

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

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

**Singular Genomics Systems, Inc.**  
(Exact name of registrant as specified in its charter)

Delaware  
(State or other jurisdiction of  
incorporation or organization)

81-2948451  
(I.R.S. Employer  
Identification Number)

3010 Science Park Road  
San Diego, CA 92121  
(858) 333-7830

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

Andrew Spaventa  
Chief Executive Officer  
and Chairperson of the Board  
Singular Genomics Systems, Inc.  
3010 Science Park Road  
San Diego, CA 92121  
(858) 333-7830

(Name, address, including zip code, and telephone number, including area code, of agent for service)

*Copies to:*

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**Approximate date of commencement of proposed sale to the public:**

From time to time, after the effective date of this Registration Statement.

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, 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 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   
Non-accelerated filer

Accelerated filer   
Smaller reporting company   
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of 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 or until this Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.**

## EXPLANATORY NOTE

This registration statement contains two prospectuses:

- a base prospectus which covers the offering, issuance and sale by us of up to \$250 million in the aggregate of the securities identified above from time to time in one or more offerings; and
- a sales agreement prospectus supplement covering the offering, issuance and sale by us of up to a maximum aggregate offering price of \$100 million of our common stock that may be issued and sold under a sales agreement, or the Sales Agreement, with Cowen and Company, LLC.

The base prospectus immediately follows this explanatory note. The specific terms of any securities to be offered pursuant to the base prospectus will be specified in a prospectus supplement to the base prospectus.

The sales agreement prospectus immediately follows the base prospectus. The \$100 million of common stock that may be offered, issued and sold by the Registrant under the Sales Agreement prospectus is included in the \$250 million of securities that may be offered, issued and sold by the Registrant under the base prospectus. Upon termination of the Sales Agreement with Cowen and Company, LLC, any portion of the \$100 million included in the Sales Agreement prospectus supplement that is not sold pursuant to the Sales Agreement will be available for sale in other offerings pursuant to the base prospectus, and if no shares are sold under the Sales Agreement, the full \$100 million of securities may be sold in other offerings by us pursuant to the base prospectus and a corresponding prospectus supplement.

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

SUBJECT TO COMPLETION, DATED JULY 19, 2022

PROSPECTUS



S I N G U L A R  
G E N O M I C S

**\$250,000,000**

**Common Stock**

**Preferred Stock**

**Debt Securities**

**Warrants**

**Units**

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We may offer and sell from time to time up to \$250 million in the aggregate, in one or more series or issuances, on terms that we will determine at the time of the offering, and any combination of the securities described in this prospectus. This prospectus provides you with a general description of the securities we may offer. We will provide specific terms of any offering in a prospectus supplement to this prospectus. Any prospectus supplement and any related free writing prospectus may also add, update, or change information contained in this prospectus. You should carefully read this prospectus and the applicable prospectus supplement and any related free writing prospectus relating to a particular offering as well as the documents incorporated or deemed to be incorporated by reference in this prospectus before you purchase any of the securities offered hereby.

We may offer and sell these securities in the same offering or in separate offerings; to or through one or more underwriters, dealers and agents; or directly to purchasers, or through a combination of these methods. The names of any underwriters, dealers, or agents involved in the sale of our securities, their compensation and any over-allotment options held by them will be described in the applicable prospectus supplement. None of our securities may be sold without delivery of the applicable prospectus supplement describing the method and terms of the offering of those securities. See “Plan of Distribution.”

Our common stock is listed on the Nasdaq Global Select Market, or Nasdaq, under the symbol “OMIC.” On July 12, 2022, the last reported sale price for our common stock was \$4.20 per share. This prospectus may not be used to consummate a sale of any securities unless accompanied by a prospectus supplement.

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**INVESTING IN OUR SECURITIES INVOLVES SIGNIFICANT RISKS. SEE “[RISK FACTORS](#)” BEGINNING ON PAGE 5 OF THIS PROSPECTUS AND ANY SIMILAR SECTION CONTAINED IN THE APPLICABLE PROSPECTUS SUPPLEMENT AS WELL AS THE RISK FACTORS THAT ARE INCORPORATED BY REFERENCE INTO THIS PROSPECTUS AND ANY PROSPECTUS SUPPLEMENT FROM OUR FILINGS WITH THE SECURITIES AND EXCHANGE COMMISSION, BEFORE INVESTING IN ANY OF OUR SECURITIES.**

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**NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ADEQUACY OR ACCURACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.**

The date of this prospectus is \_\_\_\_\_, 2022.

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## ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the United States Securities and Exchange Commission, or the SEC, using a “shelf” registration process. Under this shelf registration process, we may, from time to time, offer and sell any combination of the securities described in this prospectus in one or more offerings up to a total aggregate offering price of \$250 million.

This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may include a discussion of any risk factors or other special considerations that apply to those securities. The prospectus supplement may also add to, update or change information contained in the prospectus and, accordingly, to the extent inconsistent, information in this prospectus is superseded by the information in the prospectus supplement.

The prospectus supplement to be attached to the front of this prospectus may describe, as applicable: the terms of the securities offered; the initial or secondary public offering price; the price paid for the securities; net proceeds; and the other specific terms related to the offering of the securities.

You should only rely on the information contained or incorporated by reference in this prospectus and any prospectus supplement or related free writing prospectus relating to a particular offering. No person has been authorized to give any information or make any representations in connection with this offering other than those contained or incorporated by reference in this prospectus, any accompanying prospectus supplement and any related free writing prospectus in connection with the offering described herein and therein, and, if given or made, such information or representations must not be relied upon as having been authorized by us. Neither this prospectus nor any prospectus supplement nor any related free writing prospectus shall constitute an offer to sell or a solicitation of an offer to buy offered securities in any jurisdiction in which it is unlawful for such person to make such an offering or solicitation. This prospectus does not contain all of the information included in the registration statement. For a more complete understanding of the offering of the securities, you should refer to the registration statement, including its exhibits.

You should read the entire prospectus and any accompanying prospectus supplement and any related free writing prospectus, as well as the documents incorporated by reference before making an investment decision. Neither the delivery of this prospectus or any prospectus supplement or any related free writing prospectus nor any sale made hereunder shall under any circumstances imply that the information contained or incorporated by reference herein or in any prospectus supplement or related free writing prospectus is correct as of any date subsequent to the date hereof or of such prospectus supplement or related free writing prospectus, as applicable. You should assume that the information appearing in this prospectus, any prospectus supplement or any document incorporated by reference is accurate only as of the date of the applicable documents, regardless of the time of delivery of this prospectus or any sale of securities. Our business, financial condition, results of operations and prospects may have changed since that date.

## PROSPECTUS SUMMARY

*This summary description about us and our business highlights selected information contained elsewhere in this prospectus or incorporated in this prospectus by reference. This summary does not contain all of the information you should consider before buying securities in this offering. You should carefully read this entire prospectus and any applicable prospectus supplement, including each of the documents incorporated herein or therein by reference, before making an investment decision. As used in this prospectus, “we,” “us,” “Singular,” the “Company,” and “our” refer to Singular Genomics Systems, Inc., a Delaware corporation.*

### Overview

We are a life science technology company that is leveraging novel, next-generation sequencing (“NGS”) and multiomics technologies to empower researchers and clinicians. We developed a unique and proprietary NGS technology, which we refer to as our Sequencing Engine. This Sequencing Engine is the foundational platform technology that forms the basis of our products in development as well as our core product tenets: power, speed, flexibility and accuracy. We are currently developing two products that are purpose-built to target applications in which these core product tenets matter most. Our first product, the G4, targets the NGS market and is comprised of an instrument and associated menu of consumable kits. Our second product in development, the PX, combines single-cell analysis, spatial analysis, genomics and proteomics in one integrated instrument to offer a versatile multiomics solution.

### Corporate Information

We were incorporated in Delaware in 2016. Our principal executive offices are located at 3010 Science Park Road, San Diego, California 92121. Our telephone number is (858) 333-7830. Our website address is [www.singulargenomics.com](http://www.singulargenomics.com). Information contained on the website is not incorporated by reference into this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

### Trademarks

Singular Genomics, the Singular Genomics logo and our other registered or common law trademarks appearing in this prospectus are the property of Singular Genomics Systems, Inc. This prospectus contains references to our trademarks and service marks and to those belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus, including logos, artwork and other visual displays, may appear without the ®, TM or SM symbols, but such references are not intended to indicate in any way that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other entities’ trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other entity.

### We are an Emerging Growth Company

We currently are an “emerging growth company” as defined in the Jumpstart Our Business Startups Act of 2012, as amended, or JOBS Act. We will remain an emerging growth company until the earliest to occur of: (i) the last day of the fiscal year in which we have more than \$1.07 billion in annual revenue; (ii) the date we qualify as a “large accelerated filer,” as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), with at least \$700 million of equity securities held by non-affiliates; (iii) the issuance, in any three-year period, by us of more than \$1.0 billion in non-convertible debt securities; and (iv) the last day of the fiscal year ending after the fifth anniversary of our initial public offering. As a result of this status, we have taken advantage of reduced reporting requirements in this prospectus that are applicable to other publicly-traded entities that are not emerging growth companies and may elect to take advantage of other

exemptions from reporting requirements in our future filings with the SEC. In addition, Section 107 of the JOBS Act provides that an emerging growth company may take advantage of an extended transition period for complying with new or revised accounting standards, delaying the adoption of these accounting standards until they would apply to private companies. Even after we no longer qualify as an emerging growth company, we may qualify as a “smaller reporting company,” which would allow us to take advantage of many of the same exemptions from disclosure requirements including reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports and proxy statements, if either (i) the market value of our stock held by non-affiliates is less than \$250 million or (ii) our annual revenue is less than \$100 million during the most recently completed fiscal year and the market value of our stock held by non-affiliates is less than \$700 million.

### **The Securities We May Offer**

We may offer up to \$250 million of common stock, preferred stock, debt securities and warrants in one or more offerings and in any combination, including in units from time to time. This prospectus provides you with a general description of the securities we may offer. A prospectus supplement, which we will provide each time we offer securities, will describe the specific amounts, prices and terms of these securities.

#### *Common Stock*

Each holder of our common stock is entitled to one vote for each share on all matters to be voted upon by the stockholders, and there are no cumulative rights. Subject to any preferential rights of any outstanding preferred stock, holders of our common stock are entitled to receive ratably the dividends, if any, as may be declared from time to time by the board of directors out of funds legally available therefor. If there is a liquidation, dissolution or winding up of our company, holders of our common stock would be entitled to share in our assets remaining after the payment of liabilities and any preferential rights of any outstanding preferred stock. Our common stock is described in greater detail in this prospectus under “Description of Capital Stock—Common Stock.”

#### *Preferred Stock*

Under the terms of our amended and restated certificate of incorporation, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock.

Each series of preferred stock, if issued, will be more fully described in the particular prospectus supplement that will accompany this prospectus, including redemption provisions, rights in the event of our liquidation, dissolution or winding up, voting rights and rights to convert into common stock. While we currently have outstanding Series A Common Equivalent Preferred Stock, we have no present plans to issue any additional shares of preferred stock. Preferred stock is described in greater detail in this prospectus under “Description of Capital Stock—Preferred Stock.”

#### *Debt Securities*

The debt securities may be senior or subordinated in right of payment. For any particular debt securities we offer, the applicable prospectus supplement or term sheet will describe the title and series of the debt securities, the aggregate principal amount and the original issue price; the ranking, whether senior or subordinated; the stated maturity; the redemption terms, if any; the rate or manner of calculating the rate and the payment dates for

interest; the amount or manner of calculating the amount payable at maturity and whether that amount may be paid by delivering cash, securities or other property; the terms on which the debt securities may be convertible into or exchangeable for common stock or other securities of Singular, or any other entity, if any; and any other specific terms. We will issue the debt securities under an indenture, as described in “Description of Debt Securities.”

*Warrants*

We may issue warrants for the purchase of common stock, preferred stock or debt securities. We may issue warrants independently or together with other securities.

The warrants will be evidenced by warrant certificates issued under one or more warrant agreements, which are contracts between us and an agent for the holders of the warrants. In this prospectus, we have summarized certain general features of the warrants under “Description of Warrants.” We urge you, however, to read the prospectus supplements and any free writing prospectus that we may authorize to be provided to you related to the series of warrants being offered, as well as the complete warrant agreements and warrant certificates that contain the terms of the warrants. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement which includes this prospectus.

*Units*

We may issue units comprised of one or more of the other classes of securities issued by us as described in this prospectus in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Units are described in greater detail in this prospectus under “Description of Units.”



## **RISK FACTORS**

An investment in our securities involves significant risks. The prospectus supplement applicable to each offering of our securities will contain a discussion of the risks applicable to an investment in our securities. Prior to making a decision about investing in our securities, you should carefully consider the specific factors discussed under the heading “Risk Factors” in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in the prospectus supplement or appearing or incorporated by reference in this prospectus. You should also consider the risks, uncertainties and assumptions discussed under Item 1A, “Risk Factors,” in our most recent Annual Report on Form 10-K and in our Quarterly Reports on Form 10-Q filed subsequent to such Annual Report on Form 10-K, as well as any amendments thereto, all of which are incorporated herein by reference, and may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future and by information contained in any prospectus supplement related to a particular offering. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our business, results of operations and financial conditions and could result in a partial or complete loss of your investment.

## SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, each prospectus supplement and the information incorporated by reference in this prospectus and each prospectus supplement contains and may contain certain statements that constitute “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act. The words “aim,” “anticipate,” “assume,” “believe,” “can,” “contemplate,” “continue,” “could,” “due,” “estimate,” “expect,” “goal,” “intend,” “may,” “objective,” “ongoing,” “plan,” “potential,” “project,” “predict,” “seek,” “should,” “target,” “will,” and “would” and similar expressions and variations thereof are intended to identify forward-looking statements, but are not the exclusive means of identifying such statements. Those statements appear in this prospectus, any accompanying prospectus supplement and the documents incorporated herein and therein by reference, particularly in the sections entitled “Prospectus Summary,” “Risk Factors,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and “Business,” and include statements regarding the intent, belief or current expectations of the Company and management that are subject to known and unknown risks, uncertainties and assumptions.

This prospectus, any prospectus supplement and the information incorporated by reference in this prospectus and any prospectus supplement also contain statements that are based on the current expectations of our Company and management. You are cautioned that any such forward-looking statements are not guarantees of future performance and involve risks and uncertainties, and that actual results may differ materially from those projected in the forward-looking statements as a result of various factors.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely upon forward-looking statements as predictions of future events. The events and circumstances reflected in the forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. The risks, uncertainties and assumptions that could cause actual results to differ materially from those anticipated or implied in our forward-looking statements include, but are not limited to, those set forth above under the section entitled “Risk Factors” and in the applicable prospectus supplement, together with all of the other information contained in or incorporated by reference into the prospectus supplement or appearing or incorporated by reference into this prospectus.

Except as required by applicable law, including the securities laws of the United States and the rules and regulations of the SEC, we do not plan to publicly update or revise any forward-looking statements contained herein after we distribute this prospectus, whether as a result of any new information, future events or otherwise.

## USE OF PROCEEDS

Unless otherwise indicated in the prospectus supplement, we will use the net proceeds from the sale of securities offered by this prospectus for general corporate purposes, which may include, among other purposes, working capital, capital expenditures, other corporate expenses and acquisitions of assets, licenses, products, technologies or businesses. The timing and amount of our actual expenditures will be based on many factors, including the anticipated growth of our business. As a result, unless otherwise indicated in the prospectus supplement, our management will have broad discretion to allocate the net proceeds of the offerings. Pending their ultimate use, we intend to invest the net proceeds in short-term, investment-grade, interest-bearing instruments.

## DESCRIPTION OF CAPITAL STOCK

The following information describes our common stock and preferred stock, as well as certain provisions of our amended and restated certificate of incorporation and amended and restated bylaws. This description is only a summary. You should also refer to our amended and restated certificate of incorporation and amended and restated bylaws, which have been incorporated by reference as exhibits to our registration statement, of which this prospectus forms a part.

Our authorized capital stock consists of 400,000,000 shares of common stock, with a \$0.0001 par value per share and 10,000,000 shares of preferred stock, with a \$0.0001 par value per share, nearly all of which shares of preferred stock are undesignated. Our board of directors may establish the rights and preferences of the preferred stock from time to time. As of March 31, 2022, there were 72,187,032 shares of our common stock outstanding held by approximately 125 stockholders of record (including 1,677,569 shares of common stock which have been issued as of March 31, 2022 upon early exercise of stock options, but are not outstanding as they are subject to a right of repurchase), although we believe that there may be a significantly larger number of beneficial owners of our common stock. Additionally, as March 31, 2022, there were 2,500 shares of Series A Common Equivalent Preferred Stock outstanding, as further described below.

### Common Stock

The holders of common stock are entitled to one vote per share on all matters to be voted upon by the stockholders. The holders of common stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by the board of directors out of funds legally available, subject to preferences that may be applicable to preferred stock, if any, then outstanding. In the event of a liquidation, dissolution or winding up of our company, the holders of common stock are entitled to share ratably in all assets remaining after payment of liabilities, subject to prior distribution rights of preferred stock, if any, then outstanding. The common stock has no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to the common stock. All outstanding shares of common stock are fully paid and non-assessable.

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 preferred stock that we may designate and issue in the future.

Our common stock is listed on the Nasdaq Global Select Market under the symbol "OMIC." The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust Company. The transfer agent and registrar's address is 1 State Street 30th Floor, New York, NY 10004, and its telephone number is (212) 509-4000.

### Preferred Stock

The following description of preferred stock and the description of the terms of any particular series of preferred stock that we choose to issue hereunder and that will be set forth in the related prospectus supplement are not complete. These descriptions are qualified in their entirety by reference to our amended and restated certificate of incorporation and the certificate of designation relating to any series. The rights, preferences, privileges and restrictions of the preferred stock of each series will be fixed by the certificate of designation relating to that series. The prospectus supplement also will contain a description of certain United States federal income tax consequences relating to the purchase and ownership of the series of preferred stock that is described in the prospectus supplement.

Under the terms of our amended and restated certificate of incorporation, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of

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directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock. There are no restrictions presently on the repurchase or redemption of any shares of our preferred stock.

The prospectus supplement for a series of preferred stock will specify:

- the maximum number of shares;
- the designation of the shares;
- the annual dividend rate, if any, whether the dividend rate is fixed or variable, the date or dates on which dividends will accrue, the dividend payment dates, and whether dividends will be cumulative;
- the price and the terms and conditions for redemption, if any, including redemption at our option or at the option of the holders, including the time period for redemption, and any accumulated dividends or premiums;
- the liquidation preference, if any, and any accumulated dividends upon the liquidation, dissolution or winding up of our affairs;
- any sinking fund or similar provision, and, if so, the terms and provisions relating to the purpose and operation of the fund;
- the terms and conditions, if any, for conversion or exchange of shares of any other class or classes of our capital stock or any series of any other class or classes, or of any other series of the same class, or any other securities or assets, including the price or the rate of conversion or exchange and the method, if any, of adjustment;
- the voting rights; and
- any or all other preferences and relative, participating, optional or other special rights, privileges or qualifications, limitations or restrictions.

The issuance of preferred stock will affect, and may adversely affect, the rights of holders of common stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock on the rights of holders of common stock until the board of directors determines the specific rights attached to that preferred stock. The effects of issuing preferred stock could include one or more of the following:

- restricting dividends on the common stock;
- diluting the voting power of the common stock;
- impairing the liquidation rights of the common stock; or
- delaying or preventing changes in control or management of our company.

### ***Series A Preferred Stock Certificate of Designation***

In connection with the issuance of 2,500 shares of Series A Common Equivalent Preferred Stock (“Non-Voting Series A Preferred Stock”) pursuant to an Exchange Agreement with one of our stockholders, in January 2022, we filed a Certificate of Designation, Preferences and Rights of Series A Convertible Preferred Stock, par value \$0.0001 per share (the “Series A Certificate of Designations”) with the Secretary of State of the State of Delaware.

Pursuant to the Series A Certificate of Designations: (i) each of the aggregate 7,000 shares of Non-Voting Series A Preferred Stock (to the extent issued and outstanding) is convertible into 1,000 shares of common stock (subject to adjustment) at the option of the holder thereof (but subject to the beneficial ownership limitation described below); (ii) each outstanding share of Non-Voting Series A Preferred Stock is entitled to a de minimis

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liquidation preference of \$0.0001 per share; and (iii) the Non-Voting Series A Preferred Stock does not have any voting rights (except in certain circumstances related to the Non-Voting Series A Preferred Stock). The terms of the Non-Voting Series A Preferred Stock otherwise are substantially equivalent to the terms of the common stock. The ability of a holder to convert Non-Voting Series A Preferred Stock into common stock is prohibited to the extent that, upon such conversion, such holder, its affiliates and other persons whose ownership of common stock would be aggregated with that of such holder for purposes of Section 13(d) of the Exchange Act of 1934 would exceed 4.9% of the total number of shares of common stock then outstanding.

The foregoing summary of the Series A Certificate of Designations is qualified in its entirety by the full text thereof, which is filed as Exhibit 3.3 hereto and incorporated herein by reference. We have no present plans to issue any additional shares of preferred stock. Preferred stock will be fully paid and nonassessable upon issuance.

### **Choice of Forum**

Our amended and restated certificate provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the state or federal courts in the State of Delaware) shall, to the fullest extent permitted by law, be the sole and exclusive forum for (1) any derivative action or proceeding brought on behalf of our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any current or former director, officer, stockholder or other employee to us or our stockholders, (3) any action arising pursuant to any provision of the DGCL or our certificate of incorporation or our bylaws (as the foregoing may be amended, modified, supplemented and/or restated from time to time), or (4) any action asserting a claim governed by the internal affairs doctrine. To the extent that any such claims may be based upon federal law claims, Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. Furthermore, Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. Although our amended and restated certificate contains the choice of forum provision described above, it is possible that a court could rule that such a provision is inapplicable for a particular claim or action or that such provision is unenforceable.

## DESCRIPTION OF DEBT SECURITIES

We may issue debt securities in one or more distinct series. This section summarizes the material terms of the debt securities that are expected to be common to all series. Most of the financial terms and other specific material terms, as well as any material U.S. federal income tax consequences, of any series of debt securities that we offer will be described in a prospectus supplement or term sheet to be attached to this prospectus. Since the terms of specific debt securities may differ from the general information provided below, you should read both this prospectus and the relevant prospectus supplement or term sheet and rely on information in the prospectus supplement or term sheet that supersedes any contrary or inconsistent information below.

As required by federal law for all bonds and notes of companies that are publicly offered, the debt securities will be governed by a document called an “indenture.” An indenture is a contract between us and a financial institution acting as trustee on your behalf. The trustee has two main roles. First, the trustee can enforce your rights against us if we default. There are some limitations on the extent to which the trustee acts on your behalf, described in the second paragraph under “Events of Default.” Second, the trustee performs certain administrative duties for us.

Senior or subordinated debt securities will be issued by us under an indenture or indentures dated as of \_\_\_\_\_, 20\_\_\_\_, as supplemented from time to time, between us, as issuer, and the trustee identified in the relevant prospectus supplement, or the trustee. The debt securities may be guaranteed by one or more of our subsidiaries.

The indenture will be subject to and governed by the Trust Indenture Act of 1939, as amended. The terms “we,” “our” and “us,” when used to refer to an issuer of securities, means Singular Genomics Systems, Inc.

Because this section is a summary, it does not describe every aspect of the debt securities and the indenture. We urge you to read the indenture because it, and not this description, defines your rights as a holder of debt securities. For example, in this section, we use capitalized words to signify terms that are specifically defined in the indenture. Some of the definitions are repeated in this prospectus, or in the relevant prospectus supplement, but for the rest you will need to read the indenture. See “Where You Can Find More Information” for information on how to locate the indenture and any supplemental indentures that may be filed.

### General Provisions of the Indenture

Unless otherwise specified in a prospectus supplement or term sheet for a particular series, the debt securities covered by this prospectus will be direct, unsecured obligations of Singular. Any senior securities will be unsecured and will rank equally with all other unsecured and unsubordinated indebtedness of Singular. Any subordinated securities will be unsecured and will be subordinated in right of payment to the prior payment in full of the senior indebtedness of Singular, as more fully described in a prospectus supplement or term sheet.

The indenture provides that any debt securities proposed to be sold under this prospectus and an attached prospectus supplement or term sheet (“offered debt securities”) and any debt securities issuable upon the exercise of debt warrants or upon conversion or exchange of other offered securities (“underlying debt securities”), as well as other debt securities, may be issued under the indenture in one or more series. Any secured indebtedness of ours will rank ahead of the debt securities to the extent of the value of the assets securing such indebtedness.

You should read the prospectus supplement or term sheet for the material terms of the offered debt securities and any underlying debt securities, including the following:

- the title of the debt securities and whether the debt securities will be senior securities or subordinated securities of Singular;
- the total principal amount of the debt securities of the series and any limit on such total principal amount;

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- if not the principal amount of the debt securities, the portion of the principal amount payable upon acceleration of the maturity of the debt securities or how this portion will be determined;
- the date or dates, or how the date or dates will be determined or may be extended, when the principal of the debt securities will be payable;
- the interest rate or rates, which may be fixed or variable, that the debt securities will bear, if any, or how the rate or rates will be determined, the date or dates from which any interest will accrue or how the date or dates will be determined, the interest payment dates, any record dates for these payments, whether payments of interest will be made in cash or in kind and the basis upon which interest will be calculated if other than that of a 360-day year of twelve 30-day months;
- any optional redemption provisions;
- any sinking fund or other provisions that would obligate us to repurchase or otherwise redeem the debt securities;
- the form in which we will issue the debt securities and whether we will have the option of issuing debt securities in “certificated” form;
- if other than U.S. dollars, the currency or currencies in which the debt securities are denominated and/or payable;
- whether the amount of payments of principal, premium or interest, if any, on the debt securities will be determined with reference to an index, formula or other method (which index, formula or method may be based, without limitation, on one or more currencies, commodities, equity indices or other indices), and how these amounts will be determined;
- the place or places, if any, other than or in addition to The City of New York, of payment, transfer, conversion and/or exchange of the debt securities;
- if other than minimum denominations of \$2,000 or any integral multiple of \$1,000 above the minimum denomination in the case of registered securities issued in certificated form, the denominations in which the offered debt securities will be issued;
- if the provisions of Article Fourteen of the indenture described under “defeasance” are not applicable and any provisions in modification of, in addition to or in lieu of any of these provisions;
- whether and under what circumstances we will pay additional amounts, as contemplated by Section 1010 of the indenture, in respect of any tax, assessment or governmental charge and, if so, whether we will have the option to redeem the debt securities rather than pay the additional amounts (and the terms of this option);
- whether the debt securities are subordinated and the terms of such subordination;
- any provisions granting special rights to the holders of the debt securities upon the occurrence of specified events;
- any changes or additions to the Events of Default or covenants contained in the applicable indenture;
- whether the debt securities will be convertible into or exchangeable for any other securities and the applicable terms and conditions;
- whether the debt securities are guaranteed; and
- any other material terms of the debt securities.

For purposes of this prospectus, any reference to the payment of principal of or premium or interest, if any, on the debt securities will include additional amounts if required by the terms of the debt securities.



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The indenture does not limit the amount of debt securities that may be issued thereunder from time to time. Debt securities issued under the indenture when a single trustee is acting for all debt securities issued under the indenture are called the “indenture securities.” The indenture also provides that there may be more than one trustee thereunder, each with respect to one or more different series of indenture securities. See “— Resignation of Trustee” below. At a time when two or more trustees are acting under the indenture, each with respect to only certain series, the term “indenture securities” means the one or more series of debt securities with respect to which each respective trustee is acting. In the event that there is more than one trustee under the indenture, the powers and trust obligations of each trustee described in this prospectus will extend only to the one or more series of indenture securities for which it is trustee. If two or more trustees are acting under the indenture, then the indenture securities for which each trustee is acting would be treated as if issued under separate indentures.

The indenture does not contain any provisions that give you protection in the event we issue a large amount of debt, we repurchase a significant amount of equity or effect a recapitalization, or we are acquired by another entity.

We refer you to the applicable prospectus supplement or term sheet for information with respect to any deletions from, modifications of or additions to the Events of Default or our covenants that are described below, including any addition of a covenant or other provision providing event risk or similar protection.

We have the ability to issue indenture securities with terms different from those of indenture securities previously issued and, without the consent of the holders thereof, to reopen a previous issue of a series of indenture securities and issue additional indenture securities of that series unless the reopening was restricted when that series was created. Any additional indenture securities, together with all other outstanding indenture securities of that series, will constitute a single series of indenture securities under the indenture.

Unless otherwise specified in the applicable prospectus supplement or term sheet, the debt securities will be denominated in U.S. dollars and all payments on the debt securities will be made in U.S. dollars.

Payment of the purchase price of the debt securities must be made in immediately available funds.

The authorized denominations of debt securities denominated in U.S. dollars will be a minimum denomination of \$2,000 and integral multiples of \$1,000 above the minimum denomination. The authorized denominations of foreign currency notes will be set forth in the applicable prospectus supplement or term sheet.

### **Interest and Interest Rates**

Each debt security will begin to accrue interest from the date it is originally issued. The related prospectus supplement or term sheet will describe the method of determining the interest rate.

### **Payment and Paying Agents**

We will pay interest to the person listed in the trustee’s records as the owner of the debt security at the close of business on a particular day in advance of each regularly scheduled date for interest, even if that person no longer owns the debt security on the interest due date. That day, typically set at a date approximately two weeks prior to the interest due date, is called the “record date.” Because we will pay all the interest for an interest period to the holders on the record date, holders buying and selling debt securities must work out between themselves the appropriate purchase price. The most common manner is to adjust the sales price of the debt securities to prorate interest fairly between buyer and seller based on their respective ownership periods within the particular interest period. This prorated interest amount is called “accrued interest.”

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### *Payments on Global Securities*

We will make payments on a global security in accordance with the applicable policies of the depositary as in effect from time to time. Under those policies, we will make payments directly to the depositary, or its nominee, and not to any indirect holders who own beneficial interests in the global security. An indirect holder's right to those payments will be governed by the rules and practices of the depositary and its participants.

### *Payments on Certificated Debt Securities*

We will make payments on a certificated debt security as follows. We will pay interest that is due on an interest payment date by check mailed on the interest payment date to the holder at his or her address shown on the trustee's records as of the close of business on the regular record date. We will make payments of principal and premium, if any, duly and punctually to the office of the trustee.

Alternatively, if the holder asks us to do so, we may pay any amount that becomes due on the debt security by wire transfer of immediately available funds to an account at a bank in New York City, on the due date. To request payment by wire, the holder must give the trustee or other paying agent appropriate transfer instructions at least 15 calendar days before the requested wire payment is due. In the case of any interest payment due on an interest payment date, the instructions must be given by the person who is the holder on the relevant regular record date. Any wire instructions, once properly given, will remain in effect unless and until new instructions are given in the manner described above. In addition, see the description under "Interest and Interest Rates."

### **Material Covenants**

The prospectus supplement or term sheet relating to a particular series of debt securities that we offer will describe the material covenants included in the indenture and will be subject to negotiation between the holder and us. Such material covenants may include covenants with respect to payments of principal, premium (if any) and interest and limitations or restrictions with respect to a consolidation, merger sale or conveyance of us, restrictions on liens, or other covenants, limitations or restrictions on us.

### **Events of Default**

An event of default with respect to the debt securities of any series is defined in the indenture as:

- (a) default for 30 days in payment of any interest on the debt securities of such series when it becomes due and payable;
- (b) default in payment of principal of or any premium on the debt securities of such series at maturity or upon redemption or repayment when the same becomes due and payable;
- (c) default by us in the performance of any other covenant contained in the applicable indenture for the benefit of the debt securities of such series that has not been remedied by the end of a specified period of time after notice is given as specified in the indenture; and
- (d) certain events of bankruptcy, insolvency and reorganization of Singular.

The prospectus supplement or term sheet relating to a particular series of debt securities that we offer will describe the events of default included in the indenture and will be subject to negotiation between the holder and us.

### **Modification of the Indenture**

We and the trustee may, without the consent of the holders of the debt securities issued under such indenture, enter into supplemental indentures for, among others, one or more of the following purposes:

- to evidence the succession of another corporation to us and the assumption by such successor of its obligations under the indenture and the debt securities;

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- to add covenants of Singular or surrender any of its rights, or add any rights for the benefit of the holders of debt securities;
- to cure any ambiguity, omission, defect or inconsistency in such indenture;
- to establish the form or terms of any other series of debt securities, including any subordinated securities;
- to comply with requirements of the SEC in order to maintain the qualification of the indenture under the Trust Indenture Act;
- to evidence and provide the acceptance of any successor trustee with respect to the debt securities or one or more other series of debt securities under the indenture or to facilitate the administration of the trusts thereunder by one or more trustees in accordance with the indenture;
- to provide any additional events of default;
- to add to, change or eliminate any of the provisions of the indentures in respect of one or more series of debt securities, provided that any such addition, change or elimination, shall become effective only when there is no security outstanding of any series created prior to the adoption of such addition, change or elimination;
- to make any provisions with respect to the optional conversion rights of holders, including providing for the conversion of the debt securities into any other security or securities of ours, provided that such provisions are not adverse to the interests of the holders of any debt securities then outstanding;
- to add any guarantee of one or more series of the debt securities; or
- to supplement any of the provisions of the indenture to such extent as shall be necessary to permit or facilitate the defeasance and discharge of any series of debt securities pursuant to the indenture; provided that any such action shall not adversely affect the interests of the holders of debt securities of such series and any related coupons or any other series of securities in any material respect.

With certain exceptions, the indenture or the rights of the holders of the debt securities may be modified by us and the trustee with the consent of the holders of a majority in aggregate principal amount of the debt securities then outstanding affected thereby, but no such modification may be made without the consent of the holder of each outstanding note affected thereby that would:

- change the maturity of the principal of, or any premium on, or any installment of principal of or interest on any debt securities, or reduce the principal amount or any premium or the rate or manner of calculating interest or any premium payable upon redemption or repayment of any debt securities, or change the dates or periods for any redemption or repayment or change any place of payment where, or the coin or currency in which, any principal, premium or interest is payable, or impair the right to institute suit for the enforcement of any such payment on or after the maturity thereof (or, in the case of redemption or repayment, on or after the redemption or repayment date);
- reduce the percentage in principal amount of the outstanding debt securities, the consent whose holders is required for any such modification, or the consent of whose holders is required for any waiver of compliance with certain provisions of the indenture or certain defaults thereunder and their consequences provided for in the indenture; or
- modify any of the provisions of certain sections of the indenture, including the provisions summarized in this paragraph, except to increase any such percentage or to provide that certain other provisions of the indenture cannot be modified or waived without the consent of the holder of each of the outstanding debt securities affected thereby.

## Defeasance

The following provisions will be applicable to each series of debt securities unless we state in the applicable prospectus supplement or term sheet that the provisions of covenant defeasance and full defeasance will not be applicable to that series.

### *Covenant Defeasance*

Under current United States federal tax law, we can make the deposit described below and be released from some of the restrictive covenants in the indenture under which the particular series was issued. This is called “covenant defeasance.” In that event, you would lose the protection of those restrictive covenants but would gain the protection of having money and government securities set aside in trust to repay your debt securities. In order to achieve covenant defeasance, we must do the following:

- deposit in trust for the benefit of all holders of such debt securities a combination of money and government or government agency debt securities or bonds in the relevant currency that will generate enough cash to make interest, principal and any other payments on the debt securities of such series in the relevant currency on their various due dates; and
- deliver to the trustee a legal opinion of our counsel confirming that, under current United States federal income tax law, we may make the above deposit without causing you to be taxed on the debt securities of such series any differently than if we did not make the deposit and just repaid such debt securities ourselves at maturity.

If we accomplish covenant defeasance, you can still look to us for repayment of the debt securities if there were a shortfall in the trust deposit or the trustee is prevented from making payment. In fact, if one of the remaining Events of Default occurred (such as our bankruptcy) and the debt securities became immediately due and payable, there might be a shortfall. Depending on the event causing the default, you may not be able to obtain payment of the shortfall.

### *Full Defeasance*

If there is a change in United States federal tax law, as described below, we can legally release ourselves from all payment and other obligations on the debt securities of a particular series (called “full defeasance”) if we put in place the following other arrangements for you to be repaid:

- we must deposit in trust for the benefit of all holders of the debt securities of such series a combination of money and government or government agency debt securities or bonds in the relevant currency that will generate enough cash to make interest, principal and any other payments on the debt securities of such series in the relevant currency on their various due dates; and
- we must deliver to the trustee a legal opinion confirming that there has been a change in current United States federal tax law or an Internal Revenue Service ruling that allows us to make the above deposit without causing you to be taxed on the debt securities of such series any differently than if we did not make the deposit and just repaid such debt securities ourselves at maturity. Under current United States federal tax law, the deposit and our legal release from the debt securities of such series would be treated as though we paid you your share of the cash and debt securities or bonds at the time the cash and debt securities or bonds were deposited in trust in exchange for your debt securities and you would recognize gain or loss on your debt securities at the time of the deposit.

If we ever did accomplish full defeasance, as described above, you would have to rely solely on the trust deposit for repayment of the debt securities of such series. You could not look to us for repayment in the unlikely event of any shortfall. Conversely, the trust deposit would most likely be protected from claims of our lenders and other creditors if we ever became bankrupt or insolvent.

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Covenant defeasance and full defeasance are both subject to certain conditions, such as no default or event of default occurring and continuing, and no breach of any material agreement.

### **Discharge of the Indenture**

We may satisfy and discharge our obligations under the indenture by delivering to the trustee for cancellation all outstanding debt securities or by depositing with the trustee or the paying agent after the debt securities have become due and payable, whether at stated maturity, or any redemption or repayment date, or otherwise, cash sufficient to pay all of the outstanding debt securities and paying all other sums payable under the indenture.

### **No Personal Liability of Directors, Officers, Employees and Stockholders**

No recourse for the payment of the principal of or premium, if any, or interest on any debt security or any coupons appertaining thereto, or for any claim based thereon or otherwise in respect thereof, and no recourse under or upon any obligation, covenant or agreement of ours in the indenture or in any supplemental indenture, or in any debt security or any coupons appertaining thereto, or because of the creation of any indebtedness represented thereby, shall be had against any director, officer, employee, or stockholder as such, past, present or future, of ours or any of our affiliates or any successor person, either directly or through us or any of our affiliates or any successor person, whether by virtue of any constitution, statute or rule of law, or by the enforcement of any assessment or penalty or otherwise; it being expressly understood that all such liability is hereby expressly waived and released as a condition of, and as a consideration for, the execution of the indenture and the issue of the debt securities.

### **Governing Law**

New York law will govern the indenture and the debt securities.

### **Form, Exchange and Transfer of Certificated Debt Securities**

If registered debt securities cease to be issued in book-entry form, they will be issued:

- only in fully registered certificated form,
- without interest coupons, and
- unless we indicate otherwise in the prospectus supplement or term sheet, in a minimum denomination of \$2,000 and amounts above the minimum denomination that are integral multiples of \$1,000.

Holders may exchange their certificated debt securities of smaller denominations or combined into fewer debt securities of larger denominations, as long as the total principal amount is not changed.

Holders may exchange or transfer their certificated debt securities at the office of the trustee. We have appointed the trustee to act as our agent for registering debt securities in the names of holders transferring debt securities. We may appoint another entity to perform these functions or perform them ourselves.

Holders will not be required to pay a service charge to transfer or exchange their certificated securities, but they may be required to pay any tax or other governmental charge associated with the transfer or exchange. The transfer or exchange will be made only if our transfer agent is satisfied with the holder's proof of legal ownership.

If we have designated additional transfer agents for your debt security, they will be named in the applicable prospectus supplement or term sheet. We may appoint additional transfer agents or cancel the appointment of any particular transfer agent. We may also approve a change in the office through which any transfer agent acts.

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If any certificated debt securities of a particular series are redeemable and we redeem less than all the debt securities of that series, we may block the transfer or exchange of those debt securities during the period beginning 15 days before the day we mail the notice of redemption and ending on the day of that mailing, in order to freeze the list of holders to prepare the mailing. We may also refuse to register transfers or exchanges of any certificated debt securities selected for redemption, except that we will continue to permit transfers and exchanges of the unredeemed portion of any debt security that will be partially redeemed.

If a registered debt security is issued in book-entry form, only the depository will be entitled to transfer and exchange the debt security as described in this subsection, since it will be the sole holder of the debt security.

### **Resignation of Trustee**

The trustee may resign or be removed at any time with respect to one or more series of indenture securities provided that a successor trustee is appointed to act with respect to these series. In the event that two or more persons are acting as trustee with respect to different series of indenture securities under the indenture, each of the trustees will be a trustee of a trust separate and apart from the trust administered by any other trustee.

### **The Trustee Under the Indenture**

The trustee may be one of a number of banks with which we maintain ordinary banking relationships and from which we may obtain credit facilities and lines of credit in the future. The trustee may also serve as trustee under other indentures under which we are the obligor in the future.

## DESCRIPTION OF WARRANTS

We may issue warrants for the purchase of our preferred stock, common stock, debt securities or any combination thereof. Warrants may be issued independently or together with our preferred stock, common stock or debt securities and may be attached to or separate from any offered securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between us and a bank or trust company, as warrant agent. The warrant agent will act solely as our agent in connection with the warrants. The warrant agent will not have any obligation or relationship of agency or trust for or with any holders or beneficial owners of warrants. This summary of certain provisions of the warrants is not complete. For the terms of a particular series of warrants, you should refer to the prospectus supplement for that series of warrants and the warrant agreement for that particular series.

The prospectus supplement relating to a particular series of warrants to purchase such securities will describe the terms of the warrants, including the following:

- the title of the warrants;
- the offering price for the warrants, if any;
- the aggregate number of warrants;
- the designation and terms of the securities that may be purchased upon exercise of the warrants;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each security;
- if applicable, the date from and after which the warrants and any securities issued with the warrants will be separately transferable;
- whether the warrants will be issued in registered form or bearer form;
- information with respect to book-entry procedures, if any;
- the number and basic terms of the securities that may be purchased upon exercise of a warrant and the exercise price for the warrants;
- the dates on which the right to exercise the warrants shall commence and expire;
- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;
- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- if applicable, a discussion of material U.S. federal income tax considerations;
- the antidilution provisions of the warrants, if any;
- the redemption or call provisions, if any, applicable to the warrants;
- any provisions with respect to the holder's right to require us to repurchase the warrants upon a change in control or similar event; and
- any additional terms of the warrants, including procedures, and limitations relating to the exchange, exercise and settlement of the warrants.

Holders of equity warrants will not be entitled:

- to vote, consent or receive dividends;
- receive notice as stockholders with respect to any meeting of stockholders for the election of our directors or any other matter; or
- exercise any rights as stockholders of us.

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Holders of warrants to purchase debt securities will not be entitled to payments of principal of, or any premium or interest on, the debt securities purchasable on exercise, or to exercise any of the rights of the holders of such debt securities until such warrant is exercised.

### **Exercise of Warrants**

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to the specified time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

### **Enforceability of Rights by Holders of Warrants**

Each warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.



## DESCRIPTION OF UNITS

We may issue units consisting of any combination of the other types of securities offered under this prospectus in one or more series. We may evidence each series of units by unit certificates that we will issue under a separate agreement. We may enter into unit agreements with a unit agent. Each unit agent will be a bank or trust company that we select. We will indicate the name and address of the unit agent in the applicable prospectus supplement relating to a particular series of units.

The following description, together with the additional information included in any applicable prospectus supplement, summarizes the general features of the units that we may offer under this prospectus. You should read any prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the series of units being offered, as well as the complete unit agreements that contain the terms of the units. Specific unit agreements will contain additional important terms and provisions and we will file as an exhibit to the registration statement of which this prospectus is a part, or will incorporate by reference from another report that we file with the SEC, the form of each unit agreement relating to units offered under this prospectus.

If we offer any units, certain terms of that series of units will be described in the applicable prospectus supplement, including, without limitation, the following, as applicable:

- the title of the series of units;
- identification and description of the separate constituent securities comprising the units;
- the price or prices at which the units will be issued;
- the date, if any, on and after which the constituent securities comprising the units will be separately transferable;
- a discussion of certain United States federal income tax considerations applicable to the units; and
- any other terms of the units and their constituent securities.

### **Enforceability of Rights by Holders of Units**

To the extent applicable, each unit agent will act solely as our agent under the applicable unit agreement and will not assume any obligation or relationship of agency or trust with any holder of any unit. A single bank or trust company may act as unit agent for more than one series of units. A unit agent will have no duty or responsibility in case of any default by us under the applicable unit agreement or unit, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a unit may, without the consent of the related unit agent or the holder of any other unit, enforce by appropriate legal action its rights as holder under any security included in the unit.

We, any unit agents and any of their agents may treat the registered holder of any unit certificate as an absolute owner of the units evidenced by that certificate for any purpose and as the person entitled to exercise the rights attaching to the units so requested, despite any notice to the contrary. See “Legal Ownership of Securities.”

## LEGAL OWNERSHIP OF SECURITIES

We can issue securities in registered form or in the form of one or more global securities. We describe global securities in greater detail below. We refer to those persons who have securities registered in their own names on the books that we or any applicable trustee or depository or warrant agent maintain for this purpose as the “holders” of those securities. These persons are the legal holders of the securities. We refer to those persons who, indirectly through others, own beneficial interests in securities that are not registered in their own names, as “indirect holders” of those securities. As we discuss below, indirect holders are not legal holders, and investors in securities issued in book-entry form or in street name will be indirect holders.

### Book-Entry Holders

We may issue securities in book-entry form only, as we will specify in the applicable prospectus supplement. This means securities may be represented by one or more global securities registered in the name of a financial institution that holds them as depository on behalf of other financial institutions that participate in the depository’s book-entry system. These participating institutions, which are referred to as participants, in turn, hold beneficial interests in the securities on behalf of themselves or their customers.

Only the person in whose name a security is registered is recognized as the holder of that security. Global securities will be registered in the name of the depository or its participants. Consequently, for global securities, we will recognize only the depository as the holder of the securities, and we will make all payments on the securities to the depository. The depository passes along the payments it receives to its participants, which in turn pass the payments along to their customers who are the beneficial owners. The depository and its participants do so under agreements they have made with one another or with their customers; they are not obligated to do so under the terms of the securities.

As a result, investors in a global security will not own securities directly. Instead, they will own beneficial interests in a global security, through a bank, broker or other financial institution that participates in the depository’s book-entry system or holds an interest through a participant. As long as the securities are issued in global form, investors will be indirect holders, and not legal holders, of the securities.

### Street Name Holders

We may terminate a global security or issue securities that are not issued in global form. In these cases, investors may choose to hold their securities in their own names or in “street name.” Securities held by an investor in street name would be registered in the name of a bank, broker or other financial institution that the investor chooses, and the investor would hold only a beneficial interest in those securities through an account he or she maintains at that institution.

For securities held in street name, we or any applicable trustee or depository will recognize only the intermediary banks, brokers and other financial institutions in whose names the securities are registered as the holders of those securities, and we or any such trustee or depository will make all payments on those securities to them. These institutions pass along the payments they receive to their customers who are the beneficial owners, but only because they agree to do so in their customer agreements or because they are legally required to do so. Investors who hold securities in street name will be indirect holders, not legal holders, of those securities.

### Legal Holders

Our obligations, as well as the obligations of any applicable trustee or third party employed by us or a trustee, run only to the legal holders of the securities. We do not have obligations to investors who hold beneficial interests in global securities, in street name or by any other indirect means. This will be the case whether an investor chooses to be an indirect holder of a security or has no choice because we are issuing the securities only in global form.

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For example, once we make a payment or give a notice to the holder, we have no further responsibility for the payment or notice even if that holder is required, under agreements with its participants or customers or by law, to pass it along to the indirect holders but does not do so.

### **Special Considerations for Indirect Holders**

If you hold securities through a bank, broker or other financial institution, either in book-entry form because the securities are represented by one or more global securities or in street name, you should check with your own institution to find out:

- how it handles securities payments and notices;
- whether it imposes fees or charges;
- how it would handle a request for the holders' consent, if ever required;
- whether and how you can instruct it to send you securities registered in your own name so you can be a legal holder, if that is permitted in the future;
- how it would exercise rights under the securities if there were a default or other event triggering the need for holders to act to protect their interests; and
- if the securities are in book-entry form, how the depository's rules and procedures will affect these matters.

### **Global Securities**

A global security is a security that represents one or any other number of individual securities held by a depository. Generally, all securities represented by the same global securities will have the same terms.

Each security issued in book-entry form will be represented by a global security that we issue to, deposit with and register in the name of a financial institution or its nominee that we select. The financial institution that we select for this purpose is called the depository. Unless we specify otherwise in the applicable prospectus supplement, The Depository Trust Company, New York, New York, known as DTC, will be the depository for all securities issued in book-entry form.

