
Section 1: 8-K (8-K)

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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): July 16, 2019

REPLIGEN CORPORATION
(Exact name of registrant as specified in charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

000-14656
(Commission
File Number)

04-2729386
(IRS Employer
Identification No.)

41 Seyon Street, Bldg. 1, Suite 100, Waltham, MA 02453
(Address of Principal Executive Offices) (Zip Code)

(781) 250-0111
(Registrant's telephone number, including area code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (*see* General Instruction A.2. below):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value \$0.01 per share	RGEN	The Nasdaq Global Select Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter). 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 13(a) of the Exchange Act.

Item 1.01 Entry into a Material Definitive Agreement*Underwritten Public Offering of Common Stock*

On July 16, 2019, Repligen Corporation (the “Company”) entered into an underwriting agreement (the “Common Stock Underwriting Agreement”) with J.P. Morgan Securities LLC, Stephens Inc. and Janney Montgomery Scott LLC, as representatives of the underwriters named therein (the “Common Stock Underwriters”), relating to an underwritten public offering (the “Common Stock Offering”) of 1,380,000 shares of the Company’s common stock, \$0.01 par value per share (the “Common Stock”), at a price to the public of \$87.00 per share (the “Offering Price”). After deducting the underwriting discounts and commissions and estimated offering expenses, the Company expects to receive net proceeds from the Common Stock Offering of approximately \$113.6 million. The Company has also granted the Common Stock Underwriters a 30-day option to purchase up to an additional 207,000 shares of Common Stock at the Offering Price, less underwriting discounts and commissions.

The Common Stock Offering was made pursuant to the Company’s effective automatic shelf registration statement on Form S-3 (File No. 333-231098), including the prospectus dated April 29, 2019, as supplemented by a prospectus supplement dated July 16, 2019, filed on July 17, 2019, and a free writing prospectus dated July 16, 2019, filed on July 17, 2019. The Common Stock Offering is expected to close on or about July 19, 2019, subject to the satisfaction of customary closing conditions.

A copy of the Common Stock Underwriting Agreement is attached as Exhibit 1.1 to this Current Report on Form 8-K and is incorporated herein by reference. The foregoing description of the Common Stock Underwriting Agreement does not purport to be complete and is qualified in its entirety by reference to such exhibit.

A copy of the legal opinion of Goodwin Procter LLP relating to the legality of the issuance and sale of the Common Stock in the Common Stock Offering is attached as Exhibit 5.1 to this Current Report on Form 8-K.

Underwritten Public Offering of 0.375% Convertible Senior Notes due 2024

On July 16, 2019, the Company entered into an underwriting agreement (the “Notes Underwriting Agreement”) with J.P. Morgan Securities LLC, as representative of the underwriters named therein (the “Notes Underwriters”), relating to an underwritten public offering (the “Notes Offering”) of \$250,000,000 aggregate principal amount of 0.375% Convertible Senior Notes due 2024 (the “Notes”). After deducting the underwriting discounts and commissions and estimated offering expenses, the Company expects to receive net proceeds from the Notes Offering of approximately \$242.0 million. The Company has also granted the Notes Underwriters a 13-day option to purchase up to an additional \$37.5 million aggregate principal amount of Notes solely to cover over-allotments.

The Notes Offering was made pursuant to the Company’s effective automatic shelf registration statement on Form S-3 (File No. 333-231098), including the prospectus dated April 29, 2019, as supplemented by a prospectus supplement dated July 16, 2019, filed on July 17, 2019, and a free writing prospectus dated July 16, 2019, filed on July 17, 2019. The Notes Offering is expected to close on or about July 19, 2019, subject to the satisfaction of customary closing conditions.

The Notes will be issued pursuant to a base indenture and a first supplemental indenture, each anticipated to be dated July 19, 2019, to be entered into by and between the Company and Wilmington Trust, National Association, as trustee.

A copy of the Notes Underwriting Agreement is attached as Exhibit 1.2 to this Current Report on Form 8-K and is incorporated herein by reference. The foregoing description of the Notes Underwriting Agreement does not purport to be complete and is qualified in its entirety by reference to such exhibit.

A copy of the legal opinion of Goodwin Procter LLP relating to the legality of the issuance and sale of the Notes in the Notes Offering is attached as Exhibit 5.2 to this Current Report on Form 8-K.

Item 8.01 Other Events

On July 15, 2019, the Company issued a press release announcing the commencement of the Common Stock Offering and the Notes Offering. On July 17, 2019, the Company issued a press release announcing the pricing of the Common Stock Offering and the Notes Offering. Copies of these press releases are attached to this Current Report on Form 8-K as Exhibits 99.1 and 99.2 and are incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

<u>Exhibit No.</u>	<u>Description</u>
1.1	<u>Common Stock Underwriting Agreement, dated as of July 16, 2019, among Repligen Corporation and J.P. Morgan Securities LLC, Stephens Inc. and Janney Montgomery Scott LLC, as representatives of the underwriters named therein.</u>
1.2	<u>Notes Underwriting Agreement, dated as of July 16, 2019, between Repligen Corporation and J.P. Morgan Securities LLC, as representative of the underwriters named therein.</u>
5.1	<u>Opinion of Goodwin Procter LLP relating to the Common Stock.</u>
5.2	<u>Opinion of Goodwin Procter LLP relating to the Notes.</u>
23.1	<u>Consent of Goodwin Procter LLP (included in Exhibit 5.1).</u>
23.2	<u>Consent of Goodwin Procter LLP (included in Exhibit 5.2).</u>
99.1	<u>Press release issued by Repligen Corporation on July 15, 2019.</u>
99.2	Press release issued by Repligen Corporation on July 17, 2019.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

REPLIGEN CORPORATION

Dated: July 18, 2019

By: /s/ Tony J. Hunt
Tony J. Hunt
President and Chief Executive Officer

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Section 2: EX-1.1 (EX-1.1)

Exhibit 1.1

Execution Version

1,380,000 Shares

Repligen Corporation

UNDERWRITING AGREEMENT

July 16, 2019

J.P. MORGAN SECURITIES LLC
STEPHENS INC.
JANNEY MONTGOMERY SCOTT LLC
As Representatives of the several Underwriters

c/o J.P. Morgan Securities LLC
383 Madison Avenue
New York, New York 10179

c/o Stephens Inc.
111 Center Street
Little Rock, Arkansas 72201

c/o Janney Montgomery Scott LLC
1717 Arch Street
Philadelphia, PA 19103

Ladies and Gentlemen:

Repligen Corporation, a Delaware corporation (the "Company"), proposes to issue and sell to the several underwriters named in Schedule A hereto (the "Underwriters") an aggregate of 1,380,000 shares of its common stock, par value \$0.01 per share (the "Common Stock"). The 1,380,000 shares of Common Stock to be sold by the Company are called the "Firm Shares." In addition, the Company has granted to the Underwriters an option to purchase up to an additional 207,000 shares of Common Stock as provided in Section 2. The additional 207,000 shares of Common Stock to be sold by the Company pursuant to such option are collectively called the "Optional Shares." The Firm Shares and, if and to the extent such option is exercised, the Optional Shares are collectively called the "Offered Shares." J.P. Morgan Securities LLC ("J.P. Morgan"), Stephens Inc. and Janney Montgomery Scott LLC have agreed to act as representatives of the several Underwriters (in such capacity, the "Representatives") in connection with the offering and sale of the Offered Shares. To the extent there are no additional underwriters listed on Schedule A, the term "Representatives" as used herein shall mean you, as Underwriters, and the term "Underwriters" shall mean either the singular or the plural, as the context requires.

The Company hereby confirms its agreements with the Underwriters as follows:

1. The Company represents and warrants to, and agrees with, each of the Underwriters that, as of the date hereof and as of the Closing Date and each Option Closing Date, if any:

(i) The Company has prepared and filed with the Securities and Exchange Commission (the "Commission") a shelf registration statement on Form S-3, File No. 333-231098, including a base prospectus (the "Base Prospectus") to be used in connection with the public offering and sale of the Offered Shares. Such registration statement, including the financial statements, exhibits and schedules thereto, in the form in which it became effective under the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder (collectively, the "Securities Act"), including all documents incorporated or deemed to be incorporated by reference therein and any information deemed to be a part thereof at the time of effectiveness pursuant to Rule 430A or 430B under the Securities Act, is called the "Registration Statement." Any registration statement filed by the Company pursuant to Rule 462(b) under the Securities Act in connection with the offer and sale of the Offered Shares is called the "Rule 462(b) Registration Statement," and from and after the date and time of filing of any such Rule 462(b) Registration Statement the term "Registration Statement" shall include the Rule 462(b) Registration Statement. The preliminary prospectus supplement dated July 15, 2019 describing the Offered Shares and the offering thereof (the "Preliminary Prospectus Supplement"), together with the Base Prospectus, is called the "Preliminary Prospectus," and the Preliminary Prospectus and any other prospectus supplement to the Base Prospectus in preliminary form that describes the Offered Shares and the offering thereof and is used prior to the filing of the Prospectus (as defined below), together with the Base Prospectus, is called a "preliminary prospectus." As used herein, the term "Prospectus" shall mean the final prospectus supplement to the Base Prospectus that describes the Offered Shares and the offering thereof (the "Final Prospectus Supplement"), together with the Base Prospectus, in the form first used by the Underwriters to confirm sales of the Offered Shares or in the form first made available to the Underwriters by the Company to meet requests of purchasers pursuant to Rule 173 under the Securities Act. References herein to the Preliminary Prospectus, any preliminary prospectus and the Prospectus shall refer to both the prospectus supplement and the Base Prospectus components of such prospectus. As used herein, "Applicable Time" is 5:30 p.m. (New York City time) on July 16, 2019. As used herein, "free writing prospectus" has the meaning set forth in Rule 405 under the Securities Act, and "Pricing Prospectus" means the Preliminary Prospectus, as amended or supplemented immediately prior to the Applicable Time, together with the free writing prospectuses, if any, identified in Schedule B hereto and the pricing information set forth on Schedule B hereto. As used herein, "Road Show" means a "road show" (as defined in Rule 433 under the Securities Act) relating to the offering of the Offered Shares contemplated hereby that is a "written communication" (as defined in Rule 405 under the Securities Act).

All references in this Agreement to the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus and the Prospectus shall include the documents incorporated or deemed to be incorporated by reference therein. All references in this Agreement to financial statements and schedules and other information which are "contained,"

“included” or “stated” in, or “part of” the Registration Statement, the Rule 462(b) Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, the Pricing Prospectus or the Prospectus, and all other references of like import, shall be deemed to mean and include all such financial statements and schedules and other information which is or is deemed to be incorporated by reference in the Registration Statement, the Rule 462(b) Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, the Pricing Prospectus or the Prospectus, as the case may be. All references in this Agreement to amendments or supplements to the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, the Pricing Prospectus or the Prospectus shall be deemed to mean and include the filing of any document under the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder (collectively, the “Exchange Act”) that is or is deemed to be incorporated by reference in the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, or the Prospectus, as the case may be. All references in this Agreement to (i) the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus or the Prospectus, any amendments or supplements to any of the foregoing, or any free writing prospectus, shall include any copy thereof filed with the Commission pursuant to its Electronic Data Gathering, Analysis and Retrieval System (“EDGAR”) and (ii) the Prospectus shall be deemed to include any “electronic Prospectus” provided for use in connection with the offering of the Offered Shares as contemplated by Section 5(n) of this Agreement.

(ii) The Registration Statement has become effective under the Securities Act. The Company has complied, to the Commission’s satisfaction, with all requests of the Commission for additional or supplemental information, if any. No stop order suspending the effectiveness of the Registration Statement is in effect and no proceedings for such purpose or pursuant to Section 8A under the Securities Act have been instituted or are pending or, to the best knowledge of the Company, are contemplated or threatened by the Commission. At the time the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 (the “Annual Report”) was filed with the Commission, or, if later, at the time the Registration Statement was originally filed with the Commission, as well as at the time the Company or any person acting on its behalf (within the meaning, for this clause only, of Rule 163(c) under the Securities Act) made any offer relating to the Offered Shares in reliance on the exemption of Rule 163 under the Securities Act, the Company was a “well known seasoned issuer” as defined in Rule 405 under the Securities Act. The Registration Statement is an “automatic shelf registration statement,” as defined in Rule 405 under the Securities Act, and became effective on April 29, 2019. The Company has not received from the Commission any notice pursuant to Rule 401(g)(2) under the Securities Act objecting to the Company’s use of the automatic shelf registration form. The Company meets the requirements for use of Form S-3 under the Securities Act specified in FINRA Conduct Rule 5110(B)(7)(C)(i). The documents incorporated or deemed to be incorporated by reference in the Registration Statement, the Pricing Prospectus and the Prospectus, at the time they were or hereafter are filed with the Commission, or became effective under the Exchange Act, as the case may be, complied and will comply in all material respects with the requirements of the Exchange Act.

(iii) Each preliminary prospectus and the Prospectus, when filed, complied in all material respects with the Securities Act and, if filed by electronic transmission pursuant to EDGAR, was identical (except as may be permitted by Regulation S-T under the Securities Act) to the copy thereof delivered to the Underwriters for use in connection with the offer and sale of the Offered Shares. Each of the Registration Statement and any post-effective amendment thereto, at the time it became or becomes effective, complied and will comply in all material respects with the Securities Act and 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. As of the Applicable Time, the Pricing Prospectus will not, and at the Closing Date (as defined in Section 4) and at each applicable Option Closing Date (as defined in Section 4), will not, contain any 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 under which they were made, not misleading. The Prospectus, as of its date, did not, and at the Closing Date and at each applicable Option Closing 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 three immediately preceding sentences do not apply to statements in, or omissions from, the Registration Statement or any post-effective amendment thereto, or the Prospectus or the Pricing Prospectus, or any amendments or supplements thereto, made in reliance upon and in conformity with written information relating to any Underwriter furnished to the Company in writing by the Representatives expressly for use therein, it being understood and agreed that the only such information consists of the information described in Section 9(b) below. There are no contracts or other documents required to be described in the Pricing Prospectus or the Prospectus or to be filed as an exhibit to the Registration Statement which have not been described or filed as required.

(iv) As of the determination date referenced in Rule 164(h) under the Securities Act, the Company was not, is not and will not be (as applicable) an “ineligible issuer” in connection with the offering of the Offered Shares pursuant to Rules 164, 405 and 433 under the Securities Act. Each free writing prospectus that the Company is required to file pursuant to Rule 433(d) under the Securities Act has been, or will be, filed with the Commission in accordance with the requirements of the Securities Act. Each free writing prospectus that the Company has filed, or is required to file, pursuant to Rule 433(d) under the Securities Act or that was prepared by or on behalf of or used or referred to by the Company complies or will comply in all material respects with the requirements of Rule 433 under the Securities Act, including timely filing with the Commission or retention where required and legending, and each such free writing prospectus, as of its issue date and at all subsequent times through the completion of the public offer and sale of the Offered Shares did not, does not and will not include any information that conflicted, conflicts or will conflict with the information contained in the Registration Statement, the Prospectus or any preliminary prospectus and not superseded or modified. Except for the free writing prospectuses, if any, identified in Schedule B, and electronic road shows, if any, furnished to you before first use, the Company has not prepared, used or referred to, and will not, without your prior written consent, prepare, use or refer to, any free writing prospectus. Each Road Show, when considered together with the Pricing Prospectus, will not, as of the Applicable Time, contain any 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 under which they were made, not misleading.

(v) Prior to the later of (i) the expiration or termination of the option granted to the several Underwriters in Section 2 and (ii) the completion of the Underwriters' distribution of the Offered Shares, the Company has not distributed and will not distribute any offering material in connection with the offering and sale of the Offered Shares other than the Registration Statement, the Pricing Prospectus, the Prospectus or any free writing prospectus reviewed and consented to by J.P. Morgan, and the free writing prospectuses, if any, identified on Schedule B hereto.

(vi) This Agreement has been duly authorized, executed and delivered by the Company.

(vii) [Intentionally Omitted.]

(viii) The Offered Shares have been duly authorized for issuance and sale pursuant to this Agreement and, when issued and delivered by the Company against payment therefor pursuant to this Agreement, will be validly issued, fully paid and non-assessable, and the issuance and sale of the Offered Shares is not subject to any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase the Offered Shares.

(ix) There are (and prior to the Closing Date, will be) no debt 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 under Section 3(a)(62) under the Exchange Act.

(x) [Intentionally Omitted.]

(xi) There are no persons with registration or other similar rights to have any equity or debt securities registered for sale under the Registration Statement or included in the offering contemplated by this Agreement.

(xii) Except as otherwise disclosed in the Registration Statement, the Pricing Prospectus and the Prospectus, subsequent to the respective dates as of which information is given in the Registration Statement, the Pricing Prospectus and the Prospectus: (i) there has been no material adverse change, or any development that could be expected to result in a material adverse change in the condition, financial or otherwise, or in the earnings, business, properties, operations, assets, liabilities or prospects, whether or not arising from transactions in the ordinary course of business, of the Company and its subsidiaries, considered as one entity (any such change being referred to herein as a "Material Adverse Change"); (ii) the Company and its subsidiaries, considered as one entity, have not incurred any material liability or obligation, indirect, direct or contingent, including without limitation any losses or interference with its business from fire, explosion, flood, earthquakes, accident or other calamity, whether or not covered by insurance, or from any strike, labor dispute or court or governmental action, order or decree, that are material, individually or in the aggregate, to the Company and its subsidiaries, considered as one entity, or has entered into any transactions not in the ordinary course of business; and (iii) there has not been any material decrease in the capital stock or any material

increase in any short-term or long-term indebtedness of the Company or its subsidiaries and there has been no dividend or distribution of any kind declared, paid or made by the Company or, except for dividends paid to the Company or other subsidiaries, by any of the Company's subsidiaries on any class of capital stock, or any repurchase or redemption by the Company or any of its subsidiaries of any class of capital stock.

(xiii) (a) Ernst & Young LLP, which has expressed its opinion with respect to the financial statements (which term as used in this Agreement includes the related notes thereto) filed with the Commission as a part of the Registration Statement, the Pricing Prospectus and the Prospectus, is (i) an independent registered public accounting firm with respect to the Company and its subsidiaries as required by the Securities Act, the Exchange Act, and the rules of the Public Company Accounting Oversight Board ("PCAOB"), (ii) in compliance with the applicable requirements relating to the qualification of accountants under Rule 2-01 of Regulation S-X under the Securities Act and (iii) a registered public accounting firm as defined by the PCAOB whose registration has not been suspended or revoked and who has not requested such registration to be withdrawn.

(b) Friedman LLP, which has expressed its opinion with respect to certain financial statements of C Technologies, Inc., a New Jersey corporation and subsidiary of the Company, filed with the Commission as a part of the Registration Statement, the Pricing Prospectus and the Prospectus, is, to the Company's knowledge, (i) an independent registered public accounting firm as required by the Securities Act, the Exchange Act, and the rules of the PCAOB, (ii) in compliance with the applicable requirements relating to the qualification of accountants under Rule 2-01 of Regulation S-X under the Securities Act and (iii) a registered public accounting firm as defined by the PCAOB whose registration has not been suspended or revoked and who has not requested such registration to be withdrawn.

(xiv) The financial statements filed with the Commission as a part of the Registration Statement, the Pricing Prospectus and the Prospectus present fairly the consolidated financial position of the Company and its subsidiaries, as of the dates indicated and the results of their operations, changes in stockholders' equity and cash flows for the periods specified. Such financial statements have been prepared in conformity with generally accepted accounting principles as applied in the United States applied on a consistent basis throughout the periods involved, except as may be expressly stated in the related notes thereto. The interactive data in eXtensible Business Reporting Language included or incorporated by reference in the 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. No other financial statements or supporting schedules are required to be included in the Registration Statement, the Pricing Prospectus or the Prospectus. The financial data set forth in each of the Registration Statement, the Pricing Prospectus and the Prospectus, as applicable, under the caption "Summary Consolidated Financial Data" fairly present the information set forth therein on a basis consistent with that of the audited financial statements contained in the Registration Statement, the Pricing Prospectus and the Prospectus, as applicable. All disclosures contained in the Registration Statement, any preliminary prospectus, the Prospectus and any free writing prospectus that constitute non-GAAP financial measures (as defined by the rules and regulations under the Securities Act and the Exchange Act) comply, in all material respects, with Regulation

G under the Exchange Act and Item 10 of Regulation S-K under the Securities Act, as applicable. The pro forma financial information and the related notes thereto included or incorporated by reference in the Registration Statement, the Pricing Prospectus and the Prospectus have been prepared in accordance with the applicable requirements of the Securities Act and the Exchange Act, as applicable, and the assumptions underlying such pro forma financial information are reasonable and are set forth in the Registration Statement, the Pricing Prospectus and the Prospectus. To the Company's knowledge, no person who has been suspended or barred from being associated with a registered public accounting firm, or who has failed to comply with any sanction pursuant to Rule 5300 promulgated by the PCAOB, has participated in the preparation of, or audited, the financial statements filed with the Commission as a part of the Registration Statement, the Pricing Prospectus and the Prospectus.

(xv) The Company and each of its subsidiaries make and keep accurate books and records and maintain a system of internal accounting controls sufficient to provide reasonable assurance that: (i) transactions are executed in accordance with management's general or specific authorization; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles as applied in the United States and to maintain accountability for assets; (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 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, the Pricing Prospectus 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.

(xvi) The Company has established and maintains disclosure controls and procedures (as defined in Rules 13a-15 and 15d-15 under the Exchange Act), which (i) are designed to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to the Company's principal executive officer and its principal financial officer by others within those entities, particularly during the periods in which the periodic reports required under the Exchange Act are being prepared; (ii) have been evaluated by management of the Company for effectiveness as of the end of the Company's most recent fiscal quarter; and (iii) are effective in all material respects to perform the functions for which they were established. Since the end of the Company's most recent audited fiscal year, there have been no significant deficiencies or material weakness in the Company's internal control over financial reporting (whether or not remediated) and no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting. The Company is not aware of any change in its internal control over financial reporting that has occurred during its most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

(xvii) The Company has been duly incorporated and is validly existing as a corporation in good standing under the laws of the jurisdiction of its incorporation and has the corporate power and authority to own, lease and operate its properties and to conduct its business as described in the Registration Statement, the Pricing Prospectus and the Prospectus and to enter into and perform its obligations under this Agreement. The Company is duly qualified as a foreign corporation to transact business and is in good standing in each jurisdiction in which such qualification is required, whether by reason of the ownership or leasing of property or the conduct of business, except where the failure to be so qualified or in good standing, as the case may be, or have such power or authority would not, individually or in the aggregate, have a Material Adverse Effect (as defined below).

(xviii) Each of the Company's "subsidiaries" (for purposes of this Agreement, as defined in Rule 405 under the Securities Act) is validly existing and in good standing (where such concept is recognized) under the laws of the jurisdiction of its incorporation or organization and has the power and authority (corporate or other) to own, lease and operate its properties and to conduct its business as described in the Registration Statement, the Pricing Prospectus and the Prospectus. Each of the Company's subsidiaries is duly qualified to transact business and is in good standing (where such concept is recognized) in each jurisdiction in which such qualification is required, whether by reason of the ownership or leasing of property or the conduct of business, except where the failure to be so qualified or in good standing, as the case may be, or have such power or authority would not, individually or in the aggregate, have a Material Adverse Effect (as defined below). All of the issued and outstanding capital stock or other equity or ownership interests of each of the Company's subsidiaries have been duly authorized and validly issued, and are fully paid and non-assessable and are owned by the Company, directly or through subsidiaries, free and clear of any security interest, mortgage, pledge, lien, encumbrance or adverse claim. The Company does not own or control, directly or indirectly, any corporation, association or other entity other than the subsidiaries listed in Exhibit 21 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018 and C Technologies, Inc. Other than Repligen Sweden AB, Spectrum LifeSciences, LLC and C Technologies, Inc., none of the Company's subsidiaries constitute a "significant subsidiary" under Rule 1-02(w) of Regulation S-X under the Securities Act.

(xix) The authorized, issued and outstanding capital stock of the Company is as set forth in the Registration Statement, the Pricing Prospectus and the Prospectus (other than for subsequent issuances, if any, pursuant to employee benefit plans, or upon the exercise of outstanding options or warrants, in each case described in the Registration Statement, the Pricing Prospectus and the Prospectus). The Common Stock (including the Offered Shares) conforms in all material respects to the description thereof contained in the Registration Statement, the Pricing Prospectus and the Prospectus. All of the issued and outstanding shares of Common Stock have been duly authorized and validly issued, are fully paid and non-assessable and have been issued in compliance with all federal and state securities laws. None of the outstanding shares of Common Stock were issued in violation of any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase securities of the Company. There are no authorized or outstanding options, warrants, preemptive rights, rights of first refusal or other rights to purchase, or equity or debt securities convertible into or exchangeable or exercisable for, any capital stock of the Company or any of its subsidiaries other than those described in the Registration Statement, the Pricing Prospectus and the Prospectus. The descriptions of the Company's stock option, stock bonus and other stock plans or arrangements, and the options or other rights granted thereunder, set forth in the Registration Statement, the Pricing Prospectus and the Prospectus accurately and fairly presents the information required to be shown with respect to such plans, arrangements, options and rights.

(xx) The Common Stock is registered pursuant to Section 12(b) of the Exchange Act and is listed on The Nasdaq Global Select Market (the “NASDAQ”), and the Company has taken no action designed to, or likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from the NASDAQ, nor has the Company received any notification that the Commission or the NASDAQ is contemplating terminating such registration or listing. To the Company’s knowledge, it is in compliance with all applicable listing requirements of NASDAQ.

(xxi) Neither the Company nor any of its subsidiaries is in violation of its charter or by-laws, partnership agreement or operating agreement or similar organizational documents, as applicable, or is in default (or, with the giving of notice or lapse of time, would be in default) (“Default”) under any indenture, loan, credit agreement, note, lease, license agreement, contract, franchise or other instrument (including, without limitation, any pledge agreement, security agreement, mortgage or other instrument or agreement evidencing, guaranteeing, securing or relating to indebtedness) to which the Company or any of its subsidiaries is a party or by which it or any of them may be bound, or to which any of their respective properties or assets are subject (each, an “Existing Instrument”), except for such Defaults as could not be expected, individually or in the aggregate, to have a material adverse effect on the condition (financial or other), earnings, business, properties, operations, assets, liabilities or prospects of the Company and its subsidiaries, considered as one entity (a “Material Adverse Effect”). The Company’s execution, delivery and performance of this Agreement, consummation of the transactions contemplated hereby and by the Registration Statement, the Pricing Prospectus and the Prospectus, and the issuance and sale of the Offered Shares (including the use of proceeds from the sale of the Offered Shares as described in the Registration Statement, the Pricing Prospectus and the Prospectus under the caption “Use of Proceeds”) (i) have been duly authorized by all necessary corporate action and will not result in any violation of the provisions of the charter or by-laws, partnership agreement or operating agreement or similar organizational documents, as applicable, of the Company or any subsidiary, (ii) will not conflict with or constitute a breach of, or Default or a Debt Repayment Triggering Event (as defined below) under, or result in the creation or imposition of any lien, charge or encumbrance upon any property or assets of the Company or any of its subsidiaries pursuant to, or require the consent of any other party to, any Existing Instrument, except as could not be expected, individually or in the aggregate, to have a Material Adverse Effect and (iii) will not result in any violation of any law, administrative regulation or administrative or court decree applicable to the Company or any of its subsidiaries. No consent, approval, authorization or other order of, or registration or filing with, any court or other governmental or regulatory authority or agency, is required for the Company’s execution, delivery and performance of this Agreement, issuance of the Offered Shares and consummation of the transactions contemplated hereby and by the Registration Statement, the Pricing Prospectus and the Prospectus, except such as have been obtained or made by the Company and are in full force and effect under the Securities Act and such as may be required under applicable state securities or blue sky laws or FINRA. As used herein, a “Debt Repayment Triggering Event” means any event or condition which gives, or with the giving of notice or lapse of time would give, the holder of any note, debenture or other evidence of indebtedness (or any person acting on such holder’s behalf) the right to require the repurchase, redemption or repayment of all or a portion of such indebtedness by the Company or any of its subsidiaries.