A global security may not be transferred to or registered in the name of anyone other than the depository, its nominee or a successor depository, unless special termination situations arise. We describe those situations below under “—Special Situations When A Global Security Will Be Terminated.” As a result of these arrangements, the depository, or its nominee, will be the sole registered owner and legal holder of all securities represented by a global security, and investors will be permitted to own only beneficial interests in a global security. Beneficial interests must be held by means of an account with a broker, bank or other financial institution that in turn has an account with the depository or with another institution that does. Thus, an investor whose security is represented by a global security will not be a legal holder of the security, but only an indirect holder of a beneficial interest in the global security.

If the prospectus supplement for a particular security indicates that the security will be issued as a global security, then the security will be represented by a global security at all times unless and until the global security is terminated. If termination occurs, we may issue the securities through another book-entry clearing system or decide that the securities may no longer be held through any book-entry clearing system.

### **Special Considerations for Global Securities**

As an indirect holder, an investor's rights relating to a global security will be governed by the account rules of the investor's financial institution and of the depository, as well as general laws relating to securities transfers.

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We do not recognize an indirect holder as a holder of securities and instead deal only with the depository that holds the global security.

If securities are issued only as global securities, an investor should be aware of the following:

- an investor cannot cause the securities to be registered in his or her name, and cannot obtain non-global certificates for his or her interest in the securities, except in the special situations we describe below;
- an investor will be an indirect holder and must look to his or her own bank or broker for payments on the securities and protection of his or her legal rights relating to the securities, as we describe above;
- an investor may not be able to sell interests in the securities to some insurance companies and to other institutions that are required by law to own their securities in non-book-entry form;
- an investor may not be able to pledge his or her interest in the global security in circumstances where certificates representing the securities must be delivered to the lender or other beneficiary of the pledge in order for the pledge to be effective;
- the depository's policies, which may change from time to time, will govern payments, transfers, exchanges and other matters relating to an investor's interest in the global security. We and any applicable trustee have no responsibility for any aspect of the depository's actions or for its records of ownership interests in the global security. We and the trustee also do not supervise the depository in any way;
- the depository may, and we understand that DTC will, require that those who purchase and sell interests in the global security within its book-entry system use immediately available funds, and your broker or bank may require you to do so as well; and
- financial institutions that participate in the depository's book-entry system, and through which an investor holds its interest in the global security, may also have their own policies affecting payments, notices and other matters relating to the securities. There may be more than one financial intermediary in the chain of ownership for an investor. We do not monitor and are not responsible for the actions of any of those intermediaries.

### **Special Situations When a Global Security Will Be Terminated**

In a few special situations described below, a global security will terminate and interests in it will be exchanged for physical certificates representing those interests. After that exchange, the choice of whether to hold securities directly or in street name will be up to the investor. Investors must consult their own banks or brokers to find out how to have their interests in securities transferred to their own names, so that they will be direct holders. We have described the rights of holders and street name investors above.

A global security will terminate when the following special situations occur:

- if the depository notifies us that it is unwilling, unable or no longer qualified to continue as depository for that global security and we do not appoint another institution to act as depository within 90 days;
- if we notify any applicable trustee that we wish to terminate that global security; or
- if an event of default has occurred with regard to securities represented by that global security and has not been cured or waived.

The applicable prospectus supplement may also list additional situations for terminating a global security that would apply only to the particular series of securities covered by the prospectus supplement. When a global security terminates, the depository, and neither we nor any applicable trustee, is responsible for deciding the names of the institutions that will be the initial direct holders.

## PLAN OF DISTRIBUTION

We may sell the securities offered through this prospectus in primary offerings (1) to or through underwriters or dealers, (2) directly to purchasers, including our affiliates, (3) through agents, or (4) through a combination of any of these methods. The securities may be distributed at a fixed price or prices, which may be changed, market prices prevailing at the time of sale, prices related to the prevailing market prices, or negotiated prices. The prospectus supplement will include the following information:

- the terms of the offering;
- the names of any underwriters or agents;
- the name or names of any managing underwriter or underwriters;
- the purchase price of the securities;
- the net proceeds from the sale of the securities;
- any delayed delivery arrangements;
- any underwriting discounts, commissions and other items constituting underwriters' compensation;
- any initial public offering price;
- any discounts or concessions allowed or reallocated or paid to dealers; and
- any commissions paid to agents.

### *Sale through Underwriters or Dealers*

If underwriters are used in the sale, the underwriters will acquire the securities for their own account, including through underwriting, purchase, security lending or repurchase agreements with us. The underwriters may resell the securities from time to time in one or more transactions, including negotiated transactions. Underwriters may sell the securities in order to facilitate transactions in any of our other securities (described in this prospectus or otherwise), including other public or private transactions and short sales. Underwriters may offer securities to the public either through underwriting syndicates represented by one or more managing underwriters or directly by one or more firms acting as underwriters. Unless otherwise indicated in the prospectus supplement, the obligations of the underwriters to purchase the securities will be subject to certain conditions, and the underwriters will be obligated to purchase all the offered securities if they purchase any of them. The underwriters may change from time to time any initial public offering price and any discounts or concessions allowed or reallocated or paid to dealers. The prospectus supplement will include the names of the principal underwriters the respective amount of securities underwritten, the nature of the obligation of the underwriters to take the securities and the nature of any material relationship between an underwriter and us.

If dealers are used in the sale of securities offered through this prospectus, we will sell the securities to them as principals. They may then resell those securities to the public at varying prices determined by the dealers at the time of resale. The prospectus supplement will include the names of the dealers and the terms of the transaction.

### *Direct Sales and Sales through Agents*

We may sell the securities offered through this prospectus directly. In this case, no underwriters or agents would be involved. Such securities may also be sold through agents designated from time to time. The prospectus supplement will name any agent involved in the offer or sale of the offered securities and will describe any commissions payable to the agent by us. Unless otherwise indicated in the prospectus supplement, any agent will agree to use its reasonable best efforts to solicit purchases for the period of its appointment.

We may sell the securities directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act with respect to any sale of those securities. The terms of any such sales will be described in the prospectus supplement.

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### *Delayed Delivery Contracts*

If the prospectus supplement indicates, we may authorize agents, underwriters or dealers to solicit offers from certain types of institutions to purchase securities at the public offering price under delayed delivery contracts. These contracts would provide for payment and delivery on a specified date in the future. The contracts would be subject only to those conditions described in the prospectus supplement. The applicable prospectus supplement will describe the commission payable for solicitation of those contracts.

### *Market Making, Stabilization and Other Transactions*

Unless the applicable prospectus supplement states otherwise, each series of offered securities will be a new issue and will have no established trading market. We may elect to list any series of offered securities on an exchange. Any underwriters that we use in the sale of offered securities may make a market in such securities, but may discontinue such market making at any time without notice. Therefore, we cannot assure you that the securities will have a liquid trading market.

Any underwriter may also engage in stabilizing transactions, syndicate covering transactions and penalty bids in accordance with Rule 104 under the Securities Exchange Act of 1934, as amended. Stabilizing transactions involve bids to purchase the underlying security in the open market for the purpose of pegging, fixing or maintaining the price of the securities. Syndicate covering transactions involve purchases of the securities in the open market after the distribution has been completed in order to cover syndicate short positions.

Penalty bids permit the underwriters to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member are purchased in a syndicate covering transaction to cover syndicate short positions. Stabilizing transactions, syndicate covering transactions and penalty bids may cause the price of the securities to be higher than it would be in the absence of the transactions. The underwriters may, if they commence these transactions, discontinue them at any time.

### *Derivative Transactions and Hedging*

We, the underwriters or other agents may engage in derivative transactions involving the securities. These derivatives may consist of short sale transactions and other hedging activities. The underwriters or agents may acquire a long or short position in the securities, hold or resell securities acquired and purchase options or futures on the securities and other derivative instruments with returns linked to or related to changes in the price of the securities. In order to facilitate these derivative transactions, we may enter into security lending or repurchase agreements with the underwriters or agents. The underwriters or agents may effect the derivative transactions through sales of the securities to the public, including short sales, or by lending the securities in order to facilitate short sale transactions by others. The underwriters or agents may also use the securities purchased or borrowed from us or others (or, in the case of derivatives, securities received from us in settlement of those derivatives) to directly or indirectly settle sales of the securities or close out any related open borrowings of the securities.

### *Electronic Auctions*

We may also make sales through the Internet or through other electronic means. Since we may from time to time elect to offer securities directly to the public, with or without the involvement of agents, underwriters or dealers, utilizing the Internet or other forms of electronic bidding or ordering systems for the pricing and allocation of such securities, you should pay particular attention to the description of that system we will provide in a prospectus supplement.

Such electronic system may allow bidders to directly participate, through electronic access to an auction site, by submitting conditional offers to buy that are subject to acceptance by us, and which may directly affect the price or other terms and conditions at which such securities are sold. These bidding or ordering systems may

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present to each bidder, on a so-called “real-time” basis, relevant information to assist in making a bid, such as the clearing spread at which the offering would be sold, based on the bids submitted, and whether a bidder’s individual bids would be accepted, prorated or rejected.

Upon completion of such an electronic auction process, securities will be allocated based on prices bid, terms of bid or other factors. The final offering price at which securities would be sold and the allocation of securities among bidders would be based in whole or in part on the results of the Internet or other electronic bidding process or auction.

### *General Information*

Agents, underwriters and dealers may be entitled, under agreements entered into with us, to indemnification by us against certain liabilities, including liabilities under the Securities Act.

## LEGAL MATTERS

The validity of the securities offered by this prospectus will be passed upon by Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP, San Diego, California. Certain partners and certain investment partnerships comprised of partners of Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP own an interest representing less than one percent of the shares of our common stock. Additional legal matters may be passed upon for us or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

## EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2021, as set forth in their report which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

## WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and other reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at [www.sec.gov](http://www.sec.gov). Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, including any amendments to those reports, and other information that we file with or furnish to the SEC pursuant to Section 13(a) or 15(d) of the Exchange Act can also be accessed free of charge through the Internet. These filings will be available as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC.

We have filed with the SEC a registration statement on Form S-3 under the Securities Act of 1933, of which this prospectus forms a part, relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. The registration statement and the documents referred to below under "Incorporation by Reference" are also available on our website, [www.singulargenomics.com](http://www.singulargenomics.com). We have not incorporated by reference into this prospectus the information on our website, and you should not consider it to be a part of this prospectus.



## INFORMATION INCORPORATED BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus certain information we file with it, which means that we can disclose important information by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus, and information that we file later with the SEC will automatically update and supersede information contained in this prospectus and any accompanying prospectus supplement. We incorporate by reference the documents listed below and any future information filed (rather than furnished) with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act between the date of this prospectus and the termination of this offering, provided, however, that we are not incorporating any information furnished under Item 2.02 or Item 7.01 of any current report on Form 8-K:

- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2021, filed with the SEC on March 14, 2022;
- our Quarterly Report on [Form 10-Q](#) for the quarter ended March 31, 2022, filed with the SEC on May 10, 2022;
- our Current Reports on Form 8-K filed with the SEC on [January 6, 2022](#), [January 20, 2022](#), [January 26, 2022](#), [April 26, 2022](#), and [June 3, 2022](#) (each to the extent filed and not furnished);
- the information specifically incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2021 from our [definitive proxy statement](#) relating to our 2022 annual meeting of stockholders, which was filed with the SEC on April 14, 2022; and
- the description of our common stock contained in our Registration Statement on [Form 8-A](#) as filed with the SEC on May 25, 2021 pursuant to Section 12(b) of the Exchange Act.

We also incorporate by reference into this prospectus additional documents that we may file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the completion or termination of the offering, including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information deemed furnished and not filed with the SEC. Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

This prospectus may contain information that updates, modifies or is contrary to information in one or more of the documents incorporated by reference in this prospectus. You should rely only on the information incorporated by reference or provided in this prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus is accurate as of any date other than the date of this prospectus or the date of the documents incorporated by reference in this prospectus.

We will provide to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request, at no cost to the requester, a copy of any and all of the information that is incorporated by reference in this prospectus.

You should direct any requests for documents to:

Singular Genomics Systems, Inc.  
Attn: Investor Relations  
3010 Science Park Road  
San Diego, California 92121  
(858) 333-7830

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Our reports and documents incorporated by reference herein may also be found in the “Investors” section of our website at [www.singulargenomics.com](http://www.singulargenomics.com). Our website and the information contained in it or connected to it shall not be in this prospectus through our website at [www.singulargenomics.com](http://www.singulargenomics.com). Except for the specific incorporated documents listed above, the information on, or that can be accessed through, our website shall not be deemed to be incorporated by reference in this prospectus or the registration statement of which it forms a part.



**S I N G U L A R  
G E N O M I C S**

**Common Stock**

**Preferred Stock**

**Debt Securities**

**Warrants**

**Units**

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**PROSPECTUS**

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The information in this prospectus supplement is not complete and may be changed. We may not sell these securities until the Securities and Exchange Commission declares our registration statement effective. This prospectus supplement is not an offer to sell these securities and is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

PROSPECTUS SUPPLEMENT (Subject to Completion)

Dated July 19, 2022

**\$100,000,000**



**S I N G U L A R  
G E N O M I C S**

## **Common Stock**

We have entered into a sales agreement, or the Sales Agreement, with Cowen and Company, LLC, or Cowen, relating to the sale of shares of our common stock, par value \$0.0001 per share, offered by this prospectus supplement and the accompanying prospectus. In accordance with the terms of the Sales Agreement, we may offer and sell shares of our common stock having an aggregate offering price of up to \$100,000,000 from time to time through Cowen, acting as our agent.

Our common stock is listed on the Nasdaq Global Select Market under the symbol "OMIC." On July 12, 2022 the closing price for our common stock, as reported on the Nasdaq Global Select Market, was \$4.20 per share.

Sales of our common stock, if any, under this prospectus supplement and the accompanying prospectus will be made in sales deemed to be an "at the market offering" as defined in Rule 415(a)(4) promulgated under the Securities Act of 1933, as amended, or the Securities Act. Cowen is not required to sell any specific number or dollar amount of securities, but will act as sales agent using commercially reasonable efforts consistent with its normal trading and sales practices, on mutually agreed terms between Cowen and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

Cowen will be entitled to a commission equal to 3.0% of the aggregate gross proceeds of any shares of common stock sold under the Sales Agreement. In connection with the sale of our common stock on our behalf, Cowen will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation paid to Cowen will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to Cowen with respect to certain liabilities, including liabilities under the Securities Act or the Securities Exchange Act of 1934, as amended, or the Exchange Act. See "Plan of Distribution" beginning on page SA-11 for additional information regarding the compensation to be paid to Cowen.

**INVESTING IN OUR SECURITIES INVOLVES SIGNIFICANT RISKS. SEE "[RISK FACTORS](#)" BEGINNING ON PAGE SA-6 OF THIS PROSPECTUS SUPPLEMENT AS WELL AS THE RISK FACTORS THAT ARE INCORPORATED BY REFERENCE INTO THIS PROSPECTUS SUPPLEMENT FROM OUR FILINGS WITH THE SECURITIES AND EXCHANGE COMMISSION, BEFORE INVESTING IN ANY OF OUR SECURITIES.**

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

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## **Cowen**

The date of this prospectus supplement is \_\_\_\_\_, 2022.

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## ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus are part of a registration statement on Form S-3 that we have filed with the Securities and Exchange Commission, or SEC, utilizing a “shelf” registration process. By using a shelf registration statement, we may offer shares of our common stock having an aggregate offering price of up to \$100,000,000 from time to time under this prospectus supplement at prices and on terms to be determined by market conditions at the time of offering.

This prospectus supplement relates to the offering of our common stock. Before buying any of the common stock that we are offering, we urge you to carefully read this prospectus supplement, together with the information incorporated by reference as described under the headings “Where You Can Find More Information” and “Incorporation of Certain Information by Reference” in this prospectus supplement. These documents contain important information that you should consider when making your investment decision.

We provide information to you about this offering of our common stock in two separate documents that are bound together: (1) this prospectus supplement, which describes the specific details regarding this offering; and (2) the accompanying prospectus, which provides general information, some of which may not apply to this offering. Generally, when we refer to this “prospectus,” we are referring to both documents combined. If information in this prospectus supplement is inconsistent with the accompanying prospectus, you should rely on this prospectus supplement. To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in any document incorporated by reference in this prospectus supplement, on the other hand, you should rely on the information in this prospectus supplement. If any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in this prospectus supplement—the statement in the document having the later date modifies or supersedes the earlier statement.

You should rely only on the information contained in or incorporated by reference in this prospectus supplement and in any free writing prospectus that we have authorized for use in connection with this offering. We have not, and Cowen has not, authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and Cowen is not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus supplement, the documents incorporated by reference in this prospectus supplement, and 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. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus supplement, the documents incorporated by reference in this prospectus, and any free writing prospectus that we have authorized for use in connection with this offering, in their entirety before making an investment decision.

This prospectus supplement, the accompanying prospectus and the information incorporated herein or therein by reference contains market data, industry statistics and other data that have been obtained or compiled from information made available by independent third parties. We have not independently verified the accuracy and completeness of such data.

As used in this prospectus supplement, unless the context otherwise requires, references to “Singular,” “company,” “we,” “us” and “our” refer to Singular Genomics Systems, Inc.

All trademarks, service marks and trade names appearing in this prospectus supplement are the property of their respective holders. Use or display by us of other parties’ trademarks, trade dress or products in this prospectus supplement is not intended to, and does not, imply a relationship with, or endorsements or sponsorship of, us by the trademark or trade dress owners.

## PROSPECTUS SUPPLEMENT SUMMARY

*This summary highlights certain information about us, our business, this offering and selected information contained elsewhere or incorporated by reference into this prospectus supplement. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our common stock. For a more complete understanding of our Company and this offering, we encourage you to read and consider carefully the more detailed information in this prospectus supplement, the accompanying prospectus and any related free writing prospectus, including the information set forth in the section titled "Risk Factors" on page SA-6 in this prospectus supplement, and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus supplement and any related free writing prospectus in their entirety before making an investment decision.*

### Overview

We are a life science technology company that is leveraging novel, next-generation sequencing ("NGS") and multiomics technologies to empower researchers and clinicians. We developed a unique and proprietary NGS technology, which we refer to as our Sequencing Engine. This Sequencing Engine is the foundational platform technology that forms the basis of our products in development as well as our core product tenets: power, speed, flexibility and accuracy. We are currently developing two products that are purpose-built to target applications in which these core product tenets matter most. Our first product, the G4, targets the NGS market and is comprised of an instrument and associated menu of consumable kits. Our second product in development, the PX, combines single-cell analysis, spatial analysis, genomics and proteomics in one integrated instrument to offer a versatile multiomics solution.

The core of our Sequencing Engine is comprised of unique and proprietary chemistry, including novel chemical compounds, polymers and enzymes. This chemistry is designed to produce high sequencing accuracy and rapid cycle times that we believe can drive improvements in NGS. To take full advantage of the proprietary chemistry, we have developed and continue to develop purpose-built instrumentation consisting of high-speed, high-resolution imaging and innovative fluidic design. We believe that our Sequencing Engine, together with our proprietary innovations in molecular biology techniques, will enable differentiated applications in fast-growing markets, supported by our intellectual property portfolio.

The G4 is a benchtop next-generation sequencer designed to produce fast and accurate sequencing results. The G4 is designed to target the NGS market in particular applications that require power, speed, flexibility and accuracy. We believe the G4 will expand and accelerate the use of DNA sequencing across a wide range of applications, such as identifying cancer-associated genetic mutations, deep sequencing to detect minimum residual disease in circulating cell-free DNA, profiling the immune system, analyzing single-cell RNA transcription and rapidly sequencing exomes and whole genomes. We are executing a three-step commercialization plan for the G4 consisting of: (i) collaborating with select partners to conduct beta pilot tests, which we completed in 2021; (ii) collaborating with potential customers in our early access program, which we concluded in the second quarter of 2022; and (iii) offering the G4 broadly to the market. We commercially launched the G4 in December of 2021. We commenced shipping the G4 in the second quarter of 2022.

The PX is our second product in development and is a multiomics platform designed to target the markets for single-cell, spatial analysis and proteomics. The PX will leverage our Sequencing Engine as a readout mechanism to provide a high-resolution view of biology at the single-cell and tissue level. We believe the PX, when launched, will be a high-throughput, versatile platform capable of measuring

levels of RNA transcription, protein expression and sequence specific information directly in cells and tissues. We believe the PX will have broad application across many areas of biology. We are initially focused on applications in oncology and immunology, with future expansion into other applications such as neurology. We are currently in an advanced prototype development stage for the PX. We anticipate initiating a technology access program in the second half of 2022, which will be similar to our early access program, but we intend to initially bring samples and collaborators in-house.

#### **Corporate Information**

We were incorporated in Delaware in 2016. Our principal executive offices are located at 3010 Science Park Road, San Diego, California 92121. Our telephone number is (858) 333-7830. Our website address is [www.singulargenomics.com](http://www.singulargenomics.com). Information contained on the website is not incorporated by reference into this prospectus supplement. We have included our website address in this prospectus supplement solely as an inactive textual reference.

#### **Trademarks**

Singular Genomics, the Singular Genomics logo and our other registered or common law trademarks appearing in this prospectus supplement are the property of Singular Genomics Systems, Inc. This prospectus supplement contains references to our trademarks and service marks and to those belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus supplement, including logos, artwork and other visual displays, may appear without the ®, ™ or SM symbols, but such references are not intended to indicate in any way that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other entities' trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other entity.

#### **We are an Emerging Growth Company**

We currently are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, as amended, or JOBS Act. We will remain an emerging growth company until the earliest to occur of: (i) the last day of the fiscal year in which we have more than \$1.07 billion in annual revenue; (ii) the date we qualify as a "large accelerated filer," as defined in Rule 12b-2 under the Exchange Act, with at least \$700 million of equity securities held by non-affiliates; (iii) the issuance, in any three-year period, by us of more than \$1.0 billion in non-convertible debt securities; and (iv) the last day of the fiscal year ending after the fifth anniversary of our initial public offering. As a result of this status, we have taken advantage of reduced reporting requirements in this prospectus supplement that are applicable to other publicly traded entities that are not emerging growth companies and may elect to take advantage of other exemptions from reporting requirements in our future filings with the SEC. In addition, Section 107 of the JOBS Act provides that an emerging growth company may take advantage of an extended transition period for complying with new or revised accounting standards, delaying the adoption of these accounting standards until they would apply to private companies. Even after we no longer qualify as an emerging growth company, we may qualify as a "smaller reporting company," which would allow us to take advantage of many of the same exemptions from disclosure requirements including reduced disclosure obligations regarding executive compensation in this prospectus supplement and our periodic reports and proxy statements, if either (i) the market value of our stock held by non-affiliates is less than \$250 million or (ii) our annual revenue is less than \$100 million during the most recently completed fiscal year and the market value of our stock held by non-affiliates is less than \$700 million.



## THE OFFERING

<b>Common stock offered by us:</b>	Shares of our common stock having an aggregate offering price of up to \$100,000,000.
<b>Common stock to be outstanding after this offering:</b>	Up to 94,318,986 shares (as more fully described in the notes following this table), assuming sales of 23,809,523 shares of our common stock in this offering at an assumed offering price of \$4.20 per share, which was the last reported sale price of our common stock on the Nasdaq Global Select Market on July 12, 2022. The actual number of shares issued will vary depending on the sales price under this offering.
<b>Plan of Distribution:</b>	“At the market offering” that may be made from time to time through our sales agent, Cowen. See “Plan of Distribution” on page SA-11 of this prospectus supplement.
<b>Use of Proceeds:</b>	We currently intend to use the net proceeds from this offering for our general corporate and working capital purposes. See “Use of Proceeds” on page SA-10 of this prospectus supplement.
<b>Risk Factors:</b>	Investing in our common stock involves significant risks. See “Risk Factors” on page SA-6 of this prospectus supplement, and under similar headings in other documents incorporated by reference into this prospectus supplement.
<b>Nasdaq Global Select Market symbol:</b>	OMIC

All information in this prospectus supplement related to the number of shares of our common stock to be outstanding immediately after this offering is based on 70,509,463 shares of our common stock outstanding as of March 31, 2022, and unless otherwise indicated, excludes:

- 9,139,344 shares of common stock issuable upon the exercise of options outstanding as of March 31, 2022, with a weighted-average exercise price of \$7.00 per share;
- 1,677,569 shares of common stock which have been issued as of March 31, 2022 upon early exercise of stock options, but are not outstanding as they are subject to a right of repurchase;
- 1,119,863 shares of common stock issuable upon the exercise of options granted after March 31, 2022, at a weighted-average exercise price of \$3.86 per share;
- 7,006,507 shares of common stock reserved for future issuance under our 2021 Equity Incentive Plan, or the 2021 Plan, which includes an annual evergreen increase;
- 1,394,991 shares of common stock reserved for issuance under our 2021 Employee Stock Purchase Plan, or the 2021 ESPP, which includes an annual evergreen increase; and
- 2,500 shares of Series A Common Stock Equivalent Convertible Preferred Stock convertible into 2,500,000 shares of common stock, subject to certain limitations.

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Unless otherwise stated, all information contained in this prospectus supplement assumes no exercise of stock options after March 31, 2022 and reflects an assumed public offering price of \$4.20 per share, which was the last reported sale price of our common stock on the Nasdaq Global Select Market on July 12, 2022.

## RISK FACTORS

*Investing in our common stock is speculative and involves a high degree of risk. Before investing in our common stock, you should consider carefully the risks described below, together with the risks described in the section entitled "Risk Factors" in our most recent Annual Report on Form 10-K, and our most recent Quarterly Reports on Form 10-Q, which are incorporated by reference in their entirety, as well as the other information contained in or incorporated by reference in this prospectus supplement, including our financial statements and the related notes thereto. If any of the following risks occur, our business, financial condition, results of operations and future growth prospects could be materially and adversely affected. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment. This prospectus supplement also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of a number of factors, including the risks described below. See "Special Note Regarding Forward-Looking Statements."*

### **Risks Related to This Offering**

***We have broad discretion in the use of the net proceeds from this offering and may invest or spend the proceeds in ways with which you do not agree and in ways that may not yield a return on your investment.***

Our management will have broad discretion in the application of the net proceeds from this offering, including for any of the purposes described in the section titled "Use of Proceeds," as well as our existing cash and short-term investments, and you will be relying on the judgment of our management regarding such application. You will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used effectively. Our management might not apply the net proceeds or our existing cash and short-term investments in ways that ultimately increase the value of your investment. If we do not invest or apply the net proceeds from this offering or our existing cash and short-term investments in ways that enhance stockholder value, we may fail to achieve expected results, which could cause our stock price to decline. Pending their use, we may invest the net proceeds from this offering in short-term interest-bearing investment-grade securities or short-term U.S. Treasury securities with insignificant rates of return. These investments may not yield a favorable return to our stockholders.

***Future sales or issuances of our common stock in the public markets, or the perception of such sales, could depress the trading price of our common stock.***

The sale of a substantial number of shares of our common stock or other equity-related securities in the public markets, or the perception that such sales could occur, could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity securities. We may sell large quantities of our common stock at any time pursuant to this prospectus supplement and/or in one or more separate offerings. We cannot predict the effect that future sales of common stock or other equity-related securities, or the perception of such sales, would have on the market price of our common stock.

***The actual number of shares we will issue under the Sales Agreement, at any one time or in total, is uncertain.***

Subject to certain limitations in our Sales Agreement with Cowen and in compliance with applicable law, we have the discretion to deliver a placement notice to Cowen at any time throughout the term of the Sales Agreement. The number of shares sold by Cowen after delivering a placement notice will fluctuate based on the market price of the common shares during the sales period and the price and volume limits we set with Cowen. Because the price per share of each share sold will fluctuate based

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on the market price of our common shares during the sales period, it is not possible at this stage to predict the number of shares that will be issued or the resulting gross proceeds.

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

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

***Purchasers may experience immediate dilution in the book value per share of the common stock purchased in the offering.***

The shares sold in the public offering, if any, will be sold from time to time at various prices. However, it is possible that the offering price of our common stock will be substantially higher than the net tangible book value per share of our outstanding common stock. Therefore, if you purchase shares of our common stock in this offering, you may pay a price per share that substantially exceeds our net tangible book value per share after giving effect to this offering. You will also experience additional dilution upon the exercise of options, vesting of restricted stock units, including those options and restricted stock units currently outstanding and those granted in the future, the issuance of restricted stock or other equity awards under our stock incentive plans, or upon conversion of any convertible notes currently outstanding or that may be issued in the future. In addition, in the past, we have issued options to acquire common stock at prices significantly below the offering price and have granted restricted stock units. To the extent these outstanding options are ultimately exercised or these restricted stock units vest, you will incur additional dilution.

## SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the information incorporated by reference in this prospectus supplement, and any free writing prospectus that we authorize for use in connection with this offering, contains and may contain certain statements that constitute “forward-looking statements” within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. The words “aim,” “anticipate,” “assume,” “believe,” “can,” “contemplate,” “continue,” “could,” “due,” “estimate,” “expect,” “goal,” “intend,” “may,” “objective,” “ongoing,” “plan,” “potential,” “project,” “predict,” “seek,” “should,” “target,” “will,” and “would” and similar expressions and variations thereof are intended to identify forward-looking statements, but are not the exclusive means of identifying such statements. Those statements appear in this prospectus supplement and the documents incorporated herein by reference, particularly in the sections entitled “Prospectus Summary,” “Risk Factors,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Business,” and include statements regarding the intent, belief or current expectations of the Company and management that are subject to known and unknown risks, uncertainties and assumptions.

Forward-looking statements include, but are not limited to, statements about:

- estimates of our addressable market, market growth, future revenue, expenses, capital requirements and our needs for additional financing;
- our ability to timely and successfully implement our commercialization plan for the G4 and planned PX;
- the implementation of our business model and strategic plans for the G4 and planned PX;
- our expectations regarding the rate and degree of market acceptance of the G4 and planned PX;
- our ability to compete with competitive companies and technologies in our industry;
- our ability to manage and grow our business and commercialize the G4 and planned PX;
- our ability to develop and commercialize new products and development product enhancements;
- the impact of the COVID-19 pandemic on our business;
- our ability to establish and maintain intellectual property protection for our products or avoid or defend claims of infringement;
- our ability to fulfill our contractual commitments;
- the performance of third-party manufacturers and suppliers;
- our ability to effectively manufacture our products;
- the potential effects of government regulation;
- our ability to hire and retain key personnel and to manage our future growth effectively;
- our ability to obtain additional financing on favorable terms to us or at all;
- our expectations regarding use of proceeds from our initial public offering or subsequent offerings;
- the impact of local, regional, national and international economic conditions and events;
- our expectations about market trends;
- our expectations regarding the period during which we will qualify as an emerging growth company under the JOBS Act; and
- our anticipated use of our existing resources and the proceeds from this offering.

This prospectus supplement and the information incorporated by reference in this prospectus supplement also contain statements that are based on the current expectations of our Company and

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management. These forward-looking statements speak only as of the date of this prospectus supplement. You are cautioned that any such forward-looking statements are not guarantees of future performance and involve risks and uncertainties, and that actual results may differ materially from those projected in the forward-looking statements as a result of various factors.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely upon forward-looking statements as predictions of future events. The events and circumstances reflected in the forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. The risks, uncertainties and assumptions that could cause actual results to differ materially from those anticipated or implied in our forward-looking statements include, but are not limited to, those set forth under the section entitled "Risk Factors", together with all of the other information appearing or incorporated by reference into this prospectus supplement.

Except as required by applicable law, including the securities laws of the United States and the rules and regulations of the SEC, we do not plan to publicly update or revise any forward-looking statements contained herein after we distribute this prospectus supplement, whether as a result of any new information, future events or otherwise.

## USE OF PROCEEDS

We may issue and sell shares of our common stock having aggregate sales proceeds of up to \$100.0 million from time to time. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. We are not obligated under our Sales Agreement to sell any shares of common stock, and we may not sell any shares under or fully utilize the Sales Agreement with Cowen as a source of financing.

We currently intend to use the net proceeds from this offering to fund the commercialization of our G4 and product development and commercialization of our PX, to develop or acquire new products or technologies that are complementary to our business (although we have no such acquisition commitments as of the date of this prospectus supplement), and for our general corporate and working capital purposes. We may invest the net proceeds from this offering in short-term interest-bearing investment-grade securities or U.S. Treasury securities with insignificant rates of return, or we may hold such proceeds as cash until required for these business expenditures. We have not yet determined the specific amounts of net proceeds to be used for each of these ongoing business activities. As a result, we will retain broad discretion over the allocation of the net proceeds from this offering for our business use.

## PLAN OF DISTRIBUTION

We have entered into a Sales Agreement with Cowen, under which we may issue and sell from time to time up to \$100,000,000 of our common stock through Cowen as our sales agent. Sales of our common stock, if any, will be made at market prices by any method that is deemed to be an “at the market offering” as defined in Rule 415(a)(4) under the Securities Act, including sales made directly on the Nasdaq Global Select Market or any other trading market for our common stock.

Cowen will offer our common stock subject to the terms and conditions of the Sales Agreement on a daily basis or as otherwise agreed upon by us and Cowen. We will designate the maximum amount of common stock to be sold through Cowen on a daily basis or otherwise determine such maximum amount together with Cowen. Subject to the terms and conditions of the Sales Agreement, Cowen will use its commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us. We may instruct Cowen not to sell common stock if the sales cannot be effected at or above the price designated by us in any such instruction. Cowen or we may suspend the offering of our common stock being made through Cowen under the Sales Agreement upon proper notice to the other party. Cowen and we each have the right, by giving written notice as specified in the Sales Agreement, to terminate the Sales Agreement in each party’s sole discretion at any time.

The aggregate compensation payable to Cowen as sales agent equals 3.0% of the gross sales price of the shares sold through it pursuant to the Sales Agreement. We have also agreed to reimburse Cowen up to \$75,000 of Cowen’s actual outside legal expenses incurred by Cowen in connection with this offering, and for certain other expenses. We estimate that the total expenses of the offering payable by us, excluding commissions and reimbursements payable to Cowen under the Sales Agreement, will be approximately \$250,000.

The remaining sales proceeds, after deducting any expenses payable by us and any transaction fees imposed by any governmental, regulatory, or self-regulatory organization in connection with the sales, will equal our net proceeds for the sale of such common stock.

Cowen will provide written confirmation to us following the close of trading on the Nasdaq Global Select Market on each day in which common stock is sold through it as sales agent under the Sales Agreement. Each confirmation will include the number of shares of common stock sold through it as sales agent on that day, the volume weighted average price of the shares sold, the percentage of the daily trading volume and the net proceeds to us.

We will report at least quarterly the number of shares of common stock sold through Cowen under the Sales Agreement, the net proceeds to us and the compensation paid by us to Cowen in connection with the sales of common stock.

Settlement for sales of common stock will occur, unless the parties agree otherwise, on the second business day that is also a trading day following the date on which any sales were made in return for payment of the net proceeds to us. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

In connection with the sales of our common stock on our behalf, Cowen will be deemed to be an “underwriter” within the meaning of the Securities Act, and the compensation paid to Cowen will be deemed to be underwriting commissions or discounts. We have agreed in the Sales Agreement to provide indemnification and contribution to Cowen against certain liabilities, including liabilities under the Securities Act. As sales agent, Cowen will not engage in any transactions that stabilizes our common stock.



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Our common stock is listed on the Nasdaq Global Select Market and trades under the symbol "OMIC." The transfer agent of our common stock is Continental Stock Transfer & Trust Company.

Cowen and/or its affiliates have provided, and may in the future provide, various investment banking and other financial services for us for which services they have received and, may in the future receive, customary fees.

## LEGAL MATTERS

The validity of the securities offered by this prospectus supplement will be passed upon by Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP, San Diego, California. Certain partners and certain investment partnerships comprised of partners of Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP own an interest representing less than one percent of the shares of our common stock. Cowen and Company, LLC is being represented in connection with this offering by Cooley LLP, New York, New York.

## EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2021, as set forth in their report which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

## WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and other reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at [www.sec.gov](http://www.sec.gov). Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, including any amendments to those reports, and other information that we file with or furnish to the SEC pursuant to Section 13(a) or 15(d) of the Exchange Act can also be accessed free of charge through the Internet. These filings will be available as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC.

We have filed with the SEC a registration statement on Form S-3 under the Securities Act, of which this prospectus supplement and the accompanying prospectus form a part, relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. The registration statement and the documents referred to below under "Incorporation by Reference" are also available on our website, [www.singulargenomics.com](http://www.singulargenomics.com). We have not incorporated by reference into this prospectus the information on our website, and you should not consider it to be a part of this prospectus.

## INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus supplement certain information we file with it, which means that we can disclose important information by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus supplement, and information that we file later with the SEC will automatically update and supersede information contained in this prospectus supplement. We incorporate by reference the documents listed below and any future information filed (rather than furnished) with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act between the date of this prospectus supplement and the termination of this offering, provided, however, that we are not incorporating any information furnished under Item 2.02 or Item 7.01 of any current report on Form 8-K:

- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2021, filed with the SEC on March 14, 2022;
- our Quarterly Report on [Form 10-Q](#) for the quarter ended March 31, 2022, filed with the SEC on May 10, 2022;
- our Current Reports on Form 8-K filed with the SEC on [January 6, 2022](#), [January 20, 2022](#), [January 26, 2022](#), [April 26, 2022](#), and [June 3, 2022](#) (each to the extent filed and not furnished);
- the information specifically incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2021 from our [definitive proxy statement](#) relating to our 2022 annual meeting of stockholders, which was filed with the SEC on April 14, 2022; and
- the description of our common stock contained in our Registration Statement on [Form 8-A](#) as filed with the SEC on May 25, 2021 pursuant to Section 12(b) of the Exchange Act.

We also incorporate by reference into this prospectus supplement additional documents that we may file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the completion or termination of the offering, including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information deemed furnished and not filed with the SEC. Any statements contained in a previously filed document incorporated by reference into this prospectus supplement is deemed to be modified or superseded for purposes of this prospectus supplement to the extent that a statement contained in this prospectus supplement, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

This prospectus supplement may contain information that updates, modifies or is contrary to information in one or more of the documents incorporated by reference in this prospectus supplement. You should rely only on the information incorporated by reference or provided in this prospectus supplement. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus supplement is accurate as of any date other than the date of this prospectus supplement or the date of the documents incorporated by reference in this prospectus supplement.

We will provide to each person, including any beneficial owner, to whom this prospectus supplement is delivered, upon written or oral request, at no cost to the requester, a copy of any and all of the information that is incorporated by reference in this prospectus supplement.

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You should direct any requests for documents to:

Singular Genomics Systems, Inc.  
Attn: Investor Relations  
3010 Science Park Road  
San Diego, California 92121  
(858) 333-7830

Our reports and documents incorporated by reference herein may also be found in the “Investors” section of our website at [www.singulargenomics.com](http://www.singulargenomics.com). Except for the specific incorporated documents listed above, the information on, or that can be accessed through, our website shall not be deemed to be incorporated by reference in this prospectus supplement or the registration statement of which it forms a part.

SA-15

**\$100,000,000**



**S I N G U L A R  
G E N O M I C S**

**Common Stock**

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**PROSPECTUS SUPPLEMENT**

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**Cowen**

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, 2022

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**PART II****INFORMATION NOT REQUIRED IN THE PROSPECTUS****Item 14. Other Expenses of Issuance and Distribution**

The following table sets forth the estimated costs and expenses (other than the Securities and Exchange Commission registration fee and FINRA filing fee), other than underwriting discounts and commissions, payable by the registrant in connection with the sale of the securities being registered.

Securities and Exchange Commission registration fee	\$ 23,175
FINRA filing fee	38,000
Accounting fees and expenses	*
Legal fees and expenses	*
Printing and engraving	*
Transfer agent fees and expenses	*
Miscellaneous expenses	*
Total	\$ *

\* These fees cannot be estimated at this time, as they are calculated based on the securities offered and the number of issuances. An estimate of the aggregate expenses in connection with the sale and distribution of the securities being offered will be included in the applicable prospectus supplement.

**Item 15. Indemnification of Directors and Officers**

Section 102(b)(7) of the Delaware General Corporation Law, or the DGCL, allows a corporation to provide in its certificate of incorporation that a director of the corporation will not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except where the director breached the duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit.

Section 145(a) of the DGCL provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party 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 the corporation) by reason of the fact that such person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or enterprise, against 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 if he or she acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no cause to believe his or her conduct was unlawful.

Section 145(b) of the DGCL provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that such person acted in any of the capacities set forth above, against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit if he or she acted under similar standards, except that no indemnification may be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the court in which such action or suit was brought shall determine that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to be indemnified for such expenses which the court shall deem proper.

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Section 145 of the DGCL further provides that: (i) to the extent that a former or present director or officer of a corporation has been successful in the defense of any action, suit or proceeding referred to in subsections (a) and (b) or in the defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by him or her in connection therewith; (ii) indemnification provided for by Section 145 shall not be deemed exclusive of any other rights to which the indemnified party may be entitled; and (iii) the corporation may purchase and maintain insurance on behalf of any present or former director, officer, employee or agent of the corporation or any person who at the request of the corporation was serving in such capacity for another entity against any liability asserted against such person and incurred by him or her in any such capacity or arising out of his or her status as such, whether or not the corporation would have the power to indemnify him or her against such liabilities under Section 145.

The Company's amended and restated certificate of incorporation specifies that a director of the Company shall not be personally liable to the Company or to any stockholders for monetary damages for breach of fiduciary duties as a director, except to the extent such exemption from liability or limitation thereof is not permitted under the DGCL. Further, the Company's amended and restated certificate of incorporation also provides that if Delaware law is amended to authorize corporation action further eliminating or limiting the personal liability of directors, then the liability of the Company's directors will be eliminated or limited to the fullest extent permitted by Delaware law.

The Company's Amended and Restated Bylaws provide that the Company shall indemnify its directors and officers to the fullest extent permitted by Delaware law, as it now exists or may in the future be amended, against all expenses and liabilities reasonably incurred in connection with their service for or on the Company's behalf. The Company's amended and restated bylaws provide that the Company shall advance the expenses incurred by a director or officer in advance of the final disposition of an action or proceeding, and permit the Company to secure insurance on behalf of any director, officer, employee, or other enterprise agent for any liability arising out of his or her action in that capacity, whether or not Delaware law would otherwise permit indemnification.

The Company has entered into indemnification agreements with each of its directors and officers and certain other key employees. Subject to certain limited exceptions, under these agreements, the Company will be obligated to indemnify each of its directors, executive officers and other key employees against any and all expenses incurred by that director, executive officer, or other key employee because of his or her status as one of the Company's directors, executive officers, or other key employees, to the fullest extent permitted by Delaware law, the Company's amended and restated certificate of incorporation and our amended and restated bylaws. In addition, the form agreement provides that, to the fullest extent permitted by Delaware law, we will advance all expenses incurred by our directors, executive officers and other key employees in connection with a legal proceeding.

The Company also maintains liability insurance for its directors and officers in order to limit its exposure to liability for indemnification of such persons.

In any underwriting agreement the Company enters into in connection with the sale of the common stock being registered hereby, the underwriters may agree to indemnify, under certain conditions, the Company, its directors, its officers and persons who control the Company within the meaning of the Securities Act of 1933, as amended, or the Securities Act, against certain liabilities.

See also the undertakings set out in response to Item 17 herein.

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### Item 16. Exhibits

<u>Exhibit Number</u>	<u>Description</u>	<u>Form</u>	<u>File Number</u>	<u>Incorporated by Reference Exhibit</u>	<u>Date</u>	<u>Filed Herewith</u>
1.1*	Form of Underwriting Agreement.					
1.2	<a href="#">Sales Agreement dated as of July 19, 2022, by and between the Registrant and Cowen and Company, LLC.</a>					X
3.1	<a href="#">Amended and Restated Certificate of Incorporation of Registrant.</a>	8-K	001-40443	3.1	06/01/2021	
3.2	<a href="#">Amended and Restated Bylaws of Registrant.</a>	8-K	001-40443	3.2	06/01/2021	
3.3	<a href="#">Certificate of Designation of Preferences, Rights and Limitations of the Series A Preferred Stock, par value \$0.0001 per share, of the Company.</a>	8-K	001-40443	3.1	1/26/2022	
4.1	<a href="#">Form of Registrant's common stock certificate.</a>	S-1/A	333-255912	4.1	05/07/2021	
4.2	<a href="#">Amended and Restated Investors' Rights Agreement, dated June 27, 2019, as amended, by and among the Registrant and the other parties thereto.</a>	S-1/A	333-249076	4.2	10/9/2020	
4.3*	Certificate of designation, preferences and rights with respect to any preferred stock issued hereunder.					
4.4*	Form of Warrant with respect to each warrant issued hereunder.					
4.5	<a href="#">Form of Indenture with respect to the Securities.</a>					X
4.6*	Form of Note.					
4.7*	Form of Unit Agreement.					
5.1	<a href="#">Opinion of Gunderson Dettmer Stough Villeneuve Franklin &amp; Hachigian, LLP.</a>					X
5.2	<a href="#">Opinion of Gunderson Dettmer Stough Villeneuve Franklin &amp; Hachigian, LLP.</a>					X
23.1	<a href="#">Consent of Independent Registered Public Accounting Firm.</a>					X
23.2	Consent of Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP (included in Exhibits <a href="#">5.1</a> and <a href="#">5.2</a> ).					X
24.1	<a href="#">Power of Attorney (included on signature page to this Registration Statement).</a>					X



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<u>Exhibit Number</u>	<u>Description</u>	<u>Form</u>	<u>File Number</u>	<u>Incorporated by Reference Exhibit</u>	<u>Date</u>	<u>Filed Herewith</u>
25.1**	The Statement of Eligibility on Form T-1 under the Trust Indenture Act of 1939, as amended, of the Trustee under the Indenture will be incorporated herein by reference from a subsequent filing in accordance with Section 305(b)(2) of the Trust Indenture Act of 1939.					
107	<a href="#">Filing Fee Table</a>					X

\* To be filed by amendment or as an exhibit to a report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and incorporated herein by reference.

\*\* To be filed in accordance with the requirements of Section 305(b)(2) of the Trust Indenture Act of 1939.

### **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 of 1933, as amended, or 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 paragraphs (a)(1)(i) and (a)(1)(ii) 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 Securities Exchange Act of 1934, as amended, or the Exchange Act that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(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:
- (A) 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
  - (B) 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; or
- (5) That, for the purpose of determining liability of the registrant under the Securities Act to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
- (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
  - (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
  - (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
  - (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.
- (b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or 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.
- (h) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred

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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 Securities Act and will be governed by the final adjudication of such issue.

- (j) To file an application for the purpose of determining the eligibility of the trustee to act under subsection (a) of Section 310 of the Trust Indenture Act in accordance with the rules and regulations prescribed by the SEC under Section 305(b)(2) of the Trust Indenture Act.

## SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, 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 on Form S-3 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, on July 19, 2022.

Singular Genomics Systems, Inc.

By: /s/ Dalen Meeter

Dalen Meeter  
*Senior Vice President, Finance*

## POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Andrew Spaventa, Daralyn Durie, and Dalen Meeter, and each of them acting individually, as his or her true and lawful attorneys-in-fact and agents, with full power of each to act alone, with full powers of substitution and resubstitution, for him and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this registration statement on Form S-3 (including post-effective amendments and any related registration statements filed pursuant to Rule 462 and otherwise) with all exhibits thereto and all documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, with full power of each to act alone, 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 for 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 his, her or their 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 below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Andrew Spaventa</u> Andrew Spaventa	Chief Executive Officer, President, and Chair of the Board of Directors ( <i>Principal Executive Officer</i> )	July 19, 2022
<u>/s/ Dalen Meeter</u> Dalen Meeter	Senior Vice President ( <i>Principal Financial Officer and Principal Accounting Officer</i> )	July 19, 2022
<u>/s/ David Barker</u> David Barker, Ph.D.	Director	July 19, 2022
<u>/s/ Kim Kamdar</u> Kim Kamdar, Ph.D.	Director	July 19, 2022
<u>/s/ Elaine Mardis</u> Elaine Mardis, Ph.D.	Director	July 19, 2022

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<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Michael Pellini</u> Michael Pellini, M.D.	Lead Independent Director	July 19, 2022
<u>/s/ Jason Ryan</u> Jason Ryan	Director	July 19, 2022

## SINGULAR GENOMICS SYSTEMS, INC.

\$100,000,000

COMMON STOCKSALES AGREEMENT

July 19, 2022

Cowen and Company, LLC  
599 Lexington Avenue  
New York, NY 10022

Ladies and Gentlemen:

Singular Genomics Systems, Inc., a Delaware corporation (the "Company"), confirms its agreement (this "Agreement") with Cowen and Company, LLC ("Cowen"), as follows:

1. Issuance and Sale of Shares. The Company agrees that, from time to time during the term of this Agreement, on the terms and subject to the conditions set forth herein, it may issue and sell through Cowen, acting as agent and/or principal, shares (the "Placement Shares") of the Company's common stock, par value \$0.0001 per share (the "Common Stock"), having an aggregate offering price of up to \$100,000,000 (the "Maximum Amount"). Notwithstanding anything to the contrary contained herein, the parties hereto agree that compliance with the limitation set forth in this Section 1 on the number of shares of Common Stock issued and sold under this Agreement shall be the sole responsibility of the Company, and Cowen shall have no obligation in connection with such compliance. The issuance and sale of Placement Shares through Cowen will be effected pursuant to the Registration Statement (as defined below) filed by the Company and after such Registration Statement has been declared effective by the Securities and Exchange Commission (the "Commission"), although nothing in this Agreement shall be construed as requiring the Company to use the Registration Statement (as defined below) to issue the Placement Shares.

The Company has filed or shall file, in accordance with the provisions of the Securities Act of 1933, as amended, and the rules and regulations thereunder (collectively, the "Securities Act"), with the Commission a registration statement on Form S-3, including a base prospectus, relating to certain securities, including the Common Stock, to be issued from time to time by the Company, and which incorporates by reference documents that the Company has filed or will file in accordance with the provisions of the Securities Exchange Act of 1934, as amended, and the rules and regulations thereunder (collectively, the "Exchange Act"). The Company has prepared a prospectus specifically relating to the Placement Shares (the "ATM Prospectus") to the base prospectus included as part of such registration statement, and shall, if necessary, prepare a prospectus supplement specifically relating to the Placement Shares (the "Prospectus Supplement") to the base prospectus included as part of such registration statement. As soon as practicable following the date that such registration statement is declared effective, the Company shall furnish to Cowen, for use by Cowen, copies of the prospectus included as part of such

registration statement, as supplemented by the Prospectus Supplement, if any, relating to the Shares. Except where the context otherwise requires, such registration statement, and any post-effective amendment thereto, as amended when it becomes effective, including all documents filed as part thereof or incorporated by reference therein, and including any information contained in a Prospectus (as defined below) subsequently filed with the Commission pursuant to Rule 424(b) under the Securities Act or deemed to be a part of such registration statement pursuant to Rule 430B or 462(b) of the Securities Act, or any subsequent registration statement on Form S-3 filed pursuant to Rule 415(a)(6) under the Securities Act by the Company to cover any Shares, is herein called the “**Registration Statement**.” The base prospectus, including all documents incorporated therein by reference, included in the Registration Statement, as it may be supplemented by the ATM Prospectus and the Prospectus Supplement, if any, in the form in which such prospectus, ATM Prospectus and/or Prospectus Supplement have most recently been filed by the Company with the Commission pursuant to Rule 424(b) under the Securities Act, together with any “issuer free writing prospectus,” as defined in Rule 433 of the Securities Act regulations (“**Rule 433**”), relating to the Shares that (i) is consented to by Cowen, hereinafter referred to as a “**Permitted Free Writing Prospectus**,” (ii) is required to be filed with the Commission by the Company or (iii) is exempt from filing pursuant to Rule 433(d)(5)(i), in each case in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company’s records pursuant to Rule 433(g), is herein called the “**Prospectus**.” Any reference herein to the Registration Statement, the Prospectus or any amendment or supplement thereto shall be deemed to refer to and include the documents incorporated by reference therein, and any reference herein to the terms “amend,” “amendment” or “supplement” with respect to the Registration Statement or the Prospectus shall be deemed to refer to and include the filing after the execution hereof of any document with the Commission deemed to be incorporated by reference therein. For purposes of this Agreement, all references to the Registration Statement, the Prospectus or to any amendment or supplement thereto shall be deemed to include any copy filed with the Commission pursuant to the Electronic Data Gathering Analysis and Retrieval System (“**EDGAR**”).

2. **Placements.** Each time that the Company wishes to issue and sell the Placement Shares hereunder (each, a “**Placement**”), it will notify Cowen by email notice (or other method mutually agreed to in writing by the parties) (a “**Placement Notice**”) containing the parameters in accordance with which it desires the Placement Shares to be sold, which shall at a minimum include the number of shares of Placement Shares to be issued, the time period during which sales are requested to be made, any limitation on the number of Placement Shares that may be sold in any one Trading Day (as defined in Section 3) and any minimum price below which sales may not be made, a form of which containing such minimum sales parameters necessary is attached hereto as Schedule 1. The Placement Notice shall originate from any of the individuals from the Company set forth on Schedule 2 (with a copy to each of the other individuals from the Company listed on such schedule), and shall be addressed to each of the individuals from Cowen set forth on Schedule 2, as such Schedule 2 may be amended from time to time in accordance herewith. The Placement Notice shall be effective upon receipt by Cowen unless and until (i) in accordance with the notice requirements set forth in Section 4, Cowen declines to accept the terms contained therein for any reason, in its sole discretion, (ii) the entire amount of the Placement Shares have been sold, (iii) in accordance with the notice requirements set forth in Section 4, the Company suspends or terminates the Placement Notice for any reason, in its sole discretion, (iv) the Company issues a subsequent Placement Notice with parameters superseding

those on the earlier dated Placement Notice, or (v) this Agreement has been terminated under the provisions of Section 11. The amount of any discount, commission or other compensation to be paid by the Company to Cowen in connection with the sale and issuance of the Placement Shares shall be calculated in accordance with the terms set forth in Schedule 3. It is expressly acknowledged and agreed that neither the Company nor Cowen will have any obligation whatsoever with respect to a Placement or any Placement Shares unless and until the Company delivers a Placement Notice to Cowen and Cowen does not decline such Placement Notice pursuant to the terms set forth above, and then only upon the terms specified therein and herein. In the event of a conflict between the terms of this Agreement and the terms of a Placement Notice, the terms of the Placement Notice will control.

3. Sale of Placement Shares by Cowen. Subject to the terms and conditions herein set forth, upon the Company's delivery of a Placement Notice, and unless the sale and issuance of the Placement Shares described therein has been declined, suspended, or otherwise terminated in accordance with the terms of this Agreement, Cowen, for the period specified in the Placement Notice, will use its commercially reasonable efforts consistent with its normal trading and sales practices and applicable state and federal laws, rules and regulations and the rules of the Nasdaq Stock Market, Inc. ("Nasdaq") to sell such Placement Shares up to the amount specified in such Placement Notice, and otherwise in accordance with the terms of such Placement Notice. Cowen will provide written confirmation to the Company (including by email correspondence to each of the individuals of the Company set forth on Schedule 2, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) no later than the opening of the Trading Day (as defined below) immediately following the Trading Day on which it has made sales of Placement Shares hereunder setting forth the number of Placement Shares sold on such day, the volume-weighted average price of the Placement Shares sold, and the Net Proceeds (as defined below) payable to the Company. In the event the Company engages Cowen for a sale of Placement Shares that would constitute a "block" within the meaning of Rule 10b-18(a)(5) under the Exchange Act, the Company will provide Cowen, at Cowen's request and upon reasonable advance notice to the Company, on or prior to the Settlement Date (as defined below), the opinions of counsel, accountant's letter and officers' certificates set forth in Section 8 hereof, each dated the Settlement Date, and such other documents and information as Cowen shall reasonably request. Subject to the terms of the Placement Notices, Cowen may sell Placement Shares by any method permitted by law deemed to be an "at the market" offering as defined in Rule 415(a)(4) under the Securities Act, including without limitation sales made through Nasdaq or on any other existing trading market for the Common Stock. Cowen shall not purchase Placement Shares for its own account as principal unless expressly authorized to do so by the Company in a Placement Notice. The Company acknowledges and agrees that (i) there can be no assurance that Cowen will be successful in selling Placement Shares, and (ii) Cowen will incur no liability or obligation to the Company or any other person or entity if it does not sell Placement Shares for any reason other than a failure by Cowen to use its commercially reasonable efforts consistent with its normal trading and sales practices to sell such Placement Shares as required under this Section 3. For the purposes hereof, "Trading Day" means any day on which the Company's Common Stock is purchased and sold on the principal market on which the Common Stock is listed or quoted.

Notwithstanding any other provision of this Agreement, the Company shall not offer, sell or deliver, or request the offer or sale, of any Placement Shares pursuant to this Agreement and, by



notice to Cowen given by telephone (confirmed promptly by email), shall cancel any instructions for the offer or sale of any Placement Shares, and Cowen shall not be obligated to offer or sell any Placement Shares, (i) during any period in which the Company is, or could be deemed to be, in possession of material non-public information, or (ii) at any time from and including the date on which the Company shall issue a press release containing, or shall otherwise publicly announce, its earnings, revenues or other results of operations (an “**Earnings Announcement**”) through and including the time that the Company files a Quarterly Report on Form 10-Q or an Annual Report on Form 10-K that includes consolidated financial statements as of and for the same period or periods, as the case may be, covered by such Earnings Announcement.

#### 4. Suspension of Sales.

(a) The Company or Cowen may, upon notice to the other party in writing (including by email correspondence to each of the individuals of the other party set forth on **Schedule 2**, if receipt of such correspondence is actually acknowledged by any of the individuals to whom the notice is sent, other than via auto-reply) or by telephone (confirmed immediately by verifiable facsimile transmission or email correspondence to each of the individuals of the other party set forth on **Schedule 2**), suspend any sale of Placement Shares; *provided, however*, that such suspension shall not affect or impair either party’s obligations with respect to any Placement Shares sold hereunder prior to the receipt of such notice. While a suspension is in effect any obligation under Section 7(m), 7(n) and 7(o) with respect to delivery of certificates, opinion, or comfort letters to Cowen, shall be waived. Each of the parties agrees that no such notice under this **Section 4** shall be effective against the other unless it is made to one of the individuals named on **Schedule 2** hereto, as such schedule may be amended from time to time.

(b) If either Cowen or the Company has reason to believe that the exemptive provisions set forth in Rule 101(c)(1) of Regulation M under the Exchange Act are not satisfied with respect to the Common Stock, it shall promptly notify the other party, and Cowen may, at its sole discretion, suspend sales of the Placement Shares under this Agreement.

(c) Notwithstanding any other provision of this Agreement, during any period in which the Registration Statement is not effective under the Securities Act, the Company shall promptly notify Cowen, the Company shall not request the sale of any Placement Shares, and Cowen shall not be obligated to sell or offer to sell any Placement Shares.

#### 5. Settlement.

(a) **Settlement of Placement Shares.** Unless otherwise specified in the applicable Placement Notice, settlement for sales of Placement Shares will occur on the second (2<sup>nd</sup>) Trading Day (or such earlier day as is industry practice for regular-way trading) following the date on which such sales are made (each, a “**Settlement Date**” and the first such settlement date, the “**First Delivery Date**”). The amount of proceeds to be delivered to the Company on a Settlement Date against receipt of the Placement Shares sold (the “**Net Proceeds**”) will be equal to the aggregate sales price received by Cowen at which such Placement Shares were sold, after deduction for (i) Cowen’s commission, discount or other compensation for such sales payable by the Company pursuant to **Section 2** hereof, (ii) any other amounts due and payable by the Company to Cowen hereunder pursuant to **Section 7(g)** (Expenses) hereof, and (iii) any

transaction fees imposed by any governmental or self-regulatory organization in respect of such sales.

(b) Delivery of Placement Shares. On or before each Settlement Date, the Company will, or will cause its transfer agent to, electronically transfer the Placement Shares being sold by crediting Cowen's or its designee's account (provided Cowen shall have given the Company written notice of such designee at least one (1) Trading Day prior to the Settlement Date) at The Depository Trust Company through its Deposit and Withdrawal at Custodian System or by such other means of delivery as may be mutually agreed upon by the parties hereto which in all cases shall be freely tradeable, transferable, registered shares in good deliverable form. On each Settlement Date, Cowen will deliver the related Net Proceeds in same day funds to an account designated by the Company on, or prior to, the Settlement Date. The Company agrees that if the Company, or its transfer agent (if applicable), defaults in its obligation to deliver duly authorized Placement Shares on a Settlement Date, the Company agrees that in addition to and in no way limiting the rights and obligations set forth in Section 9(a) (Indemnification and Contribution) hereto, it will (i) hold Cowen harmless against any loss, claim, damage, or reasonable and documented expense (including reasonable and documented legal fees and expenses), as incurred, arising out of or in connection with such default by the Company and (ii) pay to Cowen (without duplication) any commission, discount, or other compensation to which it would otherwise have been entitled absent such default.

6. Representations and Warranties of the Company. The Company represents and warrants to, and agrees with, Cowen that as of (i) the date of this Agreement, (ii) each Time of Sale (as defined below), (iii) each Settlement Date, and (iv) each Bring-Down Date (as defined below) (each date included in (i) through (iv), a "**Representation Date**"):

(a) Compliance with Registration Requirements. The Registration Statement and any registration statement filed pursuant to Rule 462(b) under the Securities Act with respect to the Registration Statement (a "**Rule 462(b) Registration Statement**"), have been declared effective by the Commission under the Securities Act (provided, however, that the Company does not make such representation and warranty as of the date of this Agreement). The Company has complied to the Commission's satisfaction with all requests of the Commission for additional or supplemental information. No stop order suspending the effectiveness of the Registration Statement or any Rule 462(b) Registration Statement is in effect and no proceedings for such purpose have been instituted or are pending or, to the knowledge of the Company, contemplated or threatened by the Commission. The Company meets the requirements for use of Form S-3 under the Securities Act. The sale and issuance of the Placement Shares hereunder meets the requirements of General Instruction I.B.1 of Form S-3.

(b) No Misstatement or Omission. The Prospectus when filed complied and, as amended or supplemented, if applicable, will comply in all material respects with the Securities Act. Each of the Registration Statement, any Rule 462(b) Registration Statement, the Prospectus and any post-effective amendments or supplements thereto, at the time it became effective or its date, as applicable, complied and as of each Representation Date, complied and will comply in all material respects with the Securities Act and did not and, as of each Representation Date, did not and will not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading. The

Prospectus, as amended or supplemented, as of its date, did not and, as of each Representation Date, will not contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The representations and warranties set forth in the two immediately preceding sentences do not apply to statements in or omissions from the Registration Statement, any Rule 462(b) Registration Statement, or any post-effective amendment thereto, or the Prospectus, or any amendments or supplements thereto, made in reliance upon and in conformity with information relating to Agent's Information (as defined below). There are no contracts or other documents required to be described in the Prospectus or to be filed as exhibits to the Registration Statement which have not been described or filed as required. As used herein, "**Time of Sale**" means with respect to each offering of Placement Shares pursuant to this Agreement, the time of Cowen's initial entry into contracts with purchasers for the sale of such Placement Shares.

(c) **Offering Materials Furnished to Cowen.** The Company has delivered to Cowen one complete copy of the Registration Statement and a copy of each consent and certificate of experts filed as a part thereof, and conformed copies of the Registration Statement (without exhibits) and the Prospectus, as amended or supplemented, in such quantities and at such places as Cowen has reasonably requested. The Registration Statement, the Prospectus and any Permitted Free Writing Prospectus (to the extent any such Permitted Free Writing Prospectus was required to be filed with the Commission) delivered to Cowen for use in connection with the public offering of the Placement Shares contemplated herein have been and will be identical to the versions of such documents transmitted to the Commission for filing via EDGAR, except to the extent permitted by Regulation S-T.

(d) **Emerging Growth Company.** The Company has been and is an "emerging growth company," as defined in Section 2(a) of the Securities Act. The Company agrees to notify Cowen promptly upon the Company ceasing to be an emerging growth company.

(e) **Distribution of Offering Material By the Company.** The Company has not distributed and will not distribute, prior to the completion of Cowen's distribution of the Placement Shares, any offering material in connection with the offer and sale of the Placement Shares other than the Prospectus or the Registration Statement.

(f) **Financial Statements.** The financial statements (including the related notes thereto) of the Company included or incorporated by reference in the Registration Statement and the Prospectus comply in all material respects with the applicable requirements of the Securities Act and present fairly the financial position of the Company as of the dates indicated and the results of their operations and the changes in their cash flows for the periods specified; such financial statements have been prepared in conformity with generally accepted accounting principles ("**GAAP**") in the United States applied on a consistent basis throughout the periods covered thereby, and any supporting schedules included in the Registration Statement present fairly the information required to be stated therein; and the other financial information included or incorporated by reference in the Registration Statement and the Prospectus has been derived from the accounting records of the Company and presents fairly the information shown thereby; all disclosures included or incorporated by reference in the Registration Statement and the Prospectus regarding "non-GAAP financial measures" (as such term is defined by the rules and

regulations of the Commission) comply with Regulation G of the Exchange Act and Item 10 of Regulation S-K of the Securities Act, to the extent applicable.

(g) No Material Adverse Change. Since the date of the most recent financial statements of the Company included or incorporated by reference in the Registration Statement and the Prospectus, (i) except as set forth or contemplated in the Registration Statement and the Prospectus, there has not been any change in the capital stock (other than the issuance of shares of Common Stock upon exercise or settlement (including any “net” or “cashless” exercises or settlements) of stock options and warrants described as outstanding in, and the grant of options and awards under existing equity incentive plans described in, the Registration Statement and the Prospectus), short-term debt or long-term debt of the Company or any of its subsidiaries, or any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock, or any material adverse change, or any development involving a prospective material adverse change, in or affecting the business, properties, management, financial position, stockholders’ equity, results of operations or prospects of the Company and its subsidiaries taken as a whole; (ii) neither the Company nor any of its subsidiaries has entered into any transaction or agreement (whether or not in the ordinary course of business) that is material to the Company and its subsidiaries taken as a whole or incurred any liability or obligation, direct or contingent, that is material to the Company and its subsidiaries taken as a whole; and (iii) neither the Company nor any of its subsidiaries has sustained any loss or interference with its business that is material to the Company and its subsidiaries taken as a whole and that is either from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor disturbance or dispute or any action, order or decree of any court or arbitrator or governmental or regulatory authority.

(h) Organization and Good Standing. The Company and each of its subsidiaries have been duly organized and are validly existing and in good standing under the laws of their respective jurisdictions of organization, are duly qualified to do business and are in good standing in each jurisdiction in which their respective ownership or lease of property or the conduct of their respective businesses requires such qualification, and have all power and authority necessary to own or hold their respective properties and to conduct the businesses in which they are engaged, except where the failure to be so qualified or in good standing or have such power or authority would not, individually or in the aggregate, have a material adverse effect on the business, properties, management, financial position, stockholders’ equity, results of operations or prospects of the Company and its subsidiaries taken as a whole or on the performance by the Company of its obligations under this Agreement (a “**Material Adverse Effect**”). The Company has no subsidiaries and does not own or control, directly or indirectly, any corporation, association or other entity other than the subsidiaries listed in Exhibit 21.1 to the Company’s Annual Report on Form 10-K for the most recently ended fiscal year and other than (i) those subsidiaries not required to be listed on Exhibit 21.1 by Item 601 of Regulation S-K under the Exchange Act and (ii) those subsidiaries formed since the last day of the most recently ended fiscal year.

(i) Capitalization. The Company has an authorized capitalization as set forth in the Registration Statement and the Prospectus; all the outstanding shares of Common Stock of the Company have been duly and validly authorized and issued and are fully paid and non-assessable and are not subject to any pre-emptive or similar rights that have not been duly waived or

satisfied; except as described in or expressly contemplated by the Registration Statement and the Prospectus, there are no outstanding rights (including, without limitation, pre-emptive rights that have not been duly waived or satisfied), warrants or options to acquire, or instruments convertible into or exchangeable for, any shares of Common Stock or other equity interest in the Company or any of its subsidiaries, or any contract, commitment, agreement, understanding or arrangement of any kind relating to the issuance of any capital stock of the Company or any such subsidiary, any such convertible or exchangeable securities or any such rights, warrants or options; the Common Stock of the Company conforms in all material respects to the description thereof contained in the Registration Statement and the Prospectus; and all the outstanding shares of Common Stock or other equity interests of each subsidiary owned, directly or indirectly, by the Company have been duly and validly authorized and issued, are fully paid and non-assessable (except, in the case of any foreign subsidiary, for directors' qualifying shares) and are owned directly or indirectly by the Company, free and clear of any lien, charge, encumbrance, security interest, restriction on voting or transfer or any other claim of any third party.

(j) Due Authorization. The Company has full right, power and authority to execute and deliver this Agreement and to perform its obligations hereunder; and all action required to be taken for the due and proper authorization, execution and delivery by it of this Agreement and the consummation by it of the transactions contemplated hereby has been duly and validly taken.

(k) The Sales Agreement. This Agreement has been duly authorized, executed and delivered by the Company and is a valid and binding agreement of, the Company, enforceable in accordance with its terms, except as rights to indemnification hereunder may be limited by applicable law and except as the enforcement hereof may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws relating to or affecting the rights and remedies of creditors or by general equitable principles.

(l) The Placement Shares. The Placement Shares, when issued and delivered by the Company hereunder have been duly authorized by the Company and, when issued and delivered and paid for as provided herein, will be duly and validly issued, will be fully paid and nonassessable and will conform to the descriptions thereof in the Registration Statement and the Prospectus; and the issuance of the Placement Shares is not subject to any preemptive or similar rights that have not been duly waived or satisfied.

(m) Listing. The Company is subject to and in compliance in all material respects with the reporting requirements of Section 13 or Section 15(d) of the Exchange Act. The Common Stock is registered pursuant to Section 12(b) or Section 12(g) of the Exchange Act and is listed on the Nasdaq, and the Company has taken no action designed to, or reasonably likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from the Exchange, nor has the Company received any notification that the Commission or Nasdaq is contemplating terminating such registration or listing. All of the Placement Shares that have been or may be sold under this Agreement have been approved for listing on the Nasdaq, subject to official notice of issuance; the Company has taken all necessary actions to ensure that, upon and at all times after the Nasdaq shall have approved the Placement Shares for listing, it will be in compliance with all applicable corporate governance requirements set forth in the Nasdaq's listing rules that are then in effect.

(n) Description of the Sales Agreement. This Agreement conforms in all material respects to the description thereof contained in the Registration Statement and the Prospectus.

(o) No Violation or Default. Neither the Company nor any of its subsidiaries is (i) in violation of its charter or by-laws or similar organizational documents; (ii) in default, and no event has occurred that, with notice or lapse of time or both, would constitute such a default, in the due performance or observance of any term, covenant or condition contained in any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries is bound or to which any property or asset of the Company or any of its subsidiaries is subject; or (iii) in violation of any applicable law or statute or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority having jurisdiction over the Company and its subsidiaries, except, in the case of clauses (ii) and (iii) above, for any such default or violation that would not, individually or in the aggregate, have a Material Adverse Effect.

(p) No Conflicts. The execution, delivery and performance by the Company of this Agreement, the issuance and sale of the Placement Shares and the consummation of the transactions contemplated by this Agreement or the Prospectus will not (i) conflict with or result in a breach or violation of any of the terms or provisions of, or constitute a default under, result in the termination, modification or acceleration of, or result in the creation or imposition of any lien, charge or encumbrance upon any property, right or asset of the Company or any of its subsidiaries pursuant to, any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries is bound or to which any property, right or asset of the Company or any of its subsidiaries is subject, (ii) result in any violation of the provisions of the charter or by-laws or similar organizational documents of the Company or any of its subsidiaries or (iii) result in the violation of any applicable law or statute or any judgment, order, rule or regulation of any court or arbitrator or governmental or regulatory authority having jurisdiction over the Company and its subsidiaries, except, in the case of clauses (i) and (iii) above, for any such conflict, breach, violation, default, lien, charge or encumbrance that would not, individually or in the aggregate, have a Material Adverse Effect.

(q) No Consents Required. No consent, filing, approval, authorization, order, license, registration or qualification of or with any court or arbitrator or governmental or regulatory authority is required for the execution, delivery and performance by the Company of this Agreement, the issuance and sale of the Placement Shares and the consummation of the transactions contemplated by this Agreement, except for the registration of the Placement Shares under the Securities Act and such consents, approvals, authorizations, orders and registrations or qualifications as may be required by the Financial Industry Regulatory Authority, Inc. ("**FINRA**") and under applicable state securities laws in connection with the purchase and distribution of the Placement Shares by the Agent; (ii) as have been obtained prior to the date hereof or (iii) for which a failure to obtain or make the same would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect and would not adversely affect the validity of the shares or the ability of the Company to perform its obligations under this Agreement.

(r) Legal Proceedings. There are no legal, governmental or regulatory investigations, actions, demands, claims, suits, arbitrations, inquiries or proceedings ("**Actions**") pending to

which the Company or any of its subsidiaries is or may be a party or to which any property of the Company or any of its subsidiaries is or may be the subject that, individually or in the aggregate, if determined adversely to the Company or any of its subsidiaries, would reasonably be expected to have a Material Adverse Effect; to the knowledge of the Company, no such Actions that would reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect are threatened or contemplated by any governmental or regulatory authority or threatened by others; and (i) there are no current or pending Actions that are required under the Securities Act to be described in the Registration Statement or the Prospectus that are not so described in the Registration Statement and the Prospectus and (ii) there are no statutes, regulations or contracts or other documents that are required under the Securities Act to be filed as exhibits to the Registration Statement or described in the Registration Statement or the Prospectus that are not so filed as exhibits to the Registration Statement or described in the Registration Statement and the Prospectus.

(s) Independent Accountants. Ernst & Young LLP, who has certified certain financial statements of the Company and its subsidiaries is an independent registered public accounting firm with respect to the Company and its subsidiaries within the applicable rules and regulations adopted by the Commission and the Public Company Accounting Oversight Board (United States) and as required by the Securities Act and the Exchange Act.

(t) Title to Real and Personal Property. The Company and its subsidiaries have good and marketable title in fee simple to, or have valid rights to own, lease or otherwise use, all items of real and personal property that are necessary to the respective businesses of the Company and its subsidiaries taken as a whole (other than with respect to Intellectual Property, title to which is addressed exclusively in subsection (u)), in each case free and clear of all liens, encumbrances, claims and defects and imperfections of title except those that (i) do not materially interfere with the use made and proposed to be made of such property by the Company and its subsidiaries or (ii) would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect.

(u) Title to Intellectual Property. Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect or as otherwise disclosed in the Registration Statement and the Prospectus, (i) the Company and its subsidiaries own, or possess rights to use, all material patents, patent applications, trademarks, service marks, trade names, trademark registrations, service mark registrations, trade dress, designs, data, database rights, Internet domain names, copyrights, works of authorship, licenses, proprietary information and know-how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems or procedures) reasonably necessary for the conduct of their respective businesses as currently conducted (collectively, "Intellectual Property"), (ii) except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, to the Company's knowledge, the conduct of their respective businesses does not and will not infringe, misappropriate or otherwise conflict with any such valid rights of others, and (iii) except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, to the Company's knowledge, there are no material defects in any of the patents or patent applications included in the Intellectual Property. Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect or as otherwise disclosed in the Registration Statement and the Prospectus, (x) the Company and its

subsidiaries have not received any written notice of any claim of infringement or misappropriation of any intellectual property rights of another, (y) to the Company's knowledge there is no infringement by third parties of any Intellectual Property exclusively licensed or owned by the Company or its subsidiaries, and (z) there is no pending or, to the Company's knowledge, threatened (in writing) action, suit, proceeding or claim by others: (A) asserting that the Company or its subsidiaries infringe, misappropriate, or otherwise violates any intellectual property rights of others; or (B) challenging the validity, enforceability or scope of any of the patents included in the Intellectual Property. The Company and its subsidiaries have taken commercially reasonable steps consistent with the exercise of its sound business judgment to protect, maintain and safeguard their Intellectual Property, including the execution of appropriate nondisclosure, confidentiality agreements and invention assignment agreements and invention assignments with their employees, and, to the Company's knowledge, no employee of the Company is in or has been in violation of any term of any employment contract, patent disclosure agreement, invention assignment agreement, non-competition agreement, non-solicitation agreement, nondisclosure agreement, or any restrictive covenant to or with a former employer where the basis of such violation relates to such employee's employment with the Company. Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect or as otherwise disclosed in the Registration Statement, (i) the Company has complied in all material respects with, and is not in breach nor has received any asserted or threatened claim of breach of any license in the Intellectual Property and (ii) the Company has no knowledge of any breach or anticipated breach by any other person to any exclusive license in the Intellectual Property. The Company and its subsidiaries have not intentionally withheld material prior art with the intent to deceive the United States Patent and Trademark Office ("USPTO") during prosecution of the Company owned United States patents in violation of its duty of candor and good faith to the USPTO.

(v) Trade Secrets. Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, the Company and its subsidiaries have taken reasonable and customary actions to protect their rights in and prevent the unauthorized use and disclosure of material trade secrets and confidential business information (including confidential source code, ideas, research and development information, know-how, formulas, compositions, technical data, designs, drawings, specifications, research records, records of inventions, test information, financial, marketing and business data, customer and supplier lists and information, pricing and cost information, business and marketing plans and proposals) owned by the Company and its subsidiaries, and, to the knowledge of the Company, there has been no such unauthorized use or disclosure.

(w) IT Assets, Data Privacy and Security. Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, the computers, websites, applications, databases, software, servers, networks, data communications lines, and other information technology systems owned, licensed, leased or otherwise used by the Company and its subsidiaries (excluding any public networks) (collectively, the "IT Assets") operate and perform as is necessary for, the operation of the business of the Company and its subsidiaries as currently conducted and as proposed to be conducted as described in the Registration Statement and the Prospectus. Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, the IT Assets are free and clear of viruses, vulnerabilities, disabling code or other harmful code. The Company and its subsidiaries have at



all times implemented and maintained reasonable controls, policies, procedures, and safeguards to maintain and protect their confidential information and the integrity, continuous operation, redundancy and security of all IT Assets and data (including all Personal Data (defined below), sensitive, confidential, or regulated data (“**Confidential Data**”)) used in connection with their businesses. There have been no actual or reasonably suspected breaches of, violations of, outages of, or unlawful or unauthorized uses of, destruction of, losses of, alterations of, or accesses to IT Assets and no unlawful or unauthorized uses of, destruction of, losses of, alterations of, or accesses to Confidential Data, nor any such actual or reasonably suspected incidents under internal review or investigation. The Company and its subsidiaries materially comply, and have at all times materially complied, with all (i) applicable laws, statutes, regulations, directives, and industry standards concerning the protection, collection, use, disclosure, transfer, storage, disposal, privacy, confidentiality, integrity and security of Confidential Data (including without limitation the Health Insurance Portability and Accountability Act of 1996 (“**HIPAA**”) as amended by the Health Information Technology for Economic and Clinical Health Act (the “**HITECH Act**”); the European Union General Data Protection Regulation (“**GDPR**”) (EU 2016/679); and the California Consumer Privacy Act (“**CCPA**”) (collectively, the “**Privacy Laws**”)), and (ii) all judgments, orders, rules and regulations of any court or arbitrator or governmental or regulatory authority, policies, procedures, and contractual obligations relating to the privacy and security of IT Assets and Confidential Data and to the protection of such IT Assets and Confidential Data from unlawful or unauthorized use, destruction, loss, alteration, access, misappropriation or modification and have imposed equivalent contractual obligations on any third parties having direct or indirect access to IT Assets or responsible for any processing Confidential Data. The Company and its subsidiaries have at all times made all required disclosures to and obtained all necessary consents from individuals (including, without limitation, clinical trial participants, customers, users, and personnel) for the Company’s and its subsidiaries’ collection, use, and disclosure of Confidential Data, and complied with all such disclosures and consents. None of such disclosures made or contained in any policies or notices have been materially inaccurate, misleading or incomplete. “**Personal Data**” means (i) a natural person’s name, street address, telephone number, e-mail address, photograph, social security number or tax identification number, driver’s license number, passport number, credit card number, bank information, customer or account number, biometric identifier, medical, health or insurance information, gender, date of birth, educational or employment information, any religious or political view or affiliation, marital or other status, photograph, face geometry and any information that can identify, relate to, describe, be associated with, or be reasonably capable of being associated with an individual; (ii) any information which would qualify as “personally identifying information” under the Federal Trade Commission Act, as amended; (iii) Protected Health Information as defined by HIPAA; (iv) “personal data” as defined by GDPR; (v) “personal information” as defined by CCPA; and (vi) any other information that constitutes “personal data”, “personal information”, “personally identifiable information”, “nonpublic personal information”, “customer proprietary network information”, “individually identifiable health information”, “protected health information”, or similar information under any Privacy Law.

(x) **No Complaints.** Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, there has been no complaint or audit, proceeding, investigation (formal or informal) or claim made against the Company in the past five (5) years, and none are currently pending against, the Company or its subsidiaries by any person,

government entity, regulator, group or other party in respect of the collection, use or disclosure of Confidential Data by the Company or its subsidiaries, including without limitation, by any state Attorney General or related office, the Federal Trade Commission, the U.S. Department of Health and Human Services and any office contained therein ("**HHS**"), or any similar authority in any jurisdiction other than the United States or any other governmental entity, and, no such complaint, audit, proceeding, investigation or claim is threatened.

(y) No Undisclosed Relationships. No relationship, direct or indirect, exists between or among the Company or any of its subsidiaries, on the one hand, and the directors, officers, stockholders, customers, suppliers or other affiliates of the Company or any of its subsidiaries, on the other, that is required by the Securities Act to be described in each of the Registration Statement and the Prospectus and that is not so described in such documents and in the Prospectus.

(z) Investment Company Act. The Company is not and, after giving effect to the offering and sale of the Placement Shares and the application of the proceeds thereof as described in the Registration Statement and the Prospectus, will not be required to register as an "investment company" or an entity "controlled" by an "investment company" within the meaning of the Investment Company Act of 1940, as amended, and the rules and regulations of the Commission thereunder (collectively, the "**Investment Company Act**").

(aa) Taxes. The Company and its subsidiaries have paid all federal, state, local and foreign taxes and filed all tax returns required to be paid or filed through the date hereof or have obtained or requested extensions thereof (except where the failure to pay or file would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect or except as currently being contested in good faith and for which accounting reserves have been established) and there is no tax deficiency that has been, or would reasonably be expected to be, asserted against the Company or any of its subsidiaries or any of their respective properties or assets, except in each case as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(bb) Licenses and Permits. The Company and its subsidiaries possess all licenses, sub-licenses, certificates, permits and other authorizations issued by, and have made all declarations and filings with, the appropriate federal, state, local or foreign governmental or regulatory authorities that are necessary for the ownership or lease of their respective properties or the conduct of their respective businesses as described in each of the Registration Statement and the Prospectus, except where the failure to possess or make the same would not, individually or in the aggregate, have a Material Adverse Effect; and neither the Company nor any of its subsidiaries has received notice of any revocation or modification of any such license, sub-license, certificate, permit or authorization or has any reason to believe that any such license, sub-license, certificate, permit or authorization will not be renewed in the ordinary course. Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, to the Company's knowledge, no party granting any such licenses, certificates, permits and other authorizations has taken any action to limit, suspend or revoke the same in any material respect. Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, the Company and its subsidiaries have filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required and that all such reports,

documents, forms, notices, applications, records, claims, submissions and supplements or amendments were materially complete and correct on the date filed (or were corrected or supplemented by a subsequent submission) as required for maintenance of their licenses, certificates, permits and other authorizations that are necessary for the conduct of their respective businesses. For clarity, the matters covered in this Section 6(bb) do not cover representations related to intellectual property, which are covered by Section 6(w) above.

(cc) No Labor Disputes. No labor disturbance by or dispute with employees of the Company or any of its subsidiaries exists or, to the knowledge of the Company, is contemplated or threatened, and the Company is not aware of any existing or imminent labor disturbance by, or dispute with, the employees of any of its or its subsidiaries' principal suppliers, contractors or customers, except as would not have a Material Adverse Effect. Neither the Company nor any of its subsidiaries has received any notice of cancellation or termination with respect to any collective bargaining agreement to which it is a party.

(dd) Certain Environmental Matters. (i) The Company and its subsidiaries (x) are in compliance with all, and have not violated any, applicable federal, state, local and foreign laws, rules, regulations, judgments, decrees, orders and other legally enforceable requirements relating to pollution or the protection of human health or safety, the environment, natural resources, hazardous or toxic substances or wastes, pollutants or contaminants (collectively, "Environmental Laws"); (y) have received and are in compliance with all, and have not violated any, permits, licenses, certificates or other authorizations or approvals required of them under any Environmental Laws to conduct their respective businesses; and (z) have not received notice of any actual or potential liability under, or any actual or potential violation of, any Environmental Laws, including for the investigation or remediation of any disposal or release of hazardous or toxic substances or wastes, pollutants or contaminants, and have no knowledge of any event or condition that would reasonably be expected to result in any such notice; (ii) to the knowledge of the Company, there are no liabilities associated with Environmental Laws of the Company or its subsidiaries, except in the case of each of (i) and (ii) above, for any such matter as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect; and (iii) (x) there is no proceeding that is pending, or that is known to be contemplated, against the Company or any of its subsidiaries under any Environmental Laws in which a governmental entity is also a party, other than such proceeding regarding which it is reasonably believed no monetary sanctions of \$100,000 or more will be imposed, (y) the Company and its subsidiaries are not aware of any facts or issues regarding compliance with Environmental Laws, or liabilities or other obligations under Environmental Laws or concerning hazardous or toxic substances or wastes, pollutants or contaminants, that would reasonably be expected to have a material effect on the capital expenditures, earnings or competitive position of the Company and its subsidiaries, and (z) none of the Company or its subsidiaries anticipates material capital expenditures relating to any Environmental Laws.

(ee) Hazardous Materials. There has been no storage, generation, transportation, use, handling, treatment, Release or threat of Release of Hazardous Materials by or caused by the Company or any of its subsidiaries (or, to the knowledge of the Company and its subsidiaries, any other entity (including any predecessor) for whose acts or omissions the Company or any of its subsidiaries is or would reasonably be expected to be liable) at, on, under or from any property or facility now or, to the knowledge of the Company, previously owned, operated or

leased by the Company or any of its subsidiaries, or at, on, under or from any other property or facility, in violation of any Environmental Laws or in a manner or amount or to a location that would reasonably be expected to result in any liability under any Environmental Law, except for any violation or liability which would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. “**Hazardous Materials**” means any material, chemical, substance, waste, pollutant, contaminant, compound, mixture, or constituent thereof, in any form or amount, including petroleum (including crude oil or any fraction thereof) and petroleum products, natural gas liquids, asbestos and asbestos containing materials, naturally occurring radioactive materials, brine, and drilling mud, regulated or which would reasonably be expected to give rise to liability under any Environmental Law. “Release” means any spilling, leaking, seepage, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, disposing, depositing, dispersing, or migrating in, into or through the environment, or in, into from or through any building or structure subject to human occupation.

(ff) Compliance with ERISA. (i) Each employee benefit plan, within the meaning of Section 3(3) of the Employee Retirement Income Security Act of 1974, as amended (“**ERISA**”), for which the Company or any member of its “Controlled Group” (defined as any entity, whether or not incorporated, that is under common control with the Company within the meaning of Section 4001(a)(14) of ERISA or any entity that would be regarded as a single employer with the Company under Section 414(b),(c),(m) or (o) of the Internal Revenue Code of 1986, as amended, and the regulations and published interpretations thereunder (the “**Code**”)) would have any liability (each, a “**Plan**”) has been maintained in compliance with its terms and the requirements of any applicable statutes, orders, rules and regulations, including but not limited to ERISA and the Code; (ii) no prohibited transaction, within the meaning of Section 406 of ERISA or Section 4975 of the Code, has occurred with respect to any Plan, excluding transactions effected pursuant to a statutory or administrative exemption; (iii) for each Plan that is subject to the funding rules of Section 412 of the Code or Section 302 of ERISA, no Plan has failed (whether or not waived), or is reasonably expected to fail, to satisfy the minimum funding standards (within the meaning of Section 302 of ERISA or Section 412 of the Code) applicable to such Plan; (iv) no Plan is, or is reasonably expected to be, in “at risk status” (within the meaning of Section 303(i) of ERISA) and no Plan that is a “multiemployer plan” within the meaning of Section 4001(a)(3) of ERISA is in “endangered status” or “critical status” (within the meaning of Sections 304 and 305 of ERISA) (v) the fair market value of the assets of each Plan exceeds the present value of all benefits accrued under such Plan (determined based on those assumptions used to fund such Plan); (vi) no “reportable event” (within the meaning of Section 4043(c) of ERISA and the regulations promulgated thereunder) has occurred or is reasonably expected to occur; (vii) each Plan that is intended to be qualified under Section 401(a) of the Code is so qualified, and nothing has occurred, whether by action or by failure to act, which would cause the loss of such qualification; (viii) neither the Company nor any member of the Controlled Group has incurred, nor reasonably expects to incur, any liability under Title IV of ERISA (other than contributions to the Plan or premiums to the Pension Benefit Guarantee Corporation, in the ordinary course and without default) in respect of a Plan (including a “multiemployer plan” within the meaning of Section 4001(a)(3) of ERISA); and (ix) none of the following events has occurred or is reasonably likely to occur: (A) a material increase in the aggregate amount of contributions required to be made to all Plans by the Company or its Controlled Group affiliates in the current fiscal year of the Company and its Controlled Group affiliates compared to the amount of such contributions made in the Company’s and its Controlled Group affiliates’ most recently

completed fiscal year; or (B) a material increase in the Company and its subsidiaries' "accumulated post-retirement benefit obligations" (within the meaning of Accounting Standards Codification Topic 715-60) compared to the amount of such obligations in the Company and its subsidiaries' most recently completed fiscal year, except in each case with respect to the events or conditions set forth in (i) through (ix) hereof, as would not, individually or in the aggregate, have a Material Adverse Effect.

(gg) Disclosure Controls. The Company and its subsidiaries maintain an effective system of "disclosure controls and procedures" (as defined in Rule 13a-15(e) of the Exchange Act) that complies with the requirements of the Exchange Act and that has been designed to ensure that information required to be disclosed by the Company in reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission's rules and forms, including controls and procedures designed to ensure that such information is accumulated and communicated to the Company's management as appropriate to allow timely decisions regarding required disclosure.

(hh) Accounting Controls. The Company and its subsidiaries maintain systems of "internal control over financial reporting" (as defined in Rule 13a-15(f) of the Exchange Act) that have been designed to comply with the requirements of the Exchange Act applicable to the Company and have been designed by, or under the supervision of, their respective principal executive and principal financial officers, or persons performing similar functions, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. The Company and its subsidiaries maintain internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management's general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management's general or specific authorization; (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences; and (v) the interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement and the Prospectus fairly presents the information called for in all material respects and is prepared in accordance with the Commission's rules and guidelines applicable thereto. No material weaknesses in the Company's internal controls have been identified by the Company or its auditors (it being understood that this subsection (hh) shall not require the Company to comply with Section 404 of the Sarbanes-Oxley Act of 2002, as amended, and the rules and regulations promulgated in connection therewith (the "Sarbanes-Oxley Act") as of an earlier date than it would otherwise be required to so comply under applicable law). The Company's auditors and the Audit Committee of the Board of Directors of the Company have been advised of: (i) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting known to the Company which have adversely affected or are reasonably likely to adversely affect the Company's ability to record, process, summarize and report financial information; and (ii) any fraud known to the Company, whether or not material, that involves management or other employees who have a significant role in the Company's internal controls over financial reporting.

(ii) Insurance. The Company and its subsidiaries have insurance covering their respective properties, operations, personnel and businesses, including business interruption insurance, which insurance is in amounts and insures against such losses and risks as are adequate to protect the Company and its subsidiaries and their respective businesses; and neither the Company nor any of its subsidiaries has (i) received notice from any insurer or agent of such insurer that capital improvements or other expenditures are required or necessary to be made in order to continue such insurance or (ii) any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage at reasonable cost from similar insurers as may be necessary to continue its business.

(jj) No Unlawful Payments. Neither the Company nor any of its subsidiaries nor any director, officer or employee of the Company or any of its subsidiaries nor, to the knowledge of the Company, any agent, affiliate or other person while acting on behalf of the Company or any of its subsidiaries has (i) used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity; (ii) made or taken an act in furtherance of an offer, promise or authorization of any direct or indirect unlawful payment or benefit to any foreign or domestic government official or employee, including of any government-owned or controlled entity or of a public international organization, or any person acting in an official capacity for or on behalf of any of the foregoing, or any political party or party official or candidate for political office; (iii) violated or is in violation of any provision of the Foreign Corrupt Practices Act of 1977, as amended, or any applicable law or regulation implementing the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, or committed an offence under the Bribery Act 2010 of the United Kingdom, or any other applicable anti-bribery or anti-corruption law; or (iv) made, offered, agreed, requested or taken an act in furtherance of any unlawful bribe or other unlawful benefit, including, without limitation, any rebate, payoff, influence payment, kickback or other unlawful or improper payment or benefit. The Company and its subsidiaries have instituted, maintain and enforce policies and procedures designed to promote and ensure compliance with all applicable anti-bribery and anti-corruption laws.

(kk) Compliance with Anti-Money Laundering Laws. The operations of the Company and its subsidiaries are and have been conducted at all times in compliance with applicable financial recordkeeping and reporting requirements, including those of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the applicable money laundering statutes of all jurisdictions where the Company or any of its subsidiaries conducts business, the rules and regulations thereunder and any related or similar rules, regulations or guidelines issued, administered or enforced by any governmental agency having jurisdiction over the Company (collectively, the “Anti-Money Laundering Laws”) and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its subsidiaries with respect to the Anti-Money Laundering Laws is pending or, to the knowledge of the Company, threatened.

(ll) No Conflicts with Sanctions Laws. Neither the Company nor any of its subsidiaries, directors, officers or employees, nor, to the knowledge of the Company, any agent, affiliate or other person while acting on behalf of the Company or any of its subsidiaries is currently the subject of any sanctions administered or enforced by the U.S. government, (including, without limitation, the Office of Foreign Assets Control of the U.S. Department of

the Treasury or the U.S. Department of State and including, without limitation, the designation as a “specially designated national” or “blocked person”), the United Nations Security Council, the European Union, Her Majesty’s Treasury, or other relevant sanctions authority (collectively, “**Sanctions**”), nor is the Company or any of its subsidiaries located, organized or resident in a country or territory that is the subject of Sanctions, including, without limitation, the Crimea region in Ukraine, Cuba, Donetsk People’s Republic, Iran, Luhansk People’s Republic, North Korea and Syria (each, a “**Sanctioned Country**”); and the Company will not directly or indirectly use the proceeds of the offering of the Placement Shares hereunder, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other person or entity (i) to fund or facilitate any activities of or prohibited business with any person that, at the time of such funding or facilitation, is the subject of Sanctions, (ii) to fund or facilitate any prohibited activities of or prohibited business in any Sanctioned Country or (iii) in any other manner that will result in a violation by any person (including any person participating in the transaction, whether as underwriter, advisor, investor or otherwise) of Sanctions. For the past five (5) years, the Company and its subsidiaries have not knowingly engaged in and are not now knowingly engaged in any dealings or transactions with any person that at the time of the dealing or transaction is or was the subject of Sanctions or with any Sanctioned Country.

(mm) No Restrictions on Subsidiaries. No subsidiary of the Company is currently prohibited, directly or indirectly, under any agreement or other instrument to which it is a party or is subject, from paying any dividends to the Company, from making any other distribution on such subsidiary’s capital stock or similar ownership interest, from repaying to the Company any loans or advances to such subsidiary from the Company or from transferring any of such subsidiary’s properties or assets to the Company or any other subsidiary of the Company.

(nn) No Broker’s Fees. Neither the Company nor any of its subsidiaries is a party to any contract, agreement or understanding with any person (other than this Agreement) that would give rise to a valid claim against any of them for a brokerage commission, finder’s fee or like payment in connection with the offering and sale of the Placement Shares.

(oo) No Registration Rights. Except as described in the Registration Statement and the Prospectus or for such rights as have been validly waived, no person has the right to require the Company or any of its subsidiaries to register any securities for sale under the Securities Act by reason of the filing of the Registration Statement with the Commission or the issuance and sale of the Placement Shares.

(pp) No Stabilization. Neither the Company nor any of its subsidiaries or affiliates have taken, directly or indirectly, any action designed to or that could reasonably be expected to cause or result in any stabilization or manipulation of the price of the Placement Shares.

(qq) Margin Rules. Neither the issuance, sale and delivery of the Placement Shares nor the application of the proceeds thereof by the Company as described in each of the Registration Statement and the Prospectus will violate Regulation T, U or X of the Board of Governors of the Federal Reserve System or any other regulation of such Board of Governors.

(rr) Forward-Looking Statements. No forward-looking statement (within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act) included or

incorporated by reference in any of the Registration Statement or the Prospectus has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

(ss) Statistical and Market Data. Nothing has come to the attention of the Company that has caused the Company to believe that the statistical and market-related data included in each of the Registration Statement and the Prospectus is not based on or derived from sources that are reliable and accurate in all material respects.

(tt) Sarbanes-Oxley Act. There is and has been no failure on the part of the Company or any of the Company's directors or officers, in their capacities as such, to comply with any provision of the Sarbanes-Oxley Act of 2002, as amended, and the rules and regulations promulgated in connection therewith (the "Sarbanes-Oxley Act"), including Section 402 related to loans and Sections 302 and 906 related to certifications, to the extent compliance is required.

(uu) Not an Ineligible Issuer. The Company currently is not an "ineligible issuer," as defined in Rule 405 under the Securities Act. The Company agrees to notify Cowen promptly upon the Company becoming an "ineligible issuer."

(vv) Exchange Act Compliance. The documents incorporated or deemed to be incorporated by reference in the Prospectus, at the time they were or hereafter are filed with the Commission, complied and will comply in all material respects with the requirements of the Exchange Act, and, when read together with the other information in the Prospectus, at the Settlement Dates, will not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(ww) No Ratings. There are no debt securities, convertible securities or preferred stock issued or guaranteed by the Company or any of its subsidiaries that are rated by a "nationally recognized statistical rating organization", as such term is defined in Section 3(a)(62) under the Exchange Act.