(xxii) The Company and its subsidiaries have been and are in compliance with all applicable laws, rules and regulations, except where failure to be so in compliance could not be expected, individually or in the aggregate, to have a Material Adverse Effect.

(xxiii) There is no action, suit, proceeding, inquiry or investigation brought by or before any governmental entity now pending or, to the knowledge of the Company, threatened, against or affecting the Company or any of its subsidiaries, which could be expected, individually or in the aggregate, to have a Material Adverse Effect or materially and adversely affect the consummation of the transactions contemplated by this Agreement or the performance by the Company of its obligations hereunder; and the aggregate of all pending legal or governmental proceedings to which the Company or any such subsidiary is a party or of which any of their respective properties or assets is the subject, including ordinary routine litigation incidental to the business, if determined adversely to the Company, could not be expected to have a Material Adverse Effect. No material labor dispute with the employees of the Company or any of its subsidiaries, or with the employees of any principal supplier, manufacturer, customer or contractor of the Company, exists or, to the knowledge of the Company, is threatened or imminent.

(xxiv) The Company and its subsidiaries own or have obtained valid and enforceable licenses for, the inventions, patent applications, patents, trademarks, trade names, service names, copyrights, trade secrets and other intellectual property described in the Registration Statement, the Pricing Prospectus and the Prospectus as being owned or licensed by them or which are useful for the conduct of their respective businesses as currently conducted or as currently proposed to be conducted (collectively, "Intellectual Property"), except to the extent the failure to own, possess, license or acquire such Intellectual Property would not be expected, individually or in the aggregate, to have Material Adverse Effect. To the Company's knowledge: (i) there are no third parties who have rights to any Intellectual Property, except for customary reversionary rights of third-party licensors or rights of third-party licensees as applicable with respect to Intellectual Property that is disclosed in the Registration Statement, the Pricing Prospectus and the Prospectus as licensed to the Company or one or more of its subsidiaries; and (ii) there is no infringement by third parties of any Intellectual Property. There is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others: (A) challenging the Company's rights in or to any Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim; (B) challenging the validity, enforceability or scope of any Intellectual Property of the Company or its subsidiaries, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim; or (C) asserting that the Company or any of its subsidiaries infringes or otherwise violates, or would, upon the commercialization of any product or service described in the Registration Statement, the Pricing Prospectus or the Prospectus as under development, infringe or violate, any patent, trademark, trade name, service name, copyright, trade secret or other proprietary rights of others, and the Company is unaware

of any facts which would form a reasonable basis for any such action, suit, proceeding or claim. The Company and its subsidiaries have complied with the terms of each agreement pursuant to which Intellectual Property has been licensed to the Company or any of its subsidiaries and all such agreements are in full force and effect; except where any failure to comply would not, individually or in the aggregate, have a Material Adverse Effect.

(xxv) The Company and its subsidiaries possess such valid and current certificates, authorizations or permits required by state, federal or foreign regulatory agencies or bodies to conduct their respective businesses as currently conducted and as described in the Registration Statement, the Pricing Prospectus or the Prospectus (“Permits”). Neither the Company nor any of its subsidiaries is in violation of, or in default under, any of the Permits or has received any notice of proceedings relating to the revocation or modification of, or non-compliance with, any such certificate, authorization or permit which, if the subject of an unfavorable decision, ruling or finding, would reasonably be expected, individually or in the aggregate, to have Material Adverse Effect.

(xxvi) The Company and its subsidiaries have good and marketable title to all of the real and personal property and other assets reflected as owned in the financial statements referred to in Section 1(xiv) above (or elsewhere in the Registration Statement, the Pricing Prospectus or the Prospectus), in each case free and clear of any security interests, mortgages, liens, encumbrances, equities, adverse claims and other defects, except such as would not reasonably be expected, individually or in the aggregate, to have Material Adverse Effect. The real property, improvements, equipment and personal property held under lease by the Company or any of its subsidiaries are held under valid and enforceable leases, with such exceptions as are not material and do not materially interfere with the use made or proposed to be made of such real property, improvements, equipment or personal property by the Company or such subsidiary.

(xxvii) The Company and its subsidiaries have filed all necessary federal, state and foreign income and franchise tax returns or have properly requested extensions thereof and have paid all taxes required to be paid by any of them and, if due and payable, any related or similar assessment, fine or penalty levied against any of them except as may be being contested in good faith and by appropriate proceedings. The Company has made adequate charges, accruals and reserves in the applicable financial statements referred to in Section 1(xiv) above in respect of all federal, state and foreign income and franchise taxes for all periods as to which the tax liability of the Company or any of its subsidiaries has not been finally determined.

(xxviii) Each of the Company and its subsidiaries are insured by recognized, financially sound and reputable institutions with policies in such amounts and with such deductibles and covering such risks as are generally deemed adequate and customary for their businesses including, but not limited to, policies covering real and personal property owned or leased by the Company or any of its subsidiaries against theft, damage, destruction, acts of vandalism and earthquakes. The Company has no reason to believe that it or any of its subsidiaries will not be able (i) to renew its existing insurance coverage as and when such policies expire or (ii) to obtain comparable coverage from similar institutions as may be necessary or appropriate to conduct its business as now conducted and at a cost that could not be expected to have a Material Adverse Effect. Neither the Company nor any of its subsidiaries has been denied any insurance coverage which it has sought or for which it has applied.

(xxix) Except as could not be expected, individually or in the aggregate, to have a Material Adverse Effect: (i) neither the Company nor any of its subsidiaries is in violation of any federal, state, local or foreign statute, law, rule, regulation, ordinance, code, policy or rule of common law or any judicial or administrative interpretation thereof, including any judicial or administrative order, consent, decree or judgment, relating to pollution or protection of human health, the environment (including, without limitation, ambient air, surface water, groundwater, land surface or subsurface strata) or wildlife, including, without limitation, laws and regulations relating to the release or threatened release of chemicals, pollutants, contaminants, wastes, toxic substances, hazardous substances, petroleum or petroleum products (collectively, “Hazardous Materials”) or to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Materials (collectively, “Environmental Laws”); (ii) the Company and its subsidiaries have all permits, authorizations and approvals required under any applicable Environmental Laws and are each in compliance with their requirements; and (iii) to the knowledge of the Company, there are no pending or threatened administrative, regulatory or judicial actions, suits, demands, demand letters, claims, liens, notices of noncompliance or violation, investigation or proceedings relating to any Environmental Law against the Company or any of its subsidiaries; and (iv) there are no events or circumstances that might reasonably be expected to form the basis of an order for clean-up or remediation, or an action, suit or proceeding by any private party or governmental body or agency, against or affecting the Company or any of its subsidiaries relating to Hazardous Materials or any Environmental Laws.

(xxx) In the ordinary course of its business, the Company conducts review from time to time of the effect of Environmental Laws on the business, operations and properties of the Company and its subsidiaries, in the course of which it identifies and evaluates associated costs and liabilities (including, without limitation, any capital or operating expenditures required for clean-up, closure of properties or compliance with Environmental Laws or any permit, license or approval, any related constraints on operating activities and any potential liabilities to third parties). No facts or circumstances have come to the Company’s attention that could result in costs or liabilities that could be expected, individually or in the aggregate, to have a Material Adverse Effect.

(xxxi) The Company and its subsidiaries and any “employee benefit plan” (as defined under the Employee Retirement Income Security Act of 1974, as amended, and the regulations and published interpretations thereunder (collectively, “ERISA”)) established or maintained by the Company, its subsidiaries or their “ERISA Affiliates” (as defined below) are in compliance in all material respects with ERISA. “ERISA Affiliate” means, with respect to the Company or its subsidiaries, any member of any group of organizations described in Sections 414(b), (c), (m) or (o) of the Internal Revenue Code of 1986, as amended, and the regulations and published interpretations thereunder (collectively, the “Code”), of which the Company or such subsidiary is a member. No “reportable event” (as defined under ERISA) has occurred or is reasonably expected to occur with respect to any “employee benefit plan” established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates. No “employee

benefit plan” established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates, if such “employee benefit plan” were terminated, would have any “amount of unfunded benefit liabilities” (as defined under ERISA). Neither the Company, its subsidiaries nor any of their ERISA Affiliates has incurred or reasonably expects to incur any liability under (i) Title IV of ERISA with respect to termination of, or withdrawal from, any “employee benefit plan” or (ii) Sections 412, 4971, 4975 or 4980B of the Code, in each case except as would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect. Each employee benefit plan established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates that is intended to be qualified under Section 401(a) of the Code has been determined to be so qualified by the Internal Revenue Service and nothing has occurred, whether by action or failure to act, which could reasonably be expected to cause the loss of such qualification.

(xxxii) The Company is not, and will not be, after receipt of payment for the Offered Shares, after the application of the proceeds therefrom as described under “Use of Proceeds” in the Registration Statement, the Pricing Prospectus or the Prospectus, required to register as an “investment company” under the Investment Company Act of 1940, as amended (the “Investment Company Act”).

(xxxiii) Neither the Company nor any of its subsidiaries has taken, directly or indirectly, any action designed to or that might reasonably be expected to cause or result in stabilization or manipulation of the price of the Common Stock or of any “reference security” (as defined in Rule 100 of Regulation M under the Exchange Act (“Regulation M”)) with respect to the Common Stock, whether to facilitate the sale or resale of the Offered Shares or otherwise, and has taken no action which would directly or indirectly violate Regulation M.

(xxxiv) There are no business relationships or related-party transactions involving the Company or any of its subsidiaries or any other person required to be described in the Registration Statement, the Pricing Prospectus or the Prospectus that have not been described as required.

(xxxv) All of the information provided to the Underwriters or to counsel for the Underwriters by the Company, its counsel, its officers and directors and the holders of any securities (debt or equity) or options to acquire any securities of the Company in connection with the offering of the Offered Shares is true, complete, correct and compliant 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.

(xxxvi) The Company has furnished to the Underwriters a letter agreement in the form attached hereto as Schedule C (the “Lock-up Agreement”) from each of the persons listed on Schedule D. Such Schedule D lists under an appropriate caption the directors and executive officers of the Company. If any additional persons shall become directors or executive officers of the Company prior to the end of the Lock-up Period (as defined in the Lock-up Agreement), the Company shall cause each such person, prior to or contemporaneously with their appointment or election as a director or executive officer of the Company, to execute and deliver to the Representatives a Lock-up Agreement.

(xxxvii) All statistical, demographic and market related data included in the Registration Statement, the Pricing Prospectus or the Prospectus are based on or derived from sources that the Company believes, after reasonable inquiry, to be reliable and accurate. To the extent required, the Company has obtained the written consent to the use of such data from such sources.

(xxxviii) Except as described or incorporated by reference in the Registration Statement, the Pricing Prospectus, or the Prospectus, neither the Company nor any of its subsidiaries has sent or received any communication regarding termination of, or intent not to renew, any of the contracts or agreements referred to or described in any preliminary prospectus, the Prospectus or any free writing prospectus, or referred to or described in, or filed as an exhibit to, the Registration Statement, or any document incorporated by reference therein, and no such termination or non-renewal has been threatened by the Company or any of its subsidiaries or any other party to any such contract or agreement, which threat of termination or non-renewal has not been rescinded as of the date hereof.

(xxxix) Any certificate signed by any officer of the Company or any of its subsidiaries and delivered to any Underwriter or to counsel for the Underwriters in connection with the offering, or the purchase and sale, of the Offered Shares shall be deemed a representation and warranty by the Company to each Underwriter as to the matters covered thereby.

(xl) [Intentionally Omitted.]

(xli) 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 associated with or 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/or procedures designed to promote and ensure compliance with all applicable anti-bribery and anti-corruption laws.

(xlii) 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 (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.

(xliii) 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 associated with or acting on behalf of the Company or any of its subsidiaries is currently the subject or the target 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 (“OFAC”) 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 (“UNSC”), the European Union, Her Majesty’s Treasury (“HMT”) 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 or target of Sanctions, including, without limitation, Cuba, Iran, North Korea, Syria and Crimea (each, a “Sanctioned Country”); and the Company will not directly or indirectly use the proceeds of the offering of the Offered 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 business with any person that, at the time of such funding or facilitation, is the subject or target of Sanctions, (ii) to fund or facilitate any activities of or 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 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 or the target of Sanctions or with any Sanctioned Country.

(xliv) Except pursuant to this Agreement, there is no broker, finder or other party that is entitled to receive from the Company any brokerage or finder’s fee or other fee or commission as a result of any transactions contemplated by this Agreement.

(xlv) Each financial or operational projection or other “forward-looking statement” (as defined by Section 27A of the Securities Act or Section 21E of the Exchange Act) contained in the Registration Statement, the Pricing Prospectus or the Prospectus (i) was so included by the Company in good faith and with reasonable basis after due consideration by the Company of the underlying assumptions, estimates and other applicable facts and circumstances and (ii) is accompanied by meaningful cautionary statements identifying those factors that could cause actual results to differ materially from those in such forward looking statement. No such statement was made with the knowledge of an executive officer or director of the Company that is was false or misleading.

(xlvi) [Intentionally Omitted.]

(xlvii) 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.

(xlviii) With respect to the stock options (the "Stock Options") granted pursuant to the stock-based compensation plans of the Company and its subsidiaries (the "Company Stock Plans"), (i) each Stock Option intended to qualify as an "incentive stock option" under Section 422 of the Code so qualifies, (ii) each grant of a Stock Option was duly authorized no later than the date on which the grant of such Stock Option was by its terms to be effective (the "Grant Date") by all necessary corporate action, including, as applicable, approval by the board of directors of the Company (or a duly constituted and authorized committee thereof) and any required stockholder approval by the necessary number of votes or written consents, and the award agreement governing such grant (if any) was duly executed and delivered by each party thereto, (iii) each such grant was made in accordance with the terms of the Company Stock Plans, the Exchange Act and all other applicable laws and regulatory rules or requirements, including the rules of the NASDAQ and any other exchange on which Company securities are traded, and (iv) each such grant was properly accounted for in accordance with GAAP in the financial statements (including the related notes) of the Company and disclosed in the Company's filings with the Commission in accordance with the Exchange Act and all other applicable laws. The Company has not knowingly granted, and there is no and has been no policy or practice of the Company of granting, Stock Options prior to, or otherwise coordinating the grant of Stock Options with, the release or other public announcement of material information regarding the Company or its subsidiaries or their results of operations or prospects.

(xlix) The Company and its subsidiaries' information technology assets and equipment, computers, systems, networks, hardware, software, websites, applications, and databases (collectively, "IT Systems") are adequate for, and operate and perform in all material respects as required in connection with, the operation of the business of the Company and its subsidiaries, as applicable, as currently conducted, free and clear of all material bugs, errors, defects, Trojan horses, time bombs, malware and other corruptants. The Company and its subsidiaries have implemented and maintain commercially reasonable controls, policies, procedures, and safeguards to maintain and protect their material confidential information and the integrity, continuous operation, redundancy and security of all IT Systems and data (including all personal, personally identifiable, sensitive, confidential or regulated data ("Personal Data")) used in connection with their businesses, and there have been no breaches, violations, outages or unauthorized uses of or accesses to same, except for those that have been remedied without material cost or liability or the duty to notify any other person, nor any incidents under internal review or investigations relating to the same. The Company and its subsidiaries are presently in material compliance with all applicable laws or statutes and all

judgments, orders, rules and regulations of any court or arbitrator or governmental or regulatory authority, internal policies and contractual obligations relating to the privacy and security of IT Systems and Personal Data and to the protection of such IT Systems and Personal Data from unauthorized use, access, misappropriation or modification.

The Company acknowledges that the Underwriters and, for purposes of the opinions to be delivered pursuant to Section 8 hereof, counsel to the Company and counsel to the Underwriters, will rely upon the accuracy and truthfulness of the foregoing representations and hereby consents to such reliance.

2. Purchase, Sale and Delivery of the Offered Shares.

(a) The Company agrees to issue and sell the Firm Shares to the several Underwriters as provided in this underwriting agreement (this "Agreement"), and each Underwriter, on the basis of the representations, warranties and agreements set forth herein and subject to the conditions set forth herein, agrees, severally and not jointly, to purchase from the Company the respective number of Firm Shares set forth opposite such Underwriter's name in Schedule A hereto at a price per share (the "Purchase Price") of \$82.65.

In addition, the Company agrees to issue and sell the Optional Shares to the several Underwriters as provided in this Agreement, and the Underwriters, on the basis of the representations, warranties and agreements set forth herein and subject to the conditions set forth herein, shall have the option to purchase, severally and not jointly, from the Company the Optional Shares at the Purchase Price less an amount per share equal to any dividends or distributions declared by the Company and payable on the Firm Shares but not payable on the Optional Shares.

If any Optional Shares are to be purchased, the number of Optional Shares to be purchased by each Underwriter shall be the number of Optional Shares which bears the same ratio to the aggregate number of Optional Shares being purchased as the number of Firm Shares set forth opposite the name of such Underwriter in Schedule A hereto (or such number increased as set forth in Section 10 hereof) bears to the aggregate number of Firm Shares being purchased from the Company by the several Underwriters, subject, however, to such adjustments to eliminate any fractional Common Stock as the Representatives in their sole discretion shall make.

The Underwriters may exercise the option to purchase Optional Shares at any time in whole, or from time to time in part, on or before the thirtieth day following the date of the Prospectus, by written notice from the Representatives to the Company. Such notice shall set forth the aggregate number of Optional Shares as to which the option is being exercised and the date and time when the Optional Shares are to be delivered and paid for, which may be the same date and time as the Closing Date (as hereinafter defined) but shall not be earlier than the Closing Date nor later than the tenth full business day (as hereinafter defined) after the date of such notice (unless such time and date are postponed in accordance with the provisions of Section 10 hereof). Any such notice shall be given at least two business days prior to the date and time of delivery specified therein.

(b) The Company understands that the Underwriters intend to make a public offering of the Offered Shares and initially to offer the Offered Shares on the terms set forth in the Pricing Prospectus. The Company acknowledges and agrees that the Underwriters may offer and sell Offered Shares to or through any affiliate of an Underwriter.

(c) Payment for the Offered Shares shall be made by wire transfer in immediately available funds to the account specified by the Company to the Representatives in the case of the Firm Shares, at the offices of Covington & Burling LLP at 10:00 A.M., New York City time, on July 19, 2019, or at such other time or place on the same or such other date, not later than the fifth business day thereafter, as the Representatives and the Company may agree upon in writing or, in the case of the Optional Shares, on the date and at the time and place specified by the Representatives in the written notice of the Underwriters' election to purchase such Optional Shares. The time and date of such payment for the Firm Shares is referred to herein as the "Closing Date", and the time and date for such payment for the Optional Shares, if other than the Closing Date, is herein referred to as the "Option Closing Date."

Payment for the Offered Shares to be purchased on the Closing Date or the Option Closing Date, as the case may be, shall be made against delivery to the Representatives for the respective accounts of the several Underwriters of the Offered Shares to be purchased on such date in definitive form registered in such names and in such denominations as the Representatives shall request in writing not later than two full business days prior to the Closing Date or the Option Closing Date, as the case may be, with any transfer taxes payable in connection with the sale of such Offered Shares duly paid by the Company. Delivery of the Shares shall be made through the facilities of The Depository Trust Company ("DTC") unless the Representatives shall otherwise instruct. The certificates for the Offered Shares will be made available for inspection and packaging by the Representatives at the office of DTC or its designated custodian not later than 1:00 P.M., New York City time, on the business day prior to the Closing Date or the Option Closing Date, as the case may be.

(d) The Company acknowledges and agrees that the Underwriters are acting solely in the capacity of an arm's length contractual counterparty to the Company with respect to the offering of Offered Shares contemplated hereby (including in connection with determining the terms of the offering) and not as a financial advisor or a fiduciary to, or an agent of, the Company or any other person. Additionally, neither the Representatives nor any other Underwriter is advising the Company or any other person as to any legal, tax, investment, accounting or regulatory matters in any jurisdiction. The Company shall consult with its own advisors concerning such matters and shall be responsible for making its own independent investigation and appraisal of the transactions contemplated hereby, and the Underwriters shall have no responsibility or liability to the Company with respect thereto. Any review by the Underwriters of the Company, the transactions contemplated hereby or other matters relating to such transactions will be performed solely for the benefit of the Underwriters and shall not be on behalf of the Company.

3. [Intentionally Omitted.]

4. [Intentionally Omitted.]

5. The Company covenants and agrees with each of the Underwriters as follows:

(a) The Company, subject to Section 5(b), will comply with the requirements of Rule 430B under the Securities Act, and will notify the Representatives promptly, and confirm the notice in writing, (i) when any post-effective amendment to the Registration Statement shall become effective, or any supplement to the Prospectus or any amended prospectus shall have been filed, to furnish the Representatives with a reasonable number of copies thereof, and to file promptly all material required to be filed by the Company with the Commission pursuant to Rule 433(d) under the Securities Act, (ii) of the receipt of any comments from the Commission, (iii) of any request by the Commission for any amendment to the Registration Statement or any amendment or supplement to the Prospectus or for additional information, and (iv) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or of any order preventing or suspending the use of any preliminary prospectus, or of the suspension of the qualification of the Offered Shares or the Common Stock for offering or sale in any jurisdiction, or of the initiation or threatening of any proceedings for any of such purposes or pursuant to Section 8A under the Securities Act. The Company will promptly effect the filings necessary pursuant to Rule 424(b) under the Securities Act and will take such steps as it deems necessary to ascertain promptly whether the form of prospectus transmitted for filing under Rule 424(b) was received for filing by the Commission and, in the event that it was not, it will promptly file such prospectus. The Company will make every reasonable effort to prevent the issuance of any stop order and, if any stop order is issued, to obtain the lifting thereof at the earliest possible moment.

(b) During the period when a prospectus relating to the Offered Shares is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule), the Company will give the Representatives notice of its intention to file or prepare any amendment to the Registration Statement (including any filing under Rule 462(b) under the Securities Act and including any amendment or supplement through incorporation of any report filed under the Exchange Act), or any amendment, supplement or revision to the Prospectus, or any free writing prospectus, will furnish the Representatives with copies of any such documents a reasonable amount of time prior to such proposed filing or use, as the case may be, and will not file or use any such document without J.P. Morgan's prior written consent (such consent not to be unreasonably withheld, conditioned or delayed).

(c) The Company will use its reasonable best efforts to qualify the Offered Shares for offering and sale under the securities laws of such jurisdictions as you may reasonably request and to comply with such laws so as to permit the continuance of sales and dealings therein in such jurisdictions for as long as may be necessary to complete the distribution of the Offered Shares, provided that nothing in this Section 5(c) shall require the Company to qualify as a foreign corporation in any jurisdiction in which it is not already so qualified, or to file a general consent to service of process in any jurisdiction.

(d) The Company has furnished or will deliver to the Representatives, without charge, two signed copies of the Registration Statement as originally filed, any Rule 462(b) Registration Statement and of each amendment to each (including exhibits filed therewith or incorporated by reference therein) and signed copies of all consents and certificates of experts, and will also, upon your request, deliver to the Representatives, without charge, a conformed copy of the Registration Statement as originally filed and of each amendment thereto (without exhibits) for each of the Underwriters. The copies of the Registration Statement and each amendment thereto furnished to the Underwriters will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

(e) The Company has delivered to each Underwriter, without charge, as many written and electronic copies of each preliminary prospectus as such Underwriter reasonably requested, and the Company hereby consents to the use of such copies for purposes permitted by the Securities Act. The Company will furnish to each Underwriter, without charge, prior to 5:00 P.M. on the business day next succeeding the date of this Agreement (or as soon as reasonably practicable thereafter) and from time to time thereafter during the period when the Prospectus is required to be delivered in connection with sales of the Offered Shares under the Securities Act or the Exchange Act or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act, such number of written and electronic copies of the Prospectus (as amended or supplemented) as such Underwriter may reasonably request. The Prospectus and any amendments or supplements thereto furnished to the Underwriters will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

(f) The Company will comply with the Securities Act and Exchange Act so as to permit the completion of the distribution of the Offered Shares as contemplated in this Agreement and in the Prospectus. If at any time when, in the opinion of counsel for the Underwriters, a prospectus is required to be delivered in connection with sales of the Offered Shares under the Securities Act or the Exchange Act (or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act), any event shall occur or condition shall exist as a result of which it is necessary, in the opinion of the Company, counsel for the Company, the Representatives or counsel for the Underwriters or for the Company, to amend the Registration Statement or amend or supplement the Prospectus in order that the Prospectus will not include any untrue statements of a material fact or omit to state a material fact necessary in order to make the statements therein not misleading in the light of the circumstances existing at the time it (or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act) is delivered to a purchaser, or if it shall be necessary, in the opinion of the Company, counsel to the Company, the Representatives or counsel to the Underwriters, at any such time to amend the Registration Statement or amend or supplement the Prospectus in order to comply with the requirements of the Securities Act, the Company will promptly prepare and file with the Commission, subject to Section 5(b), such amendment or supplement as may be necessary to correct such statement or omission or to make the Registration Statement or the Prospectus comply with such requirements, and the Company will furnish to the Underwriters such number of written and electronic copies of such amendment or supplement as the Underwriters may reasonably request. The Company will provide the Representatives with notice of the occurrence of any event during the period specified above that may give rise to the need to amend or supplement the Registration Statement or the Prospectus as provided in the preceding sentence promptly after the occurrence of such event.

(g) The Company will make generally available (within the meaning of Section 11(a) of the Securities Act) to its security holders and to the Representatives as soon as practicable, but not later than 45 days after the end of its fiscal quarter in which the first anniversary date of the effective date of the Registration Statement occurs, an earnings statement (in form complying with the provisions of Rule 158 under the Securities Act) covering a period of at least twelve consecutive months beginning after the effective date (as defined in Rule 158 under the Securities Act) of the Registration Statement.

(h) The Company will use the net proceeds received by it from the sale of the Offered Shares in the manner specified in the Pricing Prospectus under the heading "Use of Proceeds".