(xx) XBRL. The interactive data in eXtensible Business Reporting Language included or incorporated by reference in each Registration Statement fairly presents the information called for in all material respects and has been prepared in accordance with the Commission's rules and guidelines applicable thereto.

(yy) No Outstanding Loans or Other Indebtedness. Except as described in the Prospectus, there are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees or indebtedness by the Company to or for the benefit of any of the officers or directors of the Company or any of the members of any of them.

(zz) No Reliance. The Company has not relied upon Cowen or legal counsel for Cowen for any legal, tax or accounting advice in connection with the offering and sale of the Placement Shares.



(aaa) FINRA Matters. All of the information provided to the Agent or to counsel for the Agent by the Company, its counsel, its officers and directors and, to the Company's knowledge, the holders of any securities (debt or equity) or options to acquire any securities of the Company in connection with the offering of the Placement Shares is true, complete, correct and compliant in all material respects with FINRA's rules and any letters, filings or other supplemental information provided to FINRA pursuant to FINRA Rules or NASD Conduct Rules is true, complete and correct in all material respects.

(bbb) Compliance with Laws. The Company has not been advised, and has no reason to believe, that it and each of its subsidiaries are not conducting business in compliance with all applicable laws, rules and regulations of the jurisdictions in which it is conducting business, except where failure to be so in compliance would not result in a Material Adverse Effect.

Any certificate signed by an officer of the Company and delivered to Cowen or to counsel for Cowen pursuant to or in connection with this Agreement shall be deemed to be a representation and warranty by the Company to Cowen as to the matters set forth therein.

The Company acknowledges that Cowen and, for purposes of the opinions to be delivered pursuant to Section 7 hereof, counsel to the Company and counsel to Cowen, will rely upon the accuracy and truthfulness of the foregoing representations and hereby consents to such reliance.

7. Covenants of the Company. The Company covenants and agrees with Cowen that:

(a) Registration Statement Amendments. After the date of this Agreement and during any period in which a Prospectus relating to any Placement Shares is required to be delivered by Cowen under the Securities Act (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), (i) the Company will notify Cowen promptly of the time when any subsequent amendment to the Registration Statement, other than documents incorporated by reference, has been filed with the Commission and/or has become effective or any subsequent supplement to the Prospectus has been filed and of any request by the Commission for any amendment or supplement to the Registration Statement or Prospectus or for additional information, (ii) the Company will prepare and file with the Commission, promptly upon Cowen's reasonable request, any amendments or supplements to the Registration Statement or Prospectus that, in Cowen's reasonable opinion, may be necessary or advisable in connection with the distribution of the Placement Shares by Cowen (*provided, however*, that the failure of Cowen to make such request shall not relieve the Company of any obligation or liability hereunder, or affect Cowen's right to rely on the representations and warranties made by the Company in this Agreement); *provided, further* that the only remedy Cowen shall have with respect to the failure by the Company to make such filing (other than Cowen's rights under Section 9 hereof) shall be to cease making sales under this Agreement until such amendment or supplement is filed; (iii) the Company will not file any amendment or supplement to the Registration Statement or Prospectus, other than documents incorporated by reference, relating to the Placement Shares or a security convertible into the Placement Shares unless a copy thereof has been submitted to Cowen within a reasonable period of time before the filing and Cowen has not reasonably objected in writing thereto within two (2) Trading Days (*provided, however*, that (A) the failure of Cowen to make such objection shall not relieve the Company of any obligation or liability hereunder, or affect Cowen's right to rely on the representations and warranties made

by the Company in this Agreement; (B) the Company has no obligation to provide Cowen any advance copy of such filing or to provide Cowen an opportunity to object to such filing if the filing does not name Cowen and does not relate to the transaction herein; and (C) that the only remedy Cowen shall have with respect to the failure by the Company to provide such a copy (other than Cowen's rights under Section 9 hereof) shall be to cease making sales under this Agreement until such consent is obtained) and the Company will furnish to Cowen at the time of filing thereof a copy of any document that upon filing is deemed to be incorporated by reference into the Registration Statement or Prospectus, except for those documents available via EDGAR; (iv) the Company will cause each amendment or supplement to the Prospectus, other than documents incorporated by reference, to be filed with the Commission as required pursuant to the applicable paragraph of Rule 424(b) of the Securities Act, and (v) prior to the termination of this Agreement, the Company will notify Cowen if at any time the Registration Statement shall no longer be effective as a result of the passage of time pursuant to Rule 415 under the Securities Act or otherwise. Prior to the initial sale of any Placement Shares, the Company shall file a final Prospectus Supplement pursuant to Rule 424(b) relating to the Placement Shares.

(b) Notice of Commission Stop Orders. The Company will advise Cowen, promptly after it receives notice or obtains knowledge thereof, of the issuance or threatened issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement, of the suspension of the qualification of the Placement Shares for offering or sale in any jurisdiction, or of the initiation or threatening of any proceeding for any such purpose; and it will promptly use its commercially reasonable efforts to prevent the issuance of any stop order or to obtain its withdrawal if such a stop order should be issued.

(c) Delivery of Prospectus; Subsequent Changes. During any period in which a Prospectus relating to the Placement Shares is required to be delivered by Cowen under the Securities Act with respect to a pending sale of the Placement Shares, (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), the Company will comply with all requirements imposed upon it by the Securities Act, as from time to time in force, and to file on or before their respective due dates (taking into account any extensions available under the Exchange Act) all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Sections 13(a), 13(c), 14, 15(d) or any other provision of or under the Exchange Act. If during such period any event occurs as a result of which the Prospectus as then amended or supplemented would include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances then existing, not misleading, or if during such period it is necessary to amend or supplement the Registration Statement or Prospectus to comply with the Securities Act, the Company will promptly notify Cowen to suspend the offering of Placement Shares during such period and the Company will promptly amend or supplement the Registration Statement or Prospectus (at the expense of the Company) so as to correct such statement or omission or effect such compliance; provided, that, the Company may delay the filing of any amendment or supplement, if in the judgment of the Company, it is in the best interest of the Company, during which such time of delay Cowen shall be under no obligation to make any sales hereunder.

(d) Listing of Placement Shares. During any period in which the Prospectus relating to the Placement Shares is required to be delivered by Cowen under the Securities Act with

respect to a pending sale of the Placement Shares (including in circumstances where such requirement may be satisfied pursuant to Rule 172 under the Securities Act), the Company will use its commercially reasonable efforts to cause the Placement Shares to be listed on Nasdaq and to qualify the Placement Shares for sale under the securities laws of such jurisdictions as Cowen reasonably designates and to continue such qualifications in effect so long as required for the distribution of the Placement Shares; *provided, however*; that the Company shall not be required in connection therewith to qualify as a foreign corporation or dealer in securities or file a general consent to service of process in any jurisdiction.

(e) Delivery of Registration Statement and Prospectus. The Company will furnish to Cowen and its counsel (at the expense of the Company) copies of the Registration Statement, the Prospectus (including all documents incorporated by reference therein) and all amendments and supplements to the Registration Statement or Prospectus that are filed with the Commission during any period in which a Prospectus relating to the Placement Shares is required to be delivered under the Securities Act (including all documents filed with the Commission during such period that are deemed to be incorporated by reference therein), in each case as soon as reasonably practicable and in such quantities as Cowen may from time to time reasonably request and, at Cowen's request, will also furnish copies of the Prospectus to each exchange or market on which sales of the Placement Shares may be made; *provided, however*; that the Company shall not be required to furnish any document (other than the Prospectus) to Cowen to the extent such document is available on EDGAR.

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

(g) Expenses. The Company, whether or not the transactions contemplated hereunder are consummated or this Agreement is terminated, in accordance with the provisions of Section 11 hereunder, will pay the following expenses all incident to the performance of its obligations hereunder, including, but not limited to, expenses relating to (i) the preparation, printing and filing of the Registration Statement and each amendment and supplement thereto, of each Prospectus and of each amendment and supplement thereto, (ii) the preparation, issuance and delivery of the Placement Shares, (iii) the qualification of the Placement Shares under securities laws in accordance with the provisions of Section 7(d) of this Agreement, including filing fees (provided, however, that any fees or disbursements of counsel for Cowen in connection therewith shall be paid by Cowen except as set forth in (vii) below), (iv) the printing and delivery to Cowen of copies of the Prospectus and any amendments or supplements thereto, and of this Agreement, (v) the fees and expenses incurred in connection with the listing or qualification of the Placement Shares for trading on Nasdaq, (vi) the filing fees and expenses, if any, of the Commission, (vii) the filing fees and associated legal expenses of Cowen's outside counsel for filings with the FINRA Corporate Financing Department and, (viii) the reasonable fees and disbursements of Cowen's counsel in an amount not to exceed \$75,000 in connection with the execution of this Agreement.

(h) Use of Proceeds. The Company will use the Net Proceeds as described in the Prospectus in the section entitled "Use of Proceeds."

(i) Notice of Other Sales. During the pendency of any Placement Notice given hereunder, and for five (5) trading days following the termination of any Placement Notice given hereunder, the Company shall provide Cowen notice as promptly as reasonably possible before it offers to sell, contracts to sell, sells, grants any option to sell or otherwise disposes of any shares of Common Stock (other than Placement Shares offered pursuant to the provisions of this Agreement) or securities convertible into or exchangeable for Common Stock, warrants or any rights to purchase or acquire Common Stock; *provided*, that such notice shall not be required in connection with the (i) offer, issuance, grant or sale of Common Stock, options to purchase shares of Common Stock, restricted stock units or other equity awards, or Common Stock issuable upon the exercise of options or other equity awards pursuant to any equity incentive plan, stock option, stock bonus, stock purchase plan or other stock plan or arrangement described in the Registration Statement or the Prospectus, (ii) the issuance of securities in connection with an acquisition, merger or sale or purchase or license of assets, (iii) the issuance or sale of Common Stock pursuant to any dividend reinvestment plan that the Company may adopt from time to time provided the implementation of such is disclosed to Cowen in advance or (iv) the issuance of any shares of Common Stock issuable upon the exchange, conversion or redemption of securities or the exercise of warrants, options or other rights in effect or outstanding.

(j) Change of Circumstances. The Company will, at any time during a fiscal quarter in which the Company intends to tender a Placement Notice or sell Placement Shares, advise Cowen promptly after it shall have received notice or obtained knowledge thereof, of any information or fact that would alter or affect in any material respect any opinion, certificate, letter or other document provided to Cowen pursuant to this Agreement.

(k) Due Diligence Cooperation. The Company will cooperate with any reasonable due diligence review conducted by Cowen or its agents in connection with the transactions contemplated hereby, including, without limitation, providing information and making available documents and senior corporate officers, during regular business hours and at the Company's principal offices, as Cowen may reasonably request.

(l) Required Filings Relating to Placement of Placement Shares. The Company agrees that on such dates as the Securities Act shall require, the Company will (i) file a prospectus supplement with the Commission under the applicable paragraph of Rule 424(b) under the Securities Act, and (ii) deliver such number of copies of each such prospectus supplement to each exchange or market on which such sales were effected as may be required by the rules or regulations of such exchange or market. The Company shall disclose in its quarterly reports on Form 10-Q and in its annual report on Form 10-K, the number of the Placement Shares sold through Cowen under this Agreement, and the gross proceeds and Net Proceeds to the Company from the sale of the Placement Shares and the compensation paid by the Company with respect to sales of the Placement Shares pursuant to this Agreement during the relevant quarter or, in the case of an Annual Report on Form 10-K, during the fiscal year covered by such Annual Report and the fourth quarter of such fiscal year.

(m) Bring-Down Dates; Certificate. On or prior to the First Delivery Date and each time (i) the Company files the Prospectus relating to the Placement Shares or amends or supplements the Registration Statement or the Prospectus relating to the Placement Shares (other than a prospectus supplement filed in accordance with Section 7(l) of this Agreement) by means of a post-effective amendment, sticker, or supplement but not by means of incorporation of

document(s) by reference to the Registration Statement or the Prospectus relating to the Placement Shares; (ii) the Company files an annual report on Form 10-K under the Exchange Act; (iii) the Company files its quarterly reports on Form 10-Q under the Exchange Act; or (iv) the Company files a report on Form 8-K containing amended financial information (other than an earnings release) under the Exchange Act (each date of filing of one or more of the documents referred to in clauses (i) through (iv) shall be a **“Bring-Down Date”**); the Company shall furnish Cowen with a certificate, in the form attached hereto as Exhibit 7(m) within three (3) Trading Days of any Bring-Down Date if requested by Cowen. The requirement to provide a certificate under this Section 7(m) shall be waived for any Bring-Down Date occurring at a time at which no Placement Notice is pending, which waiver shall continue until the earlier to occur of the date the Company delivers a Placement Notice hereunder (which for such calendar quarter shall be considered a Bring-Down Date) and the next occurring Bring-Down Date; *provided, however*, that such waiver shall not apply for any Bring-Down Date on which the Company files its annual report on Form 10-K. Notwithstanding the foregoing, if the Company subsequently decides to sell Placement Shares following a Bring-Down Date when the Company relied on such waiver and did not provide Cowen with a certificate under this Section 7(m), then before the Company delivers the Placement Notice or Cowen sells any Placement Shares, the Company shall provide Cowen with a certificate, in the form attached hereto as Exhibit 7(m), dated the date of the Placement Notice.

(n) **Legal Opinion.** On or prior to the First Delivery Date and within three (3) Trading Days of each Bring-Down Date with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 7(m) for which no waiver is applicable, the Company shall cause to be furnished to Cowen a written opinion of Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP (**“Company Counsel”**), or other counsel satisfactory to Cowen, in form and substance satisfactory to Cowen and its counsel, dated the date that the opinion is required to be delivered, substantially similar to the form attached hereto as Exhibit 7(n)(i) and Exhibit 7(n)(ii), respectively, modified, as necessary, to relate to the Registration Statement and the Prospectus as then amended or supplemented; *provided, however*, that in lieu of such opinions for subsequent Bring-Down Dates, counsel may furnish Cowen with a letter (a **“Reliance Letter”**) to the effect that Cowen may rely on a prior opinion delivered under this Section 7(n) to the same extent as if it were dated the date of such letter (except that statements in such prior opinion shall be deemed to relate to the Registration Statement and the Prospectus as amended or supplemented at such Bring-Down Date).

(o) **Comfort Letter.** On or prior to the First Delivery Date and within three (3) Trading Days of each Bring-Down Date with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 7(m) for which no waiver is applicable, the Company shall cause its independent accountants to furnish Cowen a letter (the **“Comfort Letter”**), dated the date the Comfort Letter is delivered, in form and substance satisfactory to Cowen, (i) confirming that they are an independent registered public accounting firm within the meaning of the Securities Act and the PCAOB, (ii) stating, as of such date, the conclusions and findings of such firm with respect to the financial information and other matters ordinarily covered by accountants’ “comfort letters” to Cowen in connection with registered public offerings (the first such letter, the **“Initial Comfort Letter”**) and (iii) updating the Initial Comfort Letter with any information that would have been included in the Initial Comfort Letter had it been given on such date and modified as necessary to relate to the Registration Statement

and the Prospectus, as amended and supplemented to the date of such letter; *provided* that the Company shall be required to furnish to Cowen no more than one Comfort Letter hereunder per each filing of an annual report on Form 10-K or a quarterly report on Form 10-Q.

(p) Market Activities. The Company will not, directly or indirectly, (i) take any action designed to cause or result in, or that constitutes or might reasonably be expected to constitute, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Placement Shares or (ii) sell, bid for, or purchase the Placement Shares to be issued and sold pursuant to this Agreement in violation of Regulation M, or pay anyone any compensation for soliciting purchases of the Placement Shares other than Cowen; provided, however, that the Company may bid for and purchase shares of its common stock in accordance with Rule 10b-18 under the Exchange Act.

(q) Insurance. The Company and its subsidiaries shall maintain, or cause to be maintained, insurance in such amounts and covering such risks as is reasonable and customary for the business for which it is engaged.

(r) Compliance with Laws. The Company and each of its subsidiaries shall maintain, or cause to be maintained, all material environmental permits, licenses and other authorizations required by federal, state and local law in order to conduct their businesses as described in the Prospectus, and the Company and each of its subsidiaries shall conduct their businesses, or cause their businesses to be conducted, in substantial compliance with such permits, licenses and authorizations and with applicable Environmental Laws, except where the failure to maintain or be in compliance with such permits, licenses and authorizations could not reasonably be expected to result in a Material Adverse Effect.

(s) Investment Company Act. The Company will conduct its affairs in such a manner so as to reasonably ensure that neither it nor its subsidiaries will be or become, at any time prior to the termination of this Agreement, an “investment company,” as such term is defined in the Investment Company Act, assuming no change in the Commission’s current interpretation as to entities that are not considered an investment company.

(t) Securities Act and Exchange Act. The Company will use its best efforts to comply with all requirements imposed upon it by the Securities Act and the Exchange Act as from time to time in force, so far as necessary to permit the continuance of sales of, or dealings in, the Placement Shares as contemplated by the provisions hereof and the Prospectus.

(u) No Offer to Sell. Other than a Permitted Free Writing Prospectus, neither Cowen nor the Company (including its agents and representatives, other than Cowen in its capacity as such) will make, use, prepare, authorize, approve or refer to any written communication (as defined in Rule 405 under the Securities Act), required to be filed with the Commission, that constitutes an offer to sell or solicitation of an offer to buy Placement Shares hereunder.

(v) Sarbanes-Oxley Act. The Company and its subsidiaries will use their best efforts to comply with all effective applicable provisions of the Sarbanes-Oxley Act.

(w) Affirmation. Each Placement Notice delivered by the Company to Cowen shall be deemed to be (i) an affirmation that the representations, warranties and agreements of the

Company herein contained and contained in any certificate delivered to Cowen pursuant hereto are true and correct at the time of delivery of such Placement Notice, and (ii) an undertaking that such representations, warranties and agreements will be true and correct on any applicable Time of Sale and Settlement Date, as though made at and as of each such time (it being understood that such representations, warranties and agreements shall relate to the Registration Statement and the Prospectus as amended and supplemented to the time of such Placement Notice acceptance).

(x) Renewal. If immediately prior to the third anniversary (the "**Renewal Deadline**") of the initial effective date of the Registration Statement, the aggregate gross sales price of Placement Shares sold by the Company is less than the Maximum Amount and this Agreement has not expired or been terminated, the Company will, prior to the Renewal Deadline, file, if it has not already done so and is eligible to do so, a new shelf registration statement relating to the Placement Shares, in a form satisfactory to Cowen, and, if not automatically effective, will use its best efforts to cause such registration statement to be declared effective within 60 days after the Renewal Deadline. The Company will take all other action necessary or appropriate to permit the issuance and sale of the Placement Shares to continue as contemplated in the expired registration statement relating to the Placement Shares. References herein to the Registration Statement shall include such new shelf registration statement.

8. Conditions to Cowen's Obligations. The obligations of Cowen hereunder with respect to a Placement Notice will be subject to the continuing accuracy and completeness of the representations and warranties made by the Company herein, to the due performance by the Company of its obligations hereunder and thereunder, to the completion by Cowen of a due diligence review satisfactory to Cowen in its reasonable judgment, and to the continuing satisfaction (or waiver by Cowen in its sole discretion) of the following additional conditions:

(a) Registration Statement Effective. The Registration Statement shall be effective and shall be available for (i) all sales of Placement Shares issued pursuant to all prior Placement Notices and (ii) the sale of all Placement Shares contemplated to be issued pursuant to any Placement Notice.

(b) No Material Notices. None of the following events shall have occurred and be continuing: (i) receipt by the Company or any of its subsidiaries of any request for additional information from the Commission or any other federal or state governmental authority during the period of effectiveness of the Registration Statement, the response to which would require any post-effective amendments or supplements to the Registration Statement or the Prospectus; (ii) the issuance by the Commission or any other federal or state governmental authority of any stop order suspending the effectiveness of the Registration Statement or the initiation of any proceedings for that purpose; (iii) receipt by the Company of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Placement Shares for sale in any jurisdiction or the initiation or threatening of any proceeding for such purpose; or (iv) the occurrence of any event that makes any material statement made in the Registration Statement or the Prospectus or any material document incorporated or deemed to be incorporated therein by reference untrue in any material respect or that requires the making of any changes in the Registration Statement, related Prospectus or such documents so that, in the case of the

Registration Statement, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading and, that in the case of the Prospectus, it will not contain any materially untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(c) No Misstatement or Material Omission. Cowen shall not have advised the Company that the Registration Statement or Prospectus, or any amendment or supplement thereto, contains an untrue statement of fact that in Cowen's reasonable opinion is material, or omits to state a fact that in Cowen's reasonable opinion is material and is required to be stated therein or is necessary to make the statements therein not misleading.

(d) Material Changes. Except as contemplated in the Prospectus, or disclosed in the Company's reports filed with the Commission, there shall not have been any material adverse change, on a consolidated basis, in the authorized capital stock of the Company or any Material Adverse Effect or any development that could reasonably be expected to result in a Material Adverse Effect, or any downgrading in or withdrawal of the rating assigned to any of the Company's securities (other than asset backed securities) by any rating organization or a public announcement by any rating organization that it has under surveillance or review its rating of any of the Company's securities (other than asset backed securities), the effect of which, in the case of any such action by a rating organization described above, in the reasonable judgment of Cowen (without relieving the Company of any obligation or liability it may otherwise have), is so material as to make it impracticable or inadvisable to proceed with the offering of the Placement Shares on the terms and in the manner contemplated in the Prospectus.

(e) Company Counsel Legal Opinion. Cowen shall have received the opinion of Company Counsel required to be delivered pursuant to Section 7(n) on or before the date on which such delivery of such opinion is required pursuant to Section 7(n).

(f) Cowen Counsel Legal Opinion. Cowen shall have received from Cooley LLP, counsel for Cowen, such opinion or opinions, on or before the date on which the delivery of the Company Counsel legal opinion is required pursuant to Section 7(n), with respect to such matters as Cowen may reasonably require, and the Company shall have furnished to such counsel such documents as they request for enabling them to pass upon such matters.

(g) Comfort Letter. Cowen shall have received the Comfort Letter required to be delivered pursuant to Section 7(o) on or before the date on which such delivery of such Comfort Letter is required pursuant to Section 7(o).

(h) Representation Certificate. Cowen shall have received the certificate required to be delivered pursuant to Section 7(m) on or before the date on which delivery of such certificate is required pursuant to Section 7(m).

(i) Secretary's Certificate. On or prior to the First Delivery Date, Cowen shall have received a certificate, signed on behalf of the Company by its corporate secretary, in form and substance satisfactory to Cowen and its counsel.



(j) No Suspension. Trading in the Common Stock shall not have been suspended on Nasdaq.

(k) Other Materials. On each date on which the Company is required to deliver a certificate pursuant to Section 7(m), the Company shall have furnished to Cowen such appropriate further information, certificates and documents as Cowen may have reasonably requested. All such opinions, certificates, letters and other documents shall have been in compliance with the provisions hereof. The Company will furnish Cowen with such conformed copies of such opinions, certificates, letters and other documents as Cowen shall have reasonably requested.

(l) Securities Act Filings Made. All filings with the Commission required by Rule 424 under the Securities Act to have been filed prior to the issuance of any Placement Notice hereunder shall have been made within the applicable time period prescribed for such filing by Rule 424.

(m) Approval for Listing. The Placement Shares shall either have been (i) approved for listing on Nasdaq, subject only to notice of issuance, or (ii) the Company shall have filed an application for listing of the Placement Shares on Nasdaq at, or prior to, the issuance of any Placement Notice.

(n) No Termination Event. There shall not have occurred any event that would permit Cowen to terminate this Agreement pursuant to Section 11(a).

#### 9. Indemnification and Contribution.

(a) Company Indemnification. The Company agrees to indemnify and hold harmless Cowen, the directors, officers, partners, employees and agents of Cowen and each person, if any, who (i) controls Cowen within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, or (ii) is controlled by or is under common control with Cowen from and against any and all losses, claims, liabilities, expenses and damages (including, but not limited to, any and all reasonable and documented investigative, legal and other expenses incurred in connection with, and any and all amounts paid in settlement (in accordance with Section 9(c)) of, any action, suit or proceeding between any of the indemnified parties and any indemnifying parties or between any indemnified party and any third party, or otherwise, or any claim asserted), as and when incurred, to which Cowen, or any such person, may become subject under the Securities Act, the Exchange Act or other federal or state statutory law or regulation, at common law or otherwise, insofar as such losses, claims, liabilities, expenses or damages arise out of or are based, directly or indirectly, on (x) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement or the Prospectus or any amendment or supplement to the Registration Statement or the Prospectus or in any free writing prospectus or in any application or other document executed by or on behalf of the Company in connection with this Agreement or this offering or based on written information furnished by or on behalf of the Company filed in any jurisdiction in order to qualify the Common Stock under the securities laws thereof or filed with the Commission, (y) the omission or alleged omission to state in any such document a material fact required to be stated in it or necessary to make the statements in it not misleading or (z) any breach by any of the indemnifying parties of any of their respective representations, warranties and agreements contained in this Agreement; *provided, however*, that

this indemnity agreement shall not apply to the extent that such loss, claim, liability, expense or damage arises from the sale of the Placement Shares pursuant to this Agreement and is caused directly or indirectly by an untrue statement or omission made in reliance upon and in conformity with solely Agent's Information. "Agent's Information" means, solely, the following information in the Prospectus: the third sentence of the eighth paragraph and the tenth paragraph under the caption "Plan of Distribution" in the Prospectus. This indemnity agreement will be in addition to any liability that the Company might otherwise have.

(b) Cowen Indemnification. Cowen agrees to indemnify and hold harmless the Company and its directors and each officer of the Company that signed the Registration Statement, and each person, if any, who (i) controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act or (ii) is controlled by or is under common control with the Company against any and all loss, liability, claim, damage and expense described in the indemnity contained in Section 9(a), as incurred, but only with respect to untrue statements or omissions, or alleged untrue statements or omissions, made in the Registration Statement (or any amendments thereto) or the Prospectus (or any amendment or supplement thereto) in reliance upon and in conformity with the Agent's Information.

(c) Procedure. Any party that proposes to assert the right to be indemnified under this Section 9 will, promptly after receipt of notice of commencement of any action against such party in respect of which a claim is to be made against an indemnifying party or parties under this Section 9, notify each such indemnifying party in writing of the commencement of such action, enclosing a copy of all papers served, but the omission so to notify such indemnifying party will not relieve the indemnifying party from (i) any liability that it might have to any indemnified party otherwise than under this Section 9 and (ii) any liability that it may have to any indemnified party under the foregoing provision of this Section 9 unless, and only to the extent that, such omission results in the forfeiture of substantive rights or defenses by the indemnifying party. If any such action is brought against any indemnified party and it notifies the indemnifying party of its commencement, the indemnifying party will be entitled to participate in and, to the extent that it elects by delivering written notice to the indemnified party promptly after receiving notice of the commencement of the action from the indemnified party, jointly with any other indemnifying party similarly notified, to assume the defense of the action, with counsel reasonably satisfactory to the indemnified party, and after notice from the indemnifying party to the indemnified party of its election to assume the defense, the indemnifying party will not be liable to the indemnified party for any legal or other expenses except as provided below and except for the reasonable and documented costs of investigation subsequently incurred by the indemnified party in connection with the defense. The indemnified party will have the right to employ its own counsel in any such action, but the fees, expenses and other charges of such counsel will be at the expense of such indemnified party unless (1) the employment of counsel by the indemnified party has been authorized in writing by the indemnifying party, (2) the indemnified party has reasonably concluded (based on advice of counsel) that there may be legal defenses available to it or other indemnified parties that are different from or in addition to those available to the indemnifying party, (3) a conflict or potential conflict exists (based on advice of counsel to the indemnified party) between the indemnified party and the indemnifying party (in which case the indemnifying party will not have the right to direct the defense of such action on behalf of the indemnified party) or (4) the indemnifying party has not in fact employed counsel to assume the defense of such action within a reasonable time after receiving notice of the

commencement of the action, in each of which cases the reasonable and documented fees, disbursements and other charges of counsel will be at the expense of the indemnifying party or parties. It is understood that the indemnifying party or parties shall not, in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the reasonable fees, disbursements and other charges of more than one separate firm admitted to practice in such jurisdiction at any one time for all such indemnified party or parties. All such fees, disbursements and other charges will be reimbursed by the indemnifying party promptly as they are incurred. An indemnifying party will not, in any event, be liable for any settlement of any action or claim effected without its written consent. No indemnifying party shall, without the prior written consent of each indemnified party, settle or compromise or consent to the entry of any judgment in any pending or threatened claim, action or proceeding relating to the matters contemplated by this Section 9 (whether or not any indemnified party is a party thereto), unless such settlement, compromise or consent includes an unconditional release of each indemnified party from all liability arising or that may arise out of such claim, action or proceeding.

(d) Contribution. In order to provide for just and equitable contribution in circumstances in which the indemnification provided for in the foregoing paragraphs of this Section 9 is applicable in accordance with its terms but for any reason is held to be unavailable from the Company or Cowen, the Company and Cowen will contribute to the total losses, claims, liabilities, expenses and damages (including any investigative, legal and other expenses reasonably incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claim asserted, but after deducting any contribution received by the Company from persons other than Cowen, such as persons who control the Company within the meaning of the Securities Act, officers of the Company who signed the Registration Statement and directors of the Company, who also may be liable for contribution) to which the Company and Cowen may be subject in such proportion as shall be appropriate to reflect the relative benefits received by the Company on the one hand and Cowen on the other. The relative benefits received by the Company on the one hand and Cowen on the other hand shall be deemed to be in the same proportion as the total Net Proceeds from the sale of the Placement Shares (before deducting expenses) received by the Company bear to the total compensation received by Cowen from the sale of Placement Shares on behalf of the Company. If, but only if, the allocation provided by the foregoing sentence is not permitted by applicable law, the allocation of contribution shall be made in such proportion as is appropriate to reflect not only the relative benefits referred to in the foregoing sentence but also the relative fault of the Company, on the one hand, and Cowen, on the other, with respect to the statements or omission that resulted in such loss, claim, liability, expense or damage, or action in respect thereof, as well as any other relevant equitable considerations with respect to such offering. Such relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company or Cowen, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and Cowen agree that it would not be just and equitable if contributions pursuant to this Section 9(d) were to be determined by pro rata allocation or by any other method of allocation that does not take into account the equitable considerations referred to herein. The amount paid or payable by an indemnified party as a result of the loss, claim, liability, expense, or damage, or action in respect thereof, referred to above in this Section 9(d) shall be deemed to include, for the purpose of this Section 9(d), any legal or other expenses reasonably incurred by such indemnified party in

connection with investigating or defending any such action or claim to the extent consistent with Section 9(c) hereof. Notwithstanding the foregoing provisions of this Section 9(d), Cowen shall not be required to contribute any amount in excess of the commissions received by it under this Agreement and no person found guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 9(d), any person who controls a party to this Agreement within the meaning of the Securities Act, and any officers, directors, partners, employees or agents of Cowen, will have the same rights to contribution as that party, and each officer of the Company who signed the Registration Statement and each director of the Company will have the same rights to contribution as the Company, subject in each case to the provisions hereof. Any party entitled to contribution, promptly after receipt of notice of commencement of any action against such party in respect of which a claim for contribution may be made under this Section 9(d), will notify any such party or parties from whom contribution may be sought, but the omission to so notify will not relieve that party or parties from whom contribution may be sought from any other obligation it or they may have under this Section 9(d) except to the extent that the failure to so notify such other party materially prejudiced the substantive rights or defenses of the party from whom contribution is sought. Except for a settlement entered into pursuant to the last sentence of Section 9(c) hereof, no party will be liable for contribution with respect to any action or claim settled without its written consent if such consent is required pursuant to Section 9(c) hereof.

10. Representations and Agreements to Survive Delivery. The indemnity and contribution agreements contained in Section 9 of this Agreement and all representations and warranties of the Company herein or in certificates delivered pursuant hereto shall survive, as of their respective dates, regardless of (i) any investigation made by or on behalf of Cowen, any controlling persons, or the Company (or any of their respective officers, directors or controlling persons), (ii) delivery and acceptance of the Placement Shares and payment therefor or (iii) any termination of this Agreement.

#### 11. Termination.

(a) Cowen shall have the right by giving written notice as hereinafter specified at any time to terminate this Agreement if (i) any Material Adverse Effect, or any development that would reasonably be expected to result in a Material Adverse Effect has occurred that, in the reasonable judgment of Cowen, would materially impair the ability of Cowen to sell the Placement Shares hereunder, (ii) the Company shall have failed, refused or been unable to perform any agreement on its part to be performed hereunder; *provided, however*, in the case of any failure of the Company to deliver (or cause another person to deliver) any certification, opinion or letter required under Sections 7(m), 7(n), or 7(o), Cowen's right to terminate shall not arise unless such failure to deliver (or cause to be delivered) continues for more than thirty (30) days from the date such delivery was requested, or (iii) any other condition of Cowen's obligations hereunder is not fulfilled, or (iv), any suspension or limitation of trading in the Placement Shares or in securities generally on Nasdaq shall have occurred. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g) (Expenses), Section 9 (Indemnification and Contribution), Section 10 (Representations and Agreements to Survive Delivery), Section 16 (Applicable Law; Consent to Jurisdiction) and Section 17 (Waiver of Jury Trial) hereof shall remain in full force and effect

notwithstanding such termination. If Cowen elects to terminate this Agreement as provided in this Section 11(a), Cowen shall provide the required notice as specified in Section 12 (Notices).

(b) The Company shall have the right, by giving ten (10) days' notice as hereinafter specified to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(c) Cowen shall have the right, by giving ten (10) days' notice as hereinafter specified to terminate this Agreement in its sole discretion at any time after the date of this Agreement. Any such termination shall be without liability of any party to any other party except that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(d) Unless earlier terminated pursuant to this Section 11, this Agreement shall automatically terminate upon the issuance and sale of all of the Placement Shares through Cowen on the terms and subject to the conditions set forth herein; *provided* that the provisions of Section 7(g), Section 9, Section 10, Section 16 and Section 17 hereof shall remain in full force and effect notwithstanding such termination.

(e) This Agreement shall remain in full force and effect unless terminated pursuant to Sections 11(a), (b), (c), or (d) above or otherwise by mutual agreement of the parties; *provided, however*, that any such termination by mutual agreement shall in all cases be deemed to provide that Section 7(g), Section 9, Section 10, Section 16 and Section 17 shall remain in full force and effect. Upon termination of this Agreement, subject to Section 11(f), the Company shall not have any liability to Cowen for any discount, commission or other compensation with respect to any Placement Shares not otherwise sold by Cowen under this Agreement, or otherwise, except with respect to reimbursement of expenses pursuant to Section 7(b).

(f) Any termination of this Agreement shall be effective on the date specified in such notice of termination; *provided, however*, that such termination shall not be effective until the close of business on the date of receipt of such notice by Cowen or the Company, as the case may be. If such termination shall occur prior to the Settlement Date for any sale of Placement Shares, such Placement Shares shall settle in accordance with the provisions of this Agreement.

12. Notices. All notices or other communications required or permitted to be given by any party to any other party pursuant to the terms of this Agreement shall be in writing, unless otherwise specified in this Agreement, and if sent to Cowen, shall be delivered to Cowen at Cowen and Company, LLC, 599 Lexington Avenue, New York, NY 10022, fax no. 646-562-1130, Attention: General Counsel, email: Bradley.friedman@cowen.com, with a copy to Cooley LLP, 55 Hudson Yards, New York, NY 10001, Attention: Daniel I. Goldberg, email: dgoldber@cooley.com; or if sent to the Company, shall be delivered to Singular Genomics Systems, Inc., 3010 Science Park Road, San Diego, CA 92121, attention: Daralyn Durie, General Counsel, email: daralynd@singulargenomics.com, with a copy to Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP, 3570 Carmel Mountain Road, San Diego, CA 92130 attention: Ryan J. Gunderson, email: ryangunderson@gunder.com. Each party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of

a new address for such purpose. Each such notice or other communication shall be deemed given (i) when delivered personally or by verifiable facsimile transmission (with an original to follow) on or before 4:30 p.m., New York City time, on a Business Day (as defined below), or, if such day is not a Business Day on the next succeeding Business Day, (ii) on the next Business Day after timely delivery to a nationally-recognized overnight courier and (iii) on the Business Day actually received if deposited in the U.S. mail (certified or registered mail, return receipt requested, postage prepaid). For purposes of this Agreement, "**Business Day**," shall mean any day on which the Nasdaq and commercial banks in the City of New York are open for business.

13. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the Company and Cowen and their respective successors and the affiliates, controlling persons, officers and directors referred to in Section 9 hereof. References to any of the parties contained in this Agreement shall be deemed to include the successors and permitted assigns of such party. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and permitted assigns any rights, remedies, obligations or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement. Neither party may assign its rights or obligations under this Agreement without the prior written consent of the other party; *provided, however*, that Cowen may assign its rights and obligations hereunder to an affiliate of Cowen without obtaining the Company's consent, so long as such affiliate is a registered broker-dealer.

14. Adjustments for Share Splits. The parties acknowledge and agree that all share-related numbers contained in this Agreement shall be adjusted to take into account any share split, share dividend or similar event effected with respect to the Common Stock.

15. Entire Agreement; Amendment; Severability. This Agreement (including all schedules and exhibits attached hereto and Placement Notices issued pursuant hereto) constitutes the entire agreement and supersedes all other prior and contemporaneous agreements and undertakings, both written and oral, among the parties hereto with regard to the subject matter hereof. Neither this Agreement nor any term hereof may be amended except pursuant to a written instrument executed by the Company and Cowen. In the event that any one or more of the provisions contained herein, or the application thereof in any circumstance, is held invalid, illegal or unenforceable as written by a court of competent jurisdiction, then such provision shall be given full force and effect to the fullest possible extent that it is valid, legal and enforceable, and the remainder of the terms and provisions herein shall be construed as if such invalid, illegal or unenforceable term or provision was not contained herein, but only to the extent that giving effect to such provision and the remainder of the terms and provisions hereof shall be in accordance with the intent of the parties as reflected in this Agreement.

16. Applicable Law; Consent to Jurisdiction. This Agreement shall be governed by, and construed in accordance with, the internal laws of the State of New York without regard to the principles of conflicts of laws. Each party hereby irrevocably submits to the non-exclusive jurisdiction of the state and federal courts sitting in the City of New York, borough of Manhattan, for the adjudication of any dispute hereunder or in connection with any transaction contemplated hereby, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any 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 (certified or registered mail, return receipt requested) to such party at the address in effect for notices to it under this Agreement 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.

17. Waiver of Jury Trial. The Company and Cowen each hereby irrevocably waives any right it may have to a trial by jury in respect of any claim based upon or arising out of this Agreement or any transaction contemplated hereby.

18. Absence of Fiduciary Relationship. The Company acknowledges and agrees that:

(a) Cowen has been retained solely to act as an arm's length contractual counterparty to the Company in connection with the sale of the Placement Shares contemplated hereby and that no fiduciary, advisory or agency relationship between the Company and Cowen has been created in respect of any of the transactions contemplated by this Agreement, irrespective of whether Cowen has advised or is advising the Company on other matters;

(b) the Company is capable of evaluating and understanding and understands and accepts the terms, risks and conditions of the transactions contemplated by this Agreement;

(c) the Company has been advised that Cowen and its affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that Cowen has no obligation to disclose such interests and transactions to the Company by virtue of any fiduciary, advisory or agency relationship; and

(d) the Company waives, to the fullest extent permitted by law, any claims it may have against Cowen, for breach of fiduciary duty or alleged breach of fiduciary duty and agrees that Cowen shall have no liability (whether direct or indirect) to the Company in respect of such a fiduciary claim or to any person asserting a fiduciary duty claim on behalf of or in right of the Company, including stockholders, partners, employees or creditors of the Company.

19. Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Delivery of an executed Agreement by one party to the other may be made by facsimile or by electronic transmission of a portable document format (PDF) file (including any electronic signature covered by the U.S. Federal E-SIGN Act of 2000, Uniform Electronic Transactions Act, the Electronic Signatures and Records Act or other applicable law, e.g., [www.docusign.com](http://www.docusign.com)).

**[Remainder of Page Intentionally Blank]**

If the foregoing correctly sets forth the understanding between the Company and Cowen, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement between the Company and Cowen.

Very truly yours,

**COWEN AND COMPANY, LLC**

By: /s/ Michael Murphy

Name: Michael Murphy

Title: Managing Director

**ACCEPTED as of the date  
first-above written:**

**SINGULAR GENOMICS SYSTEMS, INC.**

By: /s/ Dalen Meeter

Name: Dalen Meeter

Title: Senior Vice President, Finance



**FORM OF PLACEMENT NOTICE**

From: [ ]  
Cc: [ ]  
To: [ ]  
Subject: Cowen At the Market Offering—Placement Notice

Gentlemen:

Pursuant to the terms and subject to the conditions contained in the Sales Agreement between Singular Genomics Systems, Inc., a Delaware corporation (the "Company"), and Cowen and Company, LLC ("Cowen") dated July 19, 2022 (the "Agreement"), I hereby request on behalf of the Company that Cowen sell up to [ ] shares of the Company's common stock, par value \$0.0001 per share, at a minimum market price of \$\_\_\_\_\_ per share. Sales should begin on the date of this Notice and shall continue until [DATE] [all shares are sold].

**Notice Parties**

**Company**

Andrew Spaventa	Chief Executive Officer
Dalen Meeter	Senior Vice President Finance

**Cowen**

Michael J. Murphy	Managing Director
William Follis	Managing Director

**Compensation**

Cowen shall be paid compensation equal to 3.0% of the gross proceeds from the sales of Placement Shares pursuant to the terms of this Agreement.

**OFFICER CERTIFICATE**

The undersigned, the duly qualified and elected \_\_\_\_\_, of Singular Genomics Systems, Inc. (“**Company**”), a Delaware corporation, does hereby certify in such capacity and on behalf of the Company, pursuant to Section 7(m) of the Sales Agreement dated July 19, 2022 (the “**Sales Agreement**”) between the Company and Cowen and Company, LLC, that to the best of the knowledge of the undersigned.

(i) The representations and warranties of the Company in Section 6 of the Sales Agreement (A) to the extent such representations and warranties are subject to qualifications and exceptions contained therein relating to materiality or Material Adverse Effect, are true and correct on and as of the date hereof with the same force and effect as if expressly made on and as of the date hereof, except for those representations and warranties that speak solely as of a specific date and which were true and correct as of such date, and (B) to the extent such representations and warranties are not subject to any qualifications or exceptions, are true and correct in all material respects as of the date hereof as if made on and as of the date hereof with the same force and effect as if expressly made on and as of the date hereof except for those representations and warranties that speak solely as of a specific date and which were true and correct as of such date; and

(ii) The Company has complied with all agreements and satisfied all conditions on its part to be performed or satisfied pursuant to the Sales Agreement at or prior to the date hereof.

Cooley LLP and Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP are entitled to rely upon this Certificate in connection with the opinions given by such firms pursuant to the Sales Agreement.

Capitalized terms used but not defined herein shall have the meanings ascribed to them in the Sales Agreement.

By: \_\_\_\_\_  
Name:  
Title:

Date: \_\_\_\_\_

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**INDENTURE**

**between**

**SINGULAR GENOMICS SYSTEMS, INC.**

**as Issuer**

**and**

**[TRUSTEE]**

**as Trustee**

---

**Dated as of           , 20**

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**Providing for the Issuance of Debt Securities in Series**

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SINGULAR GENOMICS SYSTEMS, INC.  
Reconciliation and tie between the Trust Indenture Act of 1939  
and the Indenture

<u>Trust Indenture Act Section</u>	<u>Indenture Section</u>
Sec. 310(a)(1)	607
(a)(2)	607
(b)	608
Sec. 312(c)	701
Sec. 314(a)	703
(c)(1)	102
(c)(2)	102
(e)	102
Sec. 315(b)	601
Sec. 316(a) (last sentence)	101 (“Outstanding”)
(a)(1)(A)	502, 512
(a)(1)(B)	513
(b)	508
(c)	104(c)
Sec. 317(a)(1)	503
(a)(2)	504
Sec. 318(a)	111

Note: This reconciliation and tie shall not, for any purpose, be deemed to be a part of the Indenture.

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INDENTURE, dated as of \_\_\_\_\_, 20\_\_\_\_, between SINGULAR GENOMICS SYSTEMS, INC., a Delaware corporation, as Issuer (the “Company”), having its principal office at 3010 Science Park Road, San Diego, California 92121, and [TRUSTEE], a New York banking corporation, as Trustee (the “Trustee”).

#### RECITALS OF THE COMPANY

WHEREAS, the Company has duly authorized the execution and delivery of this Indenture to provide for the issuance from time to time of its unsecured senior or subordinated debentures, notes or other evidences of indebtedness (the “Securities”), which may be convertible into or exchangeable for any securities of any person (including the Company), to be issued in one or more series as in this Indenture provided; and

WHEREAS, this Indenture is subject to the provisions of the Trust Indenture Act of 1939, as amended, that are required to be part of this Indenture, and shall be governed by such provisions; provided that if any provision of this Indenture modifies any TIA (as defined herein) provision that may be so modified, such TIA provision shall be deemed to apply to this Indenture as so modified; provided further that if any provision of this Indenture excludes any TIA provision that may be so excluded, such TIA provision shall be excluded from this Indenture; and

WHEREAS, all things necessary to make this Indenture a valid agreement of the Company, in accordance with its terms, have been done.

NOW, THEREFORE, THIS INDENTURE WITNESSETH:

For and in consideration of the premises and the purchase of the Securities by the Holders (as defined herein) thereof, it is mutually covenanted and agreed, for the equal and proportionate benefit of all Holders of the Securities or of series thereof and any coupons (as defined herein), as follows:

### ARTICLE 1

#### DEFINITIONS AND OTHER PROVISIONS OF GENERAL APPLICATION

SECTION 101. Definitions. “Act”, when used with respect to any Holder, has the meaning specified in Section 104.

“Additional Amounts” has the meaning specified in Article 10.

“Affiliate” of any specified Person means any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such specified Person. For purposes of this definition, “control,” as used with respect to any Person, shall mean the possession, directly or indirectly, of the power to direct or cause the direction of the management or policies of such Person, whether through the ownership of voting securities, by agreement or otherwise. For purposes of this definition, the terms “controlling,” “controlled by” and “under common control with” shall have correlative meanings.

“Authenticating Agent” means any Person appointed by the Trustee to act on behalf of the Trustee pursuant to Section 611 to authenticate Securities.

“Authorized Newspaper” means a newspaper, in the English language or in an official language of the country of publication, customarily published on each Business Day, whether or not published on Saturdays, Sundays or holidays, and of general circulation in each place in connection with which the term is used or in the financial community of each such place. Where successive publications are required to be made in Authorized Newspapers, the successive publications may be made in the same or in different newspapers in the same city meeting the foregoing requirements and in each case on any Business Day.

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

“Bearer Security” means any Security except a Registered Security.

“Board of Directors” means (i) with respect to a corporation, the board of directors of the corporation; (ii) with respect to a partnership, the board of directors of a corporate general partner of the partnership; (iii) with respect to a limited liability company, the managing members thereof; and (iv) with respect to any other Person, the board of directors or committee of such Person serving a similar function.

“Board Resolution” means a copy of a resolution certified by the Secretary or an Assistant Secretary of the Company as the case may be, to have been duly adopted by the Board of Directors and to be in full force and effect on the date of such certification, and delivered to the Trustee.

“Business Day” means, when used with respect to any Place of Payment or any other particular location referred to in this Indenture or in the Securities, unless otherwise specified with respect to any Securities pursuant to Section 301, each Monday, Tuesday, Wednesday, Thursday and Friday which (i) is not a day on which banking institutions in that Place of Payment or other location are authorized or obligated by law or executive order to close and (ii) if a payment is to be made in (or a rate is to be ascertained for) Euros, is also a day in which TARGET2 is open for settlement of payments in Euros.

“Clearstream” means Clearstream Banking, société anonyme, or its successor.

“Code” means the United States Internal Revenue Code of 1986, as amended, and the regulations thereunder.

“Commission” or “SEC” means the U.S. Securities and Exchange Commission, as from time to time constituted, created under the Exchange Act, or, if at any time after the execution of this Indenture such Commission is not existing and performing the duties now assigned to it under the Trust Indenture Act, then the body performing such duties at such time.

“Commodity Agreement” means any forward contract, commodity swap, commodity option or other financial agreement or arrangement relating to, or the value of which is dependent upon, fluctuations in commodity prices.

“Common Depositary” has the meaning specified in Section 304.

“Company” means the Person named as the “Company” in the first paragraph of this Indenture until a successor Person shall have become such pursuant to the applicable provisions of this Indenture, and thereafter “Company” shall mean such successor Person.

“Company Request” or “Company Order” means a written request or order signed in the name of the Company by an Officer of the Company and delivered to the Trustee.

“Conversion Date” has the meaning specified in Section 312(d).

“Conversion Event” means the cessation of use of a Foreign Currency both by the government of one or more countries or by any recognized union, association or confederation of governments that issued such Foreign Currency and by a central bank or other public institution of or within the international banking community for the settlement of transactions in such Foreign Currency.

“Corporate Trust Office of the Trustee” means the principal corporate trust office of the Trustee, at which at any particular time its corporate trust business shall be administered, which office on the date of execution of this Indenture is located at [Trustee], [Address], Attention: [Department], except that with respect to presentation of Securities for payment or for registration of transfer or exchange, such term shall mean the office or agency of the Trustee at which, at any particular time, its corporate agency business shall be conducted.

“corporation” includes corporations, associations, companies and business or statutory trusts.

“coupon” means any interest coupon appertaining to a Bearer Security.

“Currency” means any currency, composite currency or currency unit and Foreign Currency issued by the government of one or more countries or by any recognized union, confederation or association of such governments.

“Currency Agreement” means any foreign exchange contract, currency swap agreement or other similar agreement with respect to currency values.

“Default” means any event that is, or with the passage of time or the giving of notice or both would be, an Event of Default.

“Defaulted Interest” has the meaning specified in Section 307.

“Depositary” means, with respect to Registered Securities of any series for which the Company shall determine that such Registered Securities will be issued in permanent global form, The Depository Trust Company, New York, New York, another clearing agency, or any successor registered as a clearing agency under the Exchange Act, or other applicable statute or regulations, which in each case, shall be designated by the Company pursuant to Section 301.

“Dollar” or “\$” means a dollar or other equivalent unit in such coin or currency of the United States of America as at the time shall be legal tender for the payment of public and private debts therein.

“Dollar Equivalent of the Currency Unit” has the meaning specified in Section 312(g).

“Dollar Equivalent of the Foreign Currency” has the meaning specified in Section 312(f).

“EDGAR” means the SEC’s Electronic Data Gathering and Retrieval System.

“Election Date” has the meaning specified in Section 312(h).

“Euroclear” means Euroclear Bank S.A./N.V. as operator of Euroclear System, and any successor thereto.

“Event of Default” has the meaning specified in Section 501.

“Exchange Act” means the U.S. Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Exchange Date” has the meaning specified in Section 304.

“Exchange Rate Agent” means, with respect to Securities of or within any series, unless otherwise specified with respect to any Securities pursuant to Section 301, a New York Clearing House bank, designated pursuant to Section 301 or Section 313.

“Exchange Rate Officer’s Certificate” means a certificate setting forth (i) the applicable Market Exchange Rate and (ii) the Dollar or Foreign Currency amounts of principal (and premium, if any) and interest, if any (on an aggregate basis and on the basis of a Security having the lowest denomination principal amount determined in accordance with Section 302 in the relevant Currency), payable with respect to a Security of any series on the basis of such Market Exchange Rate, signed by any Officer of the Company.

“Extension Notice” has the meaning specified in Section 308.

“Extension Period” has the meaning specified in Section 308.

“Federal Bankruptcy Code” means the U.S. Bankruptcy Act of Title 11 of the United States Code, as amended from time to time.

“Foreign Currency” means any Currency other than Currency of the United States.

“GAAP” means U.S. generally accepted accounting principles set forth in the opinions and pronouncements of the Accounting Principles Board of the American Institute of Certified Public Accountants and statements and pronouncements of the Financial Accounting Standards Board or in such other statements by such other successor entities as have been sanctioned and approved by the Securities and Exchange Commission, approved by a significant segment of the accounting profession, that are applicable at the date of any relevant calculation or determination.

“Government Obligations” means, unless otherwise specified with respect to any series of Securities pursuant to Section 301, securities which are (i) direct obligations of the government which issued the Currency in which the Securities of a particular series are payable or (ii) obligations of a Person controlled or supervised by and acting as an agency or instrumentality of the government which issued the Currency in which the Securities of such series are payable, the payment of which is unconditionally guaranteed by such government, which, in either case, are full faith and credit obligations of such government payable in such Currency and are not callable or redeemable at the option of the issuer thereof and shall also include a depository receipt issued by a bank or trust company as custodian with respect to any such Government Obligation or a specific payment of interest on or principal of any such Government Obligation held by such custodian for the account of the holder of a depository receipt, provided that (except as required by law) such custodian is not authorized to make any deduction from the amount payable to the holder of such depository receipt from any amount received by the custodian in respect of the Government Obligation or the specific payment of interest on or principal of the Government Obligation evidenced by such depository receipt.

“guarantee” means a guarantee (other than by endorsement of negotiable instruments for collection in the ordinary course of business), direct or indirect, in any manner (including, without limitation, letters of credit and reimbursement agreements in respect thereof), of all or any part of any Indebtedness or other obligations.

“Hedging Obligations” of any Person means the obligations of such Person pursuant to any Interest Rate Agreement, Currency Agreement, Commodity Agreement or derivative contract entered into to hedge interest rate risk, currency exchange risk, and commodity price risk.

“Holder” means, in the case of a Registered Security, the Person in whose name a Security is registered in the Security Register and, in the case of a Bearer Security, the bearer thereof and, when used with respect to any coupon, shall mean the bearer thereof.

“Indebtedness” means any and all obligations of a Person for money borrowed which, in accordance with GAAP, would be reflected on the balance sheet of such Person as a liability on the date as of which Indebtedness is to be determined.

“Indenture” means this instrument as originally executed and as it may from time to time be supplemented or amended by one or more indentures supplemental hereto entered into pursuant to the applicable provisions hereof, and shall include the terms of particular series of Securities established as contemplated by Section 301; provided, however, that, if at any time more than one Person is acting as Trustee under this instrument, “Indenture” shall mean, with respect to any one or more series of Securities for which such Person is Trustee, this instrument as originally executed or as it may from time to time be supplemented or amended by one or more indentures supplemental hereto entered into pursuant to the applicable provisions hereof and shall include the terms of particular series of Securities for which such Person is Trustee established as contemplated by Section 301, exclusive, however, of any provisions or terms which relate solely to other series of Securities for which such Person is not Trustee, regardless of when such terms or provisions were adopted, and exclusive of any provisions or terms adopted by means of one or more indentures supplemental hereto executed and delivered after such Person had become such Trustee but to which such Person, as such Trustee, was not a party.



“Indexed Security” means a Security the terms of which provide that the principal amount thereof payable at the Stated Maturity may be more or less than the principal amount thereof at original issuance.

“interest” means, when used with respect to an Original Issue Discount Security the rate prescribed in such Original Issue Discount Security.

“Interest Payment Date” means, when used with respect to any Security, the Maturity of an installment of interest on such Security.

“Interest Rate Agreement” means any interest rate swap agreement, interest rate cap agreement or other financial agreement or arrangement with respect to exposure to interest rates.

“Lien” or “lien” means, with respect to any asset, any mortgage, lien, pledge, charge, security interest or encumbrance of any kind in respect of such asset, whether or not filed, recorded or otherwise perfected under applicable law, including any conditional sale or other title retention agreement, any lease in the nature thereof, any option or other agreement to sell or give a security interest in and any filing of or agreement to give any financing statement under the Uniform Commercial Code (or equivalent statutes) of any jurisdiction.

“Market Exchange Rate” means, unless otherwise specified with respect to any Securities pursuant to Section 301, (i) for any conversion involving a currency unit on the one hand and Dollars or any Foreign Currency on the other, the exchange rate between the relevant currency unit and Dollars or such Foreign Currency calculated by the method specified pursuant to Section 301 for the Securities of the relevant series, (ii) for any conversion of Dollars into any Foreign Currency, the noon (New York City time) buying rate for such Foreign Currency for cable transfers quoted in New York City as certified for customs purposes by the Federal Reserve Bank of New York and (iii) for any conversion of one Foreign Currency into Dollars or another Foreign Currency, the spot rate at noon local time in the relevant market at which, in accordance with normal banking procedures, the Dollars or Foreign Currency into which conversion is being made could be purchased with the Foreign Currency from which conversion is being made from major banks located in either New York City, London or any other principal market for Dollars or such purchased Foreign Currency, in each case determined by the Exchange Rate Agent. Unless otherwise specified with respect to any Securities pursuant to Section 301, in the event of the unavailability of any of the exchange rates provided for in the foregoing clauses (i), (ii) and (iii), the Exchange Rate Agent shall use, in its sole discretion and without liability on its part, such quotation of the Federal Reserve Bank of New York as of the most recent available date, or quotations from one or more major banks in New York City, London or another principal market for the Currency in question, or such other quotations as the Exchange Rate Agent shall deem appropriate. Unless otherwise specified by the Exchange Rate Agent, if there is more than one market for dealing in any Currency by reason of foreign exchange regulations or otherwise, the market to be used in respect of such Currency shall be that upon which a non-resident issuer of securities designated in such Currency would purchase such Currency in order to make payments in respect of such securities.

“Maturity” means, when used with respect to any Security, the date on which the principal of such Security or any installment of principal becomes due and payable as therein or herein provided, whether at the Stated Maturity or by acceleration, notice of redemption, notice of option to elect repayment, notice of exchange or conversion, or otherwise.

“Net Tangible Assets” means the total assets of the Company as reflected in the most recent balance sheet preceding the date of determination prepared in accordance with GAAP consistently applied, less after deducting therefrom (a) all current liabilities excluding current maturities of long-term debt and Capital Lease Obligations and (b) goodwill, tradenames, trademarks, patents, unamortized debt discount and expense and other similar intangible assets prepared in accordance with GAAP, but excluding any investments in permits or licenses issued, granted or approved by the Federal Communications Commission.

“Officer” means the President, any Vice President, the Chief Financial Officer, the Treasurer or the Secretary.

“Officers’ Certificate” means a certificate signed on behalf of the Company by one Officer of the Company who must be the President, the Treasurer, or a Vice President of the Company, that meets the requirements of Section 102.

“Operating Property” means each plant or facility of the Company or a Restricted Subsidiary located within the United States, except any such plant or facility which the Board of Directors of the Company by resolution reasonably determines not to be of material importance to the total business conducted by the Company and its Restricted Subsidiaries.

“Opinion of Counsel” means a written opinion of counsel, who may be counsel for the Company, including an employee of the Company, and who shall be acceptable to the Trustee.

“Original Issue Discount Security” means any Security which provides for an amount less than the principal amount thereof to be due and payable upon an acceleration of the Maturity thereof.

“Outstanding” means, when used with respect to Securities, as of the date of determination, all Securities theretofore authenticated and delivered under this Indenture, except:

(i) Securities theretofore cancelled by the Trustee or delivered to the Trustee for cancellation;

(ii) Securities, or portions thereof, for whose payment or redemption or repayment at the option of the Holder money in the necessary amount has been theretofore deposited with the Trustee or any Paying Agent (other than the Company) in trust or set aside and segregated in trust by the Company (if the Company shall act as its own Paying Agent) for the Holders of such Securities and any coupons appertaining thereto; provided that, if such Securities are to be redeemed, notice of such redemption has been duly given pursuant to this Indenture or provision therefor satisfactory to the Trustee has been made;

(iii) Securities, except to the extent provided in Sections 1402 and 1403, with respect to which the Company has effected defeasance and/or covenant defeasance as provided in Article Fourteen;

(iv) Securities which have been paid pursuant to Section 306 or in exchange for or in lieu of which other Securities have been authenticated and delivered pursuant to this Indenture, other than any such Securities in respect of which there shall have been presented to the Trustee proof satisfactory to it that such Securities are held by a bona fide purchaser in whose hands such Securities are valid obligations of the Company; and

(v) Securities that have been converted or exchanged for other securities pursuant to Section 301;

provided, however, that in determining whether the Holders of the requisite principal amount of the Outstanding Securities have given any request, demand, authorization, direction, notice, consent or waiver hereunder or are present at a meeting of Holders for quorum purposes, and for the purpose of making the calculations required by TIA Section 313, (i) the principal amount of an Original Issue Discount Security that may be counted in making such determination or calculation and that shall be deemed to be Outstanding for such purpose shall be equal to the amount of principal thereof that would be (or shall have been determined to be) due and payable, at the time of such determination, upon an acceleration of the Maturity thereof pursuant to Section 502, (ii) the principal amount of any Security denominated in a Foreign Currency that may be counted in making such determination or calculation and that shall be deemed Outstanding for such purpose shall be equal to the Dollar equivalent, determined as of the date such Security is originally issued by the Company as set forth in an Exchange Rate Officer's Certificate delivered to the Trustee, of the principal amount (or, in the case of an Original Issue Discount Security, the Dollar equivalent as of such date of original issuance of the amount determined as provided in clause (i) above) of such Security, (iii) the principal amount of any Indexed Security that may be counted in making such determination or calculation and that shall be deemed Outstanding for such purpose shall be equal to the principal amount of such Indexed Security at original issuance, unless otherwise provided with respect to such Security pursuant to Section 301, and (iv) Securities owned by the Company or any other obligor upon the Securities or any Affiliate of the Company or such other obligor shall be disregarded and deemed not to be Outstanding, except that, in determining whether the Trustee shall be protected in making such determination or calculation or in conclusively relying upon any such request, demand, authorization, direction, notice, consent or waiver or upon any such determination as to the presence of a quorum, only Securities which a Responsible Officer of the Trustee actually knows to be so owned shall be so disregarded. Securities so owned which have been pledged in good faith may be regarded as Outstanding if the pledgee establishes to the satisfaction of the Trustee the pledgee's right so to act with respect to such Securities and that the pledgee is not the Company or any other obligor upon the Securities or any Affiliate of the Company or such other obligor.

"Paying Agent" means any Person (including the Company acting as Paying Agent) authorized by the Company to pay the principal of (or premium, if any) or interest, if any, on any Securities on behalf of the Company.

“Person” means any individual, corporation, partnership, joint venture, trust, unincorporated organization or government or any agency or political subdivision thereof.

“Place of Payment” means, when used with respect to the Securities of or within any series, the place or places (which, in the case of Bearer Securities, shall be outside the United States) where the principal of (and premium, if any) and interest, if any, on such Securities are payable as specified as contemplated by Sections 301.

“Redemption Date”, when used with respect to any Security to be redeemed, in whole or in part, means the date fixed for such redemption pursuant to this Indenture.

“Redemption Price” means, when used with respect to any Security to be redeemed, the price at which it is to be redeemed pursuant to this Indenture.

“Registered Security” means any Security registered in the Security Register.

“Regular Record Date” for the interest payable on any Interest Payment Date on the Registered Securities of or within any series means the date specified for that purpose as contemplated by Section 301.

“Repayment Date” means, when used with respect to any Security to be repaid at the option of the Holder, the date fixed for such repayment pursuant to this Indenture.

“Repayment Price” means, when used with respect to any Security to be repaid at the option of the Holder, the price at which it is to be repaid pursuant to this Indenture.

“Responsible Officer” means, when used with respect to the Trustee, any officer of the Trustee within the Corporate Trust Office of the Trustee (or any successor group of the Trustee) who has direct responsibility for administration of this Indenture and, for purposes of Section 601 (or subparagraph (3)(b) of the first paragraph of Section 602 to the extent such expanded definition is used), also includes any other officer to whom such matter is referred because of such officer’s knowledge of and familiarity with the particular subject.

“Restricted Subsidiary” means any Subsidiary:

(i) substantially all of the property of which is located, or substantially all of the business of which is carried on, within the United States, and

(ii) which owns or is the lessee of any Operating Property.

Notwithstanding the foregoing, a Subsidiary designated as an “unrestricted subsidiary” in accordance with the procedures agreed to by the Company and the Trustee in a supplemental indenture shall not be a Restricted Subsidiary.

“Security” or “Securities” has the meaning stated in the first recital of this Indenture and more particularly means any Security or Securities authenticated and delivered under this Indenture; provided, however, that if at any time there is more than one Person acting as Trustee under this Indenture, “Securities” with respect to the Indenture as to which such Person is Trustee shall have the meaning stated in the first recital of this Indenture and shall more particularly mean Securities authenticated and delivered under this Indenture, exclusive, however, of Securities of any series as to which such Person is not Trustee.

“Security Register” and “Security Registrar” have the respective meanings specified in Section 305.

“Special Record Date” for the payment of any Defaulted Interest on the Registered Securities of or within any series means a date fixed by the Trustee pursuant to Section 307.

“Stated Maturity”, when used with respect to any Security or any installment of principal thereof or interest thereon, means the date specified in such Security or a coupon representing such installment of interest as the fixed date on which the principal of such Security or such installment of principal or interest is due and payable, as such date may be extended pursuant to the provisions of Section 308.

“Subsidiary” means (1) any corporation of which at least a majority of the outstanding stock having by the terms thereof ordinary voting power for the election of directors of such corporation (irrespective of whether or not at the time stock of any other class or classes of such corporation shall have or might have voting power by reason of the happening of any contingency) is at the time directly or indirectly owned by the Company or one or more other Subsidiaries, or by the Company and one or more other Subsidiaries, and (2) any other Person in which the Company or one or more other Subsidiaries, directly or indirectly, at the date of determination, (x) own at least a majority of the outstanding ownership interests or (y) have the power to elect or direct the election of, or to appoint or approve the appointment of, at least the majority of the directors, trustees or managing members of, or other persons holding similar positions with, such Person.

“TARGET2” means the Trans-European Automated Real-Time Gross Settlement Express Transfer System, or any successor to such system.

“Trade Payables” means accounts payable or any other Indebtedness or monetary obligations to trade creditors created or assumed in the ordinary course of business in connection with the obtaining of materials or services.

“Trust Indenture Act” or “TIA” means the U.S. Trust Indenture Act of 1939 as in force at the date as of which this Indenture was executed, except as provided in Section 905.

“Trustee” means the Person named as the “Trustee” in the first paragraph of this Indenture until a successor Trustee shall have become such pursuant to the applicable provisions of this Indenture, and thereafter “Trustee” shall mean or include each Person who is then a Trustee hereunder; provided, however, that if at any time there is more than one such Person, “Trustee” as used with respect to the Securities of any series shall mean only the Trustee with respect to Securities of that series.

“United States” means, unless otherwise specified with respect to any Securities pursuant to Section 301, the United States of America (including the states and the District of Columbia), its territories, its possessions and other areas subject to its jurisdiction.

“United States person” means, unless otherwise specified with respect to any Securities pursuant to Section 301, an individual who is a citizen or resident of the United States, a corporation, partnership or other entity created or organized in or under the laws of the United States, an estate the income of which is subject to United States federal income taxation regardless of its source or any trust if a court within the United States is able to exercise primary supervision over the administration of the trust and one or more United States persons have the authority to control all substantial decisions of the trust.

“Valuation Date” has the meaning specified in Section 312(c).

“Vice President”, when used with respect to the Company or the Trustee, means any vice president, whether or not designated by a number or a word or words added before or after the title “vice president.”

“Yield to Maturity” means the yield to maturity, computed at the time of issuance of a Security (or, if applicable, at the most recent redetermination of interest on such Security) and as set forth in such Security in accordance with generally accepted United States bond yield computation principles.

SECTION 102. Compliance Certificates and Opinions. Upon any application or request by the Company to the Trustee to take any action under any provision of this Indenture, the Company shall furnish to the Trustee an Officers’ Certificate stating that all conditions precedent, if any, provided for in this Indenture (including any covenant or condition compliance with which constitutes a condition precedent) relating to the proposed action have been complied with and an Opinion of Counsel stating that in the opinion of such counsel all such conditions precedent, if any, have been complied with, except that in the case of any such application or request as to which the furnishing of such documents is specifically required by any provision of this Indenture relating to such particular application or request, no additional certificate or opinion need be furnished.

Every certificate or opinion with respect to compliance with a covenant or condition provided for in this Indenture (other than pursuant to [Article 10]) shall include:

(1) a statement that each individual signing such certificate or opinion has read such covenant or condition and the definitions herein relating thereto;

(2) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based;

(3) a statement that, in the opinion of each such individual, he has made such examination or investigation as is necessary to enable him to express an informed opinion as to whether or not such covenant or condition has been complied with; and

(4) a statement as to whether, in the opinion of each such individual, such covenant or condition has been complied with.

SECTION 103. Form of Documents Delivered to Trustee. In any case where several matters are required to be certified by, or covered by an opinion of, any specified Person, it is not necessary that all such matters be certified by, or covered by the opinion of, only one such

Person, or that they be so certified or covered by only one document, but one such Person may certify or give an opinion with respect to some matters and one or more other such Persons as to other matters, and any such Person may certify or give an opinion as to such matters in one or several documents.

Any certificate or opinion of an officer of the Company may be based, insofar as it relates to legal matters, upon a certificate or opinion of, or representations by, counsel, unless such officer knows, or in the exercise of reasonable care should know, that the certificate or opinion or representations with respect to the matters upon which his certificate or opinion is based are erroneous. Any Officers' Certificate or Opinion of Counsel may be based, insofar as it relates to factual matters, upon a certificate or opinion of, or representations by, an officer or officers of the Company stating that the information with respect to such factual matters is in the possession of the Company unless such officer or counsel knows, or in the exercise of reasonable care should know, that the certificate or opinion or representations with respect to such matters are erroneous.

Where any Person is required to make, give or execute two or more applications, requests, consents, certificates, statements, opinions or other instruments under this Indenture, they may, but need not, be consolidated and form one instrument.

SECTION 104. Acts of Holders. Any request, demand, authorization, direction, notice, consent, waiver or other action provided by this Indenture to be given or taken by Holders of the Outstanding Securities of all series or one or more series, as the case may be, may be embodied in and evidenced by one or more instruments of substantially similar tenor signed by such Holders in person or by agents duly appointed in writing. Any request, demand, authorization, direction, notice, consent, waiver or other action provided by this Indenture to be given or taken by Holders of Securities of such series may, alternatively, be embodied in and evidenced by the record of Holders of Securities of such series voting in favor thereof, either in person or by proxies duly appointed in writing, at any meeting of Holders of Securities of such series duly called and held in accordance with the provisions of Article Fifteen, or a combination of such instruments and any such record. Except as herein otherwise expressly provided, such action shall become effective when such instrument or instruments or record or both are delivered to the Trustee and, where it is hereby expressly required, to the Company or to all of them. Such instrument or instruments and any such record (and the action embodied therein and evidenced thereby) are herein sometimes referred to as the "Act" of the Holders signing such instrument or instruments or so voting at any such meeting. Proof of execution of any such instrument or of a writing appointing any such agent, or of the holding by any Person of a Security, shall be sufficient for any purpose of this Indenture (subject to section 315 of the TIA) and conclusive in favor of the Trustee, the Company and any agent of the Trustee or the Company, if made in the manner provided in this Section. The record of any meeting of Holders of Securities shall be proved in the manner provided in Section 1506.

Without limiting the generality of this Section 104, unless otherwise provided in or pursuant to this Indenture, a Holder, including a Depositary that is a Holder of a global Security (including through its nominee), may make, give or take, by a proxy or proxies, duly appointed in writing, any request, demand, authorization, direction, notice, consent, waiver or other Act provided in or pursuant to this Indenture or Securities to be made, given or taken by the Holders, and a Depositary that is a Holder of a global Security may provide its proxy or proxies to the beneficial owners of interests in such global Security through such Depositary's standing instructions and customary practices.

(a) The fact and date of the execution by any Person of any such instrument or writing may be proved by the affidavit of a witness of such execution or by a certificate of a notary public or other officer authorized by law to take acknowledgments of deeds, certifying that the individual signing such instrument or writing acknowledged to him the execution thereof. Where such execution is by a signer acting in a capacity other than his individual capacity, such certificate or affidavit shall also constitute sufficient proof of authority. The fact and date of the execution of any such instrument or writing, or the authority of the Person executing the same, may also be proved in any other reasonable manner that the Trustee deems sufficient.

(b) The principal amount and serial numbers of Registered Securities held by any Person, and the date of holding the same, shall be proved by the Security Register.

(c) The principal amount and serial numbers of Bearer Securities held by any Person, and the date of holding the same, may be proved by the production of such Bearer Securities or by a certificate executed, as depository, by any trust company, bank, banker or other depository reasonably acceptable to the Company, wherever situated, if such certificate shall be deemed by the Trustee to be satisfactory, showing that at the date therein mentioned such Person had on deposit with such depository, or exhibited to it, the Bearer Securities therein described; or such facts may be proved by the certificate or affidavit of the Person holding such Bearer Securities, if such certificate or affidavit is deemed by the Trustee to be satisfactory. The Trustee and the Company may assume that such ownership of any Bearer Security continues until (1) another certificate or affidavit bearing a later date issued in respect of the same Bearer Security is produced, or (2) such Bearer Security is produced to the Trustee by some other Person, or (3) such Bearer Security is surrendered in exchange for a Registered Security, or (4) such Bearer Security is no longer Outstanding. The principal amount and serial numbers of Bearer Securities held by any Person, and the date of holding the same, may also be proved in any other reasonable manner that the Trustee deems sufficient.

(d) If the Company shall solicit from the Holders of Registered Securities any request, demand, authorization, direction, notice, consent, waiver or other Act, the Company may, at its option, in or pursuant to a Board Resolution, fix in advance a record date for the determination of Holders entitled to give such request, demand, authorization, direction, notice, consent, waiver or other Act, but the Company shall have no obligation to do so. Notwithstanding TIA Section 316(c), such record date shall be the record date specified in or pursuant to such Board Resolution, which shall be a date not earlier than the date 30 days prior to the first solicitation of Holders generally in connection therewith and not later than the date such solicitation is completed. If such a record date is fixed, such request, demand, authorization, direction, notice, consent, waiver or other Act may be given before or after such record date, but only the Holders of record at the close of business on such record date shall be deemed to be Holders for the purposes of determining whether Holders of the requisite proportion of Outstanding Securities have authorized or agreed or consented to such request, demand, authorization,



direction, notice, consent, waiver or other Act, and for that purpose the Outstanding Securities shall be computed as of such record date; provided that no such authorization, agreement or consent by the Holders on such record date shall be deemed effective unless it shall become effective pursuant to the provisions of this Indenture not later than eleven months after the record date.

(e) Any request, demand, authorization, direction, notice, consent, waiver or other Act of the Holder of any Security shall bind every future Holder of the same Security and the Holder of every Security issued upon the registration of transfer thereof or in exchange therefor or in lieu thereof in respect of anything done, omitted or suffered to be done by the Trustee, any Security Registrar, any Paying Agent, any Authenticating Agent, the Company in reliance thereon, whether or not notation of such Act is made upon such Security.

SECTION 105. Notices, etc. to Trustee or the Company. Any request, demand, authorization, direction, notice, consent, waiver or Act of Holders or other documents provided or permitted by this Indenture to be made upon, given or furnished to, or filed with,

(1) the Trustee by any Holder or by the Company shall be sufficient for every purpose hereunder if made, given, furnished or filed in writing (including teletcopy to [insert Trustee fax number]) to or with the Trustee at its Corporate Trust Office, Attention: Trust & Securities Services, or

(2) the Company by the Trustee or by any Holder shall be sufficient for every purpose hereunder (unless otherwise herein expressly provided) if in writing and mailed, first-class postage prepaid or by overnight delivery service, to the Company addressed to it at the address of the Company's principal office specified in the first paragraph of this Indenture, to the attention of its General Counsel, or at any other address previously furnished in writing to the Trustee by the Company.

SECTION 106. Notice to Holders; Waiver. Except as otherwise expressly provided herein or otherwise specified with respect to any series of Securities pursuant to Section 301, where this Indenture provides for notice of any event to Holders of Registered Securities by the Company or the Trustee, such notice shall be sufficiently given if in writing and mailed, first-class postage prepaid, to each such Holder affected by such event, at his address as it appears in the Security Register, not later than the latest date, and not earlier than the earliest date, prescribed for the giving of such notice. In any case where notice to Holders of Registered Securities is given by mail, neither the failure to mail such notice, nor any defect in any notice so mailed, to any particular Holder shall affect the sufficiency of such notice with respect to other Holders of Registered Securities or the sufficiency of any notice to Holders of Bearer Securities given as provided. Any notice mailed to a Holder in the manner herein prescribed shall be conclusively deemed to have been received by such Holder, whether or not such Holder actually receives such notice.

In case, by reason of the suspension of or irregularities in regular mail service or by reason of any other cause, it shall be impractical to mail notice of any event to Holders of Registered Securities when such notice is required to be given pursuant to any provision of this Indenture, then any manner of giving written notice as shall be satisfactory to the Trustee shall be deemed to be sufficient giving of such notice for every purpose hereunder.

Except as otherwise expressly provided herein or otherwise specified with respect to any series of Securities pursuant to Section 301, where this Indenture provides for notice to Holders of Bearer Securities of any event, such notice shall be sufficiently given to Holders of Bearer Securities if published in an Authorized Newspaper in The City of New York and in such other city or cities as may be specified in respect of such Securities on a Business Day at least twice, the first such publication to be not earlier than the earliest date, and not later than the latest date, prescribed for the giving of such notice. Any such notice shall be deemed to have been given on the date of such publication or, if published more than once, on the date of the first such publication.

If by reason of the suspension of publication of any Authorized Newspaper or Authorized Newspapers or by reason of any other cause, it shall be impracticable to publish any notice to Holders of Bearer Securities as provided above, then such notification to Holders of Bearer Securities as shall be given with the approval of the Trustee shall constitute sufficient written notice to such Holders for every purpose hereunder. Neither the failure to give notice by publication to Holders of Bearer Securities as provided above, nor any defect in any notice so published, shall affect the sufficiency of such notice with respect to other Holders of Bearer Securities or the sufficiency of any notice to Holders of Registered Securities given as provided herein.

Any request, demand, authorization, direction, notice, consent or waiver required or permitted under this Indenture shall be in the English language, except that any published notice may be in an official language of the country of publication.

Where this Indenture provides for notice in any manner, such notice may be waived in writing by the Person entitled to receive such notice, either before or after the event, and such waiver shall be the equivalent of such notice. Waivers of notice by Holders shall be filed with the Trustee, but such filing shall not be a condition precedent to the validity of any action taken in reliance upon such waiver.

SECTION 107. Effect of Headings and Table of Contents. The Article and Section headings herein and the Table of Contents are for convenience only and shall not affect the construction hereof.

SECTION 108. Successors and Assigns. All covenants and agreements in this Indenture by the Company shall bind its successors and assigns, whether so expressed or not.

SECTION 109. Separability Clause. In case any provision in this Indenture or in any Security or any coupon shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

SECTION 110. Benefits of Indenture. Nothing in this Indenture or in the Securities or coupons, express or implied, shall give to any Person, other than the parties hereto, any Authenticating Agent, any Paying Agent, any Securities Registrar and their successors hereunder and the Holders of Securities or coupons, any benefit or any legal or equitable right, remedy or claim under this Indenture.

SECTION 111. Governing Law. THIS INDENTURE AND THE SECURITIES AND COUPONS SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO CONFLICTS OF LAW PRINCIPLES OF SUCH STATE OTHER THAN NEW YORK GENERAL OBLIGATIONS LAW SECTION 5-1401. THIS INDENTURE IS SUBJECT TO THE PROVISIONS OF THE TRUST INDENTURE ACT THAT ARE REQUIRED TO BE PART OF THIS INDENTURE AND SHALL, TO THE EXTENT APPLICABLE, BE GOVERNED BY SUCH PROVISIONS.

SECTION 112. Legal Holidays. Unless otherwise specified in or pursuant to this Indenture or any Securities, in any case where any Interest Payment Date, Redemption Date, Repayment Date, sinking fund payment date or Stated Maturity or Maturity of any Security shall not be a Business Day at any Place of Payment, then payment of principal (or premium, if any) or interest, if any, need not be made at such Place of Payment on such date, but may be made on the next succeeding Business Day at such Place of Payment with the same force and effect as if made on such Interest Payment Date, Redemption Date, Repayment Date, sinking fund payment date, Stated Maturity or Maturity, as the case may be, provided that no interest shall accrue on the amount so payable for the period from and after such Interest Payment Date, Redemption Date, Repayment Date, sinking fund payment date, Stated Maturity or Maturity, as the case may be, to such next succeeding Business Day.

SECTION 113. No Recourse. No recourse for the payment of the principal of or premium, if any, or interest on any Security or any coupons appertaining thereto, or for any claim based thereon or otherwise in respect thereof, and no recourse under or upon any obligation, covenant or agreement of the Company in this Indenture or in any supplemental indenture, or in any Security or any coupons appertaining thereto, or because of the creation of any indebtedness represented thereby, shall be had against any director, officer, employee, or stockholder as such, past, present or future, of the Company or any of its Affiliates or any successor Person of the Company, either directly or through the Company or any of its Affiliates or any successor Person of the Company, whether by virtue of any constitution, statute or rule of law, or by the enforcement of any assessment or penalty or otherwise; it being expressly understood that all such liability is hereby expressly waived and released as a condition of, and as a consideration for, the execution of this Indenture and the issue of the Securities.

SECTION 114. Incorporation by Reference of Trust Indenture Act. Whenever this Indenture refers to a provision of the TIA, the provision is incorporated by reference in and made a part of this Indenture.

The following TIA terms used in this Indenture have the following meanings:

- (i) “indenture securities” means the Securities;
- (ii) “indenture security Holder” means a Holder of a Security;
- (iii) “indenture to be qualified” means this Indenture;

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- (iv) “indenture trustee” or “institutional trustee” means the Trustee; and
  - (v) “obligor” on the Securities means the Company and any successor obligor upon the Securities.

All other terms used in this Indenture that are defined by the TIA, defined by TIA reference to another statute or defined by SEC rule under the TIA have the meanings so assigned to them.

SECTION 115. Rules of Construction. Unless the context otherwise requires:

- (i) a term has the meaning assigned to it;
- (ii) an accounting term not otherwise defined has the meaning assigned to it in accordance with GAAP;
- (iii) “or” is not exclusive;

- (iv) words in the singular include the plural, and in the plural include the singular; and
- (v) provisions apply to successive events and transactions.

SECTION 116. Force Majeure. In no event shall the Trustee be responsible or liable for any failure or delay in the performance of its obligations hereunder arising out of or caused by, directly or indirectly, forces beyond its control, including, without limitation, acts of war or terrorism, civil or military disturbances, nuclear or natural catastrophes and acts of God; it being understood that the Trustee shall use reasonable efforts which are consistent with accepted practices in the banking industry to resume performance as soon as practicable under the circumstances.

SECTION 117. U.S.A. Patriot Act. The parties hereto acknowledge that in accordance with Section 326 of the U.S.A. Patriot Act, [Trustee], like all financial institutions and in order to help fight the funding of terrorism and money laundering, is required to obtain, verify, and record information that identifies each person or legal entity that establishes a relationship or opens an account. The parties to this Indenture agree that they will provide [Trustee] with such information as it may request in order for [Trustee] to satisfy the requirements of the U.S.A. Patriot Act.

## ARTICLE 2

### SECURITY FORMS

SECTION 201. Forms Generally. The Registered Securities, if any, of each series, the Bearer Securities, if any, of each series and related coupons, the temporary global Securities of each series, if any, and the permanent global Securities of each series, if any, shall be in substantially the forms as shall be established by, or pursuant to a Board Resolution or, subject to Section 303, set forth in, or determined in the manner provided in, an Officers' Certificate pursuant to a Board Resolution of the Company, or in one or more indentures supplemental hereto, in each case with such appropriate insertions, omissions, substitutions and other variations as are required or permitted by this Indenture, and may have such letters, numbers or other marks of identification and such legends or endorsements placed thereon as may be required to comply with the rules of any securities exchange or as may, consistently herewith, be determined by the officers of the Company executing such Securities or coupons as evidenced by their execution of such Securities or coupons. If the forms of Securities or coupons of any series are established by action taken pursuant to a Board Resolution, a copy of an appropriate record of such action shall be certified by the Secretary or Assistant Secretary of the Company, and delivered to the Trustee at or prior to the delivery of the Company Order contemplated by Section 303 for the authentication and delivery of such Securities or coupons. Any portion of the text of any Security may be set forth on the reverse thereof, with an appropriate reference thereto on the face of the Security.

Unless otherwise specified as contemplated by Section 301, Bearer Securities shall have interest coupons attached.

The Trustee's certificate of authentication on all Securities shall be in substantially the form set forth in this Article.

The definitive Securities and coupons, if any, shall be printed, lithographed or engraved on steel-engraved borders or may be produced in any other manner, all as determined by the officers of the Company executing such Securities or coupons, as evidenced by their execution of such Securities or coupons.

SECTION 202. Form of Trustee's Certificate of Authentication. Subject to Section 611, the Trustee's certificate of authentication shall be in substantially the following form:

TRUSTEE'S CERTIFICATE OF AUTHENTICATION

Dated:

This is one of the Securities of the series designated therein referred to in the within-mentioned Indenture.

[Trustee],  
as Trustee

By: \_\_\_\_\_  
Authorized Signatory

SECTION 203. Securities Issuable in Global Form. If Securities of or within a series are issuable in global form, as specified as contemplated by Section 301, then, notwithstanding clause (8) of Section 301, any such Security shall represent such of the Outstanding Securities of such series as shall be specified therein and may provide that it shall represent the aggregate amount of Outstanding Securities of such series from time to time endorsed thereon and that the aggregate amount of Outstanding Securities of such series represented thereby may from time to time be increased or decreased to reflect exchanges. Any endorsement of a Security in global form to reflect the amount, or any increase or decrease in the amount, of Outstanding Securities represented thereby shall be made by the Trustee in such manner and upon instructions given by such Person or Persons as shall be specified therein or in the Company Order to be delivered to the Trustee pursuant to Section 303 or Section 304. Subject to the provisions of Section 303 and, if applicable, Section 304, the Trustee shall deliver and redeliver any Security in permanent global form in the manner and upon instructions given by the Person or Persons specified therein or in the applicable Company Order. If a Company Order pursuant to Section 303 or Section 304 has been, or simultaneously is, delivered, any instructions by the Company with respect to endorsement or delivery or redelivery of a Security in global form shall be in writing but need not comply with Section 102 and need not be accompanied by an Opinion of Counsel.

The provisions of the last sentence of Section 303 shall apply to any Security represented by a Security in global form if such Security was never issued and sold by the Company and the Company delivers to the Trustee the Security in global form together with written instructions (which need not comply with Section 102 and need not be accompanied by an Opinion of Counsel) with regard to the reduction in the principal amount of Securities represented thereby, together with the written statement contemplated by the last sentence of Section 303.

Notwithstanding any provisions of Section 307 to the contrary, unless otherwise specified as contemplated by Section 301, payment of principal of (and premium, if any) and interest, if any, on any Security in global form shall be made to the Person or Persons specified therein.

Notwithstanding the provisions of Section 309 and except as provided in the preceding paragraph, the Company, the Trustee and any agent of the Company or the Trustee shall treat as the Holder of such principal amount of Outstanding Securities represented by a permanent global Security (i), in the case of a global Registered Security, the Holder thereof, or (ii) in the case of a global Bearer Security, Euroclear or Clearstream.

### ARTICLE 3

#### THE SECURITIES

SECTION 301. Amount Unlimited; Issuable in Series. The aggregate principal amount of Securities which may be authenticated and delivered under this Indenture is unlimited.

The Securities may be issued in one or more series. There shall be established in one or more Board Resolutions of the Company or pursuant to authority granted by one or more Board Resolutions of the Company and, subject to Section 303, set forth in, or determined in the manner provided in, an Officers' Certificate, or established in one or more indentures supplemental hereto, prior to the issuance of Securities of any series, any or all of the following, as applicable (each of which (except for the matters set forth in clauses (1), (2) and (17) below), if so provided, may be determined from time to time by the Company with respect to unissued Securities of the series and set forth in such Securities of the series when issued from time to time):

(1) title of the Securities of the series (which shall distinguish the Securities of the series from all other series of Securities) and whether such Securities are senior or subordinated;

(2) any limit upon the aggregate principal amount of the Securities of the series that may be authenticated and delivered under this Indenture (except for Securities authenticated and delivered upon registration of transfer of, or in exchange for, or in lieu of, other Securities of the series pursuant to Sections 304, 305, 306, 906, 1107 or 1305);

(3) the date or dates, or the method by which such date or dates will be determined or extended, on which the principal of the Securities of the series is payable;

(4) the rate or rates at which the Securities of the series shall bear interest, if any, or the method by which such rate or rates shall be determined, the date or dates from which any such interest shall accrue, or the method by which such date or dates shall be determined, the Interest Payment Dates on which such interest shall be payable, the right, if any, of the Company to defer or extend an Interest Payment Date, and the Regular Record Date, if any, for the interest payable on any Registered Security on any Interest Payment Date, or the method by which such date or dates shall be determined, and the basis upon which interest shall be calculated if other than on the basis of a 360-day year of twelve 30-day months;

(5) the place or places, if any, other than or in addition to the Borough of Manhattan, The City of New York, where the principal of (and premium, if any) and interest, if any, on Securities of the series shall be payable (which in the case of Bearer Securities shall be outside the United States), where any Registered Securities of the series may be surrendered for registration of transfer, where Securities of the series may be surrendered for exchange, where Securities of the series that are convertible or exchangeable may be surrendered for conversion or exchange, as applicable, and, if different than the location specified in Section 105, the place or places where notices or demands to or upon the Company in respect of the Securities of the series and this Indenture may be served;

(6) the period or periods within which, the price or prices at which, the Currency in which, and other terms and conditions upon which, Securities of the series may be redeemed, in whole or in part, at the option of the Company, if the Company is to have that option;

(7) the obligation, if any, of the Company to redeem, repay or purchase Securities of the series pursuant to any sinking fund or analogous provision or at the option of a Holder thereof, and the period or periods within which or the date or dates on which, the price or prices at which, the Currency in which, and other terms and conditions upon which, Securities of the series shall be redeemed, repaid or purchased, in whole or in part, pursuant to such obligation;

(8) if other than minimum denominations of \$2,000 and integral multiples of \$1,000 above such minimum denomination, the denomination or denominations in which any Registered Securities of the series shall be issuable and, if other than denominations of \$5,000, the denomination or denominations in which any Bearer Securities of the series shall be issuable;

(9) if other than the Trustee, the identity of each Security Registrar and/or Paying Agent;

(10) if other than the principal amount thereof, the portion of the principal amount of Securities of the series that shall be payable upon an acceleration of the Maturity thereof pursuant to Section 502, upon redemption of the Securities of the series which are redeemable before their Stated Maturity, upon surrender for repayment at the option of the Holder, or which the Trustee shall be entitled to claim pursuant to Section 502 or the method by which such portion shall be determined;



(11) if other than Dollar, the Currency or Currencies in which payment of the principal of (or premium, if any) or interest, if any, on the Securities of the series shall be made or in which the Securities of the series shall be denominated and the particular provisions applicable thereto in accordance with, in addition to or in lieu of any of the provisions of Section 312;

(12) whether the amount of payments of principal of (or premium, if any) or interest, if any, on the Securities of the series may be determined with reference to an index, formula or other method (which index, formula or method may be based, without limitation, on one or more Currencies, commodities, equity indices or other indices), and the manner in which such amounts shall be determined;

(13) whether the principal of (or premium, if any) or interest, if any, on the Securities of the series are to be payable, at the election of the Company or a Holder thereof, in a Currency other than that in which such Securities are denominated or stated to be payable, the period or periods within which (including the Election Date), and the terms and conditions upon which, such election may be made, and the time and manner of determining the exchange rate between the Currency in which such Securities are denominated or stated to be payable and the Currency in which such Securities are to be so paid, in each case in accordance with, in addition to or in lieu of any of the provisions of Section 312;

(14) the designation of the initial Exchange Rate Agent, if any, or any depositaries;

(15) if Sections 1402 and/or 1403 are not applicable to the Securities of the series and any provisions in modification of, in addition to or in lieu of any of the provisions of Article Fourteen that shall be applicable to the Securities of the series;

(16) provisions, if any, granting special rights to the Holders of Securities of the series upon the occurrence of such events as may be specified;

(17) any deletions from, modifications of or additions to the Events of Default or covenants of the Company or with respect to Securities of the series, whether or not such Events of Default or covenants are consistent with the Events of Default or covenants set forth herein;

(18) whether Securities of the series are to be issuable as Registered Securities, Bearer Securities (with or without coupons) or both, any restrictions applicable to the offer, sale or delivery of Bearer Securities, whether such Securities are to be issuable initially in temporary global form, whether such Securities are to be issuable in permanent global form with or without coupons and, if so, whether beneficial owners of interests in any such permanent global Security may exchange such interests for definitive Securities of the series and of like tenor of any authorized form and denomination and the circumstances under which any such exchanges may occur, if other

than in the manner provided in Section 305, whether Registered Securities of the series may be exchanged for Bearer Securities of the series (if permitted by applicable laws and regulations), and the circumstances under which and the place or places where any such exchanges may be made and if Securities of the series are to be issuable in global form, the identity of any Depositary therefor;

(19) the date as of which any Bearer Securities of the series and any temporary global Security representing Outstanding Bearer Securities of the series shall be dated if other than the date of original issuance of the first Security of the series to be issued;

(20) the Person to whom any interest on any Registered Security of the series shall be payable, if other than the Person in whose name that Security (or one or more Predecessor Securities) is registered at the close of business on the Regular Record Date for such interest, the manner in which, or the Person to whom, any interest on any Bearer Security of the series shall be payable, if otherwise than upon presentation and surrender of the coupons appertaining thereto as they severally mature, and the extent to which, or the manner in which, any interest payable on a temporary global Security on an Interest Payment Date will be paid if other than in the manner provided in Section 304; and the extent to which, or the manner in which, any interest payable on a permanent global Security on an Interest Payment Date will be paid if other than in the manner provided in Section 307;

(21) if Securities of the series are to be issuable in definitive form (whether upon original issue or upon exchange of a temporary Security of such series) only upon receipt of certain certificates or other documents or satisfaction of other conditions, then the form and/or terms of such certificates, documents or conditions;

(22) if the Securities of the series are to be issued upon the exercise of warrants, the time, manner and place for such Securities to be authenticated and delivered;

(23) whether, under what circumstances and the Currency in which the Company will pay Additional Amounts as contemplated by [Article 10 on the Securities of the series to any Holder (including any modification to the definition of such term) in respect of any tax, assessment or governmental charge and, if so, whether the Company will have the option to redeem such Securities rather than pay such Additional Amounts (and the terms of any such option);

(24) if the Securities of the series are to be convertible into or exchangeable for any securities of any Person (including the Company), the terms and conditions upon which such Securities will be so convertible or exchangeable;

(25) whether the Securities of the series are subject to subordination and, if so, the terms of such subordination; and

(26) any other terms, conditions, rights and preferences (or limitations on such rights and preferences) relating to the series (which terms shall not be inconsistent with the requirements of the Trust Indenture Act or the provisions of this Indenture).

All Securities of any one series and the coupons appertaining to any Bearer Securities of such series shall be substantially identical except, in the case of Registered Securities, as to denomination and except as may otherwise be provided in or pursuant to such Board Resolution or pursuant to authority granted by one or more Board Resolutions (subject to Section 303) and set forth in such Officers' Certificate or in any such indenture supplemental hereto. Not all Securities of any one series need be issued at the same time, and, unless otherwise provided, a series may be reopened, without the consent of the Holders, for issuances of additional Securities of such series.

If any of the terms of the Securities of any series are established by action taken pursuant to one or more Board Resolutions or pursuant to authority granted by one or more Board Resolutions, such Board Resolutions shall be delivered to the Trustee at or prior to the issuance of the first Security of such series.

SECTION 302. Denominations. The Securities of each series shall be issuable in such denominations as shall be specified as contemplated by Section 301. With respect to Securities of any series denominated in Dollars, in the absence of any such provisions with respect to the Securities of such series, the Registered Securities of such series, other than Registered Securities issued in global form (which may be of any denomination), shall be issuable in a minimum denomination of \$2,000 and integral multiples of \$1,000 above such minimum denomination and the Bearer Securities of such series, other than the Bearer Securities issued in global form (which may be of any denomination), shall be issuable in the denomination of \$5,000.

SECTION 303. Execution, Authentication, Delivery and Dating. The Securities and any coupons appertaining thereto shall be executed on behalf of the Company by an individual or individuals duly authorized by the Board of Directors of the Company to execute the Securities and the coupons. The signature of any of these authorized persons on the Securities or coupons may be the manual or facsimile signatures of the present or any future such authorized person and may be imprinted or otherwise reproduced on the Securities.

Securities or coupons bearing the manual or facsimile signatures of individuals who were at the time of such execution of the Securities or coupons the proper officers of the Company shall bind the Company, notwithstanding that such individuals or any of them have ceased to hold such offices prior to the authentication and delivery of such Securities or did not hold such offices at the date of such Securities.