(i) The Company will use its reasonable best efforts to effect, as applicable, and maintain the listing of the Common Stock (including the Offered Shares) on the NASDAQ.

(j) During a period of 60 days from the date of the Prospectus (the "Lock-up Period"), the Company will not, without the prior written consent of J.P. Morgan, (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend or otherwise transfer or dispose of, directly or indirectly, any Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock, (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of Common Stock, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise, (iii) submit or file any registration statement under the Securities Act in respect of any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock; or (iv) publicly announce the intention to do any of the foregoing; *provided that* the Company may (1) effect the transactions contemplated hereby, (2) issue Common Stock or options to purchase Common Stock, or issue Common Stock upon exercise of options, pursuant to any stock option, stock bonus or other stock plan or arrangement described in the Registration Statement, the Pricing Prospectus and the Prospectus, (3) permit or allow the vesting of or removal or lapse of restrictions on restricted stock or other awards under existing employee benefits plans or agreements in accordance with the terms of such plans or agreements, provided that no related public disclosure, announcement, or filing under the Exchange Act, shall be required or made voluntarily, during the Lock-up Period, (4) issue options, restricted stock units or other awards to newly hired employees, including granting inducement grant awards, as permitted by Nasdaq Stock Market Rule 5635, (5) file any registration statement on Form S-8 or a successor form thereto in respect of securities offered pursuant to the terms of existing employee benefits or inducement grant award, (6) issue Common Stock upon the exchange, conversion or redemption of any of the Company's 2.125% Convertible Senior Notes due 2021 as described in the Registration Statement, the Pricing Prospectus and the Prospectus, (7) issue Common Stock to one or more counterparties in connection with the consummation any merger, asset acquisition or

other business combination transaction or any strategic partnership, joint venture, collaboration or license of any business, products or technology; *provided* that, with respect to this subsection (7), (x) the sum of the aggregate number of shares of Common Stock so issued during the Lock-up Period shall in the aggregate not exceed 10% of the total outstanding Common Stock immediately following the completion of this offering and (y) prior to the issuance of such Common Stock, each recipient of such Common Stock signs a Lock-up Agreement (or substantially similar agreement) in favor of the Representatives, and (8) effect the transactions contemplated by the underwriting agreement among the Company and the several underwriters named therein, dated as of July 16, 2019, in connection with the proposed public offering of convertible notes of the Company, including the issuance of Common Stock upon the conversion of such convertible notes.

(k) The Company, during the period when the Prospectus is required to be delivered in connection with sales of the Offered Shares under the Securities Act or the Exchange Act (or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act), will file all documents required to be filed with the Commission pursuant to the Exchange Act within the time periods required by the Exchange Act.

(l) The Company will file with the Commission such information on Form 10-Q or Form 10-K as may be required pursuant to Rule 463 under the Securities Act.

(m) During a period of five years from the effective date of the Registration Statement, the Company will furnish or make available to you copies of all reports or other communications (financial or other) furnished to shareholders generally, and to deliver to you (i) as soon as they are available, copies of any reports and financial statements furnished to or filed with the Commission or any national securities exchange on which any class of securities of the Company is listed; and (ii) such additional information concerning the business and financial condition of the Company as you may from time to time reasonably request (such financial statements to be on a consolidated basis to the extent the accounts of the Company and any subsidiaries are consolidated in reports furnished to its shareholders generally or to the Commission); *provided however* that the requirements of this Section 5(m) shall be satisfied to the extent that such reports, financial statements, other communications or other information are available on EDGAR.

(n) If so requested by J.P. Morgan, the Company shall cause to be prepared and delivered, at its expense, within one business day from the effective date of this Agreement, to the Representatives an “electronic Prospectus” to be used by the Underwriters in connection with the offering and sale of the Offered Shares. As used herein, the term “electronic Prospectus” means a form of the most recent preliminary prospectus, any free writing prospectus or the Prospectus, and any amendment or supplement thereto, that meets each of the following conditions: (i) it shall be encoded in an electronic format, satisfactory to J.P. Morgan, that may be transmitted electronically by the Representatives and the other Underwriters to offerees and purchasers of the Offered Shares, (ii) it shall disclose the same information as such paper preliminary prospectus, free writing prospectus or the Prospectus, as the case may be; and (iii) it shall be in or convertible into a paper format or an electronic format, satisfactory to J.P. Morgan, that will allow investors to store and have continuously ready access to such preliminary

prospectus, free writing prospectus or the Prospectus at any future time, without charge to investors (other than any fee charged for subscription to the Internet generally). The Company hereby confirms that, if so requested by J.P. Morgan, it has included or will include in the Prospectus filed with the Commission an undertaking that, upon receipt of a request by an investor or his or her representative, the Company shall transmit or cause to be transmitted promptly, without charge, a paper copy of such paper preliminary prospectus, free writing prospectus or the Prospectus to such investor or representative.

(o) The Company agrees to pay the required Commission filing fees relating to the Offered Shares within the time required by Rule 456(b)(1) under the Securities Act without regard to the proviso therein and otherwise in accordance with the Rules 456(b) and 457(r) under the Securities Act.

(p) If, after the date of this Agreement and during any time when a prospectus is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule), the Company receives notice pursuant to Rule 401(g)(2) under the Securities Act from the Commission or otherwise ceases to be eligible to use the automatic shelf registration form, the Company shall promptly advise the Representatives in writing of such notice or ineligibility and will (i) promptly file a new registration statement or post-effective amendment on the proper form relating to the Offered Shares, (ii) use its reasonable best efforts to cause such registration statement or post-effective amendment to be declared effective by the Commission as soon as practicable and (iii) promptly notify the Representatives in writing of such effectiveness.

(q) The Company will not take, 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 Common Stock.

(r) During the Lock-up Period, the Company will enforce all agreements between the Company and any of its security holders that restrict or prohibit, expressly or in operation, the offer, sale or transfer of Common Stock or any of the other actions restricted or prohibited under the terms of the form of Lock-up Agreement. In addition, the Company will direct the transfer agent to place stop transfer restrictions upon any such securities of the Company that are bound by such agreements for the duration of the periods contemplated in such agreements, including, without limitation, the Lock-up Agreements entered into by the Company's directors and executive officers pursuant to Section 1(xxxvi) hereof.

6. (a) The Company represents and agrees that, without the prior consent of J.P. Morgan, it has not made and will not make any offer relating to the Offered Shares that would constitute a "free writing prospectus" as defined in Rule 405 under the Securities Act; each Underwriter represents and agrees that, without the prior consent of the Company and J.P. Morgan, it has not made and will not make any offer relating to the Offered Shares that would constitute a free writing prospectus; any such free writing prospectus the use of which has been consented to by the Company and J.P. Morgan is listed on Schedule B hereto;

(b) The Company has complied and will comply with the requirements of Rule 433 under the Securities Act applicable to any free writing prospectus, including timely filing with the Commission or retention where required and legending; the Company represents that it has satisfied and agrees that it will satisfy the conditions under Rule 433 under the Securities Act to avoid a requirement to file with the Commission any electronic road show;

(c) The Company agrees that if at any time following issuance of a free writing prospectus any event occurred or occurs as a result of which such free writing prospectus would conflict with the information in the Registration Statement, the Pricing Prospectus or the Prospectus or would include an untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in light of the circumstances then prevailing, not misleading, the Company will give prompt notice thereof to the Representatives and, if requested by J.P. Morgan, will prepare and furnish without charge to each Underwriter a free writing prospectus or other document which will correct such conflict, statement or omission; provided, however, that this representation and warranty shall not apply to any statements or omissions in a free writing prospectus made in reliance upon and in strict conformity with information furnished in writing to the Company by an Underwriter through J.P. Morgan expressly for use therein.

7. The Company covenants and agrees with the several Underwriters that, whether or not the transactions contemplated by this Agreement are consummated, the Company will pay or cause to be paid all expenses incident to the performance of its obligations under this Agreement, including (i) the fees, disbursements and expenses of the Company's counsel, accountants and other advisors; (ii) filing fees and all other expenses in connection with the preparation, printing and filing of the Registration Statement, each preliminary prospectus, any free writing prospectus and the Prospectus and amendments and supplements thereto and the mailing and delivering of copies thereof to the Underwriters and dealers; (iii) the cost of printing or producing this Agreement, closing documents (including any compilations thereof) and such other documents as may be required in connection with the offering, purchase, sale and delivery of the Offered Shares; (iv) all expenses in connection with the qualification of the Offered Shares for offering and sale under state securities laws as provided in Section 5(c) or the provincial securities laws of Canada, including filing fees and the reasonable fees and disbursements of counsel for the Underwriters in connection with such qualification and in connection with the Blue Sky survey, provided such fees and disbursements do not exceed \$5,000 in the aggregate; (v) all fees and expenses in connection with listing the Offered Shares on the NASDAQ; (vi) the reasonable fees and disbursements of counsel for the Underwriters in connection with determining compliance of the terms of the sale of the Offered Shares with the rules and regulations of FINRA, and the filing fees incident to securing any required review by FINRA of the terms of the sale of the Offered Shares, provided such fees and disbursements do not exceed \$10,000 in the aggregate; (vii) all fees and expenses in connection with any stock or other transfer taxes and any stamp or other duties payable upon the sale, issuance or delivery of the Offered Shares to the Underwriters; (viii) the transportation and other expenses incurred by the Company in connection with presentations to prospective purchasers of Offered Shares, provided that the cost of any aircraft chartered in connection with the road show shall be borne 50% by the Company and 50% by the Underwriters; (ix) the costs and charges for the transfer agent and registrar; and (x) all other costs and expenses incident to the performance of its obligations hereunder which are not otherwise specifically provided for in this Section. Except as provided in Sections 7(iv) and 7(vi) above and Sections 9 and 12 the Underwriters shall pay their own expenses, including the fees and disbursements of their counsel.

8. The several obligations of the Underwriters hereunder to purchase the Offered Shares on the Closing Date or each Option Closing Date, as the case may be, are subject to the performance by the Company of its obligations hereunder and to the following additional conditions:

(a) The Prospectus shall have been filed with the Commission pursuant to Rule 424(b) under the Securities Act within the applicable time period prescribed for such filing and in accordance with Section 5(a); all material required to be filed by the Company pursuant to Rule 433(d) under the Securities Act shall have been filed with the Commission within the applicable time period prescribed for such filing by Rule 433 under the Securities Act; no stop order suspending the effectiveness of the Registration Statement or any part thereof or the Prospectus or any part thereof or any free writing prospectus shall have been issued and no proceeding for that purpose or pursuant to Section 8A under the Securities Act shall have been initiated or threatened by the Commission or any state securities commission; and all requests for additional information on the part of the Commission shall have been complied with to your reasonable satisfaction.

(b) The representations and warranties of the Company contained herein are true and correct on the date hereof and on and as of the Closing Date or the Option Closing Date, as the case may be, as if made on and as of the Closing Date or the Option Closing Date, as the case may be, and the Company shall have complied with all agreements and all conditions on its part to be performed or satisfied hereunder at or prior to the Closing Date or the Option Closing Date, as the case may be.

(c) There shall not have been any Material Adverse Change with respect to the Company, the effect of which, is in the judgment of J.P. Morgan so material and adverse as to make it impracticable or inadvisable to proceed with the public offering or the delivery of the Offered Shares being delivered at such Closing Date or Option Closing Date, as the case may be, on the terms and in the manner contemplated in this Agreement or the Pricing Prospectus.

(d) The Representatives shall have received on and as of the Closing Date or the Option Closing Date, as the case may be, a certificate of two executive officers of the Company, at least one of whom has specific knowledge about the Company's financial matters, satisfactory to J.P. Morgan, to the effect (1) set forth in Section 8(b), (2) that from the date of the Agreement through and including the Closing Date, or Option Closing Date, as the case may be, there shall not have occurred any Material Adverse Change and (3) that no stop order suspending the effectiveness of the Registration Statement has been issued and to the knowledge of the Company, no proceedings for that purpose or pursuant to Section 8A under the Securities Act have been instituted or are pending or contemplated by the Commission.

(e) On the Closing Date or Option Closing Date, as the case may be, Goodwin Procter LLP, counsel for the Company, shall have furnished to the Representatives their favorable written opinion and 10b-5 statement, dated the Closing Date or the Option Closing Date, as the case may be, in form and substance satisfactory to counsel for the Underwriters.

(f) (i) On the date hereof, Ernst & Young LLP shall have furnished to the Representatives a letter, dated the date hereof, in form and substance satisfactory to J.P. Morgan, containing statements and information of the type customarily included in accountants' "comfort letters" to underwriters with respect to the financial statements and certain financial information contained or incorporated by reference in the Registration Statement and the Prospectus.

(ii) On the date hereof, Friedman LLP shall have furnished to the Representatives a letter, dated the date hereof, in form and substance satisfactory to J.P. Morgan, containing statements and information of the type customarily included in accountants' "comfort letters" to underwriters with respect to the financial statements and certain financial information contained or incorporated by reference in the Registration Statement and the Prospectus.

(g) (i) On the Closing Date or Option Closing Date, as the case may be, the Representatives shall have received from Ernst & Young LLP a letter, dated the Closing Date or such Option Closing Date, as the case may be, in form and substance satisfactory to J.P. Morgan, to the effect that they reaffirm the statements made in the letter or letters furnished pursuant to Section 8(f), except that the specified date referred to shall be a date not more than three business days prior to the Closing Date or such Option Closing Date, as the case may be.

(ii) On the Closing Date or Option Closing Date, as the case may be, the Representatives shall have received from Friedman LLP a letter, dated the Closing Date or such Option Closing Date, as the case may be, in form and substance satisfactory to J.P. Morgan, to the effect that they reaffirm the statements made in the letter or letters furnished pursuant to Section 8(f), except that the specified date referred to shall be a date not more than three business days prior to the Closing Date or such Option Closing Date, as the case may be.

(h) On the Closing Date or Option Closing Date, as the case may be, Covington & Burling LLP, counsel for the Underwriters in connection with the offering, shall have furnished to the Representatives their favorable opinion and 10b-5 statement, dated the Closing Date or the Option Closing Date, as the case may be, in form and substance satisfactory to the Underwriters, and such counsel shall have received such papers and information as they may reasonably request to enable them to pass upon such matters.

(i) [Intentionally Omitted.]

(j) On the Closing Date or Option Closing Date, as the case may be, the Representatives shall have received a certificate from previously agreed officer(s) of the Company with respect to intellectual property matters in a previously agreed form.

(k) The Offered Shares shall have been approved for listing on the NASDAQ, as applicable, subject to official notice of issuance.

(l) If a filing has been made with FINRA, FINRA shall have raised no objection to the fairness and reasonableness of the underwriting terms and arrangements.

(m) The Representatives shall have received Lock-up Agreements from each of the persons listed on Schedule D hereto and such agreements shall be in full force and effect on the Closing Date or Option Closing Date, as the case may be.

(n) On or prior to the Closing Date or Option Closing Date, as the case may be, the Company shall have furnished to the Representatives such further information, certificates and documents as J.P. Morgan shall reasonably request.

(o) On the Closing Date or Option Closing Date, as the case may be, the Representatives shall have received a certificate from the Chief Financial Officer of the Company in form and substance satisfactory to J.P. Morgan.

If any condition specified in this Section 8 shall not have been fulfilled when and as required to be fulfilled, this Agreement may be terminated, subject to the provisions of Section 12, by J.P. Morgan by notice to the Company at any time at or prior to the Closing Date or Option Closing Date, as the case may be, and such termination shall be without liability of any party to any other party, except as provided in Section 12.

9. (a) The Company agrees to indemnify and hold harmless each Underwriter, its affiliates, directors and officers and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Securities Act or Section 20(a) of the Exchange Act against any and all losses, liabilities, claims, damages and expenses whatsoever as reasonably incurred (including without limitation, reasonable attorneys' fees of one counsel and one local counsel for all indemnified parties and any and all reasonable expenses whatsoever incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, and any and all amounts paid in settlement of any claim or litigation), joint or several, to which they or any of them may become subject under the Securities Act, the Exchange Act or otherwise, insofar as such losses, liabilities, claims, damages or expenses (or actions in respect thereof) arise out of or are based (i) upon any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, or any post-effective amendment thereof, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, or (ii) any untrue statement or alleged untrue statement of a material fact included in any preliminary prospectus, the Pricing Prospectus, any road show as defined in Rule 433(h) under the Securities Act (a "road show"), any free writing prospectus that the Company has used, referred to or filed, or is required to file, pursuant to Rule 433 of the Securities Act or the Prospectus (or any such amendment or supplement) or the omission or alleged omission to state therein a material fact necessary in order to make the statements, in the light of the circumstances under which they were made, not misleading; provided, however, that the Company will not be liable in any such case to the extent that any such loss, liability, claim, damage or expense arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made in the Registration Statement, as originally filed or any amendment thereof, the Registration Statement, or any post-effective amendment thereof,

any preliminary prospectus, the Pricing Prospectus or the Prospectus, or in any supplement thereto or amendment thereof, or any free writing prospectus in reliance upon and in strict conformity with written information furnished to the Company by or on behalf of any Underwriter through J.P. Morgan expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter is the information described as such in Section 9(b) below.

(b) Each Underwriter severally, and not jointly, agrees to indemnify and hold harmless the Company, each of the directors of the Company, each of the officers of the Company who shall have signed the Registration Statement, and each other person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20(a) of the Exchange Act, against any losses, liabilities, claims, damages and expenses whatsoever as reasonably incurred (including without limitation, reasonable attorneys' fees of one counsel and one local counsel for all indemnified parties and any and all reasonable expenses whatsoever incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, and any and all amounts paid in settlement of any claim or litigation), joint or several, to which they or any of them may become subject under the Securities Act, the Exchange Act or otherwise, insofar as such losses, liabilities, claims, damages or expenses (or actions in respect thereof) arise out of or are based upon (i) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, or any post-effective amendment thereof, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, or (ii) any untrue statement or alleged untrue statement of a material fact included in any preliminary prospectus, the Pricing Prospectus, any road show, any free writing prospectus that the Company has used, referred to or filed, or is required to file, pursuant to Rule 433 of the Securities Act or the Prospectus (or any such amendment or supplement) or the omission or alleged omission to state therein a material fact necessary in order to make the statements, in the light of the circumstances under which they were made, not misleading, in each case to the extent, but only to the extent, that any such loss, liability, claim, damage or expense arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made therein in reliance upon and in strict conformity with written information furnished to the Company by or on behalf of such Underwriter through J.P. Morgan expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the following information in the Prospectus furnished on behalf of each Underwriter: (i) the statement, if any, relating to the selling concession set forth in the first sentence of the third paragraph and (ii) the statements relating to stabilizing transactions, syndicate covering transactions, and penalty bids set forth in the fourteenth paragraph and the second and third sentences of the fifteenth paragraph, in each case under the caption "Underwriting" in the Preliminary Prospectus and Prospectus.

(c) Promptly after receipt by an indemnified party under Section 9(a) or 9(b) of notice of the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such Section, notify each party against whom indemnification is to be sought in writing of the commencement thereof (but the failure so to notify an indemnifying party shall not relieve it from any liability which it may have under this Section 9). In case any such action is brought against any indemnified party, and it

notifies an indemnifying party of the commencement thereof, the indemnifying party will be entitled to participate therein, and jointly with any other indemnifying party similarly notified, to the extent it may elect by written notice delivered to the indemnified party promptly after receiving the aforesaid notice from such indemnified party, to assume the defense thereof with counsel reasonably satisfactory to such indemnified party (who shall not, except with the consent of the indemnified party, be counsel to the indemnified party). Notwithstanding the foregoing, the indemnified party or parties shall have the right to employ its or their own counsel in any such case, but the fees and expenses of such counsel shall be at the expense of such indemnified party or parties unless (i) the employment of such counsel shall have been authorized in writing by one of the indemnifying parties in connection with the defense of such action, (ii) the indemnifying parties shall not have employed counsel to have charge of the defense of such action within a reasonable time after notice of commencement of the action, or (iii) such indemnified party or parties shall have reasonably concluded that there may be defenses available to it or them which are different from or additional to those available to one or all of the indemnifying parties (in which case the indemnifying parties shall not have the right to direct the defense of such action on behalf of the indemnified party or parties), in any of which events such fees and expenses shall be borne by the indemnifying parties. In no event shall the indemnifying parties be liable for fees and expenses of more than one counsel (in addition to any local counsel) separate from their own counsel for all indemnified parties in connection with any one action or separate but similar or related actions in the same jurisdiction arising out of the same general allegations or circumstances, which counsel, in the event of indemnified parties under Section 9(a), shall be selected by J.P. Morgan. No indemnifying party shall, without the written consent of the indemnified party, effect the settlement or compromise of, or consent to the entry of any judgment with respect to, any pending or threatened action or claim in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified party is an actual or potential party to such action or claim) unless such settlement, compromise or judgment (i) includes an unconditional release of the indemnified party, in form and substance reasonably satisfactory to the indemnified party, from all liability arising out of such action or claim and (ii) does not include a statement as to or an admission of fault, culpability or a failure to act, by or on behalf of any indemnified party.

(d) If the indemnification provided for in this Section 9 is unavailable to or insufficient to hold harmless an indemnified party under Section 9 (a) or 9(b) in respect of any losses, liabilities, claims, damages or expenses (or actions in respect thereof) referred to therein, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party as a result of such losses, liabilities, claims, damages or expenses (or actions in respect thereof) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Offered Shares. If, however, the allocation provided by the immediately preceding sentence is not permitted by applicable law, then each indemnifying party shall contribute to such amount paid or payable by such indemnified party in such proportion as is appropriate to reflect not only such relative benefits but also the relative fault of the Company on the one hand and the Underwriters on the other in connection with the statements or omissions which resulted in such losses, liabilities, claims, damages or expenses (or actions in respect thereof), as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Offered Shares shall be deemed

to be in the same proportion as the total net proceeds from the offering (before deducting expenses and after deducting total underwriting discounts and commissions) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters, in each case as set forth in the table on the cover page of the Prospectus. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company on the one hand or the Underwriters on the other and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission.

The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to this Section 9(d) were determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take account of the equitable considerations referred to above in this Section 9(d). The amount paid or payable by an indemnified party as a result of the losses, liabilities, claims, damages or expenses (or actions in respect thereof) referred to above in this Section 9(d) shall be deemed to include any documented legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this Section 9(d), no Underwriter shall be required to contribute any amount in excess of the amount by which the total price at which the Offered Shares underwritten by it and distributed to the public were offered to the public exceeds the amount of any damages which such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission.

No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligations in this Section 9(d) to contribute are several in proportion to their respective underwriting obligations and not joint.

(e) The obligations of the parties to this Agreements contained in this Section 9 are not exclusive and shall not limit any rights or remedies which may otherwise be available to any indemnified party at law or in equity.

10. If any Underwriter or Underwriters default in its or their obligations to purchase Offered Shares hereunder on the Closing Date or any Option Closing Date and the aggregate principal amount of Offered Shares that such defaulting Underwriter or Underwriters agreed but failed to purchase does not exceed 10% of the total aggregate principal amount of Offered Shares that the Underwriters are obligated to purchase on such Closing Date or Option Closing Date, as the case may be, the non-defaulting Underwriters may make arrangements satisfactory to the Company for the purchase of such Offered Shares by other persons, including any of the Underwriters, but if no such arrangements are made by such Closing Date or Option Closing Date, as the case may be, the non-defaulting Underwriters shall be obligated severally, in proportion to their respective commitments hereunder, to purchase the Offered Shares that such defaulting Underwriters agreed but failed to purchase on such Closing Date or Option Closing Date, as the case may be. If any Underwriter or Underwriters so default and the aggregate principal amount of Offered Shares with respect to which such default or defaults occur exceeds

10% of the total aggregate principal amount of Offered Shares that the Underwriters are obligated to purchase on such Closing Date or Option Closing Date, as the case may be, and arrangements satisfactory to the non-defaulting Underwriters and the Company for the purchase of such Offered Shares by other persons are not made within 48 hours after such default, this Agreement will terminate, subject to the provisions of Section 12, without liability on the part of any non-defaulting Underwriter or the Company, except as provided in Section 12 (provided that if such default occurs with respect to Optional Shares after the Closing Date, this Agreement will not terminate as to the Firm Shares or any Optional Shares purchased prior to such termination). Nothing herein will relieve a defaulting Underwriter from liability for its default.

In the event of any such default which does not result in a termination of this Agreement, either the non-defaulting Underwriters or the Company shall have the right to postpone the Closing Date or the relevant Option Closing Date, as the case may be, for a period not exceeding seven days in order to effect any required changes in the Registration Statement or Prospectus or in any other documents or arrangements. As used in this Agreement, the term "Underwriter" includes any person substituted for an Underwriter under this Section 10.

11. Notwithstanding anything herein contained, this Agreement (or the obligations of the several Underwriters with respect to any Optional Shares which have yet to be purchased) may be terminated, subject to the provisions of Section 12, in the absolute discretion of J.P. Morgan, by notice given to the Company, if after the execution and delivery of this Agreement and prior to the Closing Date or the Option Closing Date, as the case may be, (a) trading generally on the New York Stock Exchange or on the NASDAQ shall have been suspended or materially limited, or minimum or maximum prices for trading have been fixed, or maximum ranges for prices have been required, by any of said exchanges or by such system or by order of the Commission, FINRA or any other governmental or regulatory authority, (b) trading of any securities of or guaranteed by the Company or any subsidiary shall have been suspended on any exchange or in any over-the-counter market, (c) a general moratorium on commercial banking activities in New York, Massachusetts or Europe shall have been declared by U.S. federal authority or any New York State, Massachusetts or European authority or a new restriction materially adversely affecting the distribution of the Firm Shares or the Optional Shares, as the case may be, shall have become effective, or (d) there has occurred any material adverse change in the financial markets in the United States or the international financial markets, any outbreak of hostilities or escalation thereof or other calamity or crisis or any material change or development involving a prospective change in national or international political, financial or economic conditions, in each case the effect of which is such as to make it, in the judgment of J.P. Morgan, impracticable to market the Offered Shares to be delivered on the Closing Date or Option Closing Date, as the case may be, or to enforce contracts for the sale of the Offered Shares.

If this Agreement is terminated pursuant to this Section 11, such termination will be without liability of any party to any other party except as provided in Section 12 hereof.