At any time and from time to time after the execution and delivery of this Indenture, the Company may deliver Securities of any series, together with any coupons appertaining thereto, duly executed by the Company, to the Trustee for authentication, together with a Company Order for the authentication and delivery of such Securities, and the Trustee in accordance with such Company Order shall authenticate and deliver such Securities; provided, however, that, in connection with its original issuance, no Bearer Security shall be mailed or otherwise delivered to any location in the United States; and provided further that, unless otherwise specified with respect to any series of Securities pursuant to Section 301, a Bearer Security may be delivered in connection with its original issuance only if the Person entitled to receive such Bearer Security shall have furnished a certificate in the form set forth in Exhibit A-1

to this Indenture (or such other certificate as may be specified with respect to any series of Security pursuant to Section 301), dated no earlier than 15 days prior to the earlier of the date on which such Bearer Security is delivered and the date on which any temporary Security first becomes exchangeable for such Bearer Security in accordance with the terms of such temporary Security and this Indenture. If any Security shall be represented by a permanent global Bearer Security, then, for purposes of this Section and Section 304, the notation of a beneficial owner's interest therein upon original issuance of such Security or upon exchange of a portion of a temporary global Security shall be deemed to be delivery in connection with its original issuance of such beneficial owner's interest in such permanent global Security. Except as permitted by Section 306, the Trustee shall not authenticate and deliver any Bearer Security unless all appurtenant coupons for interest then matured have been detached and cancelled. If not all the Securities of any series are to be issued at one time and if the Board Resolution, Officers' Certificate pursuant to a Board Resolution, or supplemental indenture establishing such series shall so permit, such Company Order may set forth procedures acceptable to the Trustee for the issuance of such Securities and determining terms of particular Securities of such series such as interest rate or formula, maturity, any redemption or repayment provisions, date of issuance and date from which interest shall accrue.

In authenticating such Securities, and accepting the additional responsibilities under this Indenture in relation to such Securities, the Trustee shall receive, and shall be fully protected in conclusively relying upon, an Opinion of Counsel stating in effect (subject to customary exceptions):

- (i) that the form or forms of such Securities and any coupons have been established in conformity with the provisions of this Indenture;
- (ii) that the terms of such Securities and any coupons have been established in conformity with the provisions of this Indenture;
- (iii) that such Securities and coupons, when completed by appropriate insertions and executed and delivered by the Company to the Trustee for authentication in accordance with this Indenture, authenticated and delivered by the Trustee in accordance with this Indenture and issued in the manner and subject to any conditions specified in such Opinion of Counsel, will be the legal, valid and binding obligations of the Company enforceable in accordance with their terms, subject to the effect of any applicable bankruptcy, insolvency, reorganization, moratorium and other similar laws affecting creditors' rights generally (including without limitation on all laws relating to fraudulent transfers) and to general principles of equity;
- (iv) that all laws and requirements in respect of the execution and delivery by the Company of such Securities, coupons, if any, and of the supplemental indentures, if any, have been complied with and that authentication and delivery of such Securities and coupons, if any, and the execution and delivery of the supplemental indenture, if any, by the Trustee will not violate the terms of the Indenture;

- (v) that the Company has the corporate power to issue such Securities and any coupons and has duly taken all necessary corporate action with respect to such issuance; and
- (vi) that the issuance of such Securities and coupons, if any, will not contravene the articles of incorporation or by-laws of the Company or result in any violation of any of the terms or provisions of any law or regulation or of any indenture, mortgage or other agreement known to such Counsel by which the Company is bound.

Notwithstanding the provisions of Section 301 and of the preceding two paragraphs, if not all the Securities of any series are to be issued at one time, it shall not be necessary to deliver the Officers' Certificate otherwise required pursuant to Section 301 or the Company Order and Opinion of Counsel otherwise required pursuant to the preceding two paragraphs prior to or at the time of issuance of each Security, but such documents shall be delivered prior to or at the time of issuance of the first Security of such series.

The Trustee shall not be required to authenticate and deliver any such Securities if the issue of such Securities pursuant to this Indenture is unlawful or will affect the Trustee's own rights, duties or immunities under the Securities and this Indenture or otherwise in a manner which is not reasonably acceptable to the Trustee.

Each Registered Security shall be dated the date of its authentication and each Bearer Security shall be dated as of the date specified as contemplated by Section 301.

No Security or coupon shall be entitled to any benefit under this Indenture or be valid or obligatory for any purpose unless there appears on such Security a certificate of authentication substantially in the form provided for herein duly executed by the Trustee by manual signature of an authorized signatory, and such certificate upon any Security shall be conclusive evidence, and the only evidence, that such Security has been duly authenticated and delivered hereunder and is entitled to the benefits of this Indenture.

Notwithstanding the foregoing, if any Security shall have been authenticated and delivered hereunder but never issued and sold by the Company, and the Company shall deliver such Security to the Trustee for cancellation as provided in Section 310 together with a written statement (which need not comply with Section 102 and need not be accompanied by an Opinion of Counsel) stating that such Security has never been issued and sold by the Company, for all purposes of this Indenture such Security shall be deemed never to have been authenticated and delivered hereunder and shall never be entitled to the benefits of this Indenture.

SECTION 304. Temporary Securities. Pending the preparation of definitive Securities of any series, the Company may execute, and upon Company Order the Trustee shall authenticate and deliver, temporary Securities which are printed, lithographed, typewritten, mimeographed or otherwise produced, in any authorized denomination, substantially of the tenor of the definitive Securities in lieu of which they are issued, in registered form or, if authorized, in bearer form with one or more coupons or without coupons, and with such appropriate insertions, omissions, substitutions and other variations as the officers executing such Securities or coupons may determine, as conclusively evidenced by their execution of such Securities or coupons, as the case may be. Such temporary Securities may be in global form.

Except in the case of temporary Securities in global form (which shall be exchanged in accordance with the provisions of the following paragraphs), if temporary Securities of any series are issued, the Company will cause definitive Securities of that series to be prepared without unreasonable delay. After the preparation of definitive Securities of such series, the temporary Securities of such series shall be exchangeable for definitive Securities of such series upon surrender of the temporary Securities of such series at the office or agency of the Company in a Place of Payment for that series, without charge to the Holder. Upon surrender for cancellation of any one or more temporary Securities of any series (accompanied by any unmatured coupons appertaining thereto), the Company shall execute and the Trustee, upon receipt of a written instruction, shall authenticate and deliver in exchange therefor a like principal amount of definitive Securities of the same series and of like tenor of authorized denominations; provided, however, that no definitive Bearer Security shall be delivered in exchange for a temporary Registered Security; and provided further that a definitive Bearer Security shall be delivered in exchange for a temporary Bearer Security only in compliance with the conditions set forth in Section 303. Until so exchanged the temporary Securities of any series shall in all respects be entitled to the same benefits under this Indenture as definitive Securities of such series.

If temporary Securities of any series are issued in global form, any such temporary global Security shall, unless otherwise provided therein, be delivered to the London office of a depositary or common depositary (the "Common Depositary"), for the benefit of Euroclear and Clearstream, for credit to the respective accounts of the beneficial owners of such Securities (or to such other accounts as they may direct).

Without unnecessary delay but in any event not later than the date specified in, or determined pursuant to the terms of, any such temporary global Security (the "Exchange Date"), the Company shall deliver to the Trustee definitive Securities of the same series executed by the Company, in aggregate principal amount equal to the principal amount of such temporary global Security. On or after the Exchange Date such temporary global Security shall be surrendered by the Common Depositary to the Trustee, as the Company's agent for such purpose, to be exchanged, in whole or from time to time in part, for definitive Securities of the same series without charge and the Trustee shall authenticate and deliver, in exchange for each portion of such temporary global Security, an equal aggregate principal amount of definitive Securities of the same series of authorized denominations and of like tenor as the portion of such temporary global Security to be exchanged. The definitive Securities to be delivered in exchange for any such temporary global Security shall be in bearer form, registered form, permanent global bearer form or permanent global registered form, or any combination thereof, as specified as contemplated by Section 301, and, if any combination thereof is so specified, as requested by the beneficial owner thereof, provided that, unless otherwise specified in such temporary global Security, upon such presentation by the Common Depositary, such temporary global Security is accompanied by a certificate dated the Exchange Date or a subsequent date and signed by Euroclear as to the portion of such temporary global Security held for its account then to be exchanged and a certificate dated the Exchange Date or a subsequent date and signed by Clearstream as to the portion of such temporary global Security held for its account then to be

exchanged, each in the form set forth in Exhibit A-2 to this Indenture (or in such other form as may be established pursuant to Section 301); and provided, however, that definitive Bearer Securities shall be delivered in exchange for a portion of a temporary global Security only in compliance with the requirements of Section 303.

Unless otherwise specified in such temporary global Security, the interest of a beneficial owner of a temporary global Security shall be exchanged for definitive Securities of the same series and of like tenor following the Exchange Date when the account holder instructs Euroclear or Clearstream, as the case may be, to request such exchange on his behalf and delivers to Euroclear or Clearstream, as the case may be, a certificate in the form set forth in Exhibit A-1 to this Indenture (or in such other form as may be established pursuant to Section 301), dated no earlier than 15 days prior to the Exchange Date, copies of which certificate shall be available from the offices of Euroclear and Clearstream, the Trustee, any Authenticating Agent appointed for such series of Securities and each Paying Agent. Unless otherwise specified in such temporary global Security, any such exchange shall be made free of charge to the beneficial owners of such temporary global Security, except that a Person receiving definitive Securities must bear the cost of insurance, postage, transportation and the like in the event that such Person does not take delivery of such definitive Securities in person at the offices of Euroclear or Clearstream. Definitive Securities in bearer form to be delivered in exchange for any portion of a temporary global Security shall be delivered only outside the United States.

Until exchanged in full as hereinabove provided, the temporary Securities of any series shall in all respects be entitled to the same benefits under this Indenture as definitive Securities of the same series and of like tenor authenticated and delivered hereunder, except that, unless otherwise specified as contemplated by Section 301, interest payable on a temporary global Security on an Interest Payment Date for Securities of such series occurring prior to the applicable Exchange Date shall be payable to Euroclear and Clearstream on such Interest Payment Date upon delivery by Euroclear and Clearstream to the Trustee or the applicable Paying Agent of a certificate or certificates in the form set forth in Exhibit A-2 to this Indenture (or in such other form as may be established pursuant to Section 301), for credit without further interest thereon on or after such Interest Payment Date to the respective accounts of the Persons who are the beneficial owners of such temporary global Security on such Interest Payment Date and who have each delivered to Euroclear or Clearstream, as the case may be, a certificate dated no earlier than 15 days prior to the Interest Payment Date occurring prior to such Exchange Date in the form set forth in Exhibit A-1 to this Indenture (or in such other form as may be established pursuant to Section 301). Notwithstanding anything to the contrary herein contained, the certifications made pursuant to this paragraph shall satisfy the certification requirements of the preceding two paragraphs of this Section and of the third paragraph of Section 303 of this Indenture and the interests of the Persons who are the beneficial owners of the temporary global Security with respect to which such certification was made will be exchanged for definitive Securities of the same series and of like tenor on the Exchange Date or the date of certification if such date occurs after the Exchange Date, without further act or deed by such beneficial owners. Except as otherwise provided in this paragraph, no payments of principal (or premium, if any) or interest, if any, owing with respect to a beneficial interest in a temporary global Security will be made unless and until such interest in such temporary global Security shall have been exchanged for an interest in a definitive Security. Any interest so received by Euroclear and Clearstream and not paid as herein provided shall be returned to the Trustee or the applicable Paying Agent immediately prior to the expiration of two years after such Interest Payment Date in order to be repaid to the Company in accordance with (but otherwise subject to) [Article 10].

SECTION 305. Registration, Registration of Transfer and Exchange. The Company or the Trustee shall cause to be kept at the Corporate Trust Office of the Trustee a register for each series of Securities (the registers maintained in the Corporate Trust Office of the Trustee and in any other office or agency of the Company in a Place of Payment being herein sometimes collectively referred to as the "Security Register") in which, subject to such reasonable regulations as it may prescribe, the Company shall provide for the registration of Registered Securities and of transfers of Registered Securities; provided, however, that there shall be only one Security Register per series of Securities. The Security Register shall be in written form or any other form capable of being converted into written form within a reasonable time. At all reasonable times, the Security Register shall be open to inspection by the Trustee. The Trustee is hereby initially appointed as security registrar (the "Security Registrar") for the purpose of registering Registered Securities and transfers of Registered Securities as herein provided and for facilitating exchanges of temporary global Securities for permanent global Securities or definitive Securities, or both, or of permanent global Securities for definitive Securities, as herein provided.

Upon surrender for registration of transfer of any Registered Security of any series at the office or agency in a Place of Payment for that series, the Company shall execute, and the Trustee shall authenticate and deliver, in the name of the designated transferee, one or more new Registered Securities of the same series, of any authorized denominations and of a like aggregate principal amount and tenor.

At the option of the Holder, Registered Securities of any series may be exchanged for other Registered Securities of the same series, of any authorized denomination and of a like aggregate principal amount, upon surrender of the Registered Securities to be exchanged at such office or agency. Whenever any Registered Securities are so surrendered for exchange, the Company shall execute, and the Trustee shall authenticate and deliver, the Registered Securities which the Holder making the exchange is entitled to receive. Unless otherwise specified with respect to any series of Securities as contemplated by Section 301, Bearer Securities may not be issued in exchange for Registered Securities.

If (but only if) expressly permitted in or pursuant to the applicable Board Resolution and (subject to Section 303) set forth in the applicable Officers' Certificate, or in any indenture supplemental hereto, delivered as contemplated by Section 301, at the option of the Holder, Bearer Securities of any series may be exchanged for Registered Securities of the same series of any authorized denomination and of a like aggregate principal amount and tenor, upon surrender of the Bearer Securities to be exchanged at any such office or agency, with all unmatured coupons and all matured coupons in default thereto appertaining. If the Holder of a Bearer Security is unable to produce any such unmatured coupon or coupons or matured coupon or coupons in default, any such permitted exchange may be effected if the Bearer Securities are accompanied by payment in funds acceptable to the Company in an amount equal to the face amount of such missing coupon or coupons, or the surrender of such missing coupon or coupons may be waived by the Company and the Trustee if there is furnished to them such security or indemnity as they may reasonably require to save each of them and any Paying Agent harmless. If thereafter the Holder of such Security shall surrender to any Paying Agent any such missing



coupon in respect of which such a payment shall have been made, such Holder shall be entitled to receive the amount of such payment; provided, however, that, except as otherwise provided in [Article 10], interest represented by coupons shall be payable only upon presentation and surrender of those coupons at an office or agency located outside the United States. Notwithstanding the foregoing, in case a Bearer Security of any series is surrendered at any such office or agency in a permitted exchange for a Registered Security of the same series and like tenor after the close of business at such office or agency on (i) any Regular Record Date and before the opening of business at such office or agency on the relevant Interest Payment Date, or (ii) any Special Record Date and before the opening of business at such office or agency on the related proposed date for payment of Defaulted Interest, such Bearer Security shall be surrendered without the coupon relating to such Interest Payment Date or proposed date for payment, as the case may be, and interest or Defaulted Interest, as the case may be, will not be payable on such Interest Payment Date or proposed date for payment, as the case may be, in respect of the Registered Security issued in exchange for such Bearer Security, but will be payable only to the Holder of such coupon when due in accordance with the provisions of this Indenture.

Whenever any Securities are so surrendered for exchange, the Company shall execute, and the Trustee shall authenticate and deliver, the Securities that the Holder making the exchange is entitled to receive.

Notwithstanding the foregoing, except as otherwise specified as contemplated by Section 301, any permanent global Security shall be exchangeable only as provided in this paragraph. Unless otherwise specified pursuant to Section 301, all Bearer Securities issued in permanent global form, upon request of the beneficial owner and in accordance with the following provisions, will be exchangeable for definitive Bearer Securities. If any beneficial owner of an interest in a permanent global Security is entitled to exchange such interest for Securities of such series and of like tenor and principal amount of another authorized form and denomination, as specified as contemplated by Section 301 and provided that any applicable notice provided in the permanent global Security shall have been given, then without unnecessary delay but in any event not later than the earliest date on which such interest may be so exchanged, the Company shall deliver to the Trustee definitive Securities of that series in aggregate principal amount equal to the principal amount of such beneficial owner's interest in such permanent global Security, executed by the Company. On or after the earliest date on which such interests may be so exchanged, such permanent global Security shall be surrendered by the Common Depositary or such other depositary as shall be specified in the Company Order with respect thereto to the Trustee, as the Company's agent for such purpose, to be exchanged, in whole or from time to time in part, for definitive Securities of the same series without charge, and the Trustee shall authenticate and deliver, in exchange for each portion of such permanent global Security, an equal aggregate principal amount of definitive Securities of the same series of authorized denominations and of like tenor as the portion of such permanent global Security to be exchanged which, unless the Securities of the series are not issuable both as Bearer Securities and as Registered Securities, as specified as contemplated by Section 301, shall be in the form of Bearer Securities or Registered Securities, or any combination thereof, as shall be specified by the beneficial owner thereof; provided, however, that no such exchanges may occur during a period beginning at the opening of business 15 days before any selection of Securities to be

redeemed and ending on the relevant Redemption Date if the Security for which exchange is requested may be among those selected for redemption; and provided, further, that no Bearer Security delivered in exchange for a portion of a permanent global Security shall be mailed or otherwise delivered to any location in the United States. If a definitive Registered Security is issued in exchange for any portion of a permanent global Security after the close of business at the office or agency where such exchange occurs on (i) any Regular Record Date and before the opening of business at such office or agency on the relevant Interest Payment Date, or (ii) any Special Record Date and before the opening of business at such office or agency on the related proposed date for payment of Defaulted Interest, interest or Defaulted Interest, as the case may be, will not be payable on such Interest Payment Date or proposed date for payment, as the case may be, in respect of such definitive Registered Security, but will be payable on such Interest Payment Date or proposed date for payment, as the case may be, only to the Person to whom interest in respect of such portion of such permanent global Security is payable in accordance with the provisions of this Indenture.

All Securities issued upon any registration of transfer or exchange of Securities shall be the valid obligations of the Company, evidencing the same debt, and entitled to the same benefits under this Indenture, as the Securities surrendered upon such registration of transfer or exchange.

Every Registered Security presented or surrendered for registration of transfer or for exchange shall (if so required by the Company or the Security Registrar) be duly endorsed, or be accompanied by a written instrument of transfer, in form satisfactory to the Company and the Security Registrar, duly executed by the Holder thereof or his attorney duly authorized in writing.

No service charge shall be made for any registration of transfer or exchange of Securities, but the Company may require payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in connection with any registration of transfer or exchange of Securities, other than exchanges pursuant to Sections 304, 906, 1107 or 1305 not involving any transfer.

If at any time the Depositary for any permanent global Registered Securities of any series notifies the Company that it is unwilling or unable to continue as Depositary for such permanent global Registered Securities or if at any time the Depositary for such permanent global Registered Securities shall no longer be eligible to so continue under applicable law, the Company shall appoint a successor Depositary eligible under applicable law with respect to such permanent global Registered Securities. If a successor Depositary eligible under applicable law for such Registered Global Securities is not appointed by the Company within 90 days after the Company receives such notice or becomes aware of such ineligibility or if there has occurred and is continuing an Event of Default with respect to the Securities of any series, the Company will execute, and the Trustee, upon receipt of the Company Order for the authentication and delivery of definitive Registered Securities of such series and tenor, will authenticate and deliver such definitive Registered Securities of such series and tenor, in any authorized denominations, in an aggregate principal amount equal to the principal amount of such permanent global Registered Securities, in exchange for such permanent global Registered Securities.

The Company may at any time and in its sole discretion determine that any permanent global Registered Securities of any series shall no longer be maintained in global form. In such event the Company will execute, and the Trustee, upon receipt of the Company's order for the authentication and delivery of definitive Registered Securities of such series and tenor, will authenticate and deliver, definitive Registered Securities of such series and tenor in any authorized denominations, in an aggregate principal amount equal to the principal amount of such permanent global Registered Securities, in exchange for such permanent global Registered Securities.

The Company shall not be required (i) to issue, register the transfer of or exchange Securities of any series during a period beginning at the opening of business 15 days before the day of the selection for redemption of Securities of that series under Section 1103 or 1203 and ending at the close of business on (A) if Securities of the series are issuable only as Registered Securities, the day of the mailing of the relevant notice of redemption and (B) if Securities of the series are issuable as Bearer Securities, the day of the first publication of the relevant notice of redemption or, if Securities of the series are also issuable as Registered Securities and there is no publication, the mailing of the relevant notice of redemption, or (ii) to register the transfer of or exchange any Registered Security so selected for redemption in whole or in part, except the unredeemed portion of any Security being redeemed in part, or (iii) to exchange any Bearer Security so selected for redemption except that such a Bearer Security may be exchanged for a Registered Security of that series and like tenor, provided that such Registered Security shall be simultaneously surrendered for redemption, or (iv) to issue, register the transfer of or exchange any Security which has been surrendered for repayment at the option of the Holder, except the portion, if any, of such Security not to be so repaid.

The Trustee shall have no obligation or duty to monitor, determine or inquire as to compliance with any restrictions on transfer that may be imposed under this Indenture with respect to the Securities of any series pursuant to the terms thereof established as contemplated by Section 301 or under applicable law with respect to any transfer of any interest in any such Security (including any transfers between or among any depository (including any Depository or Common Depository), or its nominee, as a Holder of a Security issued in global form, any participants in such depository or owners or holders of beneficial interests in any such global Security) other than to require delivery of such certificates and other documentation or evidence as are expressly required by, and to do so if and when expressly required by, the terms of such Securities if and as may be so established in respect of such Securities, and to examine the same to determine substantial compliance as to form with the express requirements thereof.

SECTION 306. Mutilated, Destroyed, Lost and Stolen Securities. If any mutilated Security or a Security with a mutilated coupon appertaining to it is surrendered to the Trustee, the Company shall execute and the Trustee shall authenticate and deliver in exchange therefor a new Security of the same series and of like tenor and principal amount and bearing a number not contemporaneously Outstanding, with coupons corresponding to the coupons, if any, appertaining to the surrendered Security.

If there shall be delivered to the Company and the Trustee (i) evidence to their satisfaction of the destruction, loss or theft of any Security or coupon and (ii) such security or indemnity as may be required by them to save each of them and any agent of either of them harmless, then, in the absence of notice to the Company or the Trustee that such Security or coupon has been acquired by a bona fide purchaser, the Company shall execute and upon Company Order the Trustee shall authenticate and deliver, in lieu of any such destroyed, lost or stolen Security or in exchange for the Security to which a destroyed, lost or stolen coupon appertains (with all appurtenant coupons not destroyed, lost or stolen), a new Security of the same series and of like tenor and principal amount and bearing a number not contemporaneously Outstanding, with coupons corresponding to the coupons, if any, appertaining to such destroyed, lost or stolen Security or to the Security to which such destroyed, lost or stolen coupon appertains.

Notwithstanding the provisions of the previous two paragraphs, in case any such mutilated, destroyed, lost or stolen Security or coupon has become or is about to become due and payable, the Company in its discretion may, instead of issuing a new Security, with coupons corresponding to the coupons, if any, appertaining to such mutilated, destroyed, lost or stolen Security or to the Security to which such mutilated, destroyed, lost or stolen coupon appertains, pay such Security or coupon; provided, however, that payment of principal of (and premium, if any) and interest, if any, on Bearer Securities shall, except as otherwise provided in [Article 10], be payable only at an office or agency located outside the United States and, unless otherwise specified as contemplated by Section 301, any interest on Bearer Securities shall be payable only upon presentation and surrender of the coupons appertaining thereto.

Upon the issuance of any new Security under this Section, the Company may require the payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in relation thereto and any other expenses (including the fees and expenses of the Trustee) connected therewith.

Every new Security of any series, with its coupons, if any, issued pursuant to this Section in lieu of any mutilated, destroyed, lost or stolen Security, or in exchange for a Security to which a mutilated, destroyed, lost or stolen coupon appertains, shall constitute an original additional contractual obligation of the Company, whether or not the mutilated, destroyed, lost or stolen Security and its coupons, if any, or the mutilated, destroyed, lost or stolen coupon shall be at any time enforceable by anyone, and shall be entitled to all the benefits of this Indenture equally and proportionately with any and all other Securities of that series and their coupons, if any, duly issued hereunder.

The provisions of this Section are exclusive and shall preclude (to the extent lawful) all other rights and remedies with respect to the replacement or payment of mutilated, destroyed, lost or stolen Securities or coupons.

SECTION 307. Payment of Interest; Interest Rights Preserved; Optional Interest Reset. (i) Unless otherwise provided as contemplated by Section 301 with respect to any series of Securities, interest, if any, on any Registered Security which is payable, and is punctually paid or duly provided for, on any Interest Payment Date shall be paid to the Person in whose name such Security (or one or more Predecessor Securities) is registered at the close of business on the Regular Record Date for such interest at the office or agency of the Company maintained for such purpose pursuant to [Article 10]; provided, however, that each installment of interest, if any, on any Registered Security (other than a global Security) on an Interest

Payment Date may at the Company's option be paid by (i) mailing a check for such interest, payable to or upon the written order of the Person entitled thereto pursuant to Section 309, to the address of such Person as it appears on the Security Register or (ii) transfer to an account located in the United States maintained by the payee.

Unless otherwise provided as contemplated by Section 301 with respect to the Securities of any series, payment of interest, if any, may be made, in the case of a Bearer Security, by transfer to an account located outside the United States maintained by the payee.

Unless otherwise provided as contemplated by Section 301, every permanent global Security will provide that interest, if any, payable on any Interest Payment Date will be paid to each of Euroclear and Clearstream with respect to that portion of such permanent global Security held for its account by the Common Depositary, for the purpose of permitting each of Euroclear and Clearstream to credit the interest, if any, received by it in respect of such permanent global Security to the accounts of the beneficial owners thereof.

Any interest on any Registered Security of any series which is payable, but is not punctually paid or duly provided for, on any Interest Payment Date shall forthwith cease to be payable to the Holder on the relevant Regular Record Date by virtue of having been such Holder, and such defaulted interest and, if applicable, interest on such defaulted interest (to the extent lawful) at the rate or formula specified in the Securities of such series (such defaulted interest and, if applicable, interest thereon herein collectively called "Defaulted Interest") may be paid by the Company, at its election in each case, as provided in clause (1) or (2) below:

(1) The Company may elect to make payment of any Defaulted Interest to the Persons in whose names the Registered Securities of such series (or their respective Predecessor Securities) are registered at the close of business on a Special Record Date for the payment of such Defaulted Interest, which shall be fixed in the following manner. The Company shall notify the Trustee in writing of the amount of Defaulted Interest proposed to be paid on each Registered Security of such series and the date of the proposed payment, and at the same time the Company shall deposit with the Trustee an amount of money in the Currency in which the Securities of such series are payable (except as otherwise specified pursuant to Section 301 for the Securities of such series and except, if applicable, as provided in Sections 312(b), 312(d) and 312(e)) equal to the aggregate amount proposed to be paid in respect of such Defaulted Interest or shall make arrangements satisfactory to the Trustee for such deposit on or prior to the date of the proposed payment, such money when deposited to be held in trust for the benefit of the Persons entitled to such Defaulted Interest as in this clause provided. Thereupon the Trustee shall fix a Special Record Date for the payment of such Defaulted Interest that shall be not more than 15 days and not less than 10 days prior to the date of the proposed payment and not less than 10 days after the receipt by the Trustee of the notice of the proposed payment. The Trustee shall promptly notify the Company of such Special Record Date and, in the name and at the expense of the Company, shall cause notice of the proposed payment of such Defaulted Interest and the Special Record Date therefor to be given in the manner provided in Section 106, not less than 10 days prior to such Special Record Date. Notice of the proposed payment of such Defaulted Interest and the Special Record Date therefor having been so given, such Defaulted Interest shall be paid to the Persons in whose name the Registered Securities of such series (or their respective Predecessor Securities) are registered at the close of business on such Special Record Date and shall no longer be payable pursuant to the following clause (2).

(2) The Company may make payment of any Defaulted Interest on the Registered Securities of any series in any other lawful manner not inconsistent with the requirements of any securities exchange on which such Securities may be listed, and upon such notice as may be required by such exchange, if, after notice given by the Company to the Trustee of the proposed payment pursuant to this clause, such manner of payment shall be deemed practicable by the Trustee.

(b) The provisions of this Section 307(b) may be made applicable to any series of Securities pursuant to Section 301 (with such modifications, additions or substitutions as may be specified pursuant to such Section 301). The interest rate (or the spread or spread multiplier used to calculate such interest rate, if applicable) on any Security of such series may be reset by the Company on the date or dates specified on the face of such Security (each an "Optional Reset Date"). The Company may exercise such option with respect to such Security by notifying the Trustee of such exercise at least 50 but not more than 60 days prior to an Optional Reset Date for such Security. Not later than 40 days prior to each Optional Reset Date, the Trustee shall transmit, in the manner provided for in Section 106, to the Holder of any such Security a notice (the "Reset Notice") indicating whether the Company has elected to reset the interest rate (or the spread or spread multiplier used to calculate such interest rate, if applicable), and if so (i) such new interest rate (or such new spread or spread multiplier, if applicable) and (ii) the provisions, if any, for redemption during the period from such Optional Reset Date to the next Optional Reset Date or if there is no such next Optional Reset Date, to the Stated Maturity of such Security (each such period a "Subsequent Interest Period"), including the date or dates on which or the period or periods during which and the price or prices at which such redemption may occur during the Subsequent Interest Period.

Notwithstanding the foregoing, not later than 20 days prior to the Optional Reset Date, the Company may, at its option, revoke the interest rate (or the spread or spread multiplier used to calculate such interest rate, if applicable) provided for in the Reset Notice and establish an interest rate (or a spread or spread multiplier used to calculate such interest rate, if applicable) that is higher than the interest rate (or the spread or spread multiplier, if applicable) provided for in the Reset Notice, for the Subsequent Interest Period by causing the Trustee to transmit, in the manner provided for in Section 106, notice of such higher interest rate (or such higher spread or spread multiplier, if applicable) to the Holder of such Security. Such notice shall be irrevocable. All Securities with respect to which the interest rate (or the spread or spread multiplier used to calculate such interest rate, if applicable) is reset on an Optional Reset Date, and with respect to which the Holders of such Securities have not tendered such Securities for repayment (or have validly revoked any such tender) pursuant to the next succeeding paragraph, will bear such higher interest rate (or such higher spread or spread multiplier, if applicable).

The Holder of any such Security will have the option to elect repayment by the Company of the principal of such Security on each Optional Reset Date at a price equal to the principal amount thereof plus interest accrued to such Optional Reset Date. In order to obtain repayment on an Optional Reset Date, the Holder must follow the procedures set forth in Article Thirteen for repayment at the option of Holders except that the period for delivery or notification

to the Trustee shall be at least 25 but not more than 35 days prior to such Optional Reset Date and except that, if the Holder has tendered any Security for repayment pursuant to the Reset Notice, the Holder may, by written notice to the Trustee, revoke such tender or repayment until the close of business on the tenth day before such Optional Reset Date.

Subject to the foregoing provisions of this Section and Section 305, each Security delivered under this Indenture upon registration of transfer of or in exchange for or in lieu of any other Security shall carry the rights to interest accrued and unpaid, and to accrue, which were carried by such other Security.

**SECTION 308. Optional Extension of Maturity.** The provisions of this Section 308 may be made applicable to any series of Securities pursuant to Section 301 (with such modifications, additions or substitutions as may be specified pursuant to such Section 301). The Maturity of any Security of such series may be extended at the option of the Company for the period or periods specified on the face of such Security (each an "Extension Period") up to but not beyond the Stated Maturity set forth on the face of such Security. The Company may exercise such option with respect to any Security by notifying the Trustee of such exercise at least 50 but not more than 60 days prior to the Maturity of such Security in effect prior to the exercise of such option. If the Company exercises such option, the Trustee shall transmit, in the manner provided for in Section 106, to the Holder of such Security not later than 40 days prior to the Maturity a notice (the "Extension Notice") indicating (i) the election of the Company to extend the Maturity, (ii) the new Maturity, (iii) the interest rate, if any, applicable to the Extension Period and (iv) the provisions, if any, for redemption during such Extension Period. Upon the Trustee's transmittal of the Extension Notice, the Maturity of such Security shall be extended automatically and, except as modified by the Extension Notice and as described in the next paragraph, such Security will have the same terms as prior to the transmittal of such Extension Notice.

Notwithstanding the foregoing, not later than 20 days before the Maturity of such Security, the Company may, at its option, revoke the interest rate provided for in the Extension Notice and establish a higher interest rate for the Extension Period by causing the Trustee to transmit, in the manner provided for in Section 106, notice of such higher interest rate (or such higher spread or spread multiplier, if applicable) to the Holder of such Security. Such notice shall be irrevocable. All Securities with respect to which the Maturity is extended will bear such higher interest rate.

If the Company extends the Maturity of any Security, the Holder will have the option to elect repayment of such Security by the Company at Maturity at a price equal to the principal amount thereof, plus interest accrued to such date. In order to obtain repayment at Maturity once the Company has extended the Maturity thereof, the Holder must follow the procedures set forth in Article Thirteen for repayment at the option of Holders, except that the period for delivery or notification to the Trustee shall be at least 25 but not more than 35 days prior to the Maturity and except that, if the Holder has tendered any Security for repayment pursuant to an Extension Notice, the Holder may by written notice to the Trustee revoke such tender for repayment until the close of business on the tenth day before the Maturity.

SECTION 309. Persons Deemed Owners. Prior to due presentment of a Registered Security for registration of transfer, the Company, the Trustee and any agent of the Company or the Trustee may treat the Person in whose name such Registered Security is registered as the absolute owner of such Registered Security for the purpose of receiving payment of principal of (and premium, if any) and (subject to Sections 305 and 307) interest, if any, on such Registered Security and for all other purposes whatsoever, whether or not such Registered Security be overdue, and none of the Company, the Trustee or any agent of the Company or the Trustee shall be affected by notice to the contrary.

Title to any Bearer Security and any coupons appertaining thereto shall pass by delivery. The Company, the Trustee and any agent of the Company or the Trustee may treat the bearer of any Bearer Security and the bearer of any coupon as the absolute owner of such Bearer Security or coupon for the purpose of receiving payment thereof or on account thereof and for all other purposes whatsoever, whether or not such Bearer Security or coupons be overdue, and none of the Company, the Trustee or any agent of the Company or the Trustee shall be affected by notice to the contrary.

None of the Company, the Trustee, any Paying Agent or the Security Registrar shall have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests of a Security in global form or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests. The Company, the Trustee and the Securities Registrar shall be entitled to deal with any depository (including any Depository or Common Depository), and any nominee thereof, that is the Holder of any such global Security for all purposes of this Indenture relating to such global Security (including the payment of principal, premium, if any, and interest and Additional Amounts, if any, the giving of instructions or directions by or to the owner or holder of a beneficial ownership interest in such global Security) as the sole Holder of such global Security and shall have no obligations to the beneficial owners thereof. None of the Company, the Trustee, any Paying Agent or the Security Registrar shall have any responsibility or liability for any acts or omissions of any such depository with respect to such global Security, for the records of any such depository, including records in respect of beneficial ownership interests in respect of any such global Security, for any transactions between such depository and any participant in such depository or between or among any such depository, any such participant and/or any holder or owner of a beneficial interest in such global Security or for any transfers of beneficial interests in any such global Security.

Notwithstanding the foregoing, with respect to any global Security, nothing herein shall prevent the Company, the Trustee, or any agent of the Company or the Trustee, from giving effect to any written certification, proxy or other authorization furnished by any depository (including any Depository or Common Depository), as a Holder, with respect to such global Security or impair, as between such depository and owners of beneficial interests in such global Security, the operation of customary practices governing the exercise of the rights of such depository (or its nominee) as Holder of such global Security.



SECTION 310. Cancellation. All Securities and coupons surrendered for payment, redemption, repayment at the option of the Holder, registration of transfer or exchange or for credit against any current or future sinking fund payment shall, if surrendered to any Person other than the Trustee, be delivered to the Trustee. All Securities and coupons so delivered to the Trustee shall be promptly cancelled by it. The Company may at any time deliver to the Trustee for cancellation any Securities previously authenticated and delivered hereunder which the Company may have acquired in any manner whatsoever, and may deliver to the Trustee (or to any other Person for delivery to the Trustee) for cancellation any Securities previously authenticated hereunder which the Company has not issued and sold, and all Securities so delivered shall be promptly cancelled by the Trustee. If the Company shall so acquire any of the Securities, however, such acquisition shall not operate as a redemption or satisfaction of the indebtedness represented by such Securities unless and until the same are surrendered to the Trustee for cancellation. No Securities shall be authenticated in lieu of or in exchange for any Securities cancelled as provided in this Section, except as expressly permitted by this Indenture. All cancelled Securities and coupons held by the Trustee shall be disposed of by the Trustee in accordance with its customary procedures and, if requested by the Company in writing, the Trustee shall provide certification of their disposal to the Company, unless by Company Order the Company shall timely direct that cancelled Securities be returned to it.

SECTION 311. Computation of Interest. Except as otherwise specified as contemplated by Section 301 with respect to Securities of any series, interest, if any, on the Securities of each series shall be computed on the basis of a 360-day year of twelve 30-day months.

SECTION 312. Currency and Manner of Payments in Respect of Securities.

(a) Unless otherwise specified with respect to any series of Securities pursuant to Section 301, with respect to Registered Securities of any series not permitting the election provided for in paragraph (b) below or the Holders of which have not made the election provided for in paragraph (b) below, and with respect to Bearer Securities of any series, except as provided in paragraph (d) below, payment of the principal of (and premium, if any) and interest, if any, on any Registered Security or Bearer Security of such series will be made in the Currency in which such Registered Security or Bearer Security, as the case may be, is payable. The provisions of this Section 312 may be modified or superseded with respect to any Securities pursuant to Section 301.

(b) It may be provided pursuant to Section 301 with respect to Registered Securities of any series that Holders shall have the option, subject to paragraphs (d) and (e) below, to receive payments of principal of (or premium, if any) or interest, if any, on such Registered Securities in any of the Currencies which may be designated for such election by delivering to the Trustee a written election with signature guarantees and in the applicable form established pursuant to Section 301, not later than the close of business on the Election Date immediately preceding the applicable payment date. If a Holder so elects to receive such payments in any such Currency, such election will remain in effect for such Holder or any transferee of such Holder until changed by such Holder or such transferee by written notice to the Trustee (but any such change must be made not later than the close of business on the Election Date immediately preceding the next payment date to be effective for the payment to be made on such payment date and no such change of election may be made with respect to payments to be made on any Registered Security of such series with respect to which an Event of Default has occurred

or with respect to which the Company has deposited funds pursuant to Article Four or Fourteen or with respect to which a notice of redemption has been given by the Company or a notice of option to elect repayment has been sent by such Holder or such transferee). Any Holder of any such Registered Security who shall not have delivered any such election to the Trustee not later than the close of business on the applicable Election Date will be paid the amount due on the applicable payment date in the relevant Currency as provided in Section 312(a). The Trustee shall notify the Exchange Rate Agent as soon as practicable after the Election Date of the aggregate principal amount of Registered Securities for which Holders have made such written election.

(c) Unless otherwise specified pursuant to Section 301, if the election referred to in paragraph (b) above has been provided for pursuant to Section 301, then, unless otherwise specified pursuant to Section 301, not later than the fourth Business Day after the Election Date for each payment date for Registered Securities of any series, the Exchange Rate Agent will deliver to the Company a written notice specifying the Currency in which Registered Securities of such series are payable, the respective aggregate amounts of principal of (and premium, if any) and interest, if any, on the Registered Securities to be paid on such payment date and the amounts in such Currency so payable in respect of the Registered Securities as to which the Holders of Registered Securities of such series shall have elected to be paid in another Currency as provided in paragraph (b) above. If the election referred to in paragraph (b) above has been provided for pursuant to Section 301 and if at least one Holder has made such election, then, unless otherwise specified pursuant to Section 301, on the second Business Day preceding such payment date the Company will deliver to the Trustee an Exchange Rate Officer's Certificate in respect of the Dollar or Foreign Currency payments to be made on such payment date. Unless otherwise specified pursuant to Section 301, the Dollar or Foreign Currency amount receivable by Holders of Registered Securities who have elected payment in a Currency as provided in paragraph (b) above shall be determined by the Company on the basis of the applicable Market Exchange Rate in effect on the third Business Day (the "Valuation Date") immediately preceding each payment date, and such determination shall be conclusive and binding for all purposes, absent manifest error.

(d) If a Conversion Event occurs with respect to a Foreign Currency in which any of the Securities are denominated or payable other than pursuant to an election provided for pursuant to paragraph (b) above, then with respect to each date for the payment of principal of (and premium, if any) and interest, if any, on the applicable Securities denominated or payable in such Foreign Currency occurring after the last date on which such Foreign Currency was used (the "Conversion Date"), the Dollar shall be the Currency of payment for use on each such payment date. Unless otherwise specified pursuant to Section 301, the Dollar amount to be paid by the Company to the Trustee and by the Trustee or any Paying Agent to the Holders of such Securities with respect to such payment date shall be, in the case of a Foreign Currency other than a currency unit, the Dollar Equivalent of the Foreign Currency or, in the case of a currency unit, the Dollar Equivalent of the Currency Unit, in each case as determined by the Exchange Rate Agent in the manner provided in paragraph (f) or (g) below.

(e) Unless otherwise specified pursuant to Section 301, if the Holder of a Registered Security denominated in any Currency shall have elected to be paid in another Currency as provided in paragraph (b) above, and a Conversion Event occurs with respect to such elected Currency, such Holder shall receive payment in the Currency in which payment would have been made in the absence of such election; and if a Conversion Event occurs with respect to the Currency in which payment would have been made in the absence of such election, such Holder shall receive payment in Dollars as provided in paragraph (d) above.

(f) The “Dollar Equivalent of the Foreign Currency” shall be determined by the Exchange Rate Agent and shall be obtained for each subsequent payment date by converting the specified Foreign Currency into Dollars at the Market Exchange Rate on the Conversion Date.

(g) The “Dollar Equivalent of the Currency Unit” shall be determined by the Exchange Rate Agent and subject to the provisions of paragraph (h) below shall be the sum of each amount obtained by converting the Specified Amount of each Component Currency into Dollars at the Market Exchange Rate for such Component Currency on the Valuation Date with respect to each payment.

(h) For purposes of this Section 312 the following terms shall have the following meanings:

A “Component Currency” shall mean any Currency which, on the Conversion Date, was a component currency of the relevant currency unit.

A “Specified Amount” of a Component Currency shall mean the number of units of such Component Currency or fractions thereof which were represented in the relevant currency unit on the Conversion Date. If after the Conversion Date the official unit of any Component Currency is altered by way of combination or subdivision, the Specified Amount of such Component Currency shall be divided or multiplied in the same proportion. If after the Conversion Date two or more Component Currencies are consolidated into a single currency, the respective Specified Amounts of such Component Currencies shall be replaced by an amount in such single Currency equal to the sum of the respective Specified Amounts of such consolidated Component Currencies expressed in such single Currency, and such amount shall thereafter be a Specified Amount and such single Currency shall thereafter be a Component Currency. If after the Conversion Date any Component Currency shall be divided into two or more currencies, the Specified Amount of such Component Currency shall be replaced by amounts of such two or more currencies, having an aggregate Dollar Equivalent value at the Market Exchange Rate on the date of such replacement equal to the Dollar Equivalent value of the Specified Amount of such former Component Currency at the Market Exchange Rate immediately before such division and such amounts shall thereafter be Specified Amounts and such currencies shall thereafter be Component Currencies. If, after the Conversion Date of the relevant currency unit, a Conversion Event (other than any event referred to above in this definition of “Specified Amount”) occurs with respect to any Component Currency of such currency unit and is continuing on the applicable Valuation Date, the Specified Amount of such Component Currency shall, for purposes of calculating the Dollar Equivalent of the Currency Unit, be converted into Dollars at the Market Exchange Rate in effect on the Conversion Date of such Component Currency.

“Election Date” shall mean the date for any series of Registered Securities as specified pursuant to clause (13) of Section 301 by which the written election referred to in paragraph (b) above may be made.

All decisions and determinations of the Exchange Rate Agent regarding the Dollar Equivalent of the Foreign Currency, the Dollar Equivalent of the Currency Unit, the Market Exchange Rate and changes in the Specified Amounts as specified above shall be in its sole discretion and shall, in the absence of manifest error, be conclusive for all purposes and irrevocably binding upon the Company, the Trustee and all Holders of such Securities denominated or payable in the relevant Currency. The Exchange Rate Agent shall promptly give written notice to the Company and the Trustee of any such decision or determination.

In the event that the Company determines in good faith that a Conversion Event has occurred with respect to a Foreign Currency, the Company will immediately give written notice thereof to the Trustee and to the Exchange Rate Agent (and the Trustee will promptly thereafter give notice in the manner provided for in Section 106 to the affected Holders) specifying the Conversion Date. In the event the Company so determines that a Conversion Event has occurred with respect to any Foreign Currency unit in which Securities are denominated or payable, the Company will immediately give written notice thereof to the Trustee and to the Exchange Rate Agent (and the Trustee will promptly thereafter give notice in the manner provided for in Section 106 to the affected Holders) specifying the Conversion Date and the Specified Amount of each Component Currency on the Conversion Date. In the event the Company determines in good faith that any subsequent change in any Component Currency as set forth in the definition of Specified Amount above has occurred, the Company will similarly give written notice to the Trustee and the Exchange Rate Agent. The Trustee shall be fully justified and protected in conclusively relying and acting upon information received by it from the Company and the Exchange Rate Agent and shall not otherwise have any duty or obligation to determine the accuracy or validity of such information independent of the Company or the Exchange Rate Agent.

SECTION 313. Appointment and Resignation of Successor Exchange Rate Agent. (a) Unless otherwise specified pursuant to Section 301, if and so long as the Securities of any series (i) are denominated in a Foreign Currency or (ii) may be payable in a Foreign Currency, or so long as it is required under any other provision of this Indenture, then the Company will maintain with respect to each such series of Securities, or as so required, at least one Exchange Rate Agent. The Company will cause the Exchange Rate Agent to make the necessary foreign exchange determinations at the time and in the manner specified pursuant to Section 301 for the purpose of determining the applicable rate of exchange and, if applicable, for the purpose of converting the denominated Currency into the applicable payment Currency for the payment of principal (and premium, if any) and interest, if any, pursuant to Section 312.

(b) No resignation of the Exchange Rate Agent and no appointment of a successor Exchange Rate Agent pursuant to this Section shall become effective until the acceptance of appointment by the successor Exchange Rate Agent as evidenced by a written instrument delivered to the Company and the Trustee.

(c) If the Exchange Rate Agent shall resign, be removed or become incapable of acting, or if a vacancy shall occur in the office of the Exchange Rate Agent for any cause with respect to the Securities of one or more series, the Company, by or pursuant to a Board Resolution, shall promptly appoint a successor Exchange Rate Agent or Exchange Rate Agents with respect to the Securities of that or those series (it being understood that any such successor Exchange Rate Agent may be appointed with respect to the Securities of one or more or all of such series and that, unless otherwise specified pursuant to Section 301, at any time there shall only be one Exchange Rate Agent with respect to the Securities of any particular series that are originally issued by the Company on the same date and that are initially denominated and/or payable in the same Currency).

#### ARTICLE 4

##### SATISFACTION AND DISCHARGE

SECTION 401. Satisfaction and Discharge of Indenture. This Indenture shall upon Company Request cease to be of further effect with respect to any series of Securities specified in such Company Request (except as to any surviving rights of registration of transfer or exchange of Securities of such series expressly provided for herein or pursuant hereto, and any right to receive Additional Amounts, as contemplated by [Article 10]) and the Trustee, at the expense of the Company, shall execute proper instruments acknowledging satisfaction and discharge of this Indenture as to such series when

(a) either

(A) all Securities of such series theretofore authenticated and delivered and all coupons, if any, appertaining thereto (other than (i) coupons appertaining to Bearer Securities surrendered for exchange for Registered Securities and maturing after such exchange, whose surrender is not required or has been waived as provided in Section 305, (ii) Securities and coupons of such series which have been destroyed, lost or stolen and which have been replaced or paid as provided in Section 306, (iii) coupons appertaining to Securities called for redemption and maturing after the relevant Redemption Date, whose surrender has been waived as provided in Section 1106, and (iv) Securities and coupons of such series for whose payment money has theretofore been deposited in trust with the Trustee or any Paying Agent or segregated and held in trust by the Company and thereafter repaid to the Company or discharged from such trust, as provided in [Article 10]) have been delivered to the Trustee for cancellation; or

(B) all Securities of such series and, in the case of (i) or (ii) below, any coupons appertaining thereto not theretofore delivered to the Trustee for cancellation

(i) have become due and payable, or

(ii) will become due and payable at their Stated Maturity within one year, or

(iii) if redeemable at the option of the Company, are to be called for redemption within one year under arrangements satisfactory to the Trustee for the giving of notice of redemption by the Trustee in the name, and at the expense, of the Company,

and the Company, in the case of (i), (ii) or (iii) above, has irrevocably deposited or caused to be deposited with the Trustee as trust funds in trust for such purpose an amount, in the Currency in which the Securities of such series are payable, sufficient to pay and discharge the entire indebtedness on such Securities and such coupons not theretofore delivered to the Trustee for cancellation, for principal (and premium, if any) and interest, if any, to the date of such deposit (in the case of Securities which have become due and payable) or to the Stated Maturity or Redemption Date, as the case may be;

(b) the Company has paid or caused to be paid all other sums payable hereunder or under the Securities; and

(c) the Company has delivered to the Trustee an Officers' Certificate and an Opinion of Counsel, each stating that all conditions precedent herein provided for relating to the satisfaction and discharge of this Indenture as to such series have been complied with.