12. The respective indemnities, rights of contribution, agreements, representations, warranties and other statements of the Company or its officers and of the several Underwriters set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation, or statement as to the results thereof, made by or on behalf of any Underwriter, the Company or any of their respective representatives, officers or directors or any controlling person, and will survive delivery of and payment for the Offered Shares. If this Agreement is terminated pursuant to Section 8, 10 or 11 or if for any reason the purchase of any of the Offered Shares by the Underwriters is not consummated, the Company shall remain responsible for the expenses to be paid or reimbursed by it pursuant to Section 7, the respective obligations of the Company and the Underwriters pursuant to Section 9 and the provisions of Sections 12, 13 and 16 shall remain in effect and, if any Offered Shares have been purchased hereunder the representations and warranties in Section 1 and all obligations under Section 5 and Section 6 shall also remain in effect. If this Agreement shall be terminated by the Underwriters, or any of them, under Section 8 or otherwise because of any failure or refusal on the part of the Company to comply with the terms or to fulfill any of the conditions of this Agreement, or if for any reason the Company shall be unable to perform its obligations under this Agreement or any condition of the Underwriters' obligations cannot be fulfilled, the Company agrees to reimburse the Underwriters or such Underwriters as have so terminated this Agreement with respect to themselves, severally, for all out-of-pocket expenses (including the fees and expenses of its counsel) reasonably incurred by the Underwriter in connection with this Agreement or the offering contemplated hereunder.

13. This Agreement shall inure to the benefit of and be binding upon the Company and the Underwriters, the officers and directors of the Company referred to herein, any controlling persons referred to herein and their respective successors and assigns. Nothing expressed or mentioned in this Agreement is intended or shall be construed to give any other person, firm or corporation any legal or equitable right, remedy or claim under or in respect of this Agreement or any provision herein contained. No purchaser of Offered Shares from any Underwriter shall be deemed to be a successor or assign by reason merely of such purchase.

14. All notices and other communications hereunder shall be in writing and shall be deemed to have been duly given upon receipt thereof by the recipient if mailed or transmitted by any standard form of telecommunication. Notices to the Underwriters shall be given to the Representatives, c/o J.P. Morgan Securities LLC, 383 Madison Avenue, New York, New York 10022, Attention: Equity Syndicate Desk (fax no.: (212) 622-8358), c/o Stephens Inc., 111 Center Street, Little Rock, Arkansas 72201, Attention: Bill Keisler (fax no.: (501) 377-2677), and c/o Janney Montgomery Scott LLC, 60 State Street, Boston, Massachusetts 02109, Attention: David Lau (fax no.: (617) 367-1153), with a copy to capitalmarketscompliance@janney.com (fax no. (215) 665-0824), with a copy to Covington & Burling LLP, 620 Eighth Avenue, New York, New York 10018, (fax no.: 646-441-9101); Attention: Brian Rosenzweig. Notices to the Company shall be given to it at Repligen Corporation, 41 Seyon St. Building #1, Suite 100, Waltham, MA 02453, (fax no.: 781-250-0115); Attention: Chief Executive Officer, with a copy to Goodwin Proctor LLP, 100 Northern Avenue, Boston, MA 02210, (fax no.: 617-801-8626); Attention: Arthur M. McGivern.

15. This Agreement may be signed in counterparts, each of which shall be an original and all of which together shall constitute one and the same instrument.

16. THIS AGREEMENT AND ANY CLAIM, CONTROVERSY OR DISPUTE ARISING UNDER OR RELATED TO THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK, WITHOUT REGARD TO SUCH STATE'S PRINCIPLES OF CONFLICTS OF LAWS.

17. The parties hereby submit to the exclusive jurisdiction of and venue in the U.S. federal and New York State courts located in the Borough of Manhattan in the City of New York, New York in connection with any dispute related to this Agreement, any transaction contemplated hereby, or any other matter contemplated hereby. The Company waives any objection which it may now or hereafter have to the laying of venue of any such suit or proceeding in such courts. The Company agrees that final judgment in any such suit, action or proceeding brought in such court shall be conclusive and binding upon the Company and may be enforced in any court to the jurisdiction of which Company is subject by a suit upon such judgment.

18. The Company acknowledges and agrees that (i) the purchase and sale of the Offered Shares pursuant to this Agreement, including the determination of the public offering price of the Offered Shares and any related discounts and commissions, is an arm's-length commercial transaction between the Company on the one hand, and the several Underwriters, on the other, (ii) in connection therewith and with the process leading to such transaction each Underwriter is acting solely as a principal and not the agent or fiduciary of the Company or its stockholders, creditors, employees or any other party, (iii) no Underwriter has assumed an advisory or fiduciary responsibility in favor of the Company with respect to the offering contemplated hereby or the process leading thereto (irrespective of whether such Underwriter has advised or is currently advising the Company on other matters) or any other obligation to the Company except the obligations expressly set forth in this Agreement, and (iv) the Company has consulted its own legal and financial advisors to the extent it deemed appropriate. The Company agrees that it will not claim that the Underwriters, or any of them, has rendered advisory services of any nature or respect, or owes a fiduciary or similar duty to the Company, in connection with such transaction or the process leading thereto.

19. The Company acknowledges that the Underwriters' research analysts and research departments are required to be independent from their respective investment banking divisions and are subject to certain regulations and internal policies, and that such Underwriters' research analysts may hold views and make statements or investment recommendations and/or publish research reports with respect to the Company and/or the offering that differ from the views of their respective investment banking divisions. The Company hereby waives and releases, to the fullest extent permitted by law, any claims that the Company may have against the Underwriters with respect to any conflict of interest that may arise from the fact that the views expressed by their independent research analysts and research departments may be different from or inconsistent with the views or advice communicated to the Company by such Underwriters' investment banking divisions. The Company acknowledges that each of the Underwriters is a full service securities firm and as such from time to time, subject to applicable securities laws, may effect transactions for its own account or the account of its customers and hold long or short positions in debt or equity securities of the companies that may be the subject of the transactions contemplated by this Agreement.

20. No amendment or waiver of any provision of this Agreement, nor any consent or approval to any departure therefrom, shall in any event be effective unless the same shall be in writing and signed by the parties hereto.

21. This Agreement supersedes all prior agreements and understandings (whether written or oral) between the Company and the Underwriters, or any of them, with respect to the subject matter hereof.

22. The Company and each of the Underwriters hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Agreement or the transactions contemplated hereby.

23. Recognition of the U.S. Special Resolution Regimes.

(i) In the event that any Underwriter that is a Covered Entity becomes subject to a proceeding under a U.S. Special Resolution Regime, the transfer from such Underwriter of this Agreement, and any interest and obligation in or under this Agreement, will be effective to the same extent as the transfer would be effective under the U.S. Special Resolution Regime if this Agreement, and any such interest and obligation, were governed by the laws of the United States or a state of the United States.

(ii) In the event that any Underwriter that is a Covered Entity or a BHC Act Affiliate of such Underwriter becomes subject to a proceeding under a U.S. Special Resolution Regime, Default Rights under this Agreement that may be exercised against such Underwriter are permitted to be exercised to no greater extent than such Default Rights could be exercised under the U.S. Special Resolution Regime if this Agreement were governed by the laws of the United States or a state of the United States.

As used in this Section 23:

“BHC Act Affiliate” has the meaning assigned to the term “affiliate” in, and shall be interpreted in accordance with, 12 U.S.C. § 1841(k).

“Covered Entity” means any of the following: (i) a “covered entity” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b); (ii) a “covered bank” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 47.3(b); or (iii) a “covered FSI” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b).

“Default Right” has the meaning assigned to that term in, and shall be interpreted in accordance with, 12 C.F.R. §§ 252.81, 47.2 or 382.1, as applicable.

“U.S. Special Resolution Regime” means each of (i) the Federal Deposit Insurance Act and the regulations promulgated thereunder and (ii) Title II of the Dodd-Frank Wall Street Reform and Consumer Protection Act and the regulations promulgated thereunder.

[Signature Page Follows]

If the foregoing is in accordance with your understanding of our agreement, please sign and return to the Company a counterpart hereof, whereupon this instrument will become a binding agreement among the Company and the Underwriters.

Very truly yours,

REPLIGEN CORPORATION

By: /s/ Jon K. Snodgres

Name: Jon K. Snodgres

Title: Chief Financial Officer

Accepted as of the date hereof:

J.P. MORGAN SECURITIES LLC

By: /s/ David Ke

Name: David Ke

Title: Executive Director

STEPHENS INC.

By: /s/ Shawn Fitz

Name: Shawn Fitz

Title: Group Head, Managing Director

JANNEY MONTGOMERY SCOTT LLC

By: /s/ Richard Page

Name: Richard Page

Title: Head of Healthcare Investment Banking

For themselves and as Representatives of the other
Underwriters named in Schedule A hereto

SCHEDULE A

Underwriter	Number of Firm Shares
J.P. Morgan Securities LLC	759,000
Stephens Inc.	289,800
Janney Montgomery Scott LLC	248,400
Craig-Hallum Capital Group LLC	41,400
First Analysis Securities Corp.	41,400
Total	1,380,000

SCHEDULE B

Free Writing Prospectuses

Term Sheet, dated July 16, 2019, filed with the Commission on July 16, 2019, relating to the Offered Shares.

Pricing Information

Number of Firm Shares: 1,380,000

Number of Optional Shares: 207,000

Public offering price per Offered Share: \$87.00

SCHEDULE C

Form of Lock-up Agreement

LOCK-UP AGREEMENT

REPLIGEN CORPORATION
41 Seyon Street, Bldg. 1, Suite 100
Waltham, MA 02453

J.P. MORGAN SECURITIES LLC
As Representative of the Several Underwriters
c/o J.P. Morgan Securities LLC
383 Madison Avenue
New York, New York 10179

Ladies and Gentlemen:

The undersigned refers to (i) the proposed Underwriting Agreement (the "Equity Underwriting Agreement") among Repligen Corporation, a Delaware corporation (the "Company") and the several underwriters named therein (the "Equity Underwriters") in connection with the proposed public offering of the Company's common stock, par value \$0.01 per share (the "Common Stock"), and (ii) the proposed Underwriting Agreement (the "Notes Underwriting Agreement" and, together with the Equity Underwriting Agreement, the "Underwriting Agreements") among the Company and the several underwriters named therein (the "Notes Underwriters" and, together with the Equity Underwriters, the "Underwriters") in connection with the proposed public offering of the Company's convertible senior notes (the "Notes" and, together with the Common Stock, the "Securities"), in each case, pursuant to a Registration Statement on Form S-3.

As an inducement to the Underwriters to execute the Underwriting Agreements, the undersigned hereby agrees that from the date hereof and until 60 days after the public offering date set forth on the final prospectus or prospectuses used to sell any Securities (the "Public Offering Date") pursuant to either Underwriting Agreement (or if such final prospectuses have different dates, or if only one of the proposed offerings occurs, then 60 days after the latest of the dates set forth on any such final prospectus or prospectuses) (such 60-day period being referred to herein as the "Lock-Up Period"), to which you are or expect to become parties, the undersigned will not (and will cause any Family Member, any partnership, corporation or other entity within the undersigned's control, and any trustee of any trust that holds Common Stock or other securities of the Company for the benefit of the undersigned or such Family Member not to) offer, sell, contract to sell (including any short sale), pledge, hypothecate, establish an open "put equivalent position" within the meaning of Rule 16a-1(h) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), grant any option, right or warrant for the sale of, purchase any option or contract to sell, sell any option or contract to purchase, or otherwise encumber, dispose of or transfer, or grant any rights with respect to, directly or indirectly, any shares of Common Stock or securities convertible into or exchangeable or exercisable for any shares of Common Stock, enter

into a transaction which would have the same effect, or enter into any swap, hedge or other arrangement that transfers, in whole or in part, any of the economic consequences of ownership of the Common Stock, whether any such aforementioned transaction is to be settled by delivery of the Common Stock or such other securities, in cash or otherwise, or publicly disclose the intention to make any such offer, sale, pledge or disposition, or to enter into any such transaction, swap, hedge or other arrangement, without, in each case, the prior written consent of J.P. Morgan Securities LLC (“J.P. Morgan”), which consent may be withheld in J.P. Morgan’s sole discretion. As used herein, “Family Member” shall mean the spouse of the undersigned, an immediate family member of the undersigned or an immediate family member of the undersigned’s spouse, in each case living in the undersigned’s household or whose principal residence is the undersigned’s household (regardless of whether such spouse or family member may at the time be living elsewhere due to educational activities, health care treatment, military service, temporary internship or employment or otherwise). “Immediate family member” as used above shall have the meaning set forth in Rule 16a-1(e) under the Exchange Act.

The restrictions set forth in this letter shall not apply to (i) the receipt, exercise, cashless or net exercise, vesting or forfeiture of, or removal or lapse of restrictions on, any stock option, Common Stock issued upon exercise of a stock option, restricted stock, restricted stock unit or other awards pursuant to any employee benefit plan or agreement in existence as of the date hereof, so long as [subject to clause (ix) below,]¹ such transaction or event does not involve the sale or transfer of any Common Stock or securities convertible into or exchangeable or exercisable for any shares of Common Stock (other than from the undersigned to the Company), (ii) transactions relating to Common Stock acquired in open market transactions after the Public Offering Date, (iii) the transfer or sale of Common Stock, or securities convertible into or exchangeable or exercisable for any shares of Common Stock, by operation of law, such as pursuant to a domestic relations order or in connection with a divorce settlement, (iv) forfeitures of Common Stock to the Company during the Lock-Up Period only to satisfy tax withholding requirements, (v) the entry into any trading plan established pursuant to Rule 10b5-1 under the Exchange Act, provided that such plan does not provide for any sales or other dispositions of Common Stock or securities convertible into or exchangeable or exercisable for any shares of Common Stock during the Lock-Up Period and provided further that no filing by any party under the Exchange Act or other public announcement shall be required or shall be made voluntarily in connection with the entry into such plan, (vi) transfers as a bona fide gift to a charity or educational institution, (vii) by gift to a charitable trust or charitable organization, solely for estate planning purposes, and, for the avoidance of doubt, not by transfer for value, and of which the undersigned has provided to the Company prior written notice, by will or the laws of descent and distribution, or by transfers to a charitable remainder trust established by the undersigned, (viii) transfers or distributions pursuant to any *bona fide* third-party tender offer, merger, consolidation or other similar transaction made to all holders of the Company’s capital stock involving a Change of Control of the Company, provided that in the event that such tender offer, merger, consolidation or other such transaction is not completed, the shares of Common Stock and other securities convertible, exercisable or exchangeable for shares of Common Stock held by the undersigned shall remain subject to the provisions of this Agreement [or (ix) open market sales of shares of Common Stock received upon the exercise of stock options to purchase up to [●] shares of Common Stock, granted prior to the date hereof, pursuant to an employee benefit

¹ **NTD: Bracketed language in lock-up to be included only for lock-ups signed by Dawes and Cooper.**

plan in existence as of the date hereof and which are set to expire prior to September 30, 2019, solely to generate cash proceeds sufficient to satisfy the exercise price of such stock options and any tax liability resulting from such exercise]²[or (ix) the transfer or sale of Common Stock, or securities convertible into or exchangeable or exercisable for any shares of Common Stock, pursuant to a trading plan established pursuant to Rule 10b5-1 under the Exchange Act (a “10b5-1 Plan”) that has been entered into by the undersigned prior to the date of this agreement and has been disclosed to J.P. Morgan]³; provided, however, that in the case of any transaction or transfer contemplated by clauses (i) through (vi), no filing by any party (donor, donee, transferor or transferee) under the Exchange Act or other public announcement shall be required or shall be made voluntarily in connection with such transfer or distribution during the Lock-Up Period; and provided, further, that in the case of any transfer or distribution pursuant to clause (vi) or (vii), each donee or distributee agrees in writing prior to such transfer to be bound by the terms of this Agreement as if it were a party hereto; and provided, further, that in the case of an open market sale of shares of Common Stock pursuant to clause (ix), the unsold portion of shares of Common Stock received pursuant to such exercise remain subject to this Agreement and any filing made under the Exchange Act in connection with such open market sales shall include a statement to the effect that such sales are solely to generate cash proceeds sufficient to satisfy the exercise price of a soon to expire option to purchase Common Stock and any tax liability resulting from such exercise]⁴; and provided, further, that in the case of a transfer or sale pursuant to clause (ix), to the extent a public announcement or filing under the Exchange Act, if any, is required or voluntarily made by or on behalf of the undersigned or the Company regarding any such transfers or sales, such announcement or filing shall include a statement to the effect that the sale was made pursuant to a 10b5-1 Plan]⁵. For purposes of this paragraph, the term “Change of Control” shall mean any transaction or series of related transactions pursuant to which any “person” or “group” (as such terms are used in Sections 13(d) and 14(d) of the Exchange Act) becomes the “beneficial owner” (as such term is defined in Rules 13d-3 and 13d-5 under the Exchange Act), directly or indirectly, of more than 50% of the Common Stock entitled to vote in elections for the Company’s Board of Directors on a fully diluted basis.

In addition, the undersigned agrees that, during the period commencing on the date hereof and ending 60 days after the Public Offering Date, without the prior written consent of J.P. Morgan (which consent may be withheld in its sole discretion): (a) the undersigned will not request, make any demand for or exercise any right with respect to, the registration of any Common Stock or any security convertible into or exercisable or exchangeable for Common Stock and (b) the undersigned waives any and all notice requirements and rights with respect to the registration of any such security pursuant to any agreement, understanding or otherwise to which the undersigned is a party.

Any Common Stock received upon exercise of options granted to the undersigned will also be subject to this Agreement. In addition, the foregoing restrictions shall not apply to the transfer of Common Stock or securities convertible into or exchangeable or exercisable for any shares of Common Stock by gift, or by will or intestate succession to a Family Member or to a trust whose

² **NTD: Bracketed language to be included for Dawes (20,000 shares) and Cooper (24,000 shares).**

³ **NTD: Bracketed language to be included for Hunt.**

⁴ **NTD: Bracketed language to be included for Dawes and Cooper.**

⁵ **NTD: Bracketed language to be included for Hunt.**

beneficiaries consist exclusively of one or more of the undersigned and/or a Family Member, or to a partnership or limited liability company the partners or members of which consist solely of the undersigned and/or a Family Member; *provided, that*, in any such case (i) the transferee agrees in writing prior to such transfer to be bound by the terms of this Agreement as if it were a party hereto and (ii) no filing by any party (donor, donee, transferor or transferee) under the Exchange Act or other public announcement shall be required or shall be made voluntarily in connection with such transfer or distribution during the Lock-Up Period.

In furtherance of the foregoing, the Company and its transfer agent and registrar are hereby authorized to (a) decline to make any transfer of shares of Common Stock if such transfer would constitute a violation or breach of this Agreement and (b) place legends and stop transfer instructions on any such shares of Common Stock owned or beneficially owned by the undersigned.

This Agreement is irrevocable and shall be binding on the undersigned and the successors, heirs, personal representatives and assigns of the undersigned. This Agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to choice of law rules. This Agreement shall lapse and become null and void if the Public Offering Date shall not have occurred on or before October 31, 2019.

Very truly yours,

Printed Name: _____

Date: _____

SCHEDULE D

Persons Signing Lock-up Agreement

Directors:

Glenn L. Cooper
Karen A. Dawes
Tony J. Hunt
Nicolas M. Barthelemy
John G. Cox
Thomas F. Ryan, Jr.
Glenn Muir

Officers:

Tony J. Hunt
Jon K. Snodgres
Ralf Kuriyel

[\(Back To Top\)](#)

Section 3: EX-1.2 (EX-1.2)

Exhibit 1.2

Execution Version

0.375% Convertible Senior Notes due 2024

Repligen Corporation

UNDERWRITING AGREEMENT

July 16, 2019

J.P. MORGAN SECURITIES LLC

As Representative of the several Underwriters

c/o J.P. Morgan Securities LLC

383 Madison Avenue
New York, New York 10179

Ladies and Gentlemen:

Repligen Corporation, a Delaware corporation (the “Company”), proposes to issue and sell to the several underwriters named in Schedule I hereto (the “Underwriters”) for whom you are acting as representative (the “Representative”) an aggregate principal amount, as set forth on a term sheet substantially in the form of Schedule III hereto (the “Pricing Term Sheet”), of its 0.375% Convertible Senior Notes due 2024 (the “Firm Securities”). The Company also proposes to sell to the several Underwriters, at the option of the Underwriters, up to an additional principal amount as set forth the Pricing Term Sheet, of its 0.375% Convertible Senior Notes due 2024 (the “Option Securities”). The Firm Securities and the Option Securities are hereinafter referred to collectively as the “Securities”. The Securities will be convertible into cash, shares of common stock of the Company, par value \$0.01 per share (the “Common Stock”), or a combination of cash and shares of Common Stock (any shares of Common Stock issuable upon conversion of the Securities, including, for the avoidance of doubt, any additional shares deliverable upon conversion in connection with a “make-whole fundamental change,” are referred to as the “Conversion Shares”). The Securities will be issued pursuant to an Indenture to be dated on or around the Closing Date (as defined in Section 4) (the “Base Indenture”), between the Company and Wilmington Trust, National Association, as trustee (the “Trustee”), which will be substantially in the form filed as an exhibit to the Registration Statement (as defined below), as supplemented and/or amended by a supplemental indenture to be dated on or about the Closing Date, by and between the Company and the Trustee (the “Supplemental Indenture”, and together with, the Base Indenture, as supplemented and/or amended, the “Indenture”).

The Company hereby confirms its agreements with the Underwriters as follows:

1. The Company represents and warrants to, and agrees with, each of the Underwriters that, as of the date hereof and as of the Closing Date and each Option Closing Date, if any:

(i) The Company has prepared and filed with the Securities and Exchange Commission (the "Commission") a shelf registration statement on Form S-3, File No. 333-231098, including a base prospectus (the "Base Prospectus") to be used in connection with the public offering and sale of the Securities. Such registration statement, including the financial statements, exhibits and schedules thereto, in the form in which it became effective under the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder (collectively, the "Securities Act"), including all documents incorporated or deemed to be incorporated by reference therein and any information deemed to be a part thereof at the time of effectiveness pursuant to Rule 430A or 430B under the Securities Act, is called the "Registration Statement." Any registration statement filed by the Company pursuant to Rule 462(b) under the Securities Act in connection with the offer and sale of the Securities is called the "Rule 462(b) Registration Statement," and from and after the date and time of filing of any such Rule 462(b) Registration Statement the term "Registration Statement" shall include the Rule 462(b) Registration Statement. The preliminary prospectus supplement dated July 15, 2019 describing the Securities and the offering thereof (the "Preliminary Prospectus Supplement"), together with the Base Prospectus, is called the "Preliminary Prospectus," and the Preliminary Prospectus and any other prospectus supplement to the Base Prospectus in preliminary form that describes the Securities and the offering thereof and is used prior to the filing of the Prospectus (as defined below), together with the Base Prospectus, is called a "preliminary prospectus." As used herein, the term "Prospectus" shall mean the final prospectus supplement to the Base Prospectus that describes the Securities and the offering thereof (the "Final Prospectus Supplement"), together with the Base Prospectus, in the form first used by the Underwriters to confirm sales of the Securities or in the form first made available to the Underwriters by the Company to meet requests of purchasers pursuant to Rule 173 under the Securities Act. References herein to the Preliminary Prospectus, any preliminary prospectus and the Prospectus shall refer to both the prospectus supplement and the Base Prospectus components of such prospectus.

As used herein, "Applicable Time" is 5:30 p.m. (New York City time) on July 16, 2019. As used herein, "free writing prospectus" has the meaning set forth in Rule 405 under the Securities Act, and "Pricing Prospectus" means the Preliminary Prospectus, as amended or supplemented immediately prior to the Applicable Time, together with the free writing prospectuses identified in Schedule II hereto, which includes the Pricing Term Sheet. As used herein, "Road Show" means a "road show" (as defined in Rule 433 under the Securities Act) relating to the offering of the Securities contemplated hereby that is a "written communication" (as defined in Rule 405 under the Securities Act).

All references in this Agreement to the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus and the Prospectus shall include the documents incorporated or deemed to be incorporated by reference therein. All references in this Agreement to financial statements and schedules and other information which are "contained," "included" or "stated" in, or "part of" the Registration Statement, the Rule 462(b) Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, the Pricing Prospectus or the Prospectus, and all other references of like import, shall be deemed to mean and include all such financial statements and schedules and other information which is or is deemed to be incorporated by reference in the Registration Statement, the Rule 462(b)

Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, the Pricing Prospectus or the Prospectus, as the case may be. All references in this Agreement to amendments or supplements to the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, the Pricing Prospectus or the Prospectus shall be deemed to mean and include the filing of any document under the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder (collectively, the “Exchange Act”) that is or is deemed to be incorporated by reference in the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, or the Prospectus, as the case may be. All references in this Agreement to (i) the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus or the Prospectus, any amendments or supplements to any of the foregoing, or any free writing prospectus, shall include any copy thereof filed with the Commission pursuant to its Electronic Data Gathering, Analysis and Retrieval System (“EDGAR”) and (ii) the Prospectus shall be deemed to include any “electronic Prospectus” provided for use in connection with the offering of the Securities as contemplated by Section 5(n) of this Agreement.

(ii) The Registration Statement has become effective under the Securities Act. The Company has complied, to the Commission’s satisfaction, with all requests of the Commission for additional or supplemental information, if any. No stop order suspending the effectiveness of the Registration Statement is in effect and no proceedings for such purpose or pursuant to Section 8A under the Securities Act have been instituted or are pending or, to the best knowledge of the Company, are contemplated or threatened by the Commission. At the time the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 (the “Annual Report”) was filed with the Commission, or, if later, at the time the Registration Statement was originally filed with the Commission, as well as at the time the Company or any person acting on its behalf (within the meaning, for this clause only, of Rule 163(c) under the Securities Act) made any offer relating to the Securities in reliance on the exemption of Rule 163 under the Securities Act, the Company was a “well known seasoned issuer” as defined in Rule 405 under the Securities Act. The Registration Statement is an “automatic shelf registration statement,” as defined in Rule 405 under the Securities Act, and became effective on April 29, 2019. The Company has not received from the Commission any notice pursuant to Rule 401(g)(2) under the Securities Act objecting to the Company’s use of the automatic shelf registration form. The Company meets the requirements for use of Form S-3 under the Securities Act specified in FINRA Conduct Rule 5110(B)(7)(C)(i). The documents incorporated or deemed to be incorporated by reference in the Registration Statement, the Pricing Prospectus and the Prospectus, at the time they were or hereafter are filed with the Commission, or became effective under the Exchange Act, as the case may be, complied and will comply in all material respects with the requirements of the Exchange Act.

(iii) Each preliminary prospectus and the Prospectus, when filed, complied in all material respects with the Securities Act and, if filed by electronic transmission pursuant to EDGAR, was identical (except as may be permitted by Regulation S T under the Securities Act) to the copy thereof delivered to the Underwriters for use in connection with the offer and sale of the Securities. Each of the Registration Statement and any post-effective amendment thereto, at the time it became or becomes effective, complied and will comply in all material respects with the Securities Act and the Trust Indenture Act of 1939, as amended, and

the rules and regulations of the Commission promulgated thereunder (the “Trust Indenture Act”) and 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. As of the Applicable Time, the Pricing Prospectus will not, and at the Closing Date (as defined in Section 4) and at each applicable Option Closing Date (as defined in Section 4), will not, contain any 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 under which they were made, not misleading. The Prospectus, as of its date, did not, and at the Closing Date and at each applicable Option Closing 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 three immediately preceding sentences do not apply to (i) statements in, or omissions from, the Registration Statement or any post-effective amendment thereto, or the Prospectus or the Pricing Prospectus, or any amendments or supplements thereto, made in reliance upon and in conformity with written information relating to any Underwriter furnished to the Company in writing by the Representative expressly for use therein, it being understood and agreed that the only such information consists of the information described in Section 9(b) below or (ii) that part of the Registration Statement that constitutes the Statement of Eligibility and Qualification (Form T-1) of the Trustee under the Trust Indenture Act. There are no contracts or other documents required to be described in the Pricing Prospectus or the Prospectus or to be filed as an exhibit to the Registration Statement which have not been described or filed as required.

(iv) As of the determination date referenced in Rule 164(h) under the Securities Act, the Company was not, is not and will not be (as applicable) an “ineligible issuer” in connection with the offering of the Securities pursuant to Rules 164, 405 and 433 under the Securities Act. Each free writing prospectus that the Company is required to file pursuant to Rule 433(d) under the Securities Act (including the Pricing Term Sheet) has been, or will be, filed with the Commission in accordance with the requirements of the Securities Act. Each free writing prospectus that the Company has filed, or is required to file, pursuant to Rule 433(d) under the Securities Act or that was prepared by or on behalf of or used or referred to by the Company complies or will comply in all material respects with the requirements of Rule 433 under the Securities Act, including timely filing with the Commission or retention where required and legending, and each such free writing prospectus, as of its issue date and at all subsequent times through the completion of the public offer and sale of the Securities did not, does not and will not include any information that conflicted, conflicts or will conflict with the information contained in the Registration Statement, the Prospectus or any preliminary prospectus and not superseded or modified. Except for the free writing prospectuses, if any, identified in Schedule II, and electronic road shows, if any, furnished to you before first use, the Company has not prepared, used or referred to, and will not, without your prior written consent, prepare, use or refer to, any free writing prospectus. Each Road Show, when considered together with the Pricing Prospectus, will not, as of the Applicable Time, contain any 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 under which they were made, not misleading.

(v) Prior to the later of (i) the expiration or termination of the option granted to the several Underwriters in Section 2 and (ii) the completion of the Underwriters' distribution of the Securities, the Company has not distributed and will not distribute any offering material in connection with the offering and sale of the Securities other than the Registration Statement, the Pricing Prospectus, the Prospectus or any free writing prospectus reviewed and consented to by the Representative, and the free writing prospectuses, if any, identified on Schedule II hereto.

(vi) This Agreement has been duly authorized, executed and delivered by the Company.

(vii) The Indenture has been duly authorized by the Company and will be duly executed and delivered by the Company on the Closing Date, and upon the effectiveness of the Registration Statement and on the Closing Date and on each Option Closing Date, as the case may be, when duly executed and delivered in accordance with its terms by each of the parties thereto other than the Company, will constitute a valid and legally binding agreement of the Company enforceable against the Company in accordance with its terms, except as enforceability may be limited by applicable bankruptcy, insolvency fraudulent transfer, reorganization, moratorium or similar laws affecting creditors' rights generally or by equitable principles relating to enforceability (collectively, the "Enforceability Exceptions"), and the Indenture has been duly qualified under the Trust Indenture Act.

(viii) The Securities to be issued and sold by the Company hereunder have been duly authorized by the Company and, when duly executed, authenticated, issued and delivered as provided in the Indenture and paid for as provided herein, will be duly and validly issued and outstanding and will constitute valid and legally binding obligations of the Company enforceable against the Company in accordance with their terms, subject to the Enforceability Exceptions, and will be entitled to the benefits of the Indenture.

(ix) Upon issuance and delivery of the Securities in accordance with this Agreement and the Indenture, the Securities will be convertible at the option of the holder thereof into cash, shares of Common Stock or a combination of cash and shares of Common Stock in accordance with the terms of the Securities; the maximum number of Conversion Shares issuable upon conversion of the Securities (including any "make-whole shares," as defined in the Preliminary Prospectus Supplement) have been duly authorized and reserved for issuance upon conversion of the Securities and, when issued upon conversion of the Securities in accordance with the terms of the Securities, will be validly issued, fully paid and non-assessable, and the issuance of the maximum number of Conversion Shares will not be subject to any preemptive or similar rights.

(x) Each of the Indenture and the Securities conforms in all material respects to the description thereof contained in the Registration Statement, the Pricing Prospectus and the Prospectus.

(xi) There are no persons with registration or other similar rights to have any equity or debt securities registered for sale under the Registration Statement or included in the offering contemplated by this Agreement.

(xii) Except as otherwise disclosed in the Registration Statement, the Pricing Prospectus and the Prospectus, subsequent to the respective dates as of which information is given in the Registration Statement, the Pricing Prospectus and the Prospectus: (i) there has been no material adverse change, or any development that could be expected to result in a material adverse change in the condition, financial or otherwise, or in the earnings, business, properties, operations, assets, liabilities or prospects, whether or not arising from transactions in the ordinary course of business, of the Company and its subsidiaries, considered as one entity (any such change being referred to herein as a “Material Adverse Change”); (ii) the Company and its subsidiaries, considered as one entity, have not incurred any material liability or obligation, indirect, direct or contingent, including without limitation any losses or interference with its business from fire, explosion, flood, earthquakes, accident or other calamity, whether or not covered by insurance, or from any strike, labor dispute or court or governmental action, order or decree, that are material, individually or in the aggregate, to the Company and its subsidiaries, considered as one entity, or has entered into any transactions not in the ordinary course of business; and (iii) there has not been any material decrease in the capital stock or any material increase in any short-term or long-term indebtedness of the Company or its subsidiaries and there has been no dividend or distribution of any kind declared, paid or made by the Company or, except for dividends paid to the Company or other subsidiaries, by any of the Company’s subsidiaries on any class of capital stock, or any repurchase or redemption by the Company or any of its subsidiaries of any class of capital stock.

(xiii) (a) Ernst & Young LLP, which has expressed its opinion with respect to the financial statements (which term as used in this Agreement includes the related notes thereto) filed with the Commission as a part of the Registration Statement, the Pricing Prospectus and the Prospectus, is (i) an independent registered public accounting firm with respect to the Company and its subsidiaries as required by the Securities Act, the Exchange Act, and the rules of the Public Company Accounting Oversight Board (“PCAOB”), (ii) in compliance with the applicable requirements relating to the qualification of accountants under Rule 2-01 of Regulation S-X under the Securities Act and (iii) a registered public accounting firm as defined by the PCAOB whose registration has not been suspended or revoked and who has not requested such registration to be withdrawn.

(b) Friedman LLP, which has expressed its opinion with respect to certain financial statements of C Technologies, Inc., a New Jersey corporation and subsidiary of the Company, filed with the Commission as a part of the Registration Statement, the Pricing Prospectus and the Prospectus, is, to the Company’s knowledge, (i) an independent registered public accounting firm as required by the Securities Act, the Exchange Act, and the rules of the PCAOB, (ii) in compliance with the applicable requirements relating to the qualification of accountants under Rule 2-01 of Regulation S-X under the Securities Act and (iii) a registered public accounting firm as defined by the PCAOB whose registration has not been suspended or revoked and who has not requested such registration to be withdrawn.

(xiv) The financial statements filed with the Commission as a part of the Registration Statement, the Pricing Prospectus and the Prospectus present fairly the consolidated financial position of the Company and its subsidiaries, as of the dates indicated and the results of their operations, changes in stockholders' equity and cash flows for the periods specified. Such financial statements have been prepared in conformity with generally accepted accounting principles as applied in the United States applied on a consistent basis throughout the periods involved, except as may be expressly stated in the related notes thereto. The interactive data in eXtensible Business Reporting Language included or incorporated by reference in the 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. No other financial statements or supporting schedules are required to be included in the Registration Statement, the Pricing Prospectus or the Prospectus. The financial data set forth in each of the Registration Statement, the Pricing Prospectus and the Prospectus, as applicable, under the caption "Summary Consolidated Financial Data" fairly present the information set forth therein on a basis consistent with that of the audited financial statements contained in the Registration Statement, the Pricing Prospectus and the Prospectus, as applicable. All disclosures contained in the Registration Statement, any preliminary prospectus, the Prospectus and any free writing prospectus that constitute non-GAAP financial measures (as defined by the rules and regulations under the Securities Act and the Exchange Act) comply, in all material respects, with Regulation G under the Exchange Act and Item 10 of Regulation S-K under the Securities Act, as applicable. The pro forma financial information and the related notes thereto included or incorporated by reference in the Registration Statement, the Pricing Prospectus and the Prospectus have been prepared in accordance with the applicable requirements of the Securities Act and the Exchange Act, as applicable, and the assumptions underlying such pro forma financial information are reasonable and are set forth in the Registration Statement, the Pricing Prospectus and the Prospectus. To the Company's knowledge, no person who has been suspended or barred from being associated with a registered public accounting firm, or who has failed to comply with any sanction pursuant to Rule 5300 promulgated by the PCAOB, has participated in the preparation of, or audited, the financial statements filed with the Commission as a part of the Registration Statement, the Pricing Prospectus and the Prospectus.

(xv) The Company and each of its subsidiaries make and keep accurate books and records and maintain a system of internal accounting controls sufficient to provide reasonable assurance that: (i) transactions are executed in accordance with management's general or specific authorization; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles as applied in the United States and to maintain accountability for assets; (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 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, the Pricing Prospectus 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.

(xvi) The Company has established and maintains disclosure controls and procedures (as defined in Rules 13a-15 and 15d-15 under the Exchange Act), which (i) are designed to ensure that material information relating to the Company, including its consolidated subsidiaries, is made known to the Company's principal executive officer and its principal financial officer by others within those entities, particularly during the periods in which the periodic reports required under the Exchange Act are being prepared; (ii) have been evaluated by management of the Company for effectiveness as of the end of the Company's most recent fiscal quarter; and (iii) are effective in all material respects to perform the functions for which they were established. Since the end of the Company's most recent audited fiscal year, there have been no significant deficiencies or material weakness in the Company's internal control over financial reporting (whether or not remediated) and no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting. The Company is not aware of any change in its internal control over financial reporting that has occurred during its most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

(xvii) The Company has been duly incorporated and is validly existing as a corporation in good standing under the laws of the jurisdiction of its incorporation and has the corporate power and authority to own, lease and operate its properties and to conduct its business as described in the Registration Statement, the Pricing Prospectus and the Prospectus and to enter into and perform its obligations under each of this Agreement, the Indenture and the Securities (together, the "Transaction Documents"). The Company is duly qualified as a foreign corporation to transact business and is in good standing in each jurisdiction in which such qualification is required, whether by reason of the ownership or leasing of property or the conduct of business, except where the failure to be so qualified or in good standing, as the case may be, or have such power or authority would not, individually or in the aggregate, have a Material Adverse Effect (as defined below).

(xviii) Each of the Company's "subsidiaries" (for purposes of this Agreement, as defined in Rule 405 under the Securities Act) is validly existing and in good standing (where such concept is recognized) under the laws of the jurisdiction of its incorporation or organization and has the power and authority (corporate or other) to own, lease and operate its properties and to conduct its business as described in the Registration Statement, the Pricing Prospectus and the Prospectus. Each of the Company's subsidiaries is duly qualified to transact business and is in good standing (where such concept is recognized) in each jurisdiction in which such qualification is required, whether by reason of the ownership or leasing of property or the conduct of business, except where the failure to be so qualified or in good standing, as the case may be, or have such power or authority would not, individually or in the aggregate, have a Material Adverse Effect (as defined below). All of the issued and outstanding capital stock or other equity or ownership interests of each of the Company's subsidiaries have been duly authorized and validly issued, and are fully paid and non-assessable and are owned by the Company, directly or through subsidiaries, free and clear of any security interest, mortgage, pledge, lien, encumbrance or adverse claim. The Company does not own or control, directly or indirectly, any corporation, association or other entity other than the subsidiaries listed in Exhibit 21 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2018 and C Technologies, Inc. Other than Repligen Sweden AB, Spectrum LifeSciences, LLC and C Technologies, Inc., none of the Company's subsidiaries constitute a "significant subsidiary" under Rule 1-02(w) of Regulation S-X under the Securities Act.

(xix) The authorized, issued and outstanding capital stock of the Company is as set forth in the Registration Statement, the Pricing Prospectus and the Prospectus (other than for subsequent issuances, if any, pursuant to employee benefit plans, or upon the exercise of outstanding options or warrants, in each case described in the Registration Statement, the Pricing Prospectus and the Prospectus). The Common Stock (including the Conversion Shares) conforms in all material respects to the description thereof contained in the Registration Statement, the Pricing Prospectus and the Prospectus. All of the issued and outstanding shares of Common Stock have been duly authorized and validly issued, are fully paid and non-assessable and have been issued in compliance with all federal and state securities laws. None of the outstanding shares of Common Stock were issued in violation of any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase securities of the Company. There are no authorized or outstanding options, warrants, preemptive rights, rights of first refusal or other rights to purchase, or equity or debt securities convertible into or exchangeable or exercisable for, any capital stock of the Company or any of its subsidiaries other than those described in the Registration Statement, the Pricing Prospectus and the Prospectus. The descriptions of the Company's stock option, stock bonus and other stock plans or arrangements, and the options or other rights granted thereunder, set forth in the Registration Statement, the Pricing Prospectus and the Prospectus accurately and fairly presents the information required to be shown with respect to such plans, arrangements, options and rights.

(xx) The Common Stock is registered pursuant to Section 12(b) of the Exchange Act and is listed on The Nasdaq Global Select Market (the "NASDAQ"), and the Company has taken no action designed to, or likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from the NASDAQ, nor has the Company received any notification that the Commission or the NASDAQ is contemplating terminating such registration or listing. To the Company's knowledge, it is in compliance with all applicable listing requirements of NASDAQ.

(xxi) Neither the Company nor any of its subsidiaries is in violation of its charter or by-laws, partnership agreement or operating agreement or similar organizational documents, as applicable, or is in default (or, with the giving of notice or lapse of time, would be in default) ("Default") under any indenture, loan, credit agreement, note, lease, license agreement, contract, franchise or other instrument (including, without limitation, any pledge agreement, security agreement, mortgage or other instrument or agreement evidencing, guaranteeing, securing or relating to indebtedness) to which the Company or any of its subsidiaries is a party or by which it or any of them may be bound, or to which any of their respective properties or assets are subject (each, an "Existing Instrument"), except for such Defaults as could not be expected, individually or in the aggregate, to have a material adverse effect on the condition (financial or other), earnings, business, properties, operations, assets, liabilities or prospects of the Company and its subsidiaries, considered as one entity (a "Material Adverse Effect"). The Company's execution, delivery and performance of each of the

Transaction Documents, consummation of the transactions contemplated by the Transaction Documents and by the Registration Statement, the Pricing Prospectus and the Prospectus and the issuance and sale of the Securities (including the use of proceeds from the sale of the Securities as described in the Registration Statement, the Pricing Prospectus and the Prospectus under the caption "Use of Proceeds"), and the issuance of the Conversion Shares upon conversion of the Securities (i) have been duly authorized by all necessary corporate action and will not result in any violation of the provisions of the charter or by laws, partnership agreement or operating agreement or similar organizational documents, as applicable, of the Company or any subsidiary, (ii) will not conflict with or constitute a breach of, or Default or a Debt Repayment Triggering Event (as defined below) under, or result in the creation or imposition of any lien, charge or encumbrance upon any property or assets of the Company or any of its subsidiaries pursuant to, or require the consent of any other party to, any Existing Instrument, except as could not be expected, individually or in the aggregate, to have a Material Adverse Effect and (iii) will not result in any violation of any law, administrative regulation or administrative or court decree applicable to the Company or any of its subsidiaries. No consent, approval, authorization or other order of, or registration or filing with, any court or other governmental or regulatory authority or agency, is required for the Company's execution, delivery and performance of the Transaction Documents, issuance of the Securities (including the issuance of the Conversion Shares upon conversion thereof) and consummation of the transactions contemplated by the Transaction Documents and by the Registration Statement, the Pricing Prospectus and the Prospectus, except such as have been or will be (in the case of the Statement of Eligibility (Form T-1) of the Trustee under the Trust Indenture Act) obtained or made by the Company and are or will be in full force and effect under the Securities Act and Trust Indenture Act and such as may be required under applicable state securities or blue sky laws or FINRA. As used herein, a "Debt Repayment Triggering Event" means any event or condition which gives, or with the giving of notice or lapse of time would give, the holder of any note, debenture or other evidence of indebtedness (or any person acting on such holder's behalf) the right to require the repurchase, redemption or repayment of all or a portion of such indebtedness by the Company or any of its subsidiaries.

(xxii) The Company and its subsidiaries have been and are in compliance with all applicable laws, rules and regulations, except where failure to be so in compliance could not be expected, individually or in the aggregate, to have a Material Adverse Effect.

(xxiii) There is no action, suit, proceeding, inquiry or investigation brought by or before any governmental entity now pending or, to the knowledge of the Company, threatened, against or affecting the Company or any of its subsidiaries, which could be expected, individually or in the aggregate, to have a Material Adverse Effect or materially and adversely affect the consummation of the transactions contemplated by the Transaction Documents or the performance by the Company of its obligations under the Transaction Documents; and the aggregate of all pending legal or governmental proceedings to which the Company or any such subsidiary is a party or of which any of their respective properties or assets is the subject, including ordinary routine litigation incidental to the business, if determined adversely to the Company, could not be expected to have a Material Adverse Effect. No material labor dispute with the employees of the Company or any of its subsidiaries, or with the employees of any principal supplier, manufacturer, customer or contractor of the Company, exists or, to the knowledge of the Company, is threatened or imminent.

(xxiv) The Company and its subsidiaries own or have obtained valid and enforceable licenses for, the inventions, patent applications, patents, trademarks, trade names, service names, copyrights, trade secrets and other intellectual property described in the Registration Statement, the Pricing Prospectus and the Prospectus as being owned or licensed by them or which are useful for the conduct of their respective businesses as currently conducted or as currently proposed to be conducted (collectively, “Intellectual Property”), except to the extent the failure to own, possess, license or acquire such Intellectual Property would not be expected, individually or in the aggregate, to have Material Adverse Effect. To the Company’s knowledge: (i) there are no third parties who have rights to any Intellectual Property, except for customary reversionary rights of third-party licensors or rights of third-party licensees as applicable with respect to Intellectual Property that is disclosed in the Registration Statement, the Pricing Prospectus and the Prospectus as licensed to the Company or one or more of its subsidiaries; and (ii) there is no infringement by third parties of any Intellectual Property. There is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others: (A) challenging the Company’s rights in or to any Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim; (B) challenging the validity, enforceability or scope of any Intellectual Property of the Company or its subsidiaries, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim; or (C) asserting that the Company or any of its subsidiaries infringes or otherwise violates, or would, upon the commercialization of any product or service described in the Registration Statement, the Pricing Prospectus or the Prospectus as under development, infringe or violate, any patent, trademark, trade name, service name, copyright, trade secret or other proprietary rights of others, and the Company is unaware of any facts which would form a reasonable basis for any such action, suit, proceeding or claim. The Company and its subsidiaries have complied with the terms of each agreement pursuant to which Intellectual Property has been licensed to the Company or any of its subsidiaries and all such agreements are in full force and effect; except where any failure to comply would not, individually or in the aggregate, have a Material Adverse Effect.

(xxv) The Company and its subsidiaries possess such valid and current certificates, authorizations or permits required by state, federal or foreign regulatory agencies or bodies to conduct their respective businesses as currently conducted and as described in the Registration Statement, the Pricing Prospectus or the Prospectus (“Permits”). Neither the Company nor any of its subsidiaries is in violation of, or in default under, any of the Permits or has received any notice of proceedings relating to the revocation or modification of, or non-compliance with, any such certificate, authorization or permit which, if the subject of an unfavorable decision, ruling or finding, would reasonably be expected, individually or in the aggregate, to have Material Adverse Effect.

(xxvi) The Company and its subsidiaries have good and marketable title to all of the real and personal property and other assets reflected as owned in the financial statements referred to in Section 1(xiv) above (or elsewhere in the Registration Statement, the Pricing Prospectus or the Prospectus), in each case free and clear of any security interests,

mortgages, liens, encumbrances, equities, adverse claims and other defects, except such as would not reasonably be expected, individually or in the aggregate, to have Material Adverse Effect. The real property, improvements, equipment and personal property held under lease by the Company or any of its subsidiaries are held under valid and enforceable leases, with such exceptions as are not material and do not materially interfere with the use made or proposed to be made of such real property, improvements, equipment or personal property by the Company or such subsidiary.

(xxvii) The Company and its subsidiaries have filed all necessary federal, state and foreign income and franchise tax returns or have properly requested extensions thereof and have paid all taxes required to be paid by any of them and, if due and payable, any related or similar assessment, fine or penalty levied against any of them except as may be being contested in good faith and by appropriate proceedings. The Company has made adequate charges, accruals and reserves in the applicable financial statements referred to in Section 1(xiv) above in respect of all federal, state and foreign income and franchise taxes for all periods as to which the tax liability of the Company or any of its subsidiaries has not been finally determined.

(xxviii) Each of the Company and its subsidiaries are insured by recognized, financially sound and reputable institutions with policies in such amounts and with such deductibles and covering such risks as are generally deemed adequate and customary for their businesses including, but not limited to, policies covering real and personal property owned or leased by the Company or any of its subsidiaries against theft, damage, destruction, acts of vandalism and earthquakes. The Company has no reason to believe that it or any of its subsidiaries will not be able (i) to renew its existing insurance coverage as and when such policies expire or (ii) to obtain comparable coverage from similar institutions as may be necessary or appropriate to conduct its business as now conducted and at a cost that could not be expected to have a Material Adverse Effect. Neither the Company nor any of its subsidiaries has been denied any insurance coverage which it has sought or for which it has applied.

(xxix) Except as could not be expected, individually or in the aggregate, to have a Material Adverse Effect: (i) neither the Company nor any of its subsidiaries is in violation of any federal, state, local or foreign statute, law, rule, regulation, ordinance, code, policy or rule of common law or any judicial or administrative interpretation thereof, including any judicial or administrative order, consent, decree or judgment, relating to pollution or protection of human health, the environment (including, without limitation, ambient air, surface water, groundwater, land surface or subsurface strata) or wildlife, including, without limitation, laws and regulations relating to the release or threatened release of chemicals, pollutants, contaminants, wastes, toxic substances, hazardous substances, petroleum or petroleum products (collectively, "Hazardous Materials") or to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Materials (collectively, "Environmental Laws"); (ii) the Company and its subsidiaries have all permits, authorizations and approvals required under any applicable Environmental Laws and are each in compliance with their requirements; and (iii) to the knowledge of the Company, there are no pending or threatened administrative, regulatory or judicial actions, suits, demands, demand letters, claims, liens, notices of noncompliance or violation, investigation or proceedings relating to any Environmental Law against the Company or any of its subsidiaries; and (iv) there are no events or circumstances that might reasonably be expected to form the basis of an order for clean-up or remediation, or an action, suit or proceeding by any private party or governmental body or agency, against or affecting the Company or any of its subsidiaries relating to Hazardous Materials or any Environmental Laws.

(xxx) In the ordinary course of its business, the Company conducts review from time to time of the effect of Environmental Laws on the business, operations and properties of the Company and its subsidiaries, in the course of which it identifies and evaluates associated costs and liabilities (including, without limitation, any capital or operating expenditures required for clean-up, closure of properties or compliance with Environmental Laws or any permit, license or approval, any related constraints on operating activities and any potential liabilities to third parties). No facts or circumstances have come to the Company's attention that could result in costs or liabilities that could be expected, individually or in the aggregate, to have a Material Adverse Effect.

(xxxi) The Company and its subsidiaries and any "employee benefit plan" (as defined under the Employee Retirement Income Security Act of 1974, as amended, and the regulations and published interpretations thereunder (collectively, "ERISA")) established or maintained by the Company, its subsidiaries or their "ERISA Affiliates" (as defined below) are in compliance in all material respects with ERISA. "ERISA Affiliate" means, with respect to the Company or its subsidiaries, any member of any group of organizations described in Sections 414(b), (c), (m) or (o) of the Internal Revenue Code of 1986, as amended, and the regulations and published interpretations thereunder (collectively, the "Code"), of which the Company or such subsidiary is a member. No "reportable event" (as defined under ERISA) has occurred or is reasonably expected to occur with respect to any "employee benefit plan" established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates. No "employee benefit plan" established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates, if such "employee benefit plan" were terminated, would have any "amount of unfunded benefit liabilities" (as defined under ERISA). Neither the Company, its subsidiaries nor any of their ERISA Affiliates has incurred or reasonably expects to incur any liability under (i) Title IV of ERISA with respect to termination of, or withdrawal from, any "employee benefit plan" or (ii) Sections 412, 4971, 4975 or 4980B of the Code, in each case except as would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect. Each employee benefit plan established or maintained by the Company, its subsidiaries or any of their ERISA Affiliates that is intended to be qualified under Section 401(a) of the Code has been determined to be so qualified by the Internal Revenue Service and nothing has occurred, whether by action or failure to act, which could reasonably be expected to cause the loss of such qualification.

(xxxii) The Company is not, and will not be, after receipt of payment for the Securities or after the application of the proceeds therefrom as described under "Use of Proceeds" in the Registration Statement, the Pricing Prospectus or the Prospectus, required to register as an "investment company" under the Investment Company Act of 1940, as amended (the "Investment Company Act").

(xxxiii) Neither the Company nor any of its subsidiaries has taken, directly or indirectly, any action designed to or that might reasonably be expected to cause or result in stabilization or manipulation of the price of the Common Stock or of any “reference security” (as defined in Rule 100 of Regulation M under the Exchange Act (“Regulation M”)) with respect to the Common Stock, whether to facilitate the sale or resale of the Securities (or the Conversion Shares) or otherwise, and has taken no action which would directly or indirectly violate Regulation M.

(xxxiv) There are no business relationships or related-party transactions involving the Company or any of its subsidiaries or any other person required to be described in the Registration Statement, the Pricing Prospectus or the Prospectus that have not been described as required.

(xxxv) All of the information provided to the Underwriters or to counsel for the Underwriters by the Company, its counsel, its officers and directors and the holders of any securities (debt or equity) or options to acquire any securities of the Company in connection with the offering of the Securities is true, complete, correct and compliant 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.

(xxxvi) The Company has furnished to the Underwriters a letter agreement in the form attached hereto as Schedule IV (the “Lock-up Agreement”) from each of the persons listed on Schedule V. Such Schedule V lists under an appropriate caption the directors and executive officers of the Company. If any additional persons shall become directors or executive officers of the Company prior to the end of the Lock-up Period (as defined in the Lock-up Agreement), the Company shall cause each such person, prior to or contemporaneously with their appointment or election as a director or executive officer of the Company to execute and deliver to the Representative a Lock-up Agreement.

(xxxvii) All statistical, demographic and market related data included in the Registration Statement, the Pricing Prospectus or the Prospectus are based on or derived from sources that the Company believes, after reasonable inquiry, to be reliable and accurate. To the extent required, the Company has obtained the written consent to the use of such data from such sources.