Notwithstanding the satisfaction and discharge of this Indenture, the obligations of the Company to the Trustee under Section 606 and, if money shall have been deposited with the Trustee pursuant to subclause (B) of clause (a) of this Section, the obligations of the Trustee under Section 402 and [Article 10], and the penultimate paragraph of Section 1405 shall survive.

SECTION 402. Application of Trust Money. All money deposited with the Trustee pursuant to Section 401 shall be held in trust and applied by it, in accordance with the provisions of the Securities, the coupons and this Indenture, to the payment, either directly or through any Paying Agent (including the Company acting as its own Paying Agent) to the Persons entitled thereto, of the principal (and premium, if any) and interest, if any, for whose payment such money has been deposited with the Trustee; but such money need not be segregated from other funds except to the extent required by law. Money so held in trust is subject to the Trustee's rights under Section 606.

## ARTICLE 5

### REMEDIES

SECTION 501. Events of Default. "Event of Default," wherever used herein with respect to Securities of any series, means any one of the following events (whatever the reason for such Event of Default and whether it shall be voluntary or involuntary or be effected by operation of law or pursuant to any judgment, decree or order of any court or any order, rule or regulation of any administrative or governmental body):

(1) [default in the payment of any interest on any Security of that series, or any related coupon, when such interest or coupon becomes due and payable, and continuance of such default for a period of 30 days; or

(2) default in the payment of the principal of (or premium, if any, on) any Security of that series at its Maturity; or

(3) default in the deposit of any principal payment into the sinking fund, when and as due by the terms of any Security of that series and Article Twelve; or

(4) default in the performance, or breach, of any covenant or agreement of the Company in this Indenture which affects or is applicable to the Securities of that series (other than a default in the performance or breach of a covenant or agreement that is elsewhere in this Section specifically dealt with or which has expressly been included in this Indenture solely for the benefit of other series of Securities), and continuance of such default or breach for a period of after receipt of notice given, by registered or certified mail, to the Company by the Trustee or to the Company and the Trustee by the Holders of at least 25% in principal amount of all Outstanding Securities of that series a written notice specifying such default or breach and requiring it to be remedied and stating that such notice is a "Notice of Default" hereunder; or

(5) the entry by a court having jurisdiction in the premises of (A) a decree or order for relief in respect of the Company in an involuntary case or proceeding under Bankruptcy Law or (B) a decree or order adjudging the Company a bankrupt or insolvent, or approving as properly filed a petition seeking reorganization, arrangement, adjustment or composition of or in respect of the Company under any applicable federal or state law, or appointing a custodian, receiver, liquidator, assignee, trustee, sequestrator or other similar official of the Company or of any substantial part of their property, or ordering the winding up or liquidation of their affairs, and the continuance of any such decree or order for relief or any such other decree or order unstayed and in effect for a period of 90 consecutive days; or

(6) the commencement by the Company of a voluntary case or proceeding under Bankruptcy Law or of any other case or proceeding to be adjudicated a bankrupt or insolvent, or the consent by them to the entry of a decree or order for relief in respect of the Company is an involuntary case or proceeding under Bankruptcy Law or to the commencement of any bankruptcy or insolvency case or proceeding against them, or the filing by them of a petition or answer or consent seeking reorganization or relief under any applicable Federal or State law, or the consent by them to the filing of such petition or to the appointment of or taking possession by a custodian, receiver, liquidator, assignee, trustee, sequestrator or similar official of the Company or of any substantial part of their property, or the making by them of an assignment for the benefit of creditors, or the admission by them in writing of their inability to pay their debts generally as they become due; or

(7) there occurs any other Event of Default provided pursuant to Sections 301 or 901 with respect to Securities of that series.]

SECTION 502. [RESERVED].

**ARTICLE 6**  
**THE TRUSTEE**

SECTION 601. Notice of Defaults. Within 90 days after the occurrence of any Default hereunder with respect to the Securities of any series, the Trustee shall transmit, in the manner and to the extent provided in TIA Section 313(c), notice of such default hereunder known to a Responsible Officer of the Trustee, unless such Default shall have been cured or waived; provided, however, that, except in the case of a Default in the payment of the principal of (or premium, if any) or interest, if any, on any Security of such series or in the payment of any sinking fund installment with respect to Securities of such series, the Trustee shall be protected in withholding such notice if and so long as the board of directors, the executive committee or a trust committee of directors and/or Responsible Officers of the Trustee in good faith determine that the withholding of such notice is in the best interest of the Holders of Securities of such series and any related coupons; and, provided further, that in the case of any default or breach of the character specified in Section 501 [ ] with respect to Securities and coupons of such series, no such notice to Holders shall be given until at least 30 days after the occurrence thereof.

SECTION 602. Certain Duties, Responsibilities and Rights of Trustee. Subject to the provisions of TIA Sections 315(a) through 315(d):

(1) except during the continuance of an Event of Default,

(a) the Trustee undertakes to perform such duties and only such duties as are specifically set forth in this Indenture, and no implied covenants or obligations shall be read into this Indenture against the Trustee; and

(b) in the absence of bad faith on its part, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon certificates or opinions furnished to the Trustee and conforming to the requirements of this Indenture; but in the case of any such certificates or opinions which by any provision hereof are specifically required to be furnished to the Trustee, the Trustee shall be under a duty to examine the same to determine whether or not they conform to the requirements of this Indenture;

(2) if any Event of Default has occurred and is continuing with respect to the Securities of any series, the Trustee shall exercise such of the rights and powers vested in it by this Indenture, and use the same degree of care and skill in their exercise, as a prudent person would exercise or use under the circumstances in the conduct of such person's own affairs;

(3) the Trustee may not be relieved from liabilities for its own negligent action, its own negligent failure to act, or its own willful misconduct, except that:

(a) this subparagraph (3) does not limit the effect of subparagraph (1) of this paragraph or the penultimate paragraph of this Section 602;



(b) the Trustee shall not be liable for any error of judgment made in good faith by a Responsible Officer, unless it is proved that the Trustee was negligent in ascertaining the pertinent facts; and

(c) the Trustee shall not be liable with respect to any action taken or omitted to be taken by it in good faith in accordance with the direction of the Holders of a majority in principal amount of the Outstanding Securities of the affected series relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee, under this Indenture;

(4) the Trustee may conclusively rely and shall be fully protected in acting or refraining from acting upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, bond, debenture, note, other evidence of indebtedness or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties;

(5) any request or direction of the Company mentioned herein shall be sufficiently evidenced by a Company Request or Company Order and any resolution of the Board of Directors of the Company may be sufficiently evidenced by a Board Resolution of the Company;

(6) whenever in the administration of this Indenture the Trustee shall deem it desirable that a matter be proved or established prior to taking, suffering or omitting any action hereunder, the Trustee (unless other evidence be herein specifically prescribed) may, in the absence of bad faith on its part, conclusively rely upon an Officers' Certificate;

(7) the Trustee may consult with counsel of its selection and the advice or written opinion of such counsel or any Opinion of Counsel shall be full and complete authorization and protection in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon;

(8) the Trustee shall be under no obligation to exercise any of the rights or powers vested in it by this Indenture at the request or direction of any of the Holders of Securities of any series or any related coupons pursuant to this Indenture, unless such Holders shall have offered to the Trustee security or indemnity reasonably satisfactory to it against the costs, expenses and liabilities which might be incurred by it in compliance with such request or direction;

(9) the Trustee shall not be bound to make any investigation into the facts or matters stated in any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, bond, debenture, note, other evidence of indebtedness or other paper or document, but the Trustee, in its discretion, may make such further inquiry or investigation into such facts or matters as it may see fit, and, if the Trustee shall determine to make such further inquiry or investigation, it shall be entitled to examine the books, records and premises of the Company personally or by agent or attorney;

(10) the Trustee may execute any of the trusts or powers hereunder or perform any duties hereunder either directly or by or through agents, attorneys, custodians, or nominees and the Trustee shall not be responsible for any misconduct or negligence on the part of any agent, attorney, custodian, or nominee appointed with due care by it hereunder;

(11) the Trustee shall not be liable for any action taken, suffered or omitted by it in good faith and believed by it to be authorized or within the discretion or rights or powers conferred upon it by this Indenture;

(12) in the event that the Trustee is also acting as Paying Agent, Security Registrar or in any other capacity hereunder, the rights, privileges, protections, immunities and benefits afforded to the Trustee pursuant to this Article Six, including, without limitation, its right to be indemnified, shall also be afforded to the Trustee in its capacity as such Paying Agent, Security Registrar or in such other capacity and each agent, custodian and other Person employed to act hereunder;

(13) other than in the case of an Event of Default described under clauses [\_\_\_\_\_] of Section 501, the Trustee shall not be deemed to know or be charged with knowledge of any Default or Event of Default with respect to the Securities of any series for which it is acting as Trustee unless a Responsible Officer of the Trustee shall have received written notice thereof at the Corporate Trust Office of the Trustee from the Company or a Holder of such Securities and such notice references this Indenture and such Securities;

(14) the Trustee shall not be required to give any bond or surety in respect of the performance of its powers and duties hereunder; and

(15) in no event shall the Trustee be responsible or liable for special, indirect, punitive or consequential loss or damage.

The Trustee shall not be required to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder, or in the exercise of any of its rights or powers if it shall have reasonable grounds for believing that repayment of such funds or adequate indemnity against such risk or liability is not reasonably assured to it.

Whether or not therein expressly so provided, every provision of this Indenture relating to the conduct or affecting the liability of or affording protection to the Trustee shall be subject to the provisions of this Section 602.

SECTION 603. Trustee Not Responsible for Recitals or Issuance of Securities. The recitals contained herein and in the Securities, except for the Trustee's certificates of authentication, and in any coupons shall be taken as the statements of the Company and neither the Trustee nor any Authenticating Agent assumes any responsibility for their correctness. The

Trustee makes no representations as to the validity or sufficiency of this Indenture or of the Securities or coupons, except that the Trustee represents that it is duly authorized to execute and deliver this Indenture, authenticate the Securities and perform its obligations hereunder and that the statements made by it in a Statement of Eligibility on Form T-1 supplied to the Company are true and accurate, subject to the qualifications set forth therein. Neither the Trustee nor any Authenticating Agent shall be accountable for the use or application by the Company of Securities or the proceeds thereof.

SECTION 604. May Hold Securities. The Trustee, any Authenticating Agent, any Paying Agent, any Security Registrar or any other agent of the Company or of the Trustee, in its individual or any other capacity, may become the owner or pledgee of Securities and coupons and, subject to TIA Sections 310(b) and 311, may otherwise deal with the Company with the same rights it would have if it were not Trustee, Authenticating Agent, Paying Agent, Security Registrar or such other agent.

SECTION 605. Money Held in Trust. Money held by the Trustee in trust hereunder need not be segregated from other funds except to the extent required by law. The Trustee shall be under no liability for interest on any money received by it hereunder except as otherwise agreed in writing with the Company for the investment thereof.

SECTION 606. Compensation and Reimbursement. The Company agrees:

(1) to pay to the Trustee from time to time such compensation as shall be agreed in writing between the Company and the Trustee for all services rendered by it hereunder (which compensation shall not be limited by any provision of law in regard to the compensation of a trustee of an express trust);

(2) except as otherwise expressly provided herein, to reimburse the Trustee upon its request for all reasonable expenses, disbursements and advances incurred or made by the Trustee in accordance with any provision of this Indenture (including the reasonable compensation and the expenses and disbursements of its agents and counsel), except any such expense, disbursement or advance as may be attributable to its gross negligence or willful misconduct; and

(3) to indemnify the Trustee and any predecessor trustee and its and their officers, directors, employees, and agents for, and to hold it or them harmless against, any loss, liability or expense incurred without gross negligence or willful misconduct on its or their part, arising out of or in connection with the acceptance or administration of the trust or trusts hereunder, including the costs and expenses (including reasonable fees and expenses of counsel) of defending itself or themselves against any claim or liability in connection with the exercise or performance of any of its or their powers or duties hereunder.

The obligations of the Company under this Section to compensate the Trustee, to pay or reimburse the Trustee for expenses, disbursements and advances and to indemnify and hold harmless the Trustee shall constitute additional indebtedness hereunder and shall survive the satisfaction and discharge of this Indenture, the resignation or removal of the Trustee and the

termination of this Indenture for any reason. As security for the performance of such obligations of the Company, the Trustee shall have a claim and lien prior to the Securities upon all property and funds held or collected by the Trustee as such, except funds held in trust for the payment of principal of (or premium, if any) or interest, if any, on particular Securities or any coupons.

When the Trustee incurs expenses or renders services in connection with an Event of Default specified in Section 501[\_\_\_\_]), the expenses (including reasonable charges and expense of its counsel) of and the compensation for such services are intended to constitute expenses of administration under any applicable U.S. federal or state bankruptcy, insolvency or other similar law.

The provisions of this Section shall survive the satisfaction and discharge of this Indenture, the termination of this Indenture for any reason and the earlier resignation or removal of the Trustee.

SECTION 607. Corporate Trustee Required; Eligibility; Conflicting Interests; Disqualification. There shall be at all times a Trustee hereunder which shall be eligible to act as Trustee under TIA Section 310(a)(1) and shall have a combined capital and surplus of at least \$50,000,000. If such corporation publishes reports of condition at least annually, pursuant to law or to the requirements of U.S. federal, state, territorial or District of Columbia supervising or examining authority, then for the purposes of this Section, the combined capital and surplus of such corporation shall be deemed to be its combined capital and surplus as set forth in its most recent report of condition so published. If at any time the Trustee shall cease to be eligible in accordance with the provisions of this Section, it shall resign immediately in the manner and with the effect hereinafter specified in this Article. If the Trustee shall have or acquire any conflicting interest within the meaning of the Trust Indenture Act, it shall either eliminate such conflicting interest or resign to the extent, in the manner and with the effect, and subject to the conditions, provided in the Trust Indenture Act and this Indenture. For purposes of Section 310(b)(1) of the Trust Indenture Act and to the extent permitted thereby, the Trustee, in its capacity as trustee in respect of the Securities of any series, shall not be deemed to have a conflicting interest arising from its capacity as trustee in respect of the Securities of any other series. Nothing contained herein shall prevent the Trustee from filing the application provided for in the second to last sentence of Section 310(b) of the Trust Indenture Act.

SECTION 608. Resignation and Removal; Appointment of Successor. No resignation or removal of the Trustee and no appointment of a successor Trustee pursuant to this Article shall become effective until the acceptance of appointment by the successor Trustee in accordance with the applicable requirements of Section 609 and any and all amounts then due and owing to the Trustee hereunder have been paid in full.

(a) The Trustee may resign at any time with respect to the Securities of one or more series by giving written notice thereof to the Company. If the instrument of acceptance by a successor Trustee required by Section 609 shall not have been delivered to the Trustee within 30 days after the giving of such notice of resignation, the resigning Trustee may petition, at the expense of the Company, any court of competent jurisdiction for the appointment of a successor Trustee with respect to the Securities of such series.

(b) The Trustee may be removed at any time with respect to the Securities of any series by Act of the Holders of a majority in principal amount of the Outstanding Securities of such series, delivered to the Trustee and to the Company. If the instrument of acceptance by a successor Trustee required by Section 609 shall not have been delivered to the Trustee within 60 days after the giving of such notice of removal, the Trustee being removed may petition, at the expense of the Company, any court of competent jurisdiction for the appointment of a successor Trustee with respect to the Securities of such series.

(c) If at any time:

(1) the Trustee shall fail to comply with the provisions of TIA Section 310(b) after written request therefor by the Company or any Holder who has been a bona fide Holder of a Security for at least six months, or

(2) the Trustee shall cease to be eligible under Section 607 and shall fail to resign after written request therefor by the Company or any Holder who has been a bona fide Holder of a Security for at least six months, or

(3) the Trustee shall become incapable of acting or shall be adjudged a bankrupt or insolvent or a receiver of the Trustee or of its property shall be appointed or any public officer shall take charge or control of the Trustee or of its property or affairs for the purpose of rehabilitation, conservation or liquidation,

then, in any such case, (i) the Company, by a Board Resolution, may remove the Trustee with respect to all Securities, or (ii) subject to TIA Section 315(e), any Holder who has been a bona fide Holder of a Security for at least six months may, on behalf of himself and all others similarly situated, petition any court of competent jurisdiction for the removal of the Trustee with respect to all Securities and the appointment of a successor Trustee or Trustees.

(d) If the Trustee shall resign, be removed or become incapable of acting, or if a vacancy shall occur in the office of Trustee for any cause, with respect to the Securities of one or more series, the Company, by a Board Resolution, shall promptly appoint a successor Trustee or Trustees with respect to the Securities of that or those series (it being understood that any such successor Trustee may be appointed with respect to the Securities of one or more or all of such series and that at any time there shall be only one Trustee with respect to the Securities of any particular series). If, within one year after such resignation, removal or incapability, or the occurrence of such vacancy, a successor Trustee with respect to the Securities of any series shall be appointed by Act of the Holders of a majority in principal amount of the Outstanding Securities of such series delivered to the Company and the retiring Trustee, the successor Trustee so appointed shall, forthwith upon its acceptance of such appointment, become the successor Trustee with respect to the Securities of such series and to that extent supersede the successor Trustee appointed by the Company. If no successor Trustee with respect to the Securities of any series shall have been so appointed by the Company or the Holders and accepted appointment in the manner hereinafter provided, any Holder who has been a bona fide Holder of a Security of such series for at least six months may, on behalf of himself and all others similarly situated, petition any court of competent jurisdiction for the appointment of a successor Trustee with respect to the Securities of such series.

(e) The Company shall give written notice of each resignation and each removal of the Trustee with respect to the Securities of any series and each appointment of a successor Trustee with respect to the Securities of any series to the Holders of Securities of such series in the manner provided for in Section 106. Each notice shall include the name of the successor Trustee with respect to the Securities of such series and the address of its Corporate Trust Office.

SECTION 609. Acceptance of Appointment by Successor. In case of the appointment hereunder of a successor Trustee with respect to all Securities, every such successor Trustee so appointed shall execute, acknowledge and deliver to the Company and the retiring Trustee an instrument accepting such appointment, and thereupon the resignation or removal of the retiring Trustee shall become effective and such successor Trustee, without any further act, deed or conveyance, shall become vested with all the rights, powers, trusts and duties of the retiring Trustee; but, on the written request of the Company or the successor Trustee, such retiring Trustee shall, upon payment of its charges, execute and deliver an instrument transferring to such successor Trustee all the rights, powers and trusts of the retiring Trustee and shall duly assign, transfer and deliver to such successor Trustee all property and money held by such retiring Trustee hereunder, subject nevertheless to its claim and lien provided for in Section 606.

(a) In case of the appointment hereunder of a successor Trustee with respect to the Securities of one or more (but not all) series, the Company, the retiring Trustee and each successor Trustee with respect to the Securities of one or more series shall execute and deliver an indenture supplemental hereto wherein each successor Trustee shall accept such appointment and which (1) shall contain such provisions as shall be necessary or desirable to transfer and confirm to, and to vest in, each successor Trustee all the rights, powers, trusts and duties of the retiring Trustee with respect to the Securities of that or those series to which the appointment of such successor Trustee relates, (2) if the retiring Trustee is not retiring with respect to all Securities, shall contain such provisions as shall be deemed necessary or desirable to confirm that all the rights, powers, trusts and duties of the retiring Trustee with respect to the Securities of that or those series as to which the retiring Trustee is not retiring shall continue to be vested in the retiring Trustee, and (3) shall add to or change any of the provisions of this Indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one Trustee, it being understood that nothing herein or in such supplemental indenture shall constitute such Trustees co-trustees of the same trust and that each such Trustee shall be trustee of a trust or trusts hereunder separate and apart from any trust or trusts hereunder administered by any other such Trustee; and upon the execution and delivery of such supplemental indenture the resignation or removal of the retiring Trustee shall become effective to the extent provided therein and each such successor Trustee, without any further act, deed or conveyance, shall become vested with all the rights, powers, trusts and duties of the retiring Trustee with respect to the Securities of that or those series to which the appointment of such successor Trustee relates; but, on request of the Company or any successor Trustee, such retiring Trustee shall duly assign, transfer and deliver to such successor Trustee all property and money held by such retiring Trustee hereunder

with respect to the Securities of that or those series to which the appointment of such successor Trustee relates, subject nevertheless to its claim and lien provided for in Section 606. Whenever there is a successor Trustee with respect to one or more (but less than all) series of securities issued pursuant to this Indenture, the terms "Indenture" and "Securities" shall have the meanings specified in the provisos to the respective definitions of those terms in Section 101 which contemplate such situation.

(b) Upon request of any such successor Trustee, the Company shall execute any and all instruments for more fully and certainly vesting in and confirming to such successor Trustee all such rights, powers and trusts referred to in paragraph (a) or (b) of this Section, as the case may be.

(c) No successor Trustee shall accept its appointment unless at the time of such acceptance such successor Trustee shall be qualified and eligible under this Article. The Trustee shall have no liability or responsibility for the action or inaction of any successor Trustee.

SECTION 610. Conversion, Consolidation or Succession to Business. Any corporation into which the Trustee may be merged or converted or with which it may be consolidated, or any corporation resulting from any merger, conversion or consolidation to which the Trustee shall be a party, or any corporation succeeding to all or substantially all the corporate trust business of the Trustee, shall be the successor of the Trustee hereunder, provided such corporation shall be otherwise qualified and eligible under this Article, without the execution or filing of any paper or any further act on the part of any of the parties hereto. In case any Securities or coupons shall have been authenticated, but not delivered, by the Trustee then in office, any successor by merger, conversion or consolidation to such authenticating Trustee may adopt such authentication and deliver the Securities or coupons so authenticated with the same effect as if such successor Trustee had itself authenticated such Securities or coupons. In case any of the Securities shall not have been authenticated by such predecessor Trustee, any successor Trustee may authenticate and deliver such Securities or coupons either in the name of any predecessor hereunder or in the name of the successor Trustee. In all such cases such certificates shall have the full force and effect which this Indenture provides for the certificate of authentication of the Trustee; provided, however, that the right to adopt the certificate of authentication of any predecessor Trustee or to authenticate Securities in the name of any predecessor Trustee shall apply only to its successor or successors by merger, conversion or consolidation.

SECTION 611. Appointment of Authenticating Agent. At any time when any of the Securities remain Outstanding, the Trustee may appoint an Authenticating Agent or Agents with respect to one or more series of Securities which shall be authorized to act on behalf of the Trustee to authenticate Securities of such series and the Trustee shall give written notice of such appointment to all Holders of Securities of the series with respect to which such Authenticating Agent will serve, in the manner provided for in Section 106. Securities so authenticated shall be entitled to the benefits of this Indenture and shall be valid and obligatory for all purposes as if authenticated by the Trustee hereunder. Any such appointment shall be evidenced by an instrument in writing signed by a Responsible Officer of the Trustee, and a copy of such instrument shall be promptly furnished to the Company. Wherever reference is made in this Indenture to the authentication and delivery of Securities by the Trustee or the Trustee's

certificate of authentication, such reference shall be deemed to include authentication and delivery on behalf of the Trustee by an Authenticating Agent and a certificate of authentication executed on behalf of the Trustee by an Authenticating Agent. Each Authenticating Agent shall be acceptable to the Company and shall at all times be a corporation organized and doing business under the laws of the United States of America, any state thereof or the District of Columbia, authorized under such laws to act as Authenticating Agent, having a combined capital and surplus of not less than \$50,000,000 and subject to supervision or examination by U.S. federal or state authority. If such corporation publishes reports of condition at least annually, pursuant to law or to the requirements of said supervising or examining authority, then for the purposes of this Section, the combined capital and surplus of such corporation shall be deemed to be its combined capital and surplus as set forth in its most recent report of condition so published. If at any time an Authenticating Agent shall cease to be eligible in accordance with the provisions of this Section, it shall resign immediately in the manner and with the effect specified in this Section.

Any corporation into which an Authenticating Agent may be merged or converted or with which it may be consolidated, or any corporation resulting from any merger, conversion or consolidation to which such Authenticating Agent shall be a party, or any corporation succeeding to all or substantially all the corporate agency or corporate trust business of an Authenticating Agent, shall continue to be an Authenticating Agent, provided such corporation shall be otherwise eligible under this Section, without the execution or filing of any paper or any further act on the part of the Trustee or the Authenticating Agent.

An Authenticating Agent may resign at any time by giving written notice thereof to the Trustee and to the Company. The Trustee may at any time terminate the agency of an Authenticating Agent by giving written notice thereof to such Authenticating Agent and to the Company. Upon receiving such a notice of resignation or upon such a termination, or in case at any time such Authenticating Agent shall cease to be eligible in accordance with the provisions of this Section, the Trustee may appoint a successor Authenticating Agent which shall be acceptable to the Company and shall give written notice of such appointment to all Holders of Securities of the series with respect to which such Authenticating Agent will serve, in the manner provided for in Section 106. Any successor Authenticating Agent upon acceptance of its appointment hereunder shall become vested with all the rights, powers and duties of its predecessor hereunder, with like effect as if originally named as an Authenticating Agent. No successor Authenticating Agent shall be appointed unless eligible under the provisions of this Section. The Trustee shall have no liability or responsibility for the action or inaction of any Authenticating Agent (that is not the Trustee).

The Company agrees to pay to each Authenticating Agent from time to time reasonable compensation for its services under this Section.

If an appointment with respect to one or more series is made pursuant to this Section, the Securities of such series may have endorsed thereon, in addition to the Trustee's certificate of authentication, an alternate certificate of authentication in the following form:

Dated: \_\_\_\_\_

This is one of the Securities of the series designated therein referred to in the within-mentioned Indenture.



[Trustee],  
as Trustee

By: \_\_\_\_\_  
as Authenticating Agent

By: \_\_\_\_\_  
Authorized Signatory

## ARTICLE 7

### HOLDERS' LISTS AND REPORTS BY TRUSTEE AND COMPANY

SECTION 701. Disclosure of Names and Addresses of Holders. Every Holder of Securities or coupons, by receiving and holding the same, agrees with the Company and the Trustee that neither of the Company, or the Trustee or any agent of either of them shall be held accountable by reason of the disclosure of any such information as to the names and addresses of the Holders in accordance with TIA Section 312, regardless of the source from which such information was derived, and that the Trustee shall not be held accountable by reason of mailing any material pursuant to a request made under TIA Section 312(b).

SECTION 702. Reports by Trustee. Within 60 days after May 15 of each year commencing with the first May 15 after the first issuance of Securities pursuant to this Indenture, the Trustee shall transmit to the Holders of Securities, in the manner and to the extent provided in TIA Section 313(c), a brief report dated as of such May 15 if required by TIA Section 313(a). The Company will promptly notify the Trustee in writing when any series of Securities are listed on any stock exchange and of any delisting thereof.

A copy of each such report shall, at the time of such transmission to Holders, be filed by the Trustee with each stock exchange if any, upon which the Securities are listed and with the Company.

SECTION 703. Reports by Company. The Company shall:

(1) Unless available on EDGAR, file with the Trustee, within 15 days after the Company, as the case may be, has filed the same with the Commission, copies of the annual reports and of the information, documents and other reports (or copies of such portions of any of the foregoing as the Commission may from time to time by rules and regulations prescribe) which the Company may be required to file with the Commission pursuant to Section 13 or Section 15(d) of the Exchange Act; or, if the Company is no longer required to file information, documents or reports pursuant to either of such Sections, then it shall file with the Trustee and the Commission, in accordance with rules and regulations prescribed from time to time by the Commission, such of the supplementary and periodic information, documents and reports which may be required pursuant to Section 13 of the Exchange Act in respect of a security listed and registered on a national securities exchange as may be prescribed from time to time in such rules and regulations;

(2) file with the Trustee and the Commission, in accordance with rules and regulations prescribed from time to time by the Commission, such additional information, documents and reports with respect to compliance by the Company with the conditions and covenants of this Indenture as may be required from time to time by such rules and regulations; and

(3) transmit to all Holders, in the manner and to the extent provided in TIA Section 313(c), within 30 days after the filing thereof with the Trustee, such summaries of any information, documents and reports required to be filed by the Company pursuant to paragraphs (1) and (2) of this Section as may be required by rules and regulations prescribed from time to time by the Commission.

Delivery of such reports, information and documents to the Trustee, which if pursuant to an EDGAR filing, the Trustee is not required to confirm, is for informational purposes only and the Trustee's receipt of such shall not constitute constructive notice of the filing of such a report, its timeliness or any information contained therein or determinable from information contained therein, including compliance by the Company with any of its covenants hereunder (as to which the Trustee is entitled to conclusively rely exclusively on Officers' Certificates).

## ARTICLE 8

### CONSOLIDATION, MERGER, CONVEYANCE, TRANSFER OR LEASE

[RESERVED]

## ARTICLE 9

### SUPPLEMENTAL INDENTURES

SECTION 901. Supplemental Indentures Without Consent of Holders. Without the consent of any Holders, the Company when authorized by or pursuant to a Board Resolution, and the Trustee, at any time and from time to time, may enter into one or more indentures supplemental hereto, in form satisfactory to the Trustee, for any of the following purposes:

(1) to evidence the succession of another Person to the Company and the assumption by any such successor of the covenants of the Company contained herein and in the Securities and any related coupons in accordance with Article Eight; or

(2) to add to the covenants of the Company for the benefit of the Holders of all or any series of Securities and any related coupons (and if such covenants are to be for the benefit of less than all series of Securities, stating that such covenants are being included solely for the benefit of such series) or to surrender any right or power herein conferred upon the Company; or

(3) to add any additional Events of Default for the benefit of the Holders of all or any series of Securities and any related coupons (and if such Events of Default are to be for the benefit of less than all series of Securities, stating that such Events of Default are being included solely for the benefit of such series); or

(4) to add to or change any of the provisions of this Indenture to provide that Bearer Securities may be registrable as to principal, to change or eliminate any restrictions on the payment of principal of or any premium or interest on Bearer Securities, to permit Bearer Securities to be issued in exchange for Registered Securities, to permit Bearer Securities to be issued in exchange for Bearer Securities of other authorized denominations or to permit or facilitate the issuance of Securities in uncertificated form, provided that any such action shall not adversely affect the interests of the Holders of Securities of any series or any related coupons in any material respect; or

(5) to change or eliminate any of the provisions of this Indenture; provided that any such change or elimination shall become effective only when there is no Security Outstanding of any series created prior to the execution of such supplemental indenture which is entitled to the benefit of any such provision; or

(6) to secure the Securities pursuant to the requirements of [Article 10] or otherwise; or

(7) to establish the form or terms of Securities of any series and any related coupons as permitted by Sections 201 and 301, including the provisions and procedures relating to Securities convertible into or exchangeable for any securities of any Person (including the Company); or

(8) to comply with requirements of the Securities and Exchange Commission in order to maintain the qualification of the indenture under the Trust Indenture Act; or

(9) to evidence and provide for the acceptance of appointment hereunder by a successor Trustee with respect to the Securities of one or more series and to add to or change any of the provisions of this Indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one Trustee, pursuant to the requirements of Section 609(b); or

(10) to make any provisions with respect to the optional conversion rights of holders, including providing for the conversion of Securities into any other security or securities of the Company, provided that such provisions are not adverse to the interests of the holders of any debt securities then outstanding; or

(11) to cure any ambiguity, to correct or supplement any provision herein which may be inconsistent with any other provision herein, or to make any other provisions with respect to matters or questions arising under this Indenture, provided such action shall not adversely affect the interests of the Holders of Securities of any series and any related coupons in any material respect; or

(12) to add any guarantee of one or more series of the Securities; or

(13) to supplement any of the provisions of this Indenture to such extent as shall be necessary to permit or facilitate the defeasance and discharge of any series of Securities pursuant to Sections 401, 1402 and 1403; provided that any such action shall not adversely affect the interests of the Holders of Securities of such series and any related coupons or any other series of Securities in any material respect.

SECTION 902. Supplemental Indentures with Consent of Holders. With the consent of the Holders of a majority in principal amount of all Outstanding Securities affected by such supplemental indenture, by Act of said Holders delivered to the Company and the Trustee and the Company when authorized by or pursuant to a Board Resolution, and the Trustee may enter into an indenture or indentures supplemental hereto for the purpose of adding any provisions to or changing in any manner or eliminating any of the provisions of this Indenture which affect such Securities or of modifying in any manner the rights of the Holders of such Securities under this Indenture; provided, however, that no such supplemental indenture shall, without the consent of the Holder of each Outstanding Security affected thereby,

(1) change the Stated Maturity of the principal of (or premium, if any) or any installment of principal of or interest on any Security of such series; or the terms of any sinking fund with respect to any Security; or reduce the principal amount thereof (or premium, if any) or the rate of interest (or manner of calculating the rate of interest), if any, thereon, or any premium payable upon the redemption thereof, or repayment thereof at the option of the Holder, or the date(s) or period(s) for any redemption or repayment thereof, or change any obligation of the Company to pay Additional Amounts contemplated by [Article 10] (except as contemplated by [Article 8] and permitted by Section 901(1)), or reduce the amount of the principal of an Original Issue Discount Security of such series that would be due and payable upon an acceleration of the Maturity thereof pursuant to Section 502, or upon the redemption thereof, or the amount thereof provable in bankruptcy pursuant to Section 502, or adversely affect any right of repayment at the option of any Holder of any Security of such series, or change any Place of Payment where, or the Currency in which, any Security of such series or any premium or interest thereon is payable; or impair the right to institute suit for the enforcement of any such payment on or after the Stated Maturity thereof (or, in the case of redemption or repayment at the option of the Holder, on or after the Redemption Date or Repayment Date, as the case may be), or modify the provisions of this Indenture with respect to the mandatory redemption of Securities or repayment of the Securities at the option of the Holder in a manner adverse to any Holder of any Securities or any coupons appertaining thereto, adversely affect any right to convert or exchange any Security as may be provided pursuant to Section 301 herein, or

(2) reduce the percentage in principal amount of the Outstanding Securities of any series the consent of whose Holders is required for any such supplemental indenture or for any waiver of compliance with certain provisions of this Indenture which affect such series or certain defaults applicable to such series hereunder and their consequences provided for in this Indenture, or reduce the requirements of Section 1504 for quorum or voting with respect to Securities of such series, or

(3) modify any of the provisions of this Section or Section 513, except to increase any such percentage or to provide that certain other provisions of this Indenture which affect such series cannot be modified or waived without the consent of the Holder of each Outstanding Security affected thereby.

It shall not be necessary for any Act of Holders under this Section to approve the particular form of any proposed supplemental indenture, but it shall be sufficient if such Act shall approve the substance thereof.

SECTION 903. Execution of Supplemental Indentures. In executing, or accepting the additional trusts created by, any supplemental indenture permitted by this Article or the modifications thereby of the trusts created by this Indenture, the Trustee shall receive, and shall be fully protected in conclusively relying upon, an Opinion of Counsel stating that the execution of such supplemental indenture is authorized or permitted by this Indenture. The Trustee may, but shall not be obligated to, enter into any such supplemental indenture which affects the Trustee's own rights, duties or immunities under this Indenture or otherwise.

SECTION 904. Effect of Supplemental Indentures. Upon the execution of any supplemental indenture under this Article, this Indenture shall be modified in accordance therewith, and such supplemental indenture shall form a part of this Indenture for all purposes; and every Holder of Securities theretofore or thereafter authenticated and delivered hereunder and of any coupon appertaining thereto shall be bound thereby.

SECTION 905. Conformity with Trust Indenture Act. Every supplemental indenture executed pursuant to this Article shall conform to the requirements of the Trust Indenture Act as then in effect.

SECTION 906. Reference in Securities to Supplemental Indentures. Securities of any series authenticated and delivered after the execution of any supplemental indenture pursuant to this Article may, and shall if required by the Trustee, bear a notation in form approved by the Trustee as to any matter provided for in such supplemental indenture. If the Company shall so determine, new Securities of any series so modified as to conform, in the opinion of the Trustee, to any such supplemental indenture may be prepared and executed by the Company, and authenticated and delivered (which delivery, in the case of Bearer Securities, shall occur only outside the United States) by the Trustee in exchange for Outstanding Securities of such series.

SECTION 907. Notice of Supplemental Indentures. Promptly after the execution by the Company and the Trustee of any supplemental indenture pursuant to the provisions of Section 902, the Company shall give written notice thereof to the Holders of each Outstanding Security affected, in the manner provided for in Section 106, setting forth in general terms the substance of such supplemental indenture.

**ARTICLE 10  
COVENANTS**

[RESERVED]

**ARTICLE 11  
REDEMPTION OF SECURITIES**

SECTION 1101. Applicability of Article. Securities of any series which are redeemable before their Stated Maturity shall be redeemable in accordance with the terms of such Securities and (except as otherwise specified as contemplated by Section 301 for Securities of any series) in accordance with this Article.

SECTION 1102. Election to Redeem; Notice to Trustee. The election of the Company to redeem any Securities shall be evidenced by or pursuant to a Board Resolution. In case of any redemption at the election of the Company, the Company shall, at least 60 days prior to the Redemption Date fixed by the Company (unless a shorter notice shall be satisfactory to the Trustee), notify the Trustee in writing of such Redemption Date and of the principal amount of Securities of such series to be redeemed and, in the case of a partial redemption, shall deliver to the Trustee such documentation and records as shall enable the Trustee to select the Securities to be redeemed pursuant to Section 1103. In the case of any redemption of Securities prior to the expiration of any restriction on such redemption provided in the terms of such Securities or elsewhere in this Indenture, the Company shall furnish the Trustee with an Officers' Certificate evidencing compliance with such restriction.

SECTION 1103. Selection by Trustee of Securities to Be Redeemed. If less than all the Securities of any series with the same terms are to be redeemed, the particular Securities to be redeemed shall be selected not more than 45 days prior to the Redemption Date by the Trustee, from the Outstanding Securities of such series with the same terms not previously called for redemption, by such method as the Trustee shall deem fair and appropriate, subject to applicable law, and which may provide for the selection for redemption of portions of the principal of Securities of such series; provided, however, that no such partial redemption shall reduce the portion of the principal amount of a Security not redeemed to less than the minimum authorized denomination for Securities of such series established pursuant to Section 301.

The Trustee shall promptly notify the Company in writing of the Securities selected for redemption and, in the case of any Securities selected for partial redemption, the principal amount thereof to be redeemed.

For all purposes of this Indenture, unless the context otherwise requires, all provisions relating to the redemption of Securities shall relate, in the case of any Security redeemed or to be redeemed only in part, to the portion of the principal amount of such Security which has been or is to be redeemed.

SECTION 1104. Notice of Redemption. Except as otherwise specified as contemplated by Section 301 for Securities of any series, notice of redemption shall be given in the manner provided for in Section 106 not less than 30 nor more than 60 days prior to the Redemption Date, to each Holder of Securities to be redeemed.

Except as otherwise specified as contemplated by Section 301 for Securities of any series, all notices of redemption shall state:

- (1) the Redemption Date,
- (2) the Redemption Price (if known) or the formula pursuant to which the Redemption Price is to be determined if the Redemption Price cannot be determined at the time the notice is given, together with the amount of accrued interest, if any, to the Redemption Date,
- (3) if less than all the Outstanding Securities of any series are to be redeemed, the identification (and, in the case of partial redemption, the principal amounts) of the particular Securities to be redeemed,
- (4) in case any Security is to be redeemed in part only, the notice which relates to such Security shall state that on and after the Redemption Date, upon surrender of such Security, the Holder will receive, without charge, a new Security or Securities of the same series of like tenor of authorized denominations for the principal amount thereof remaining unredeemed,
- (5) that on the Redemption Date, the Redemption Price and accrued interest, if any, to the Redemption Date payable as provided in Section 1106 will become due and payable upon each such Security, or the portion thereof, to be redeemed and, if applicable, that interest thereon will cease to accrue on and after said date,
- (6) the Place or Places of Payment (which in the case of Bearer Securities shall be outside the United States) where such Securities, together in the case of Bearer Securities with all coupons appertaining thereto, if any, maturing on or after the Redemption Date, are to be surrendered for payment of the Redemption Price and accrued interest, if any,
- (7) that the redemption is for a sinking fund, if such is the case,
- (8) that, unless otherwise specified in such notice, Bearer Securities of any series, if any, surrendered for redemption must be accompanied by all coupons maturing subsequent to the Redemption Date or the amount of any such missing coupon or coupons will be deducted from the Redemption Price unless security or indemnity satisfactory to the Company, the Trustee and any Paying Agent is furnished,
- (9) if Bearer Securities of any series are to be redeemed and any Registered Securities of such series are not to be redeemed, and if such Bearer Securities may be exchanged for Registered Securities not subject to redemption on such Redemption Date pursuant to Section 305 or otherwise, the last date, as determined by the Company, on which such exchanges may be made,

(10) the CUSIP, ISIN or other similar numbers, if any, assigned to such Securities; provided, however, that such notice may state that no representation is made as to the correctness of CUSIP, ISIN or other similar numbers, in which case none of the Company, the Trustee or any agent of the Company or the Trustee shall have any liability in respect of the use of any CUSIP, ISIN or other similar number or numbers on such notices, and the redemption of such Securities shall not be affected by any defect in or omission of such numbers,

(11) the Euroclear or the Clearstream reference numbers of such Security, if any, and

(12) such other matters as the Company shall deem desirable or appropriate.

Notice of redemption of Securities to be redeemed at the election of the Company shall be given by the Company or, at the Company's written request, by the Trustee in the name and at the expense of the Company.

SECTION 1105. Deposit of Redemption Price. On or prior to 11:00 a.m. (New York City time) on any Redemption Date, the Company shall deposit with the Trustee or with a Paying Agent (or, if the Company is acting as its own Paying Agent, which it may not do in the case of a sinking fund payment under Article Twelve, segregate and hold in trust as provided in [Article 10]) an amount of money in the Currency in which the Securities of such series are payable (except as otherwise specified pursuant to Section 301 for the Securities of such series and except, if applicable, as provided in Sections 312(b), 312(d) and 312(e)) sufficient to pay on the Redemption Date the Redemption Price of, and (except if the Redemption Date shall be an Interest Payment Date) accrued interest, if any, on, all the Securities or portions thereof which are to be redeemed on that date.

SECTION 1106. Securities Payable on Redemption Date. Notice of redemption having been given as aforesaid, the Securities so to be redeemed shall, on the Redemption Date, become due and payable at the Redemption Price therein specified in the Currency in which the Securities of such series are payable (except as otherwise specified pursuant to Section 301 for the Securities of such series and except, if applicable, as provided in Sections 312(b), 312(d) and 312(e)) (together with accrued interest, if any, to the Redemption Date), and from and after such date (unless the Company shall default in the payment of the Redemption Price and accrued interest, if any) such Securities shall, if the same were interest-bearing, cease to bear interest and the coupons for such interest appertaining to any Bearer Securities so to be redeemed, except to the extent provided below, shall be void. Upon surrender of any such Security for redemption in accordance with said notice, together with all coupons, if any, appertaining thereto maturing after the Redemption Date, such Security shall be paid by the Company at the Redemption Price, together with accrued interest, if any, to the Redemption Date; provided, however, that installments of interest on Bearer Securities whose Stated Maturity is on or prior to the Redemption Date shall be payable only at an office or agency located outside the United States (except as otherwise provided in [Article 10]) and, unless otherwise specified as contemplated by Section 301, only upon presentation and surrender of coupons for such interest; and provided further that installments of interest on Registered Securities whose Stated Maturity is on or prior to the Redemption Date shall be payable to the Holders of such Securities, or one or more Predecessor Securities, registered as such at the close of business on the relevant Regular Record Dates according to their terms and the provisions of Section 307.



If any Bearer Security surrendered for redemption shall not be accompanied by all appurtenant coupons maturing after the Redemption Date, such Security may be paid after deducting from the Redemption Price an amount equal to the face amount of all such missing coupons, or the surrender of such missing coupon or coupons may be waived by the Company and the Trustee if there be furnished to them such security or indemnity as they may require to save each of them and any Paying Agent harmless. If thereafter the Holder of such Security shall surrender to the Trustee or any Paying Agent any such missing coupon in respect of which a deduction shall have been made from the Redemption Price, such Holder shall be entitled to receive the amount so deducted; provided, however, that interest represented by coupons shall be payable only at an office or agency located outside the United States (except as otherwise provided in [Article 10]) and, unless otherwise specified as contemplated by Section 301, only upon presentation and surrender of those coupons.

If any Security called for redemption shall not be so paid upon surrender thereof for redemption, the principal (and premium, if any) shall, until paid, bear interest from the Redemption Date at the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) set forth in or contemplated by such Security.

SECTION 1107. Securities Redeemed in Part. Any Security which is to be redeemed only in part (pursuant to the provisions of this Article or of Article Twelve) shall be surrendered at a Place of Payment therefor (with, if the Company or the Trustee so requires, due endorsement by, or a written instrument of transfer in form satisfactory to the Company and the Trustee duly executed by, the Holder thereof or such Holder's attorney duly authorized in writing), and the Company shall execute, and the Trustee shall authenticate and deliver to the Holder of such Security without service charge, a new Security or Securities of the same series and of like tenor, of any authorized denomination as requested by such Holder, in aggregate principal amount equal to and in exchange for the unredeemed portion of the principal of the Security so surrendered.

SECTION 1108. Optional Redemption Due to Changes in Tax Treatment. Each series of Securities may be redeemed at the option of the Company (or their successors) in whole but not in part at any time (except in the case of Securities that have a variable rate of interest, which may be redeemed on any Interest Payment Date) at a Redemption Price equal to the principal amount thereof plus accrued interest to the date fixed for redemption (except in the case of Outstanding Original Issue Discount Securities which may be redeemed at the Redemption Price specified by the terms of such series of Securities) if (i) the Company is or would be required to pay Additional Amounts as a result of any change in or amendment to the laws or any regulations or rulings promulgated thereunder of the United States (or in the case of a successor Person to the Company, of the jurisdiction in which such successor Person is organized or any political subdivision or taxing authority thereof or therein) or (ii) any change in the official application or interpretation of such laws, regulations or rulings, or any change in the official application or interpretation of, or any execution of or amendment to, any treaty or treaties affecting taxation to which the United States (or such other jurisdiction or political subdivision or taxing authority) is a party, which change, execution or amendment becomes effective on or after the date of issuance of such series pursuant to Section 301(23) (or in the case of a successor Person to the Company,

the date on which such successor Person became such). Prior to the giving of notice of redemption of such Securities pursuant to this Indenture, the Company will deliver to the Trustee an Officers' Certificate, stating that the Company is entitled to effect such redemption and setting forth in reasonable detail a statement of circumstances showing that the conditions precedent to the right of the Company to redeem such Securities pursuant to this Section have been satisfied.

## ARTICLE 12

### SINKING FUNDS

SECTION 1201. Applicability of Article. Retirements of Securities of any series pursuant to any sinking fund shall be made in accordance with the terms of such Securities and (except as otherwise specified as contemplated by Section 301 for Securities of any series) in accordance with this Article.

The minimum amount of any sinking fund payment provided for by the terms of Securities of any series is herein referred to as a "mandatory sinking fund payment," and any payment in excess of such minimum amount provided for by the terms of Securities of any series is herein referred to as an "optional sinking fund payment." If provided for by the terms of Securities of any series, the cash amount of any mandatory sinking fund payment may be subject to reduction as provided in Section 1202. Each sinking fund payment shall be applied to the redemption of Securities of any series as provided for by the terms of Securities of such series.

SECTION 1202. Satisfaction of Sinking Fund Payments with Securities. Subject to Section 1203, in lieu of making all or any part of any mandatory sinking fund payment with respect to any Securities of a series in cash, the Company may at its option (1) deliver to the Trustee Outstanding Securities of a series (other than any previously called for redemption) theretofore purchased or otherwise acquired by the Company, together, in the case of any Bearer Securities of such series, with all unmatured coupons appertaining thereto, and/or (2) receive credit for the principal amount of Securities of such series which have been previously delivered to the Trustee by the Company or for Securities of such series which have been redeemed either at the election of the Company pursuant to the terms of such Securities or through the application of permitted optional sinking fund payments pursuant to the terms of such Securities, in each case in satisfaction of all or any part of any mandatory sinking fund payment with respect to the Securities of the same series required to be made pursuant to the terms of such Securities as provided for by the terms of such series; provided, however, that such Securities have not been previously so credited. Such Securities shall be received and credited for such purpose by the Trustee at the Redemption Price specified in such Securities for redemption through operation of the sinking fund and the amount of such mandatory sinking fund payment shall be reduced accordingly.

SECTION 1203. Redemption of Securities for Sinking Fund. Not less than 60 days prior to each sinking fund payment date for any series of Securities, the Company will deliver to the Trustee an Officers' Certificate specifying the amount of the next ensuing sinking fund payment for that series pursuant to the terms of that series, the portion thereof, if any, which is to be satisfied by payment of cash in the Currency in which the Securities of such series are payable (except as otherwise specified pursuant to Section 301 for the Securities of such series and except, if applicable, as provided in Sections 312(b), 312(d) and 312(e)) and the portion thereof,

if any, which is to be satisfied by delivering or crediting Securities of that series pursuant to Section 1202 (which Securities will, if not previously delivered, accompany such certificate) and whether the Company intends to exercise its right to make a permitted optional sinking fund payment with respect to such series. Such certificate shall be irrevocable and upon its delivery the Company shall be obligated to make the cash payment or payments therein referred to, if any, on or before the next succeeding sinking fund payment date. In the case of the failure of the Company to deliver such certificate, the sinking fund payment due on the next succeeding sinking fund payment date for that series shall be paid entirely in cash and shall be sufficient to redeem the principal amount of such Securities subject to a mandatory sinking fund payment without the option to deliver or credit Securities as provided in Section 1202 and without the right to make any optional sinking fund payment, if any, with respect to such series.