(xxxviii) Except as described or incorporated by reference in the Registration Statement, the Pricing Prospectus, or the Prospectus, neither the Company nor any of its subsidiaries has sent or received any communication regarding termination of, or intent not to renew, any of the contracts or agreements referred to or described in any preliminary prospectus, the Prospectus or any free writing prospectus, or referred to or described in, or filed as an exhibit to, the Registration Statement, or any document incorporated by reference therein, and no such termination or non-renewal has been threatened by the Company or any of its subsidiaries or any other party to any such contract or agreement, which threat of termination or non-renewal has not been rescinded as of the date hereof.

(xxxix) Any certificate signed by any officer of the Company or any of its subsidiaries and delivered to any Underwriter or to counsel for the Underwriters in connection with the offering, or the purchase and sale, of the Securities shall be deemed a representation and warranty by the Company to each Underwriter as to the matters covered thereby.

(xl) [Intentionally Omitted.]

(xli) 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 associated with or 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/or procedures designed to promote and ensure compliance with all applicable anti-bribery and anti-corruption laws.

(xlii) 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 (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.

(xliii) 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 associated with or acting on behalf of the Company or any of its subsidiaries is currently the subject or the target 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 (“OFAC”) 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 (“UNSC”), the European Union, Her Majesty’s Treasury (“HMT”) 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 or target of Sanctions, including, without limitation, Cuba, Iran, North Korea, Syria and Crimea (each, a “Sanctioned Country”); and the Company will not directly or indirectly use the proceeds of the offering of the Securities 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 business with any person that, at the time of such funding or facilitation, is the subject or target of Sanctions, (ii) to fund or facilitate any activities of or 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 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 or the target of Sanctions or with any Sanctioned Country.

(xlv) Except pursuant to this Agreement, there is no broker, finder or other party that is entitled to receive from the Company any brokerage or finder’s fee or other fee or commission as a result of any transactions contemplated by the Transaction Documents.

(xlv) Each financial or operational projection or other “forward-looking statement” (as defined by Section 27A of the Securities Act or Section 21E of the Exchange Act) contained in the Registration Statement, the Pricing Prospectus or the Prospectus (i) was so included by the Company in good faith and with reasonable basis after due consideration by the Company of the underlying assumptions, estimates and other applicable facts and circumstances and (ii) is accompanied by meaningful cautionary statements identifying those factors that could cause actual results to differ materially from those in such forward looking statement. No such statement was made with the knowledge of an executive officer or director of the Company that is was false or misleading.

(xlvi) [Intentionally Omitted.]

(xlvii) 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.

(xlviii) With respect to the stock options (the “Stock Options”) granted pursuant to the stock-based compensation plans of the Company and its subsidiaries (the “Company Stock Plans”), (i) each Stock Option intended to qualify as an “incentive stock option” under Section 422 of the Code so qualifies, (ii) each grant of a Stock Option was duly authorized no later than the date on which the grant of such Stock Option was by its terms to be effective (the “Grant Date”) by all necessary corporate action, including, as applicable, approval by the board of directors of the Company (or a duly constituted and authorized committee thereof) and any required stockholder approval by the necessary number of votes or written consents, and the award agreement governing such grant (if any) was duly executed and

delivered by each party thereto, (iii) each such grant was made in accordance with the terms of the Company Stock Plans, the Exchange Act and all other applicable laws and regulatory rules or requirements, including the rules of the NASDAQ and any other exchange on which Company securities are traded, and (iv) each such grant was properly accounted for in accordance with GAAP in the financial statements (including the related notes) of the Company and disclosed in the Company's filings with the Commission in accordance with the Exchange Act and all other applicable laws. The Company has not knowingly granted, and there is no and has been no policy or practice of the Company of granting, Stock Options prior to, or otherwise coordinating the grant of Stock Options with, the release or other public announcement of material information regarding the Company or its subsidiaries or their results of operations or prospects.

(xlix) The Company and its subsidiaries' information technology assets and equipment, computers, systems, networks, hardware, software, websites, applications, and databases (collectively, "IT Systems") are adequate for, and operate and perform in all material respects as required in connection with, the operation of the business of the Company and its subsidiaries, as applicable, as currently conducted, free and clear of all material bugs, errors, defects, Trojan horses, time bombs, malware and other corruptants. The Company and its subsidiaries have implemented and maintain commercially reasonable controls, policies, procedures, and safeguards to maintain and protect their material confidential information and the integrity, continuous operation, redundancy and security of all IT Systems and data (including all personal, personally identifiable, sensitive, confidential or regulated data ("Personal Data")) used in connection with their businesses, and there have been no breaches, violations, outages or unauthorized uses of or accesses to same, except for those that have been remedied without material cost or liability or the duty to notify any other person, nor any incidents under internal review or investigations relating to the same. The Company and its subsidiaries are presently in material compliance with all applicable laws or statutes and all judgments, orders, rules and regulations of any court or arbitrator or governmental or regulatory authority, internal policies and contractual obligations relating to the privacy and security of IT Systems and Personal Data and to the protection of such IT Systems and Personal Data from unauthorized use, access, misappropriation or modification.

The Company acknowledges that the Underwriters and, for purposes of the opinions to be delivered pursuant to Section 8 hereof, counsel to the Company and counsel to the Underwriters, will rely upon the accuracy and truthfulness of the foregoing representations and hereby consents to such reliance.

2. Subject to the terms and conditions herein set forth, (a) the Company agrees to sell to each of the Underwriters, and each of the Underwriters agrees, severally and not jointly, to purchase from the Company the principal amount of Firm Securities set forth opposite the Underwriter's name in Schedule 1 hereto at a price equal to 97% of the principal amount thereof (the "Purchase Price") plus accrued interest, if any, from July 19, 2019 to the Closing Date and (b) in the event and to the extent that the Underwriters shall exercise the election to purchase Option Securities as provided below, the Company agrees to sell to each of the Underwriters, and each of the Underwriters agrees, severally and not jointly, to purchase from the Company, at the Purchase Price plus accrued interest, if any, from July 19, 2019 to the date of payment and delivery, the principal amount of Option Securities determined by multiplying the principal

amount of Option Securities as to which such election shall have been exercised by a fraction, the numerator of which is the aggregate principal amount of Firm Securities to be purchased by such Underwriter and the denominator of which is the aggregate principal amount of Firm Securities to be purchased by all of the Underwriters from the Company hereunder.

The Company hereby grants to the Underwriters the right to purchase at their election the Option Securities. The Underwriters may exercise their option to acquire the Option Securities in whole or in part from time to time only by written notice (which may be given by electronic mail) from the Representative to the Company, given within a period of 30 calendar days after the date of this Agreement and setting forth the aggregate principal amount of Option Securities to be purchased and the date on which such Option Securities are to be delivered, as determined by the Representative but in no event earlier than the Closing Date or, unless the Representative and the Company otherwise agree in writing, earlier than two or later than ten business days after the date of such notice.

The terms of the Securities shall be as set forth in the Preliminary Prospectus and the Pricing Term Sheet.

3. It is understood that the several Underwriters propose to offer the Firm Securities and the Option Securities, as applicable, for sale to the public upon the terms and conditions set forth in the Prospectus. The Company acknowledges and agrees that the Underwriters may offer and sell the Securities to or through any affiliate of an Underwriter.

4. Payment for the Securities shall be made by wire transfer in immediately available funds to the account specified by the Company to the Representative in the case of the Firm Securities, at the offices of Covington & Burling LLP at 10:00 A.M., New York City time, on July 19, 2019, or at such other time not later than seven full business days thereafter as the Representative and the Company determine (such time being herein referred to as the "Closing Date"), or, in the case of the Option Securities, on the date and at the time and place specified by the Representative in the written notice of the Underwriters' election to purchase such Option Securities, provided that the Company is given at least two business days' notice (each such time and date being herein referred to as an "Option Closing Date").

Payment for the Securities to be purchased on the Closing Date or any Option Closing Date, as the case may be, shall be made against delivery to the nominee of The Depository Trust Company ("DTC"), for the account of the Underwriter of the Securities to be purchased on such date of one or more global notes representing the Securities (collectively, the "Global Note"), with any transfer taxes payable in connection with the sale of such Securities duly paid by the Company. The Global Note will be made available for inspection by the Representative at the offices of Covington & Burling LLP not later than 5:00 P.M., New York City time, on the business day prior to the Closing Date or any Option Closing Date, as the case may be.

The Company acknowledges and agrees that the Underwriters are acting solely in the capacity of an arm's length contractual counterparty to the Company with respect to the offering of Securities contemplated hereby (including in connection with determining the terms of the offering) and not as a financial advisor or a fiduciary to, or an agent of, the Company or any

other person. Additionally, neither the Representative nor any other Underwriter is advising the Company or any other person as to any legal, tax, investment, accounting or regulatory matters in any jurisdiction. The Company shall consult with its own advisors concerning such matters and shall be responsible for making its own independent investigation and appraisal of the transactions contemplated hereby, and the Underwriters shall have no responsibility or liability to the Company with respect thereto. Any review by the Underwriters of the Company, the transactions contemplated hereby or other matters relating to such transactions will be performed solely for the benefit of the Underwriters and shall not be on behalf of the Company.

5. The Company covenants and agrees with each of the Underwriters as follows:

(a) The Company, subject to Section 5(b), will comply with the requirements of Rule 430B under the Securities Act, and will notify the Representative promptly, and confirm the notice in writing, (i) when any post-effective amendment to the Registration Statement shall become effective, or any supplement to the Prospectus or any amended prospectus shall have been filed, to furnish the Representative with a reasonable number of copies thereof, and to file promptly all material required to be filed by the Company with the Commission pursuant to Rule 433(d) under the Securities Act (including the Pricing Term Sheet), (ii) of the receipt of any comments from the Commission, (iii) of any request by the Commission for any amendment to the Registration Statement or any amendment or supplement to the Prospectus or for additional information, and (iv) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or of any order preventing or suspending the use of any preliminary prospectus, or of the suspension of the qualification of the Securities or the Common Stock for offering or sale in any jurisdiction, or of the initiation or threatening of any proceedings for any of such purposes or pursuant to Section 8A under the Securities Act. The Company will promptly effect the filings necessary pursuant to Rule 424(b) under the Securities Act and will take such steps as it deems necessary to ascertain promptly whether the form of prospectus transmitted for filing under Rule 424(b) was received for filing by the Commission and, in the event that it was not, it will promptly file such prospectus. The Company will make every reasonable effort to prevent the issuance of any stop order and, if any stop order is issued, to obtain the lifting thereof at the earliest possible moment.

(b) During the period when a prospectus relating to the Securities is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule), the Company will give the Representative notice of its intention to file or prepare any amendment to the Registration Statement (including any filing under Rule 462(b) under the Securities Act and including any amendment or supplement through incorporation of any report filed under the Exchange Act), or any amendment, supplement or revision to the Prospectus, or any free writing prospectus, will furnish the Representative with copies of any such documents a reasonable amount of time prior to such proposed filing or use, as the case may be, and will not file or use any such document without the Representative's prior written consent (such consent not to be unreasonably withheld, conditioned or delayed).

(c) The Company will use its reasonable best efforts to qualify the Securities for offering and sale under the securities laws of such jurisdictions as you may reasonably request and to comply with such laws so as to permit the continuance of sales and dealings therein in such jurisdictions for as long as may be necessary to complete the distribution of the Securities, provided that nothing in this Section 5(c) shall require the Company to qualify as a foreign corporation in any jurisdiction in which it is not already so qualified, or to file a general consent to service of process in any jurisdiction.

(d) The Company has furnished or will deliver to the Representative, without charge, two signed copies of the Registration Statement as originally filed, any Rule 462(b) Registration Statement and of each amendment to each (including exhibits filed therewith or incorporated by reference therein) and signed copies of all consents and certificates of experts, and will also, upon your request, deliver to the Representative, without charge, a conformed copy of the Registration Statement as originally filed and of each amendment thereto (without exhibits) for each of the Underwriters. The copies of the Registration Statement and each amendment thereto furnished to the Underwriters will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

(e) The Company has delivered to each Underwriter, without charge, as many written and electronic copies of each preliminary prospectus as such Underwriter reasonably requested, and the Company hereby consents to the use of such copies for purposes permitted by the Securities Act. The Company will furnish to each Underwriter, without charge, prior to 5:00 P.M. on the business day next succeeding the date of this Agreement (or as soon as reasonably practicable thereafter) and from time to time thereafter during the period when the Prospectus is required to be delivered in connection with sales of the Securities under the Securities Act or the Exchange Act or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act, such number of written and electronic copies of the Prospectus (as amended or supplemented) as such Underwriter may reasonably request. The Prospectus and any amendments or supplements thereto furnished to the Underwriters will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

(f) The Company will comply with the Securities Act and Exchange Act so as to permit the completion of the distribution of the Securities as contemplated in this Agreement and in the Prospectus. If at any time when, in the opinion of counsel for the Underwriters, a prospectus is required to be delivered in connection with sales of the Securities under the Securities Act or the Exchange Act (or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act), any event shall occur or condition shall exist as a result of which it is necessary, in the opinion of the Company, counsel for the Company, the Representative or counsel for the Underwriters or for the Company, to amend the Registration Statement or amend or supplement the Prospectus in order that the Prospectus will not include any untrue statements of a material fact or omit to state a material fact necessary in order to make the statements therein not misleading in the light of the circumstances existing at the time it (or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act) is delivered to a purchaser, or if it shall be necessary, in the opinion of the Company, counsel to the Company, the Representative or counsel to the Underwriters, at any such time to amend the Registration Statement or amend or supplement the Prospectus in order to comply with the requirements of the Securities Act, the Company will promptly prepare and file with the Commission, subject to Section 5(b), such

amendment or supplement as may be necessary to correct such statement or omission or to make the Registration Statement or the Prospectus comply with such requirements, and the Company will furnish to the Underwriters such number of written and electronic copies of such amendment or supplement as the Underwriters may reasonably request. The Company will provide the Representative with notice of the occurrence of any event during the period specified above that may give rise to the need to amend or supplement the Registration Statement or the Prospectus as provided in the preceding sentence promptly after the occurrence of such event.

(g) The Company will make generally available (within the meaning of Section 11(a) of the Securities Act) to its security holders and to the Representative as soon as practicable, but not later than 45 days after the end of its fiscal quarter in which the first anniversary date of the effective date of the Registration Statement occurs, an earnings statement (in form complying with the provisions of Rule 158 under the Securities Act) covering a period of at least twelve consecutive months beginning after the effective date (as defined in Rule 158 under the Securities Act) of the Registration Statement.

(h) The Company will use the net proceeds received by it from the sale of the Securities in the manner specified in the Pricing Prospectus under the heading "Use of Proceeds".

(i) The Company will use its reasonable best efforts to effect, as applicable, and maintain the listing of the Common Stock (including the Conversion Shares) on the NASDAQ.

(j) During a period of 60 days from the date of the Prospectus (the "Lock-up Period"), the Company will not, without the prior written consent of the Representative, (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend or otherwise transfer or dispose of, directly or indirectly, any Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock, (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of Common Stock, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise, (iii) submit or file any registration statement under the Securities Act in respect of any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock; or (iv) publicly announce the intention to do any of the foregoing; *provided that* the Company may (1) effect the transactions contemplated hereby, (2) issue Common Stock or options to purchase Common Stock, or issue Common Stock upon exercise of options, pursuant to any stock option, stock bonus or other stock plan or arrangement described in the Registration Statement, the Pricing Prospectus and the Prospectus, (3) permit or allow the vesting of or removal or lapse of restrictions on restricted stock or other awards under existing employee benefits plans or agreements in accordance with the terms of such plans or agreements, provided that no related public disclosure, announcement, or filing under the Exchange Act, shall be required or made voluntarily, during the Lock-up Period, (4) issue options, restricted stock units or other awards to newly hired employees, including granting inducement grant awards, as permitted by Nasdaq Stock Market Rule 5635, (5) file any registration statement on Form S-8 or a successor form

thereto in respect of securities offered pursuant to the terms of existing employee benefits or inducement grant award, (6) issue Common Stock upon the exchange, conversion or redemption of any of the Company's 2.125% Convertible Senior Notes due 2021 as described in the Registration Statement, the Pricing Prospectus and the Prospectus, (7) issue Common Stock to one or more counterparties in connection with the consummation any merger, asset acquisition or other business combination transaction or any strategic partnership, joint venture, collaboration or license of any business, products or technology; *provided* that, with respect to this subsection (7), (x) the sum of the aggregate number of shares of Common Stock so issued during the Lock-up Period shall in the aggregate not exceed 10% of the total outstanding Common Stock immediately following the completion of this offering and (y) prior to the issuance of such Common Stock, each recipient of such Common Stock signs a Lock-up Agreement (or substantially similar agreement) in favor of the Representative, and (8) effect the transactions contemplated by the underwriting agreement among the Company and the several underwriters named therein, dated as of July 16, 2019, in connection with the proposed public offering of shares of the Common Stock.

(k) The Company, during the period when the Prospectus is required to be delivered in connection with sales of the Securities under the Securities Act or the Exchange Act (or in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act), will file all documents required to be filed with the Commission pursuant to the Exchange Act within the time periods required by the Exchange Act.

(l) The Company will file with the Commission such information on Form 10-Q or Form 10-K as may be required pursuant to Rule 463 under the Securities Act.

(m) During a period of five years from the effective date of the Registration Statement, the Company will furnish or make available to you copies of all reports or other communications (financial or other) furnished to shareholders generally, and to deliver to you (i) as soon as they are available, copies of any reports and financial statements furnished to or filed with the Commission or any national securities exchange on which any class of securities of the Company is listed; and (ii) such additional information concerning the business and financial condition of the Company as you may from time to time reasonably request (such financial statements to be on a consolidated basis to the extent the accounts of the Company and any subsidiaries are consolidated in reports furnished to its shareholders generally or to the Commission); *provided however* that the requirements of this Section 5(m) shall be satisfied to the extent that such reports, financial statements, other communications or other information are available on EDGAR.

(n) If so requested by the Representative, the Company shall cause to be prepared and delivered, at its expense, within one business day from the effective date of this Agreement, to the Representative an "electronic Prospectus" to be used by the Underwriters in connection with the offering and sale of the Securities. As used herein, the term "electronic Prospectus" means a form of the most recent preliminary prospectus, any free writing prospectus or the Prospectus, and any amendment or supplement thereto, that meets each of the following conditions: (i) it shall be encoded in an electronic format, satisfactory to the Representative, that may be transmitted electronically by the Representative and the other Underwriters to offerees

and purchasers of the Securities, (ii) it shall disclose the same information as such paper preliminary prospectus, free writing prospectus or the Prospectus, as the case may be; and (iii) it shall be in or convertible into a paper format or an electronic format, satisfactory to the Representative, that will allow investors to store and have continuously ready access to such preliminary prospectus, free writing prospectus or the Prospectus at any future time, without charge to investors (other than any fee charged for subscription to the Internet generally). The Company hereby confirms that, if so requested by the Representative, it has included or will include in the Prospectus filed with the Commission an undertaking that, upon receipt of a request by an investor or his or her representative, the Company shall transmit or cause to be transmitted promptly, without charge, a paper copy of such paper preliminary prospectus, free writing prospectus or the Prospectus to such investor or representative.

(o) The Company agrees to pay the required Commission filing fees relating to the Securities within the time required by Rule 456(b)(1) under the Securities Act without regard to the proviso therein and otherwise in accordance with the Rules 456(b) and 457(r) under the Securities Act.

(p) If, after the date of this Agreement and during any time when a prospectus is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 under the Securities Act or any similar rule), the Company receives notice pursuant to Rule 401(g)(2) under the Securities Act from the Commission or otherwise ceases to be eligible to use the automatic shelf registration form, the Company shall promptly advise the Representative in writing of such notice or ineligibility and will (i) promptly file a new registration statement or post-effective amendment on the proper form relating to the Securities, (ii) use its reasonable best efforts to cause such registration statement or post-effective amendment to be declared effective by the Commission as soon as practicable and (iii) promptly notify the Representative in writing of such effectiveness.

(q) The Company will not take, 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 Common Stock.

(r) During the Lock-up Period, the Company will enforce all agreements between the Company and any of its security holders that restrict or prohibit, expressly or in operation, the offer, sale or transfer of Common Stock or any of the other actions restricted or prohibited under the terms of the form of Lock-up Agreement. In addition, the Company will direct the transfer agent to place stop transfer restrictions upon any such securities of the Company that are bound by such agreements for the duration of the periods contemplated in such agreements, including, without limitation, the Lock-up Agreements entered into by the Company's directors and executive officers pursuant to Section 1(xxxvi) hereof.

(s) The Company will reserve and keep available at all times, free of pre-emptive rights, a number of shares of Common Stock equal to the maximum number of Conversion Shares for the purpose of enabling the Company to satisfy all obligations to issue Conversion Shares upon conversion of the Securities. The Company will use its best efforts to cause a number of shares of Common Stock equal to the maximum number of Conversion Shares to be listed on the NASDAQ.

6. (a) The Company represents and agrees that, without the prior consent of the Representative, it has not made and will not make any offer relating to the Securities that would constitute a "free writing prospectus" as defined in Rule 405 under the Securities Act; each Underwriter represents and agrees that, without the prior consent of the Company and the Representative, it has not made and will not make any offer relating to the Securities that would constitute a free writing prospectus; any such free writing prospectus the use of which has been consented to by the Company and the Representative is listed on Schedule II hereto;

(b) The Company has complied and will comply with the requirements of Rule 433 under the Securities Act applicable to any free writing prospectus (including the Pricing Term Sheet), including timely filing with the Commission or retention where required and legending; the Company represents that it has satisfied and agrees that it will satisfy the conditions under Rule 433 under the Securities Act to avoid a requirement to file with the Commission any electronic road show;

(c) The Company agrees that if at any time following issuance of a free writing prospectus any event occurred or occurs as a result of which such free writing prospectus would conflict with the information in the Registration Statement, the Pricing Prospectus or the Prospectus or would include an untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in light of the circumstances then prevailing, not misleading, the Company will give prompt notice thereof to the Representative and, if requested by the Representative, will prepare and furnish without charge to each Underwriter a free writing prospectus or other document which will correct such conflict, statement or omission; provided, however, that this representation and warranty shall not apply to any statements or omissions in a free writing prospectus made in reliance upon and in strict conformity with information furnished in writing to the Company by an Underwriter through the Representative expressly for use therein.

7. The Company covenants and agrees with the several Underwriters that, whether or not the transactions contemplated by this Agreement are consummated, the Company will pay or cause to be paid all expenses incident to the performance of its obligations under the Transaction Documents, including (i) the fees, disbursements and expenses of the Company's counsel, accountants and other advisors; (ii) filing fees and all other expenses in connection with the preparation, printing and filing of the Registration Statement, each preliminary prospectus, any free writing prospectus and the Prospectus and amendments and supplements thereto and the mailing and delivering of copies thereof to the Underwriters and dealers; (iii) the cost of printing or producing the Transaction Documents, closing documents (including any compilations thereof) and such other documents as may be required in connection with the offering, purchase, sale and delivery of the Securities; (iv) all expenses in connection with the qualification of the Securities for offering and sale under state securities laws as provided in Section 5(c) or the provincial securities laws of Canada, including filing fees and the reasonable fees and disbursements of counsel for the Underwriters in connection with such qualification and in connection with the Blue Sky survey, provided such fees and disbursements do not exceed

\$5,000 in the aggregate; (v) all fees and expenses in connection with listing the Conversion Shares on the NASDAQ; (vi) the reasonable fees and disbursements of counsel for the Underwriters in connection with determining compliance of the terms of the sale of the Securities with the rules and regulations of FINRA, and the filing fees incident to securing any required review by FINRA of the terms of the sale of the Securities, provided such fees and disbursements do not exceed \$10,000 in the aggregate; (vii) all fees and expenses in connection with the preparation, issuance and delivery of the notes representing the Securities to the Underwriters, including any stock or other transfer taxes and any stamp or other duties payable upon the sale, issuance or delivery of the Securities to the Underwriters; (viii) the cost and charges of the Trustee and any paying agent (including related fees and expenses of any counsel to such parties); (ix) the transportation and other expenses incurred by the Company in connection with presentations to prospective purchasers of Securities, provided that the cost of any aircraft chartered in connection with the road show shall be borne 50% by the Company and 50% by the Underwriters; and (x) all other costs and expenses incident to the performance of its obligations hereunder which are not otherwise specifically provided for in this Section. Except as provided in Sections 7(iv) and 7(vi) above and Section 9 the Underwriters shall pay their own expenses, including the fees and disbursements of their counsel.

8. The several obligations of the Underwriters hereunder to purchase the Securities on the Closing Date or each Option Closing Date, as the case may be, are subject to the performance by the Company of its obligations hereunder and to the following additional conditions:

(a) The Prospectus shall have been filed with the Commission pursuant to Rule 424(b) under the Securities Act within the applicable time period prescribed for such filing and in accordance with Section 5(a); all material required to be filed by the Company pursuant to Rule 433(d) under the Securities Act shall have been filed with the Commission within the applicable time period prescribed for such filing by Rule 433 under the Securities Act; no stop order suspending the effectiveness of the Registration Statement or any part thereof or the Prospectus or any part thereof or any free writing prospectus shall have been issued and no proceeding for that purpose or pursuant to Section 8A under the Securities Act shall have been initiated or threatened by the Commission or any state securities commission; and all requests for additional information on the part of the Commission shall have been complied with to your reasonable satisfaction.

(b) The representations and warranties of the Company contained herein are true and correct on the date hereof and on and as of the Closing Date or the Option Closing Date, as the case may be, as if made on and as of the Closing Date or the Option Closing Date, as the case may be, and the Company shall have complied with all agreements and all conditions on its part to be performed or satisfied hereunder at or prior to the Closing Date or the Option Closing Date, as the case may be.

(c) There shall not have been any Material Adverse Change with respect to the Company, the effect of which, is in the judgment of the Representative so material and adverse as to make it impracticable or inadvisable to proceed with the public offering or the delivery of the Securities being delivered at such Closing Date or Option Closing Date, as the case may be, on the terms and in the manner contemplated in this Agreement or the Pricing Prospectus.

(d) The Representative shall have received on and as of the Closing Date or the Option Closing Date, as the case may be, a certificate of two executive officers of the Company, at least one of whom has specific knowledge about the Company's financial matters, satisfactory to the Representative, to the effect (1) set forth in Section 8(b), (2) that from the date of the Agreement through and including the Closing Date, or Option Closing Date, as the case may be, there shall not have occurred any Material Adverse Change and (3) that no stop order suspending the effectiveness of the Registration Statement has been issued and to the knowledge of the Company, no proceedings for that purpose or pursuant to Section 8A under the Securities Act have been instituted or are pending or contemplated by the Commission.

(e) On the Closing Date or Option Closing Date, as the case may be, Goodwin Procter LLP, counsel for the Company, shall have furnished to the Representative their favorable written opinion and 10b-5 statement, dated the Closing Date or the Option Closing Date, as the case may be, in form and substance satisfactory to counsel for the Underwriters.