Not more than 60 days before each such sinking fund payment date the Trustee shall select the Securities to be redeemed upon such sinking fund payment date in the manner specified in Section 1103 and cause notice of the redemption thereof to be given in the name of and at the expense of the Company in the manner provided in Section 1104. Such notice having been duly given, the redemption of such Securities shall be made upon the terms and in the manner stated in Sections 1106 and 1107.

Prior to any sinking fund payment date, the Company shall pay to the Trustee or a Paying Agent (or, if the Company is acting as its own Paying Agent, segregate and hold in trust as provided in [Article 10]) in cash a sum equal to the principal (and premium, if any) and any interest that will accrue to the date fixed for redemption of Securities or portions thereof to be redeemed on such sinking fund payment date pursuant to this Section 1203.

Notwithstanding the foregoing, with respect to a sinking fund for any series of Securities, if at any time the amount of cash to be paid into such sinking fund on the next succeeding sinking fund payment date, together with any unused balance of any preceding sinking fund payment or payments for such series, does not exceed in the aggregate \$100,000, the Trustee, unless requested by the Company, shall not give the next succeeding notice of the redemption of Securities of such series through the operation of the sinking fund. Any such unused balance of moneys deposited in such sinking fund shall be added to the sinking fund payment for such series to be made in cash on the next succeeding sinking fund payment date or, at the request of the Company, shall be applied at any time or from time to time to the purchase of Securities of such series, by public or private purchase, in the open market or otherwise, at a purchase price for such Securities (excluding accrued interest and brokerage commissions, for which the Trustee or any Paying Agent will be reimbursed by the Company) not in excess of the principal amount thereof.

## **ARTICLE 13**

### **REPAYMENT AT OPTION OF HOLDERS**

SECTION 1301. Applicability of Article. Repayment of Securities of any series before their Stated Maturity at the option of Holders thereof shall be made in accordance with the terms of such Securities and (except as otherwise specified as contemplated by Section 301 for Securities of any series) in accordance with this Article.

SECTION 1302. Repayment of Securities. Securities of any series subject to repayment in whole or in part at the option of the Holders thereof will, unless otherwise provided in the terms of such Securities, be repaid at the Repayment Price thereof, together with interest, if any, thereon accrued to the Repayment Date specified in or pursuant to the terms of such Securities. The Company covenants that on or before the Repayment Date it will deposit with the Trustee or with a Paying Agent (or, if the Company is acting as its own Paying Agent, segregate and hold in trust as provided in [Article 10]) an amount of money in the Currency in which the Securities of such series are payable (except as otherwise specified pursuant to Section 301 for the Securities of such series and except, if applicable, as provided in Sections 312(b), 312(d) and 312(e)) sufficient to pay the Repayment Price of, and (except if the Repayment Date shall be an Interest Payment Date) accrued interest, if any, on, all the Securities or portions thereof, as the case may be, to be repaid on such date.

SECTION 1303. Exercise of Option. Securities of any series subject to repayment at the option of the Holders thereof will contain an “Option to Elect Repayment” form on the reverse of such Securities. To be repaid at the option of the Holder, except as otherwise specified as contemplated by Section 301 for Securities of such series, any Security so providing for such repayment, with the “Option to Elect Repayment” form on the reverse of such Security duly completed by the Holder (or by the Holder’s attorney duly authorized in writing), must be received by the Company at the Place of Payment therefor specified in the terms of such Security (or at such other place or places of which the Company shall from time to time notify the Holders of such Securities) not earlier than 45 days nor later than 30 days prior to the Repayment Date. If less than the entire Repayment Price of such Security is to be repaid in accordance with the terms of such Security, the portion of the Repayment Price of such Security to be repaid, in increments of the minimum denomination for Securities of such series, and the denomination or denominations of the Security or Securities to be issued to the Holder for the portion of such Security surrendered that is not to be repaid, must be specified. Any Security providing for repayment at the option of the Holder thereof may not be repaid in part if, following such

repayment, the unpaid principal amount of such Security would be less than the minimum authorized denomination of Securities of the series of which such Security to be repaid is a part. Except as otherwise may be provided by the terms of any Security providing for repayment at the option of the Holder thereof, exercise of the repayment option by the Holder shall be irrevocable unless waived by the Company.

SECTION 1304. When Securities Presented for Repayment Become Due and Payable. If Securities of any series providing for repayment at the option of the Holders thereof shall have been surrendered as provided in this Article and as provided by or pursuant to the terms of such Securities, such Securities or the portions thereof, as the case may be, to be repaid shall become due and payable and shall be paid by the Company on the Repayment Date therein specified, and on and after such Repayment Date (unless the Company shall default in the payment of such Securities on such Repayment Date) such Securities shall, if the same were interest-bearing, cease to bear interest and the coupons for such interest appertaining to any Bearer Securities so to be repaid, except to the extent provided below, shall be void. Upon surrender of any such Security for repayment in accordance with such provisions, together with all coupons, if any, appertaining thereto maturing after the Repayment Date, the Repayment Price of such Security so to be repaid shall be paid by the Company, together with accrued interest, if any, to the Repayment Date; provided, however, that coupons whose Stated Maturity is on or prior to the Repayment Date shall be payable only at an office or agency located outside the United States (except as otherwise provided in [Article 10]) and, unless otherwise specified pursuant to Section 301, only upon presentation and surrender of such coupons; and provided further that, in the case of Registered Securities, installments of interest, if any, whose Stated Maturity is on or prior to the Repayment Date shall be payable to the Holders of such Securities, or one or more Predecessor Securities, registered as such at the close of business on the relevant Regular Record Dates according to their terms and the provisions of Section 307.

If any Bearer Security surrendered for repayment shall not be accompanied by all appurtenant coupons maturing after the Repayment Date, such Security may be paid after deducting from the amount payable therefor as provided in Section 1302 an amount equal to the face amount of all such missing coupons, or the surrender of such missing coupon or coupons may be waived by the Company and the Trustee if there be furnished to them such security or indemnity as they may require to save each of them and any Paying Agent harmless. If thereafter the Holder of such Security shall surrender to the Trustee or any Paying Agent any such missing coupon in respect of which a deduction shall have been made as provided in the preceding sentence, such Holder shall be entitled to receive the amount so deducted; provided, however, that interest represented by coupons shall be payable only at an office or agency located outside the United States (except as otherwise provided in [Article 10]) and, unless otherwise specified as contemplated by Section 301, only upon presentation and surrender of those coupons.

If the principal amount of any Security surrendered for repayment shall not be so repaid upon surrender thereof, such principal amount (together with interest, if any, thereon accrued to such Repayment Date) shall, until paid, bear interest from the Repayment Date at the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) set forth in or contemplated by such Security.

SECTION 1305. Securities Repaid in Part. Upon surrender of any Security which is to be repaid in part only, the Company shall execute and the Trustee shall authenticate and deliver to the Holder of such Security, without service charge and at the expense of the Company, a new Security or Securities of the same series, and of like tenor, of any authorized denomination specified by the Holder, in an aggregate principal amount equal to and in exchange for the portion of the principal of such Security so surrendered which is not to be repaid.

## ARTICLE 14

### DEFEASANCE AND COVENANT DEFEASANCE

SECTION 1401. Company's Option to Effect Defeasance or Covenant Defeasance. Except as otherwise specified as contemplated by Section 301 for Securities of any series, the provisions of this Article Fourteen shall apply to each series of Securities, and the Company may, at its option, effect defeasance of the Securities of or within a series under Section 1402, or covenant defeasance of or within a series under Section 1403 in accordance with the terms of such Securities and in accordance with this Article.

SECTION 1402. Defeasance and Discharge. Upon the Company's exercise of the above option applicable to this Section with respect to any Securities of or within a series, the Company shall be deemed to have been discharged from its obligations with respect to such Outstanding Securities and any related coupons on the date the conditions set forth in Section 1404 are satisfied (hereinafter, "defeasance"). For this purpose, such defeasance means that the Company shall be deemed to have paid and discharged the entire indebtedness represented by such Outstanding Securities and any related coupons, which shall thereafter be deemed to be "Outstanding" only for the purposes of Section 1405 and the other Sections of this Indenture referred to in (A) and (B) below, and to have satisfied all its other obligations under such Securities and any related coupons and this Indenture insofar as such Securities and any related coupons are concerned (and the Trustee, at the expense of the Company, shall execute proper instruments acknowledging the same), except for the following which shall survive until otherwise terminated or discharged hereunder: (A) the rights of Holders of such Outstanding Securities and any related coupons to receive, solely from the trust fund described in Section 1404 and as more fully set forth in such Section, payments in respect of the principal of (and premium, if any) and interest, if any, on such Securities and any related coupons when such payments are due, (B) the Company's obligations with respect to such Securities under Sections 304, 305, 306, [Article 10] and with respect to the payment of Additional Amounts, if any, on such Securities as contemplated by [Article 10] and such obligations as shall be ancillary thereto, (C) the rights, powers, trusts, duties and immunities of the Trustee hereunder including, without limitation, Section 606 and the penultimate paragraph of Section 1405 and (D) this Article Fourteen. Subject to compliance with this Article Fourteen, the Company may exercise its option under this Section 1402 notwithstanding the prior exercise of its option under Section 1403 with respect to such Securities and any related coupons.

SECTION 1403. Covenant Defeasance. Upon the Company's exercise of the above option applicable to this Section with respect to any Securities of or within a series, the Company shall be released from its obligations under Sections 801 and 802 and [Article 10], and, if specified pursuant to Section 301, its obligations under any other covenant, with respect to such

Outstanding Securities and any related coupons on and after the date the conditions set forth in Section 1404 are satisfied (hereinafter, “covenant defeasance”), and such Securities and any related coupons shall thereafter be deemed not to be “Outstanding” for the purposes of any direction, waiver, consent or declaration or Act of Holders (and the consequences of any thereof) in connection with such covenants, but shall continue to be deemed “Outstanding” for all other purposes hereunder. For this purpose, such covenant defeasance means that, with respect to such Outstanding Securities and any related coupons, the Company may omit to comply with and shall have no liability in respect of any term, condition or limitation set forth in any such covenant, whether directly or indirectly, by reason of any reference elsewhere herein to any such covenant or by reason of reference in any such covenant to any other provision herein or in any other document and such omission to comply shall not constitute a Default or an Event of Default under Section 501[ ] or Section 501[ ] or otherwise, as the case may be, but, except as specified above, the remainder of this Indenture and such Securities and any related coupons shall be unaffected thereby.

SECTION 1404. Conditions to Defeasance or Covenant Defeasance. The following shall be the conditions to application of either Section 1402 or Section 1403 to any Outstanding Securities of or within a series and any related coupons:

(1) The Company shall irrevocably have deposited or caused to be deposited with the Trustee (or another trustee satisfying the requirements of Section 607 who shall agree to comply with the provisions of this Article Fourteen applicable to it) as trust funds in trust for the purpose of making the following payments, specifically pledged as security for, and dedicated solely to, the benefit of the Holders of such Securities and any related coupons, (A) an amount (in such Currency in which such Securities and any related coupons are then specified as payable at Stated Maturity), or (B) Government Obligations applicable to such Securities (determined on the basis of the Currency in which such Securities are then specified as payable at Stated Maturity) which through the scheduled payment of principal and interest in respect thereof in accordance with their terms will provide, not later than one day before the due date of any payment of principal of and premium, if any, and interest, if any, under such Securities and any related coupons, money in an amount, or (C) a combination thereof, sufficient, in the opinion of a nationally recognized firm of independent public accountants expressed in a written certification thereof delivered to the Trustee, to pay and discharge, and which shall be applied by the Trustee (or other qualifying trustee) to pay and discharge, (i) the principal of (and premium, if any) and interest, if any, on such Outstanding Securities and any related coupons on the Stated Maturity (or Redemption Date, if applicable) of such principal (and premium, if any) or installment of interest, if any, and (ii) any mandatory sinking fund payments or analogous payments applicable to such Outstanding Securities and any related coupons on the day on which such payments are due and payable in accordance with the terms of this Indenture and of such Securities and any related coupons; provided that the Trustee shall have been irrevocably instructed to apply such money or the proceeds of such Government Obligations to said payments with respect to such Securities and any related coupons. Before such a deposit, the Company may give to the Trustee, in accordance with Section 1102, a notice of its election to redeem all or any portion of such Outstanding Securities at a future date in accordance with the terms of the Securities of such series and Article Eleven, which notice shall be irrevocable. Such irrevocable redemption notice, if given, shall be given effect in applying the foregoing.

(2) No Default or Event of Default with respect to such Securities or any related coupons shall have occurred and be continuing on the date of such deposit or, insofar as paragraphs [ ] and [ ] of Section 501 are concerned, at any time during the period ending on the 91st day after the date of such deposit (it being understood that this condition shall not be deemed satisfied until the expiration of such period).

(3) Such defeasance or covenant defeasance shall not result in a breach or violation of, or constitute a default under, any material agreement or instrument (other than this Indenture) to which the Company or any of its Subsidiaries is a party or by which the Company or any of its Subsidiaries is bound.

(4) In the case of an election under Section 1402, the Company shall have delivered to the Trustee an Opinion of Counsel stating that (x) the Company has received from, or there has been published by, the Internal Revenue Service a ruling, or (y) since the date of execution of this Indenture, there has been a change in the applicable federal income tax law, in either case to the effect that, and based thereon such opinion shall confirm that, the Holders of such Outstanding Securities and any related coupons will not recognize income, gain or loss for federal income tax purposes as a result of the deposit and such defeasance and will be subject to U.S. federal income tax on the same amounts, in the same manner and at the same times as would have been the case if the deposit and such defeasance had not occurred.

(5) In the case of an election under Section 1403, the Company shall have delivered to the Trustee an Opinion of Counsel to the effect that the Holders of such Outstanding Securities and any related coupons will not recognize income, gain or loss for federal income tax purposes as a result of such covenant defeasance and will be subject to U.S. federal income tax on the same amounts, in the same manner and at the same times as would have been the case if the deposit and such covenant defeasance had not occurred.

(6) Notwithstanding any other provisions of this Section, such defeasance or covenant defeasance shall be effected in compliance with any additional or substitute terms, conditions or limitations in connection therewith pursuant to Section 301.

(7) The Company shall have delivered to the Trustee an Officers' Certificate and an Opinion of Counsel, each stating that all conditions precedent provided for relating to either the defeasance under Section 1402 or the covenant defeasance under Section 1403 (as the case may be) have been complied with.



SECTION 1405. Deposited Money and Government Obligations to Be Held in Trust; Other Miscellaneous Provisions. Subject to the provisions of the last paragraph of [Article 10], all money and Government Obligations (or other property as may be provided pursuant to Section 301) (including the proceeds thereof) deposited with the Trustee (or other qualifying trustee, collectively for purposes of this Section 1405, the "Trustee") pursuant to Section 1404 in respect of such Outstanding Securities and any related coupons shall be held in trust and applied by the Trustee, in accordance with the provisions of such Securities and any related coupons and this Indenture, to the payment, either directly or through any Paying Agent (including the Company acting as its own Paying Agent) as the Trustee may determine, to the Holders of such Securities and any related coupons of all sums due and to become due thereon in respect of principal (and premium, if any) and interest, if any, but such money need not be segregated from other funds except to the extent required by law.

Unless otherwise specified with respect to any Security pursuant to Section 301, if, after a deposit referred to in Section 1404(1) has been made, (a) the Holder of a Security in respect of which such deposit was made is entitled to, and does, elect pursuant to Section 312(b) or the terms of such Security to receive payment in a Currency other than that in which the deposit pursuant to Section 1404(1) has been made in respect of such Security, or (b) a Conversion Event occurs as contemplated in Section 312(d) or 312(e) or by the terms of any Security in respect of which the deposit pursuant to Section 1404(1) has been made, the indebtedness represented by such Security and any related coupons shall be deemed to have been, and will be, fully discharged and satisfied through the payment of the principal of (and premium, if any) and interest, if any, on such Security as they become due out of the proceeds yielded by converting (from time to time as specified below in the case of any such election) the amount or other property deposited in respect of such Security into the Currency in which such Security becomes payable as a result of such election or Conversion Event based on the applicable Market Exchange Rate for such Currency in effect on the third Business Day prior to each payment date, except, with respect to a Conversion Event, for such Currency in effect (as nearly as feasible) at the time of the Conversion Event.

The Company shall pay and indemnify the Trustee against any tax, fee or other charge imposed on or assessed against the cash or Government Obligations deposited pursuant to Section 1404 or the principal and interest received in respect thereof other than any such tax, fee or other charge which by law is for the account of the Holders of such Outstanding Securities and any related coupons. Notwithstanding anything to the contrary contained herein, the foregoing sentence shall survive the termination of this Indenture and the earlier resignation or removal of the Trustee.

Anything in this Article Fourteen to the contrary notwithstanding, the Trustee shall deliver or pay to the Company from time to time upon Company Request any money or Government Obligations (or other property and any proceeds therefrom) held by it as provided in Section 1404 which, in the opinion of a nationally recognized firm of independent public accountants expressed in a written certification thereof delivered to the Trustee, are in excess of the amount thereof which would then be required to be deposited to effect a defeasance or covenant defeasance, as applicable, in accordance with this Article.

SECTION 1406. Reinstatement. If the Trustee or any Paying Agent is unable to apply any money in accordance with Section 1405 with respect to any Securities by reason of any order or judgment of any court or governmental authority enjoining, restraining or otherwise prohibiting such application, then the Company's obligations under this Indenture and

such Securities and any related coupons shall be revived and reinstated as though no deposit had occurred pursuant to Section 1402 or 1403, as the case may be, until such time as the Trustee or Paying Agent is permitted to apply all such money in accordance with Section 1405; provided, however, that if the Company makes any payment of principal of (or premium, if any) or interest, if any, on any such Security or any related coupon following the reinstatement of its obligations, the Company shall be subrogated to the rights of the Holders of such Securities and any related coupons to receive such payment from the money held by the Trustee or Paying Agent.

## ARTICLE 15

### MEETINGS OF HOLDERS OF SECURITIES

SECTION 1501. Purposes for Which Meetings May Be Called. If Securities of a series are issuable as Bearer Securities, a meeting of Holders of Securities of such series may be called at any time and from time to time pursuant to this Article to make, give or take any request, demand, authorization, direction, notice, consent, waiver or other action provided by this Indenture to be made, given or taken by Holders of Securities of such series.

SECTION 1502. Call, Notice and Place of Meetings. The Trustee may at any time call a meeting of Holders of Securities of any series for any purpose specified in Section 1501, to be held at such time and at such place in The City of New York or in London as the Trustee shall determine. Notice of every meeting of Holders of Securities of any series, setting forth the time and the place of such meeting and in general terms the action proposed to be taken at such meeting, shall be given, in the manner provided for in Section 106, not less than 21 nor more than 180 days prior to the date fixed for the meeting.

(a) In case at any time the Company, pursuant to a Board Resolution, or the Holders of at least 10% in principal amount of the Outstanding Securities of any series shall have requested the Trustee to call a meeting of the Holders of Securities of such series for any purpose specified in Section 1501, by written request setting forth in reasonable detail the action proposed to be taken at the meeting, and the Trustee shall not have made the first publication of the notice of such meeting within 21 days after receipt of such request or shall not thereafter proceed to cause the meeting to be held as provided herein, then the Company or the Holders of Securities of such series in the amount above specified, as the case may be, may determine the time and the place in The City of New York or in London for such meeting and may call such meeting for such purposes by giving notice thereof as provided in paragraph (a) of this Section.

SECTION 1503. Persons Entitled to Vote at Meetings. To be entitled to vote at any meeting of Holders of Securities of any series, a Person shall be (1) a Holder of one or more Outstanding Securities of such series, or (2) a Person appointed by an instrument in writing as proxy for a Holder or Holders of one or more Outstanding Securities of such series by such Holder or Holders. The only Persons who shall be entitled to be present or to speak at any meeting of Holders of Securities of any series shall be the Person entitled to vote at such meeting and their counsel, any representatives of the Trustee and its counsel and any representatives of the Company and its counsel.

SECTION 1504. Quorum; Action. The Persons entitled to vote a majority in principal amount of the Outstanding Securities of a series shall constitute a quorum for a meeting of Holders of Securities of such series; provided, however, that, if any action is to be taken at such meeting with respect to a consent or waiver which this Indenture expressly provides may be given by the Holders of not less than a specified percentage in principal amount of the Outstanding Securities of a series, the Persons entitled to vote such specified percentage in principal amount of the Outstanding Securities of such series shall constitute a quorum. In the absence of a quorum within 30 minutes of the time appointed for any such meeting, the meeting shall, if convened at the request of Holders of Securities of such series, be dissolved. In any other case the meeting may be adjourned for a period of not less than 10 days as determined by the chairman of the meeting prior to the adjournment of such meeting. In the absence of a quorum at any such adjourned meeting, such adjourned meeting may be further adjourned for a period of not less than 10 days as determined by the chairman of the meeting prior to the adjournment of such adjourned meeting. Notice of the reconvening of any adjourned meeting shall be given as provided in Section 1502(a), except that such notice need be given only once not less than five days prior to the date on which the meeting is scheduled to be reconvened. Notice of the reconvening of any adjourned meeting shall state expressly the percentage, as provided above, of the principal amount of the Outstanding Securities of such series which shall constitute a quorum.

Except as limited by the proviso to Section 902, any resolution presented to a meeting or adjourned meeting duly reconvened at which a quorum is present as aforesaid may be adopted by the affirmative vote of the Holders of a majority in principal amount of the Outstanding Securities of such series; provided, however, that, except as limited by the proviso to Section 902, any resolution with respect to any request, demand, authorization, direction, notice, consent, waiver or other action which this Indenture expressly provides may be made, given or taken by the Holders of a specified percentage, which is less than a majority, in principal amount of the Outstanding Securities of a series may be adopted at a meeting or an adjourned meeting duly reconvened and at which a quorum is present as aforesaid by the affirmative vote of the Holders of not less than such specified percentage in principal amount of the Outstanding Securities of such series.

Any resolution passed or decision taken at any meeting of Holders of Securities of any series duly held in accordance with this Section shall be binding on all the Holders of Securities of such series and the related coupons, whether or not present or represented at the meeting.

Notwithstanding the foregoing provisions of this Section 1504, if any action is to be taken at a meeting of Holders of Securities of any series with respect to any request, demand, authorization, direction, notice, consent, waiver or other action that this Indenture expressly provides may be made, given or taken by the Holders of a specified percentage in principal amount of all Outstanding Securities affected thereby, or of the Holders of such series and one or more additional series:

- (i) there shall be no minimum quorum requirement for such meeting; and
- (ii) the principal amount of the Outstanding Securities of such series that vote in favor of such request, demand, authorization, direction, notice, consent, waiver or other action shall be taken into account in determining whether such request, demand, authorization, direction, notice, consent, waiver or other action has been made, given or taken under this Indenture.

SECTION 1505. Determination of Voting Rights; Conduct and Adjournment of Meetings. Notwithstanding any provisions of this Indenture, the Trustee may make such reasonable regulations as it may deem advisable for any meeting of Holders of Securities of a series in regard to proof of the holding of Securities of such series and of the appointment of proxies and in regard to the appointment and duties of inspectors of votes, the submission and examination of proxies, certificates and other evidence of the right to vote, and such other matters concerning the conduct of the meeting as its shall deem appropriate. Except as otherwise permitted or required by any such regulations, the holding of Securities shall be proved in the manner specified in Section 104 and the appointment of any proxy shall be proved in the manner specified in Section 104 or by having the signature of the person executing the proxy witnessed or guaranteed by any trust company, bank or banker authorized by Section 104 to certify to the holding of Bearer Securities. Such regulations may provide that written instruments appointing proxies, regular on their face, may be presumed valid and genuine without the proof specified in Section 104 or other proof.

(a) The Trustee shall, by an instrument in writing appoint a temporary chairman of the meeting, unless the meeting shall have been called by the Company or by Holders of Securities as provided in Section 1502(b), in which case the Company or the Holders of Securities of the series calling the meeting, as the case may be, shall in like manner appoint a temporary chairman. A permanent chairman and a permanent secretary of the meeting shall be elected by vote of the Persons entitled to vote a majority in principal amount of the Outstanding Securities of such series represented at the meeting.

(b) At any meeting each Holder of a Security of such series or proxy shall be entitled to one vote for each \$1,000 principal amount of Outstanding Securities of such series held or represented by him (determined as specified in the definition of "Outstanding" in Section 101); provided, however, that no vote shall be cast or counted at any meeting in respect of any Security challenged as not Outstanding and ruled by the chairman of the meeting to be not Outstanding. The chairman of the meeting shall have no right to vote, except as a Holder of a Security of such series or proxy.

(c) Any meeting of Holders of Securities of any series duly called pursuant to Section 1502 at which a quorum is present may be adjourned from time to time by Persons entitled to vote a majority in principal amount of the Outstanding Securities of such series represented at the meeting; and the meeting may be held as so adjourned without further notice.

SECTION 1506. Counting Votes and Recording Action of Meetings. The vote upon any resolution submitted to any meeting of Holders of Securities of any series shall be by written ballots on which shall be subscribed the signatures of the Holders of Securities of such series or of their representatives by proxy and the principal amounts and serial numbers of the Outstanding Securities of such series held or represented by them. The permanent chairman of the meeting shall appoint two inspectors of votes who shall count all votes cast at the meeting for or against any resolution and who shall make and file with the secretary of the meeting their verified written reports in duplicate of all votes cast at the meeting. A record, at least in duplicate, of the

proceedings of each meeting of Holders of Securities of any series shall be prepared by the Secretary of the meeting and there shall be attached to said record the original reports of the inspectors of votes on any vote by ballot taken thereat and affidavits by one or more persons having knowledge of the facts setting forth a copy of the notice of the meeting and showing that said notice was given as provided in Section 1502 and, if applicable, Section 1504. Each copy shall be signed and verified by the affidavits of the permanent chairman and secretary of the meeting and one such copy shall be delivered to the Company, and another to the Trustee to be preserved by the Trustee, the latter to have attached thereto the ballots voted at the meeting. Any record so signed and verified shall be conclusive evidence of the matters therein stated. The provisions of articles 86 to 94.8 of the Luxembourg law of August 10, 1915 on commercial companies, as amended, are hereby excluded.

This Indenture may be executed in any number of counterparts, each of which so executed shall be deemed to be an original, but all such counterparts shall together constitute but one and the same Indenture.

*[Remainder of Page Intentionally Left Blank]*

IN WITNESS WHEREOF, the parties hereto have caused this Indenture to be duly executed, as of the day and year first above written.

**SINGULAR GENOMICS SYSTEMS, INC.**

as Issuer

By: \_\_\_\_\_

Name:

Title:

**[TRUSTEE]**

as Trustee

By: \_\_\_\_\_

Name:

Title:

[Signature Page to Indenture]

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**EXHIBIT A**

**FORMS OF CERTIFICATION**

A-1

**EXHIBIT A-1**

**FORM OF CERTIFICATE TO BE GIVEN BY  
PERSON ENTITLED TO RECEIVE BEARER SECURITY  
OR TO OBTAIN INTEREST PAYABLE PRIOR  
TO THE EXCHANGE DATE**

**CERTIFICATE**

[Insert title or sufficient description  
of Securities to be delivered]

This is to certify that as of the date hereof, and except as set forth below, the above-captioned Securities held by you for our account (i) are owned by person(s) that are not citizens or residents of the United States, domestic partnerships, domestic corporations, any estate the income of which is subject to United States federal income taxation regardless of its source or any trust if a court within the United States is able to exercise primary supervision over the administration of the trust and one or more United States persons have the authority to control all substantial decisions of the trust (“United States person(s)”), (ii) are owned by United States person(s) that are (a) foreign branches of United States financial institutions (financial institutions, as defined in United States Treasury Regulations Section 1.165-12(c)(1)(v) are herein referred to as “financial institutions”) purchasing for their own account or for resale, or (b) United States person(s) who acquired the Securities through foreign branches of United States financial institutions and who hold the Securities through such United States financial institutions on the date hereof (and in either case (a) or (b), each such United States financial institution hereby agrees, on its own behalf or through its agent, that you may advise Singular Genomics Systems, Inc. or its agent that such financial institution will comply with the requirements of Section 165(j)(3)(A), (B) or (C) of the United States Internal Revenue Code of 1986, as amended, and the regulations thereunder), or (iii) are owned by United States or foreign financial institution(s) for purposes of resale during the restricted period (as defined in United States Treasury Regulations Section 1.163-5(c)(2)(i)(D)(7)), and, in addition, if the owner is a United States or foreign financial institution described in clause (iii) above (whether or not also described in clause (i) or (ii)), this is to further certify that such financial institution has not acquired the Securities for purposes of resale directly or indirectly to a United States person or to a person within the United States or its possessions.

As used herein, “United States” means the United States of America (including the states and the District of Columbia); and its “possessions” include Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, Wake Island and the Northern Mariana Islands.

We undertake to advise you promptly by tested telex on or prior to the date on which you intend to submit your certification relating to the above-captioned Securities held by you for our account in accordance with your Operating Procedures if any applicable statement herein is not correct on such date, and in the absence of any such notification it may be assumed that this certification applies as of such date.



This certificate excepts and does not relate to [U.S.\$] of such interest in the above-captioned Securities in respect of which we are not able to certify and as to which we understand an exchange for an interest in a permanent global Security or an exchange for and delivery of definitive Securities (or, if relevant, collection of any interest) cannot be made until we do so certify.

We understand that this certificate may be required in connection with certain tax legislation in the United States. If administrative or legal proceedings are commenced or threatened in connection with which this certificate is or would be relevant, we irrevocably authorize you to produce this certificate or a copy thereof to any interested party in such proceedings.

Dated:

[To be dated no earlier than the 15th day prior to (i) the Exchange Date or (ii) the relevant Interest Payment Date occurring prior to the Exchange Date, as applicable]

[Name of Person Making Certification]

---

(Authorized Signatory)

Name:

Title:

EXHIBIT A-2

FORM OF CERTIFICATE TO BE GIVEN BY [                    ]  
AND [                    ] IN  
CONNECTION WITH THE EXCHANGE OF A PORTION OF A  
TEMPORARY GLOBAL SECURITY OR TO OBTAIN INTEREST  
PAYABLE PRIOR TO THE EXCHANGE DATE

CERTIFICATE

[Insert title or sufficient description  
of Securities to be delivered]

This is to certify that based solely on written certifications that we have received in writing, by tested telex or by electronic transmission from each of the persons appearing in our records as persons entitled to a portion of the principal amount set forth below (our "Member Organizations") substantially in the form attached hereto, as of the date hereof, [U.S.\$]                    principal amount of the above-captioned Securities (i) is owned by person(s) that are not citizens or residents of the United States, domestic partnerships, domestic corporations or any estate the income of which is subject to United States Federal income taxation regardless of its source or any trust if a court within the United States is able to exercise primary supervision over the administration of the trust and one or more United States persons have the authority to control all substantial decisions of the trust ("United States person(s)"), (ii) is owned by United States person(s) that are (a) foreign branches of United States financial institutions (financial institutions, as defined in U.S. Treasury Regulations Section 1.165-12(c)(1)(v) are herein referred to as "financial institutions") purchasing for their own account or for resale, or (b) United States person(s) who acquired the Securities through foreign branches of United States financial institutions and who hold the Securities through such United States financial institutions on the date hereof (and in either case (a) or (b), each such financial institution has agreed, on its own behalf or through its agent, that we may advise Singular Genomics Systems, Inc. or its agent that such financial institution will comply with the requirements of Section 165(j)(3)(A), (B) or (C) of the Internal Revenue Code of 1986, as amended, and the regulations thereunder), or (iii) is owned by United States or foreign financial institution(s) for purposes of resale during the restricted period (as defined in United States Treasury Regulations Section 1.163-5(c)(2)(i)(D)(7)) and, to the further effect, that financial institutions described in clause (iii) above (whether or not also described in clause (i) or (ii)) have certified that they have not acquired the Securities for purposes of resale directly or indirectly to a United States person or to a person within the United States or its possessions.

As used herein, "United States" means the United States of America (including the states and the District of Columbia); and its "possessions" include Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, Wake Island and the Northern Mariana Islands.

We further certify that (i) we are not making available herewith for exchange (or, if relevant, collection of any interest) any portion of the temporary global Security representing the above-captioned Securities excepted in the above-referenced certificates of Member Organizations and (ii) as of the date hereof we have not received any notification from any of our Member Organizations to the effect that the statements made by such Member Organizations with respect to any portion of the part submitted herewith for exchange (or, if relevant, collection of any interest) are no longer true and cannot be relied upon as of the date hereof.

We understand that this certification is required in connection with certain tax legislation in the United States. If administrative or legal proceedings are commenced or threatened in connection with which this certificate is or would be relevant, we irrevocably authorize you to produce this certificate or a copy thereof to any interested party in such proceedings.

Dated:

{To be dated no earlier than the Exchange  
Date or the relevant Interest Payment  
Date occurring prior to the Exchange Date,  
as applicable}

[                    ]  
[                    ]

---

By

SILICON VALLEY  
ANN ARBOR  
AUSTIN  
BEIJING  
BOSTON  
LOS ANGELES  
NEW YORK  
SAN DIEGO  
SAN FRANCISCO  
SINGAPORE



July 19, 2022

Singular Genomics Systems, Inc.  
3010 Science Park Road  
San Diego, California 92121

Re: **Registration Statement on Form S-3**

Ladies and Gentlemen:

We have acted as counsel to Singular Genomics Systems, Inc., a Delaware corporation (the “**Company**”), in connection with its filing on the date hereof with the Securities and Exchange Commission (the “**Commission**”) of a Registration Statement on Form S-3 (the “**Registration Statement**”) in connection with the registration pursuant to the Securities Act of 1933, as amended (the “**Act**”), of the Securities (as defined below).

The Registration Statement relates to the proposed issuance and sale by the Company, from time to time, pursuant to Rule 415 under the Act, as set forth in the Registration Statement, the prospectus contained therein (the “**Prospectus**”) and the supplements to the prospectus referred to therein (each a “**Prospectus Supplement**”), of up to an aggregate offering price of \$250,000,000, or the equivalent thereof, of shares of the Company’s common stock, \$0.0001 par value per share (the “**Common Stock**”), shares of the Company’s preferred stock, \$0.0001 par value per share (the “**Preferred Stock**”), debt securities (the “**Debt Securities**”), warrants to purchase any of the securities described above (the “**Warrants**”), and Units comprised of one or more of the shares of Common Stock or Preferred Stock, Debt Securities or Warrants (the “**Units**”, together with the Common Stock, the Preferred Stock, the Debt Securities or the Warrants, the “**Securities**”).

The Securities are to be sold from time to time as set forth in the Registration Statement, the Prospectus contained therein and the Prospectus Supplements. The Debt Securities are to be issued in one or more series pursuant to an indenture (including any officer’s certificate or supplemental indenture used to issue the Debt Securities, the “**Indenture**”) to be entered into between the Company and a bank or trust company to be named in the Indenture and duly qualified under the Trust Indenture Act of 1939, as amended (the “**Trust Indenture Act**”), as trustee (the “**Trustee**”), the form of which is filed as an exhibit to the Registration Statement. The Warrants will be issued pursuant to a warrant agreement (each, a “**Warrant Agreement**”) to be entered into between the Company and a bank or trust company, as warrant agent (each, a “**Warrant Agent**”), which will be in a form to be filed as an exhibit to a post-effective amendment to the Registration Statement or a Current Report on Form 8-K incorporated in such Registration Statement by reference. The Preferred Stock will be issued in one or more series and the relative powers, designations, preferences, rights and qualifications, limitations or restrictions of such Preferred Stock will be set forth in one or more certificates of designation (each, a “**Certificate of Designation**”), which will be in a form to be filed as an exhibit to a post-effective amendment to the Registration Statement or a Current Report on Form 8-K incorporated in such Registration Statement by reference.

We have examined instruments, documents, certificates and records that we have deemed relevant and necessary for the basis of our opinions hereinafter expressed. In such examination, we have assumed: (i) the authenticity of original documents and the genuineness of all signatures; (ii) the conformity to the originals of all documents submitted to us as copies; (iii) the truth, accuracy and completeness of the information, representations and warranties contained in the instruments, documents, certificates and records we have reviewed; (iv) that the Registration Statement, and any

GUNDERSON DETTMER STOUGH VILLENEUVE FRANKLIN & HACHIGIAN, LLP  
3570 Carmel Mountain Road, Suite 200 | San Diego, CA 92130 | [gunder.com](http://gunder.com)



amendments thereto (including post-effective amendments), will have become effective under the Act; (v) that a Prospectus Supplement will have been filed with the Commission describing the Securities offered thereby; (vi) that the Securities will be issued and sold in compliance with applicable U.S. federal and state securities laws and in the manner stated in the Registration Statement and the applicable Prospectus Supplement; (vii) that a definitive purchase, underwriting or similar agreement with respect to any Securities offered will have been duly authorized and validly executed and delivered by the Company and the other parties thereto; (viii) that any Securities issuable upon conversion, exchange, redemption or exercise of any Securities being offered will be duly authorized, created and, if appropriate, reserved for issuance upon such conversion, exchange, redemption or exercise; (ix) that the Indenture will be the legal, valid and binding obligation of each party thereto, other than the Company, enforceable against each such party in accordance with its terms, and will be duly qualified under the Trust Indenture Act, and that the applicable Trustee will be duly eligible to serve as trustee; (x) with respect to shares of Common Stock or Preferred Stock offered, that there will be sufficient shares of Common Stock or Preferred Stock authorized under the Company's organizational documents that are not otherwise reserved for issuance; and (xi) the legal capacity of all natural persons. As to any facts material to the opinions expressed herein that were not independently established or verified, we have relied upon oral or written statements and representations of officers and other representatives of the Company.

Based on such examination, we are of the opinion that:

1. With respect to shares of the Common Stock to be sold by the Company, when both: (a) the Board of Directors of the Company or a duly constituted and acting committee thereof (such Board of Directors or committee being hereinafter referred to as the "**Board**") has taken all necessary corporate action to approve the issuance and the terms of the offering of the shares of Common Stock and related matters; and (b) certificates representing the shares of Common Stock have been duly executed, countersigned, registered and delivered either (i) in accordance with the applicable definitive purchase, underwriting or similar agreement approved by the Board, or upon the exercise of Warrants to purchase Common Stock, upon payment of the consideration therefor (not less than the par value of the Common Stock) provided for therein or (ii) upon conversion or exercise of any other Security, in accordance with the terms of such Security or the instrument governing such Security providing for such conversion or exercise as approved by the Board, for the consideration approved by the Board, then the shares of Common Stock will be validly issued, fully paid and nonassessable;
2. With respect to any particular series of shares of Preferred Stock, when both: (a) the Board has taken all necessary corporate action to approve the issuance and terms of the shares of Preferred Stock, the terms of the offering thereof, and related matters, including the adoption of a certificate of designation relating to such Preferred Stock conforming to the Delaware General Corporation Law (a "**Certificate**") and the filing of the Certificate with the Secretary of State of the State of Delaware; and (b) certificates representing the shares of Preferred Stock have been duly executed, countersigned, registered and delivered either (i) in accordance with the applicable definitive purchase, underwriting or similar agreement approved by the Board, or upon the exercise of Warrants to purchase Preferred Stock, upon payment of the consideration therefor (not less than the par value of the Preferred Stock) provided for therein or (ii) upon conversion or exercise of such Security or the instrument governing such Security providing for such conversion or exercise as approved by the Board, for the consideration approved by the Board, then the shares of Preferred Stock will be validly issued, fully paid and nonassessable;
3. With respect to the Indenture, when the Indenture has been duly authorized, executed and delivered by the Company, the Indenture will constitute a legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms;
4. With respect to the Debt Securities to be issued under the Indenture, when (a)(i) the terms of the Debt Securities have been duly established and authorized by the Company, (ii) the Indenture has been duly executed and delivered by the Company, (iii) the issuance and sale of the Debt Securities has been duly authorized by all necessary action (corporate or otherwise) and (iv) the Debt Securities have been duly executed by the Company and duly authenticated by the Trustee in accordance with the terms of the Indenture, and delivered to the purchasers thereof against payment of the consideration therefor duly approved by the Company, the Debt Securities will constitute legal, valid and binding obligations of the Company, enforceable against the Company

in accordance with their terms and (b) when the Debt Securities to be offered and issued by the Company upon exercise of the Warrants have been issued by the Company against payment in full of the consideration and in accordance with the applicable Warrant and the Indenture, the Debt Securities will be duly authorized and legal, valid and binding obligations of the Company, enforceable against the Company in accordance with their terms;

5. With respect to the Warrants, when both: (a) the Board has taken all necessary corporate action to approve the issuance and terms of the Warrants and related matters; and (b) the Warrants have been duly executed and delivered against payment therefor, pursuant to the applicable definitive purchase, underwriting, warrant or similar agreement duly authorized, executed and delivered by the Company and a Warrant Agent, and the certificates for the Warrants have been duly executed and delivered by the Company and such Warrant Agent, then the Warrants will be validly issued and will constitute valid and binding obligations of the Company, enforceable against the Company in accordance with their terms; and
6. With respect to the Units, when both: (a) the Board has taken all necessary corporate action to approve the issuance and terms of the Units, the terms of the offering thereof, and related matters, including the adoption of a unit agreement, as applicable; and (b) the Units have been duly executed, authenticated, issued and delivered against payment therefor in accordance with the terms of the applicable unit agreement and in the manner contemplated by the applicable Prospectus Supplement and by such corporate action (assuming the securities issuable upon exercise of such Units have been duly authorized and reserved for issuance by all necessary corporate action and the applicable Indenture and Debt Securities have been duly executed by the Company and such Debt Securities have been authenticated by the applicable Trustee in accordance with the Indenture), then the Units will be legally valid and binding obligations of the Company, enforceable against the Company in accordance with their terms.

Our opinion that any document is legal, valid and binding is qualified as to:

- (a) limitations imposed by bankruptcy, insolvency, reorganization, arrangement, fraudulent conveyance, moratorium or other laws relating to or affecting the rights of creditors generally;
- (b) rights to indemnification and contribution, which may be limited by applicable law or equitable principles; and
- (c) general principles of equity, including without limitation concepts of materiality, reasonableness, good faith and fair dealing, and the possible unavailability of specific performance or injunctive relief and limitation of rights of acceleration, regardless of whether such enforceability is considered in a proceeding in equity or at law.

We express no opinion as to the laws of any other jurisdiction, other than the Federal laws of the United States of America, the laws of the State of New York (including in each case the rules or regulations promulgated thereunder or pursuant thereto) and the Delaware General Corporation Law.

We hereby consent to the filing of this opinion as an exhibit to the above-referenced Registration Statement and to the use of our name wherever it appears in the Registration Statement, the Prospectus, any Prospectus Supplement, and in any amendment or supplement thereto. In giving such consent, we do not believe that we are “experts” within the meaning of such term as used in the Act or the rules and regulations of the Commission issued thereunder with respect to any part of the Registration Statement, including this opinion as an exhibit.

Very truly yours,

/s/ Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP

GUNDERSON DETTMER STOUGH VILLENEUVE FRANKLIN & HACHIGIAN, LLP

SILICON VALLEY  
ANN ARBOR  
AUSTIN  
BEIJING  
BOSTON  
LOS ANGELES  
NEW YORK  
SAN DIEGO  
SAN FRANCISCO  
SINGAPORE



July 19, 2022

Singular Genomics Systems, Inc.  
3010 Science Park Road  
San Diego, California 92121

Ladies and Gentlemen:

We have acted as counsel to Singular Genomics Systems, Inc., a Delaware corporation (the “*Company*”), and you have requested our opinion with respect to certain matters in connection with the offering by the Company of the number of authorized but unissued shares having aggregate sale proceeds of up to \$100 million (the “*Shares*”) of the Company’s common stock, par value \$0.0001 (the “*Common Stock*”), to be issued pursuant to the Registration Statement on Form S-3 filed on the date hereof with the Securities and Exchange Commission (the “*Commission*”) under the Securities Act of 1933, as amended (the “*Act*”) (the “*Registration Statement*”), the related prospectus, included in the Registration Statement (the “*Base Prospectus*”), and the related at-the-market offering prospectus supplement (the “*ATM Prospectus*”) and that certain sales agreement, dated July 19, 2022 by and between the Company and Cowen and Company, LLC (the “*Sales Agreement*”). The Base Prospectus and the ATM Prospectus are collectively referred to as the “*Prospectus*.” The Shares are to be sold by the Company in accordance with the Sales Agreement, as described in the ATM Prospectus.

In connection with this opinion, we have examined and relied upon the Registration Statement, the Prospectus, the Company’s Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws, as currently in effect, and the originals or copies certified to our satisfaction of such other documents, records, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. With your consent, we have relied upon certificates and other assurances of officers of the Company as to factual matters without having independently verified such factual matters. We have assumed the genuineness and authenticity of all documents submitted to us as originals, and the conformity to originals of all documents submitted to us as copies thereof and the due execution and delivery by all parties other than the Company of all documents where due execution and delivery are a prerequisite to the effectiveness thereof.

This opinion is being furnished in connection with the requirements of Item 601(b)(5) of Regulation S-K under the Act, and no opinion is expressed herein as to any matter pertaining to the contents of the Registration Statement or the Prospectus, other than as expressly stated herein with respect to the issue of the Shares. Our opinion is limited to the matters stated herein and no opinion is implied or may be inferred beyond the matters expressly stated. Our opinion herein is expressed solely with respect to the General Corporation Law of the State of Delaware and we express no opinion with respect to any other laws. Our opinion is based on these laws as in effect on the date hereof, and we disclaim any obligation to advise you of facts, circumstances, events or developments which hereafter may be brought to our attention and which may alter, affect or modify the opinion expressed herein.

Subject to the foregoing and the other matters set forth herein, it is our opinion that, as of the date hereof, the Shares have been duly authorized and when issued and paid for in accordance with the terms of the Sales Agreement, such Shares will be validly issued, fully paid and nonassessable.

GUNDERSON DETTMER STOUGH VILLENEUVE FRANKLIN & HACHIGIAN, LLP  
3570 Carmel Mountain Road, Suite 200 | San Diego, CA 92130 | [gunder.com](http://gunder.com)



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We consent to the reference to our firm under the caption "Legal Matters" in the ATM Prospectus and to the filing of this opinion as an exhibit to the Registration Statement. In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission thereunder.

Very truly yours,

/s/ Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP

GUNDERSON DETTMER STOUGH VILLENEUVE FRANKLIN & HACHIGIAN, LLP



**Consent of Independent Registered Public Accounting Firm**

We consent to the reference to our firm under the caption “Experts” in the Registration Statement (Form S-3) and related Prospectus of Singular Genomics Systems, Inc. for the registration of its common stock, preferred stock, debt securities, warrants, and units and to the incorporation by reference therein of our report dated March 14, 2022, with respect to the financial statements of Singular Genomics Systems, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2021, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

San Diego, California  
July 19, 2022

## Calculation of Filing Fee Tables

**Form S-3**  
(Form Type)**Singular Genomics Systems, Inc.**  
(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered

Security Type	Security Class Title	Fee Calculation Rule	Amount Registered(2)	Proposed Maximum Offering Price Per Unit(2)	Maximum Aggregate Offering Price(2)	Fee Rate	Amount of Registration Fee
Equity(1)	Common stock, \$0.0001 par value per share	—	—	—	—	—	—
Equity(1)	Preferred stock, \$0.0001 par value per share	—	—	—	—	—	—
Debt(1)	Debt Securities	—	—	—	—	—	—
Other(1)	Warrants	—	—	—	—	—	—
Other(1)	Units	—	—	—	—	—	—
Unallocated (Universal) Shelf	—	Rule 457(o)	—	(3)	\$250,000,000	\$0.0000927	\$23,175.00
Total Offering Amounts					N/A		\$23,175.00
Total Fee Offsets							—
Net Fee Due							\$23,175.00

- (1) Represents securities that may be offered and sold from time to time in one or more offerings by Singular Genomics Systems, Inc.
- (2) Such indeterminate number or amount of common stock, preferred stock, debt securities, warrants to purchase any combination of the foregoing securities, and units composed of one or more of the foregoing securities, with an aggregate initial offering price not to exceed \$250,000,000. Securities registered hereunder may be sold separately or together in any combination with other securities registered hereunder. The securities registered hereunder also include such indeterminate number of shares of common stock and preferred stock and amount of debt securities as may be issued upon conversion of or exchange for securities that provide for conversion or exchange, upon exercise of securities or pursuant to the antidilution provisions of any other securities.
- (3) The proposed maximum aggregate offering price per unit will be determined from time to time by the registrant in connection with the issuance by the registrant of the securities registered hereunder and is not specified as to each class of security pursuant to General Instruction II.D. of Form S-3 under the Securities Act.