(f) (i) On the date hereof, Ernst & Young LLP shall have furnished to the Representative a letter, dated the date hereof, in form and substance satisfactory to the Representative, containing statements and information of the type customarily included in accountants' "comfort letters" to underwriters with respect to the financial statements and certain financial information contained or incorporated by reference in the Registration Statement and the Prospectus.

(ii) On the date hereof, Friedman LLP shall have furnished to the Representative a letter, dated the date hereof, in form and substance satisfactory to the Representative, containing statements and information of the type customarily included in accountants' "comfort letters" to underwriters with respect to the financial statements and certain financial information contained or incorporated by reference in the Registration Statement and the Prospectus.

(g) (i) On the Closing Date or Option Closing Date, as the case may be, the Representative shall have received from Ernst & Young LLP a letter, dated the Closing Date or such Option Closing Date, as the case may be, in form and substance satisfactory to the Representative, to the effect that they reaffirm the statements made in the letter or letters furnished pursuant to Section 8(f), except that the specified date referred to shall be a date not more than three business days prior to the Closing Date or such Option Closing Date, as the case may be.

(ii) On the Closing Date or Option Closing Date, as the case may be, the Representative shall have received from Friedman LLP a letter, dated the Closing Date or such Option Closing Date, as the case may be, in form and substance satisfactory to the Representative, to the effect that they reaffirm the statements made in the letter or letters furnished pursuant to Section 8(f), except that the specified date referred to shall be a date not more than three business days prior to the Closing Date or such Option Closing Date, as the case may be.

(h) On the Closing Date or Option Closing Date, as the case may be, Covington & Burling LLP, counsel for the Underwriters in connection with the offering, shall have furnished to the Representative their favorable opinion and 10b-5 statement, dated the Closing Date or the Option Closing Date, as the case may be, in form and substance satisfactory to the Underwriters, and such counsel shall have received such papers and information as they may reasonably request to enable them to pass upon such matters.

(i) On the Closing Date or Option Closing Date, as the case may be, Skadden, Arps, Slate, Meagher & Flom LLP, special product counsel for the Underwriters in connection with the offering, shall have furnished to the Representative their favorable opinion dated the Closing Date or the Option Closing Date, as the case may be, in form and substance satisfactory to the Underwriters, and such counsel shall have received such papers and information as they may reasonably request to enable them to pass upon such matters.

(j) On the Closing Date or Option Closing Date, as the case may be, the Representative shall have received a certificate from previously agreed officer(s) of the Company with respect to intellectual property matters in a previously agreed form.

(k) The Conversion Shares shall have been approved for listing on the NASDAQ, as applicable, subject to official notice of issuance.

(l) If a filing has been made with FINRA, FINRA shall have raised no objection to the fairness and reasonableness of the underwriting terms and arrangements.

(m) The Representative shall have received Lock-up Agreements from each of the persons listed on Schedule V hereto and such agreements shall be in full force and effect on the Closing Date or Option Closing Date, as the case may be.

(n) On or prior to the Closing Date or Option Closing Date, as the case may be, the Company shall have furnished to the Representative such further information, certificates and documents as the Representative shall reasonably request.

(o) On the Closing Date or Option Closing Date, as the case may be, the Representative shall have received a certificate from the Chief Financial Officer of the Company in form and substance satisfactory to the Representative.

If any condition specified in this Section 8 shall not have been fulfilled when and as required to be fulfilled, this Agreement may be terminated, subject to the provisions of Section 12, by the Representative by notice to the Company at any time at or prior to the Closing Date or Option Closing Date, as the case may be, and such termination shall be without liability of any party to any other party, except as provided in Section 12.

9. (a) The Company agrees to indemnify and hold harmless each Underwriter, its affiliates, directors and officers and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Securities Act or Section 20(a) of the Exchange Act against any and all losses, liabilities, claims, damages and expenses whatsoever as reasonably incurred (including without limitation, reasonable attorneys' fees of one counsel and one local counsel for all indemnified parties and any and all reasonable expenses whatsoever incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, and any and all amounts paid in settlement of any claim or litigation), joint or several, to which they or any of them may become subject under the Securities Act, the Exchange Act or otherwise, insofar as such losses, liabilities, claims, damages or expenses (or actions in respect thereof) arise out of or are based (i) upon any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, or any post-effective amendment thereof, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, or (ii) any untrue statement or alleged untrue statement of a material fact included in any preliminary prospectus, the Pricing Prospectus, any road show as defined in Rule 433(h) under the Securities Act (a "road show"), any free writing prospectus that the Company has used, referred to or filed, or is required to file, pursuant to Rule 433 of the Securities Act or the Prospectus (or any such amendment or supplement) or the omission or alleged omission to state therein a material fact necessary in order to make the statements, in the light of the circumstances under which they were made, not misleading; provided, however, that the Company will not be liable in any such case to the extent that any such loss, liability, claim, damage or expense arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made in the Registration Statement, as originally filed or any amendment thereof, the Registration Statement, or any post-effective amendment thereof, any preliminary prospectus, the Pricing Prospectus or the Prospectus, or in any supplement thereto or amendment thereof, or any free writing prospectus in reliance upon and in strict conformity with written information furnished to the Company by or on behalf of any Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter is the information described as such in Section 9(b) below.

(b) Each Underwriter severally, and not jointly, agrees to indemnify and hold harmless the Company, each of the directors of the Company, each of the officers of the Company who shall have signed the Registration Statement, and each other person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20(a) of the Exchange Act, against any losses, liabilities, claims, damages and expenses whatsoever as reasonably incurred (including without limitation, reasonable attorneys' fees of one counsel and one local counsel for all indemnified parties and any and all reasonable expenses whatsoever incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, and any and all amounts paid in settlement of any claim or litigation), joint or several, to which they or any of them may become subject under the Securities Act, the Exchange Act or otherwise, insofar as such losses, liabilities, claims, damages or expenses (or actions in respect thereof) arise out of or are based upon (i) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, or any post-effective amendment thereof, or arise out of or are based upon the omission or alleged

omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, or (ii) any untrue statement or alleged untrue statement of a material fact included in any preliminary prospectus, the Pricing Prospectus, any road show, any free writing prospectus that the Company has used, referred to or filed, or is required to file, pursuant to Rule 433 of the Securities Act or the Prospectus (or any such amendment or supplement) or the omission or alleged omission to state therein a material fact necessary in order to make the statements, in the light of the circumstances under which they were made, not misleading, in each case to the extent, but only to the extent, that any such loss, liability, claim, damage or expense arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made therein in reliance upon and in strict conformity with written information furnished to the Company by or on behalf of such Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the following information in the Prospectus furnished on behalf of each Underwriter: (i) the statement, if any, relating to the selling concession set forth in the first sentence of the third paragraph, (ii) the statements relating to market-making set forth in the ninth paragraph and (iii) the statements relating to stabilizing transactions, syndicate covering transactions, and penalty bids set forth in the fifteenth paragraph, in each case under the caption "Underwriting" in the Preliminary Prospectus and Prospectus.

(c) Promptly after receipt by an indemnified party under Section 9(a) or 9(b) of notice of the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such Section, notify each party against whom indemnification is to be sought in writing of the commencement thereof (but the failure so to notify an indemnifying party shall not relieve it from any liability which it may have under this Section 9). In case any such action is brought against any indemnified party, and it notifies an indemnifying party of the commencement thereof, the indemnifying party will be entitled to participate therein, and jointly with any other indemnifying party similarly notified, to the extent it may elect by written notice delivered to the indemnified party promptly after receiving the aforesaid notice from such indemnified party, to assume the defense thereof with counsel reasonably satisfactory to such indemnified party (who shall not, except with the consent of the indemnified party, be counsel to the indemnified party). Notwithstanding the foregoing, the indemnified party or parties shall have the right to employ its or their own counsel in any such case, but the fees and expenses of such counsel shall be at the expense of such indemnified party or parties unless (i) the employment of such counsel shall have been authorized in writing by one of the indemnifying parties in connection with the defense of such action, (ii) the indemnifying parties shall not have employed counsel to have charge of the defense of such action within a reasonable time after notice of commencement of the action, or (iii) such indemnified party or parties shall have reasonably concluded that there may be defenses available to it or them which are different from or additional to those available to one or all of the indemnifying parties (in which case the indemnifying parties shall not have the right to direct the defense of such action on behalf of the indemnified party or parties), in any of which events such fees and expenses shall be borne by the indemnifying parties. In no event shall the indemnifying parties be liable for fees and expenses of more than one counsel (in addition to any local counsel) separate from their own counsel for all indemnified parties in connection with any one action or separate but similar or related actions in the same jurisdiction arising out of the

same general allegations or circumstances, which counsel, in the event of indemnified parties under Section 9(a), shall be selected by the Representative. No indemnifying party shall, without the written consent of the indemnified party, effect the settlement or compromise of, or consent to the entry of any judgment with respect to, any pending or threatened action or claim in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified party is an actual or potential party to such action or claim) unless such settlement, compromise or judgment (i) includes an unconditional release of the indemnified party, in form and substance reasonably satisfactory to the indemnified party, from all liability arising out of such action or claim and (ii) does not include a statement as to or an admission of fault, culpability or a failure to act, by or on behalf of any indemnified party.

(d) If the indemnification provided for in this Section 9 is unavailable to or insufficient to hold harmless an indemnified party under Section 9 (a) or 9(b) in respect of any losses, liabilities, claims, damages or expenses (or actions in respect thereof) referred to therein, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party as a result of such losses, liabilities, claims, damages or expenses (or actions in respect thereof) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Securities. If, however, the allocation provided by the immediately preceding sentence is not permitted by applicable law, then each indemnifying party shall contribute to such amount paid or payable by such indemnified party in such proportion as is appropriate to reflect not only such relative benefits but also the relative fault of the Company on the one hand and the Underwriters on the other in connection with the statements or omissions which resulted in such losses, liabilities, claims, damages or expenses (or actions in respect thereof), as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Securities shall be deemed to be in the same proportion as the total net proceeds from the offering (before deducting expenses and after deducting total underwriting discounts and commissions) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters, in each case as set forth in the table on the cover page of the Prospectus. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company on the one hand or the Underwriters on the other and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission.

The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to this Section 9(d) were determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take account of the equitable considerations referred to above in this Section 9(d). The amount paid or payable by an indemnified party as a result of the losses, liabilities, claims, damages or expenses (or actions in respect thereof) referred to above in this Section 9(d) shall be deemed to include any documented legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this Section 9(d), no Underwriter shall be required to contribute any amount in excess of the amount by which the total price at which the Securities underwritten by it and distributed to the public were offered to the public exceeds the amount of any damages which such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission.

No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligations in this Section 9(d) to contribute are several in proportion to their respective underwriting obligations and not joint.

(e) The obligations of the parties to this Agreements contained in this Section 9 are not exclusive and shall not limit any rights or remedies which may otherwise be available to any indemnified party at law or in equity.

10. If any Underwriter or Underwriters default in its or their obligations to purchase Securities hereunder on the Closing Date or any Option Closing Date and the aggregate principal amount of Securities that such defaulting Underwriter or Underwriters agreed but failed to purchase does not exceed 10% of the total aggregate principal amount of Securities that the Underwriters are obligated to purchase on such Closing Date or Option Closing Date, as the case may be, the non-defaulting Underwriters may make arrangements satisfactory to the Company for the purchase of such Securities by other persons, including any of the Underwriters, but if no such arrangements are made by such Closing Date or Option Closing Date, as the case may be, the non-defaulting Underwriters shall be obligated severally, in proportion to their respective commitments hereunder, to purchase the Securities that such defaulting Underwriters agreed but failed to purchase on such Closing Date or Option Closing Date, as the case may be. If any Underwriter or Underwriters so default and the aggregate principal amount of Securities with respect to which such default or defaults occur exceeds 10% of the total aggregate principal amount of Securities that the Underwriters are obligated to purchase on such Closing Date or Option Closing Date, as the case may be, and arrangements satisfactory to the non-defaulting Underwriters and the Company for the purchase of such Securities by other persons are not made within 48 hours after such default, this Agreement will terminate, subject to the provisions of Section 12, without liability on the part of any non-defaulting Underwriter or the Company, except as provided in Section 12 (provided that if such default occurs with respect to Option Securities after the Closing Date, this Agreement will not terminate as to the Firm Securities or any Option Securities purchased prior to such termination). Nothing herein will relieve a defaulting Underwriter from liability for its default.

In the event of any such default which does not result in a termination of this Agreement, either the non-defaulting Underwriters or the Company shall have the right to postpone the Closing Date or the relevant Option Closing Date, as the case may be, for a period not exceeding seven days in order to effect any required changes in the Registration Statement or Prospectus or in any other documents or arrangements. As used in this Agreement, the term "Underwriter" includes any person substituted for an Underwriter under this Section 10.

11. Notwithstanding anything herein contained, this Agreement (or the obligations of the several Underwriters with respect to any Option Securities which have yet to be purchased) may be terminated, subject to the provisions of Section 12, in the absolute discretion of the Representative, by notice given to the Company, if after the execution and delivery of this Agreement and prior to the Closing Date or the Option Closing Date, as the case may be, (a) trading generally on the New York Stock Exchange or on the NASDAQ shall have been suspended or materially limited, or minimum or maximum prices for trading have been fixed, or maximum ranges for prices have been required, by any of said exchanges or by such system or by order of the Commission, FINRA or any other governmental or regulatory authority, (b) trading of any securities of or guaranteed by the Company or any subsidiary shall have been suspended on any exchange or in any over-the-counter market, (c) a general moratorium on commercial banking activities in New York, Massachusetts or Europe shall have been declared by U.S. federal authority or any New York State, Massachusetts or European authority or a new restriction materially adversely affecting the distribution of the Firm Securities or the Option Securities, as the case may be, shall have become effective, or (d) there has occurred any material adverse change in the financial markets in the United States or the international financial markets, any outbreak of hostilities or escalation thereof or other calamity or crisis or any material change or development involving a prospective change in national or international political, financial or economic conditions, in each case the effect of which is such as to make it, in the judgment of the Representative, impracticable to market the Securities to be delivered on the Closing Date or Option Closing Date, as the case may be, or to enforce contracts for the sale of the Securities.

If this Agreement is terminated pursuant to this Section 11, such termination will be without liability of any party to any other party except as provided in Section 12 hereof.

12. The respective indemnities, rights of contribution, agreements, representations, warranties and other statements of the Company or its officers and of the several Underwriters set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation, or statement as to the results thereof, made by or on behalf of any Underwriter, the Company or any of their respective representatives, officers or directors or any controlling person, and will survive delivery of and payment for the Securities. If this Agreement is terminated pursuant to Section 8, 10 or 11 or if for any reason the purchase of any of the Securities by the Underwriters is not consummated, the Company shall remain responsible for the expenses to be paid or reimbursed by it pursuant to Section 7, the respective obligations of the Company and the Underwriters pursuant to Section 9 and the provisions of Sections 12, 13 and 16 shall remain in effect and, if any Securities have been purchased hereunder the representations and warranties in Section 1 and all obligations under Section 5 and Section 6 shall also remain in effect. If this Agreement shall be terminated by the Underwriters, or any of them, under Section 8 or otherwise because of any failure or refusal on the part of the Company to comply with the terms or to fulfill any of the conditions of this Agreement, or if for any reason the Company shall be unable to perform its obligations under this Agreement or any condition of the Underwriters' obligations cannot be fulfilled, the Company agrees to reimburse the Underwriters or such Underwriters as have so terminated this Agreement with respect to themselves, severally, for all out-of-pocket expenses (including the fees and expenses of its counsel) reasonably incurred by the Underwriter in connection with this Agreement or the offering contemplated hereunder.

13. This Agreement shall inure to the benefit of and be binding upon the Company and the Underwriters, the officers and directors of the Company referred to herein, any controlling persons referred to herein and their respective successors and assigns. Nothing expressed or mentioned in this Agreement is intended or shall be construed to give any other person, firm or corporation any legal or equitable right, remedy or claim under or in respect of this Agreement or any provision herein contained. No purchaser of Securities from any Underwriter shall be deemed to be a successor or assign by reason merely of such purchase.

14. All notices and other communications hereunder shall be in writing and shall be deemed to have been duly given upon receipt thereof by the recipient if mailed or transmitted by any standard form of telecommunication. Notices to the Underwriters shall be given to the Representative, c/o J.P. Morgan Securities LLC, 383 Madison Avenue, New York, New York 10022, Attention: Equity Syndicate Desk (fax no.: (212) 622-8358), with a copy to Covington & Burling LLP, 620 Eighth Avenue, New York, New York 10018, (fax no.: 646-441-9101); Attention: Brian Rosenzweig. Notices to the Company shall be given to it at Repligen Corporation, 41 Seyon St. Building #1, Suite 100, Waltham, MA 02453, (fax no.: 781-250-0115); Attention: Chief Executive Officer, with a copy to Goodwin Proctor LLP, 100 Northern Avenue, Boston, MA 02210, (fax no.: 617-801-8626); Attention: Arthur M. McGivern.

15. This Agreement may be signed in counterparts, each of which shall be an original and all of which together shall constitute one and the same instrument.

16. THIS AGREEMENT AND ANY CLAIM, CONTROVERSY OR DISPUTE ARISING UNDER OR RELATED TO THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK, WITHOUT REGARD TO SUCH STATE'S PRINCIPLES OF CONFLICTS OF LAWS.

17. The parties hereby submit to the exclusive jurisdiction of and venue in the U.S. federal and New York State courts located in the Borough of Manhattan in the City of New York, New York in connection with any dispute related to this Agreement, any transaction contemplated hereby, or any other matter contemplated hereby. The Company waives any objection which it may now or hereafter have to the laying of venue of any such suit or proceeding in such courts. The Company agrees that final judgment in any such suit, action or proceeding brought in such court shall be conclusive and binding upon the Company and may be enforced in any court to the jurisdiction of which Company is subject by a suit upon such judgment.

18. The Company acknowledges and agrees that (i) the purchase and sale of the Securities pursuant to this Agreement, including the determination of the public offering price of the Securities and any related discounts and commissions, is an arm's-length commercial transaction between the Company on the one hand, and the several Underwriters, on the other, (ii) in connection therewith and with the process leading to such transaction each Underwriter is acting solely as a principal and not the agent or fiduciary of the Company or its stockholders, creditors, employees or any other party, (iii) no Underwriter has assumed an advisory or fiduciary responsibility in favor of the Company with respect to the offering contemplated

hereby or the process leading thereto (irrespective of whether such Underwriter has advised or is currently advising the Company on other matters) or any other obligation to the Company except the obligations expressly set forth in this Agreement, and (iv) the Company has consulted its own legal and financial advisors to the extent it deemed appropriate. The Company agrees that it will not claim that the Underwriters, or any of them, has rendered advisory services of any nature or respect, or owes a fiduciary or similar duty to the Company, in connection with such transaction or the process leading thereto.

19. The Company acknowledges that the Underwriters' research analysts and research departments are required to be independent from their respective investment banking divisions and are subject to certain regulations and internal policies, and that such Underwriters' research analysts may hold views and make statements or investment recommendations and/or publish research reports with respect to the Company and/or the offering that differ from the views of their respective investment banking divisions. The Company hereby waives and releases, to the fullest extent permitted by law, any claims that the Company may have against the Underwriters with respect to any conflict of interest that may arise from the fact that the views expressed by their independent research analysts and research departments may be different from or inconsistent with the views or advice communicated to the Company by such Underwriters' investment banking divisions. The Company acknowledges that each of the Underwriters is a full service securities firm and as such from time to time, subject to applicable securities laws, may effect transactions for its own account or the account of its customers and hold long or short positions in debt or equity securities of the companies that may be the subject of the transactions contemplated by this Agreement.

20. Notwithstanding anything herein to the contrary, the Company is authorized to disclose to any persons the U.S. federal and state income tax treatment and tax structure of the potential transaction and all materials of any kind (including tax opinions and other tax analyses) provided to the Company relating to that treatment and structure, without the Underwriters imposing any limitation of any kind. However, any information relating to the tax treatment and tax structure shall remain confidential (and the foregoing sentence shall not apply) to the extent necessary to enable any person to comply with securities laws. For this purpose, "tax structure" is limited to any facts that may be relevant to that treatment.

21. No amendment or waiver of any provision of this Agreement, nor any consent or approval to any departure therefrom, shall in any event be effective unless the same shall be in writing and signed by the parties hereto.

22. This Agreement supersedes all prior agreements and understandings (whether written or oral) between the Company and the Underwriters, or any of them, with respect to the subject matter hereof.

23. The Company and each of the Underwriters hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Agreement or the transactions contemplated hereby.

24. Recognition of the U.S. Special Resolution Regimes.

(i) In the event that any Underwriter that is a Covered Entity becomes subject to a proceeding under a U.S. Special Resolution Regime, the transfer from such Underwriter of this Agreement, and any interest and obligation in or under this Agreement, will be effective to the same extent as the transfer would be effective under the U.S. Special Resolution Regime if this Agreement, and any such interest and obligation, were governed by the laws of the United States or a state of the United States.

(ii) In the event that any Underwriter that is a Covered Entity or a BHC Act Affiliate of such Underwriter becomes subject to a proceeding under a U.S. Special Resolution Regime, Default Rights under this Agreement that may be exercised against such Underwriter are permitted to be exercised to no greater extent than such Default Rights could be exercised under the U.S. Special Resolution Regime if this Agreement were governed by the laws of the United States or a state of the United States.

As used in this Section 23:

“BHC Act Affiliate” has the meaning assigned to the term “affiliate” in, and shall be interpreted in accordance with, 12 U.S.C. § 1841(k).

“Covered Entity” means any of the following: (i) a “covered entity” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b); (ii) a “covered bank” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 47.3(b); or (iii) a “covered FSI” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b).

“Default Right” has the meaning assigned to that term in, and shall be interpreted in accordance with, 12 C.F.R. §§ 252.81, 47.2 or 382.1, as applicable.

“U.S. Special Resolution Regime” means each of (i) the Federal Deposit Insurance Act and the regulations promulgated thereunder and (ii) Title II of the Dodd-Frank Wall Street Reform and Consumer Protection Act and the regulations promulgated thereunder.

[Signature Page Follows]

If the foregoing is in accordance with your understanding of our agreement, please sign and return to the Company a counterpart hereof, whereupon this instrument will become a binding agreement among the Company and the Underwriters.

Very truly yours,

REPLIGEN CORPORATION

By: /s/ Jon K. Snodgres

Name: Jon K. Snodgres

Title: Chief Financial Officer

Accepted as of the date hereof:

J.P. MORGAN SECURITIES LLC

By: /s/ Santosh Sreenivasan

Name: Santosh Sreenivasan

Title: Managing Director

For itself and as Representative of the
other Underwriters named in Schedule I hereto

SCHEDULE I

Underwriter	Principal Amount of Firm Securities to be Purchased
J.P. Morgan Securities LLC	\$ 175,000,000
Stephens Inc.	\$ 25,000,000
Janney Montgomery Scott LLC	\$ 25,000,000
Stifel, Nicolaus & Company, Incorporated	\$ 25,000,000
Total	\$ 250,000,000

SCHEDULE II

Free Writing Prospectuses

- Term sheet containing the terms of the Securities, substantially in the form of Schedule III.

SCHEDULE III

Form of Pricing Term Sheet

**Free Writing Prospectus
Filed pursuant to Rule 433
Relating to the
Preliminary Prospectus Supplements each dated July 15, 2019 to the
Prospectus dated April 29, 2019
Registration No. 333-231098**

Pricing Term Sheet
dated as of July 16, 2019

Repligen Corporation

Concurrent Offerings of

**\$250,000,000 Aggregate Principal Amount of 0.375% Convertible Senior Notes due 2024
(the “Convertible Notes Offering”)**

and

**1,380,000 Shares of Common Stock, par value \$0.01 per Share
(the “Common Stock Offering”)**

The information in this pricing term sheet relates only to the Convertible Notes Offering and the Common Stock Offering (together, the “Offerings”) and should be read together with (i) the preliminary prospectus supplement dated July 15, 2019 relating to the Convertible Notes Offering (the “Convertible Notes Preliminary Prospectus Supplement”), including the documents incorporated by reference therein and (ii) the preliminary prospectus supplement dated July 15, 2019 relating to the Common Stock Offering (the “Common Stock Preliminary Prospectus Supplement” and, together with the Convertible Notes Preliminary Prospectus Supplement, the “Preliminary Prospectus Supplements”), including the documents incorporated by reference therein. Neither the Convertible Notes Offering nor the Common Stock Offering is contingent on the successful completion of the other offering. The information in this pricing term sheet supersedes the information in the Convertible Notes Preliminary Prospectus Supplement and the Common Stock Preliminary Prospectus Supplement to the extent inconsistent with the information therein. In all other respects, this pricing term sheet is qualified in its entirety by reference to the Convertible Notes Preliminary Prospectus Supplement and the Common Stock Preliminary Prospectus Supplement, as the case may be. The Issuer has increased the size of the Common Stock Offering to \$120,060,000 (or \$138,069,000 if the underwriters’ option to purchase additional Notes is exercised in full). Each final prospectus supplement for the Offerings will reflect conforming changes relating to such increase in the size of the Common Stock Offering.

Issuer:	Repligen Corporation, a Delaware corporation (the “Issuer”)
Ticker / Exchange for Common Stock:	RGEN / The Nasdaq Global Select Market (“Nasdaq”)
Pricing Date:	July 16, 2019
Trade Date:	July 17, 2019
Settlement Date:	July 19, 2019

Total Transaction Size: \$120,060,000 (or \$138,069,000 if the underwriters of the Common Stock Offering exercise in full their option to purchase additional shares of common stock) in gross proceeds from the Common Stock Offering and \$250,000,000 (or \$287,500,000 if the underwriters of the Convertible Notes Offering exercise in full their option to purchase additional notes) in gross proceeds from the Convertible Notes Offering. Neither the Common Stock Offering nor the Convertible Notes Offering is contingent on the other.

Use of Proceeds: The Issuer estimates that the net proceeds to the Issuer from the Common Stock Offering, after deducting underwriting discounts and commissions and estimated offering expenses payable by the Issuer, will be approximately \$113.6 million (or approximately \$130.7 million if the underwriters exercise their option to purchase additional shares of common stock in full) and that the net proceeds to the Issuer from the Convertible Notes Offering, after deducting underwriting discounts and commissions and estimated offering expenses payable by the Issuer, will be approximately \$242.0 million (or approximately \$278.4 million if the underwriters exercise their option to purchase additional notes in full).

The Issuer intends to use a portion of the net proceeds from the Offerings to exchange, with a limited number of holders in privately negotiated exchanges, approximately \$92.0 million aggregate principal amount of its existing 2.125% Convertible Senior Notes due 2021 (the "2016 Notes") for a combination of cash and shares of the Issuer's common stock to be completed concurrently with the closing of the Offerings (the "Note Exchanges"). The Issuer expects to pay an aggregate of approximately \$92.3 million in cash, which represents the principal amount exchanged and accrued and unpaid interest thereon, and issue an aggregate of approximately 1.85 million shares of the Issuer's common stock, to settle the Note Exchanges. Contemporaneously with the closing of the Convertible Notes Offering, the Issuer intends to issue a notice of redemption in respect of the remaining approximately \$23.0 million principal amount of 2016 Notes, which the Issuer expects would result in the conversion of all or substantially all of the remaining 2016 Notes in accordance with their terms prior to the end of the Issuer's third quarter of 2019. The Issuer intends to settle any such conversions of the remaining 2016 Notes with cash in an amount equal to the principal amount thereof and shares of the Issuer's common stock in excess thereof, and intends to use a portion of the net proceeds from the Offerings to satisfy any such cash payments.

The Issuer intends to use the remaining net proceeds from the Offerings for working capital and other general corporate purposes, including to fund possible acquisitions of, or investments in, complementary businesses, products, services and technologies. The Issuer has not entered into any agreements or commitments with respect to any acquisitions or investments at this time.

Common Stock Offering

Shares Offered: 1,380,000 shares of common stock (or 1,587,000 shares of common stock if the underwriters exercise in full their option to purchase additional shares)

Common Stock To be Outstanding Immediately after the Common Stock Offering:	45,453,998 shares (or 45,660,998 shares if the underwriters exercise in full their option to purchase additional shares)
Nasdaq Last Reported Sale Price of Common Stock on July 16, 2019:	\$88.44 per share
Public Offering Price:	\$87.00 per share of common stock (the "Public Offering Price")
Underwriting Discount:	\$4.35 per share of common stock

	Approximately \$6,003,000 in aggregate (approximately \$6,903,450 in aggregate if the underwriters' option to purchase additional shares is exercised in full)
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Joint Book-Running Managers:	J.P. Morgan Securities LLC Stephens Inc. Janney Montgomery Scott LLC
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Co-Managers:	Craig-Hallum Capital Group LLC First Analysis Securities Corp.
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Convertible Notes Offering

Notes:	0.375% Convertible Senior Notes due 2024 (the "Notes")
Aggregate Principal Amount of Notes Offered:	\$250,000,000 (or \$287,500,000 if the underwriters exercise in full their option to purchase additional notes)
Issue Price:	100% plus accrued interest, if any, from July 19, 2019
Maturity:	July 15, 2024, unless earlier converted or repurchased
Interest Rate:	0.375% per annum, accruing from July 19, 2019
Interest Payment Dates and Record Dates:	Interest will accrue from the Settlement Date or from the most recent date on which interest has been paid or provided for, and will be payable semi-annually in arrears on January 15 and July 15 of each year, beginning on January 15, 2020, to holders of record at the close of business on the preceding January 1 and July 1, respectively.
Conversion Premium:	Approximately 32.50% above the Public Offering Price in the Common Stock Offering
Initial Conversion Rate:	8.6749 shares of common stock per \$1,000 principal amount of Notes
Initial Conversion Price:	Approximately \$115.28 per share of common stock

Underwriting Discount: \$30.00 per \$1,000 principal amount of Notes
 \$7,500,000 in aggregate (or \$8,625,000 in aggregate if the underwriters exercise in full their option to purchase additional notes)

Increase in Conversion Rate upon Conversion upon a Make-Whole Fundamental Change: The following table sets forth the number of additional shares of common stock by which the conversion rate will be increased per \$1,000 principal amount of Notes for each stock price and effective date set forth below:

Effective Date	Stock Price										
	\$87.00	\$95.00	\$105.00	\$115.275	\$130.00	\$150.00	\$180.00	\$220.00	\$260.00	\$300.00	\$350.00
July 19, 2019	2.8193	2.3663	1.8820	1.5034	1.1062	0.7453	0.4249	0.2053	0.0971	0.0421	0.0106
July 15, 2020	2.8193	2.3663	1.8688	1.4713	1.0596	0.6927	0.3764	0.1694	0.0732	0.0276	0.0044
July 15, 2021	2.8193	2.3442	1.8014	1.3866	0.9652	0.6010	0.3021	0.1203	0.0438	0.0119	0.0002
July 15, 2022	2.8193	2.2562	1.6741	1.2390	0.8121	0.4632	0.2016	0.0634	0.0155	0.0011	0.0000
July 15, 2023	2.8193	2.0829	1.4326	0.9688	0.5495	0.2533	0.0773	0.0118	0.0000	0.0000	0.0000
July 15, 2024	2.8193	1.8514	0.8489	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

The exact stock prices and effective dates may not be set forth in the table above, in which case:

- If the stock price is between two stock prices in the table or the effective date is between two effective dates in the table, the number of additional shares by which the conversion rate will be increased will be determined by a straight-line interpolation between the number of additional shares set forth for the higher and lower stock prices and the earlier and later effective dates based on a 365-day year;
- If the stock price is greater than \$350.00 per share (subject to adjustment in the same manner as the stock prices set forth in the column headings of the table above), no additional shares will be added to the conversion rate; and
- If the stock price is less than \$87.00 per share (subject to adjustment in the same manner as the stock prices set forth in the column headings of the table above), no additional shares will be added to the conversion rate.

Notwithstanding the foregoing, in no event will the conversion rate per \$1,000 principal amount of notes exceed 11.4942 shares of common stock, subject to adjustment in the same manner as the conversion rate as set forth under "Description of Notes—Conversion Rights—Conversion Rate Adjustments" in the Convertible Notes Preliminary Prospectus Supplement.

CUSIP Number / ISIN: 759916 AB5 / US759916AB50

Sole Book-Running Manager: J.P. Morgan Securities LLC

Co-Managers: Stephens Inc.
 Janney Montgomery Scott LLC
 Stifel, Nicolaus & Company, Incorporated

The Issuer has filed a registration statement (including a prospectus and related preliminary prospectus supplements for each of the Offerings) with the U.S. Securities and Exchange Commission (the "SEC") for the Offerings to which this communication relates. Before you invest, you should read the Convertible Notes Preliminary Prospectus Supplement or the Common Stock Preliminary Prospectus Supplement, as applicable, the related base prospectus and the other documents the Issuer has filed with the SEC that are incorporated by reference into the Convertible Notes Preliminary Prospectus Supplement or the Common Stock Preliminary Prospectus Supplement, as applicable, for more complete information about the Issuer, the Convertible Notes Offering and the Common Stock Offering. You may get these documents for free by visiting EDGAR on the SEC's website at <http://www.sec.gov>. Alternatively, copies may be obtained from J.P. Morgan Securities LLC, Attention: Broadridge Financial Solutions, 1155 Long Island Avenue, Edgewood, NY 11717, or by telephone at (866) 803-9204, or by email at prospectus-eq_fi@jpmchase.com, from Stephens Inc., Attention: Equity Syndicate Desk, 111 Center Street, Little Rock, AR 72201, or by telephone at (800) 643-9691, or by email at prospectus@stephens.com or from Janney Montgomery Scott, Attention: Equity Syndicate, 60 State Street, 35th Floor, Boston, MA 02109, or by telephone at (617) 557-2971, or by email at prospectus@janney.com. You may also access the Convertible Notes Preliminary Prospectus Supplement and the related base prospectus by clicking on the following link: <https://www.sec.gov/Archives/edgar/data/730272/000119312519194004/d777344d424b5.htm>, and the Common Stock Preliminary Prospectus Supplement and the related base prospectus by clicking on the following link: <https://www.sec.gov/Archives/edgar/data/730272/000119312519193992/d772731d424b5.htm>.

ANY DISCLAIMERS OR OTHER NOTICES THAT MAY APPEAR BELOW ARE NOT APPLICABLE TO THIS COMMUNICATION AND SHOULD BE DISREGARDED. SUCH DISCLAIMERS OR OTHER NOTICES WERE AUTOMATICALLY GENERATED AS A RESULT OF THIS COMMUNICATION BEING SENT VIA BLOOMBERG OR ANOTHER EMAIL SYSTEM.

SCHEDULE IV

Form of Lock-up Agreement

LOCK-UP AGREEMENT

REPLIGEN CORPORATION
41 Seyon Street, Bldg. 1, Suite 100
Waltham, MA 02453

J.P. MORGAN SECURITIES LLC
As Representative of the Several Underwriters
c/o J.P. Morgan Securities LLC
383 Madison Avenue
New York, New York 10179

Ladies and Gentlemen:

The undersigned refers to (i) the proposed Underwriting Agreement (the "Equity Underwriting Agreement") among Repligen Corporation, a Delaware corporation (the "Company") and the several underwriters named therein (the "Equity Underwriters") in connection with the proposed public offering of the Company's common stock, par value \$0.01 per share (the "Common Stock"), and (ii) the proposed Underwriting Agreement (the "Notes Underwriting Agreement" and, together with the Equity Underwriting Agreement, the "Underwriting Agreements") among the Company and the several underwriters named therein (the "Notes Underwriters" and, together with the Equity Underwriters, the "Underwriters") in connection with the proposed public offering of the Company's convertible senior notes (the "Notes" and, together with the Common Stock, the "Securities"), in each case, pursuant to a Registration Statement on Form S-3.

As an inducement to the Underwriters to execute the Underwriting Agreements, the undersigned hereby agrees that from the date hereof and until 60 days after the public offering date set forth on the final prospectus or prospectuses used to sell any Securities (the "Public Offering Date") pursuant to either Underwriting Agreement (or if such final prospectuses have different dates, or if only one of the proposed offerings occurs, then 60 days after the latest of the dates set forth on any such final prospectus or prospectuses) (such 60-day period being referred to herein as the "Lock-Up Period"), to which you are or expect to become parties, the undersigned will not (and will cause any Family Member, any partnership, corporation or other entity within the undersigned's control, and any trustee of any trust that holds Common Stock or other securities of the Company for the benefit of the undersigned or such Family Member not to) offer, sell, contract to sell (including any short sale), pledge, hypothecate, establish an open "put equivalent position" within the meaning of Rule 16a-1(h) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), grant any option, right or warrant for the sale of, purchase any option or contract to sell, sell any option or contract to purchase, or otherwise encumber, dispose of or transfer, or grant any rights with respect to, directly or indirectly, any shares of Common Stock or securities convertible into or exchangeable or exercisable for any shares of Common Stock, enter into a transaction which would have the same effect, or enter into any swap, hedge or other

arrangement that transfers, in whole or in part, any of the economic consequences of ownership of the Common Stock, whether any such aforementioned transaction is to be settled by delivery of the Common Stock or such other securities, in cash or otherwise, or publicly disclose the intention to make any such offer, sale, pledge or disposition, or to enter into any such transaction, swap, hedge or other arrangement, without, in each case, the prior written consent of J.P. Morgan Securities LLC (“J.P. Morgan”), which consent may be withheld in J.P. Morgan’s sole discretion. As used herein, “Family Member” shall mean the spouse of the undersigned, an immediate family member of the undersigned or an immediate family member of the undersigned’s spouse, in each case living in the undersigned’s household or whose principal residence is the undersigned’s household (regardless of whether such spouse or family member may at the time be living elsewhere due to educational activities, health care treatment, military service, temporary internship or employment or otherwise). “Immediate family member” as used above shall have the meaning set forth in Rule 16a-1(e) under the Exchange Act.

The restrictions set forth in this letter shall not apply to (i) the receipt, exercise, cashless or net exercise, vesting or forfeiture of, or removal or lapse of restrictions on, any stock option, Common Stock issued upon exercise of a stock option, restricted stock, restricted stock unit or other awards pursuant to any employee benefit plan or agreement in existence as of the date hereof, so long as [subject to clause (ix) below,]¹ such transaction or event does not involve the sale or transfer of any Common Stock or securities convertible into or exchangeable or exercisable for any shares of Common Stock (other than from the undersigned to the Company), (ii) transactions relating to Common Stock acquired in open market transactions after the Public Offering Date, (iii) the transfer or sale of Common Stock, or securities convertible into or exchangeable or exercisable for any shares of Common Stock, by operation of law, such as pursuant to a domestic relations order or in connection with a divorce settlement, (iv) forfeitures of Common Stock to the Company during the Lock-Up Period only to satisfy tax withholding requirements, (v) the entry into any trading plan established pursuant to Rule 10b5-1 under the Exchange Act, provided that such plan does not provide for any sales or other dispositions of Common Stock or securities convertible into or exchangeable or exercisable for any shares of Common Stock during the Lock-Up Period and provided further that no filing by any party under the Exchange Act or other public announcement shall be required or shall be made voluntarily in connection with the entry into such plan, (vi) transfers as a bona fide gift to a charity or educational institution, (vii) by gift to a charitable trust or charitable organization, solely for estate planning purposes, and, for the avoidance of doubt, not by transfer for value, and of which the undersigned has provided to the Company prior written notice, by will or the laws of descent and distribution, or by transfers to a charitable remainder trust established by the undersigned, (viii) transfers or distributions pursuant to any *bona fide* third-party tender offer, merger, consolidation or other similar transaction made to all holders of the Company’s capital stock involving a Change of Control of the Company, provided that in the event that such tender offer, merger, consolidation or other such transaction is not completed, the shares of Common Stock and other securities convertible, exercisable or exchangeable for shares of Common Stock held by the undersigned shall remain subject to the provisions of this Agreement [or (ix) open market sales of shares of Common Stock received upon the exercise of stock options to purchase up to [●] shares of Common Stock, granted prior to the date hereof, pursuant to an employee benefit

¹ **NTD: Bracketed language in lock-up to be included only for lock-ups signed by Dawes and Cooper.**

plan in existence as of the date hereof and which are set to expire prior to September 30, 2019, solely to generate cash proceeds sufficient to satisfy the exercise price of such stock options and any tax liability resulting from such exercise]²[or (ix) the transfer or sale of Common Stock, or securities convertible into or exchangeable or exercisable for any shares of Common Stock, pursuant to a trading plan established pursuant to Rule 10b5-1 under the Exchange Act (a “10b5-1 Plan”) that has been entered into by the undersigned prior to the date of this agreement and has been disclosed to J.P. Morgan]³; provided, however, that in the case of any transaction or transfer contemplated by clauses (i) through (vi), no filing by any party (donor, donee, transferor or transferee) under the Exchange Act or other public announcement shall be required or shall be made voluntarily in connection with such transfer or distribution during the Lock-Up Period; and provided, further, that in the case of any transfer or distribution pursuant to clause (vi) or (vii), each donee or distributee agrees in writing prior to such transfer to be bound by the terms of this Agreement as if it were a party hereto; and provided, further, that in the case of an open market sale of shares of Common Stock pursuant to clause (ix), the unsold portion of shares of Common Stock received pursuant to such exercise remain subject to this Agreement and any filing made under the Exchange Act in connection with such open market sales shall include a statement to the effect that such sales are solely to generate cash proceeds sufficient to satisfy the exercise price of a soon to expire option to purchase Common Stock and any tax liability resulting from such exercise]⁴; and provided, further, that in the case of a transfer or sale pursuant to clause (ix), to the extent a public announcement or filing under the Exchange Act, if any, is required or voluntarily made by or on behalf of the undersigned or the Company regarding any such transfers or sales, such announcement or filing shall include a statement to the effect that the sale was made pursuant to a 10b5-1 Plan]⁵. For purposes of this paragraph, the term “Change of Control” shall mean any transaction or series of related transactions pursuant to which any “person” or “group” (as such terms are used in Sections 13(d) and 14(d) of the Exchange Act) becomes the “beneficial owner” (as such term is defined in Rules 13d-3 and 13d-5 under the Exchange Act), directly or indirectly, of more than 50% of the Common Stock entitled to vote in elections for the Company’s Board of Directors on a fully diluted basis.

In addition, the undersigned agrees that, during the period commencing on the date hereof and ending 60 days after the Public Offering Date, without the prior written consent of J.P. Morgan (which consent may be withheld in its sole discretion): (a) the undersigned will not request, make any demand for or exercise any right with respect to, the registration of any Common Stock or any security convertible into or exercisable or exchangeable for Common Stock and (b) the undersigned waives any and all notice requirements and rights with respect to the registration of any such security pursuant to any agreement, understanding or otherwise to which the undersigned is a party.

Any Common Stock received upon exercise of options granted to the undersigned will also be subject to this Agreement. In addition, the foregoing restrictions shall not apply to the transfer of Common Stock or securities convertible into or exchangeable or exercisable for any shares of

² **NTD: Bracketed language to be included for Dawes (20,000 shares) and Cooper (24,000 shares).**

³ **NTD: Bracketed language to be included for Hunt.**

⁴ **NTD: Bracketed language to be included for Dawes and Cooper.**

⁵ **NTD: Bracketed language to be included for Hunt.**

Common Stock by gift, or by will or intestate succession to a Family Member or to a trust whose beneficiaries consist exclusively of one or more of the undersigned and/or a Family Member, or to a partnership or limited liability company the partners or members of which consist solely of the undersigned and/or a Family Member; *provided, that*, in any such case (i) the transferee agrees in writing prior to such transfer to be bound by the terms of this Agreement as if it were a party hereto and (ii) no filing by any party (donor, donee, transferor or transferee) under the Exchange Act or other public announcement shall be required or shall be made voluntarily in connection with such transfer or distribution during the Lock-Up Period.

In furtherance of the foregoing, the Company and its transfer agent and registrar are hereby authorized to (a) decline to make any transfer of shares of Common Stock if such transfer would constitute a violation or breach of this Agreement and (b) place legends and stop transfer instructions on any such shares of Common Stock owned or beneficially owned by the undersigned.

This Agreement is irrevocable and shall be binding on the undersigned and the successors, heirs, personal representatives and assigns of the undersigned. This Agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to choice of law rules. This Agreement shall lapse and become null and void if the Public Offering Date shall not have occurred on or before October 31, 2019.

Very truly yours,

Printed Name: _____

Date: _____

SCHEDULE V

Persons Signing Lock-up Agreement

Directors:

Glenn L. Cooper
Karen A. Dawes
Tony J. Hunt
Nicolas M. Barthelemy
John G. Cox
Thomas F. Ryan, Jr.
Glenn Muir

Officers:

Tony J. Hunt
Jon K. Snodgres
Ralf Kuriyel

[\(Back To Top\)](#)

Section 4: EX-5.1 (EX-5.1)

Exhibit 5.1

July 18, 2019

Repligen Corporation
41 Seyon Street
Building. 1, Suite 100
Waltham, MA 02453

Re: Securities Registered under Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to Repligen Corporation, a Delaware corporation (the "Company") in connection with its filing of a Registration Statement on Form S-3 (File No. 333-231098) (as amended or supplemented, the "Registration Statement") filed on April 29, 2019 with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"). The Registration Statement became effective under the Securities Act on April 29, 2019. Reference is made to our opinion letter dated April 29, 2019 and included as Exhibit 5.1 to the Registration Statement. We are delivering this supplemental opinion letter in connection with the prospectus supplement (the "Prospectus Supplement") filed on July 17, 2019 by the Company with the Commission pursuant to Rule 424 under the Securities Act. The Prospectus Supplement relates to the offering by the Company of up to 1,587,000 shares of the Company's Common Stock, par value \$0.01 per share (the "Shares") covered by the Registration Statement. The Shares include an option granted to the underwriters of the offering to purchase up to 207,000 Shares. The Shares are being sold to the several underwriters named in, and pursuant to, an underwriting agreement among the Company and such underwriters (the "Underwriting Agreement").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinion set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinion set forth below, on certificates of officers of the Company.

The opinion set forth below is limited to the Delaware General Corporation Law.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and, upon issuance and delivery against payment therefor in accordance with the terms of the Underwriting Agreement, the Shares will be validly issued, fully paid and non-assessable.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement and to the references to our firm under the caption "Legal Matters" in the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ GOODWIN PROCTER LLP

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Section 5: EX-5.2 (EX-5.2)

Exhibit 5.2

Repligen Corporation
41 Seyon Street
Building 1, Suite 100
Waltham, MA 02453

Re: Securities Registered under Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to Repligen Corporation, a Delaware corporation (the "Company") in connection with its filing of a Registration Statement on Form S-3 (File No. 333-231098) (as amended or supplemented, the "Registration Statement") filed on April 29, 2019 with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"). The Registration Statement became effective under the Securities Act on April 29, 2019. Reference is made to our opinion letter dated April 29, 2019 and included as Exhibit 5.1 to the Registration Statement. We are delivering this supplemental opinion letter in connection with the prospectus supplement (the "Prospectus Supplement") filed on July 17, 2019 by the Company with the Commission pursuant to Rule 424 under the Securities Act. The Prospectus Supplement relates to the offering by the Company of (i) up to \$287,500,000 aggregate principal amount of its 0.375% Convertible Senior Notes due 2024 (the "Notes") and (ii) the shares of the Company's common stock, par value \$0.01 par value (the "Common Stock"), that may be issued upon conversion of the Notes (the "Conversion Shares" and collectively with the Notes, the "Securities") covered by the Registration Statement. The Notes are being sold to the several underwriters named in, and pursuant to, an underwriting agreement among the Company and such underwriters (the "Underwriting Agreement").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinion set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinion set forth below, on certificates of officers of the Company.

We refer to the First Supplemental Indenture, which is anticipated to be dated on or about July 19, 2019 and entered into by the Company and Wilmington Trust, National Association, as trustee (the "Trustee"), establishing the terms of the Notes, in a form consistent with that authorized by the Company (the "Supplemental Indenture"). The Supplemental Indenture will amend and supplement the Indenture, which is anticipated to be dated on or about July 19, 2019 and entered into by the Company and the Trustee (as amended and supplemented by the Supplemental Indenture, the "Indenture"). We refer to the Indenture and the Notes as the "Subject Documents."

In our examination of the Subject Documents and other documents relevant to the opinions set forth below, we have assumed, without independent verification, (i) the genuineness of all signatures, (ii) the legal capacity of all natural persons, (iii) the authenticity and completeness of all Subject Documents submitted to us as originals, (iv) the conformity to originals of any Subject Documents submitted to us as copies or by facsimile or other means of

electronic transmission and (v) the truth, accuracy and completeness of information, representations and warranties contained in the Subject Documents. We have also assumed the validity and constitutionality of each relevant statute, rule, regulation and action by governmental agencies covered by this opinion letter, unless a reported decision of a court in the relevant jurisdiction has held otherwise.

The opinions set forth below are limited to the Delaware General Corporation Law and the law of New York.

Based on the foregoing, and subject to the additional qualifications set forth below, we are of the opinion that:

(1) Upon the due execution and delivery of the Indenture by each of the parties thereto and the execution, authentication and issuance of the Notes against payment therefor pursuant to the Underwriting Agreement and in accordance with the terms of the Indenture, the Notes will be valid and binding obligations of the Company, enforceable against the Company in accordance with their terms.

(2) A sufficient number of authorized but unissued shares of common stock are available for issuance were the Notes converted today, and, assuming sufficient authorized but unissued shares of Common Stock are available for issuance when the Notes are converted, the Conversion Shares, when issued and delivered upon conversion of the Notes in accordance with the terms of the Notes and the Indenture, will be validly issued, fully paid and non-assessable.

The opinions set forth above are subject to the following additional qualifications:

(i) Our opinion set forth above as to enforceability is subject to and limited by the effect of any applicable bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and other similar laws of general application affecting the rights and remedies of creditors and to general principles of equity.

(ii) We express no opinion with respect to any provision of any of the Subject Documents relating to: (a) non-reliance, exculpation, disclaimer, limitation of liability, indemnification, contribution, waiver, limitation or exclusion of remedies; (b) liquidated damages, forfeitures, default interest, late charges, make-whole premiums, payment of attorneys' fees, collection upon acceleration of amounts that might be determined to constitute unearned interest thereon, or other economic remedies, in each case to the extent it constitutes a penalty or is prohibited by law; (c) concepts of materiality, reasonableness, good faith, fair dealing or unconscionability; (d) governing law (except for the enforceability of any provision choosing New York law as a Subject Document's governing law pursuant to the statutes referred to in paragraph (iii) below); (e) the waiver of the right to trial by jury or of usury, stay, extension and similar laws; (f) the validity, legally binding effect or enforceability of any provision in the

Subject Documents that requires or relates to adjustments to the conversion rate at a rate or in an amount that a court would determine in the circumstances under applicable law to be commercially unreasonable or a penalty or forfeiture; (g) rights or remedies not being exclusive, not preventing the concurrent assertion of any other right or remedy, being cumulative and exercisable in addition to any other right and remedy, or any delay or omission to exercise any right or remedy not impairing any right or remedy or not constituting a waiver thereof; (h) any obligation or agreement to use best efforts, reasonable best efforts or commercially reasonable efforts; (i) any requirement that a party take further action or enter into further agreements or instruments or provide further assurances; (j) any requirement that amendments or waivers be in writing insofar as they suggest that oral or other modifications, amendments or waivers could not be effectively agreed upon by the parties or that the doctrine of promissory estoppel might not apply; (k) service of process by any method not provided for under applicable statute or court rule; and (l) the severability of any provisions to the foregoing effect to the extent such provisions are unenforceable.

(iii) To the extent that any opinion set forth herein relates to the enforceability of the choice of New York law, selection of a New York forum or exclusive jurisdiction provisions in any of the Subject Documents, such opinion is rendered solely in reliance upon N.Y. Gen. Oblig. Law §§ 5-1401, 5-1402 (McKinney 2010) and N.Y. CPLR 327(b) (McKinney 2010) and is subject to the qualifications that such enforceability may be limited by public policy or other considerations of any jurisdiction, other than the State of New York, in which enforcement of such provisions, or of a judgment upon an agreement containing such provisions, is sought and by constitutional limitations.

We hereby consent to the inclusion of this opinion as Exhibit 5.2 to the Company's Current Report on Form-8-K, dated July 18, 2019, which is incorporated by reference into the Registration Statement and to the references to our firm under the caption "Legal Matters" in the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ GOODWIN PROCTER LLP

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Section 6: EX-99.1 (EX-99.1)

Exhibit 99.1



Source: Repligen Corporation

July 15, 2019 16:02 ET

Repligen Corporation Announces Proposed Public Offerings of \$100 million of Common Stock and \$250 million of Convertible Senior Notes

WALTHAM, Mass., July 15, 2019 (GLOBE NEWSWIRE) — Repligen Corporation (NASDAQ: RGEN) ("Repligen") today announced that it has commenced concurrent underwritten public offerings of \$100,000,000 in shares of its common stock (the "Shares") and \$250,000,000 aggregate principal amount of convertible senior notes due 2024 (the "Notes"). In addition, Repligen expects to grant the underwriters of the offering of Shares (the "Shares Offering") a 30-day option to purchase up to \$15,000,000 of additional Shares and the underwriters of the offering of Notes (the "Notes Offering") a 13-day option to purchase up to \$37,500,000 aggregate principal amount of additional Notes solely to cover over-allotments. The offerings are subject to market and other conditions, and there can be no assurance as to whether or when the offerings may be completed or as to the actual size or terms of the offerings. Neither offering is contingent on the completion of the other offering.

The Notes will be senior, unsecured obligations of Repligen, and interest will be payable semi-annually in arrears. The Notes will be convertible into cash, shares of Repligen's common stock or a combination thereof, at Repligen's election. The interest rate, conversion rate and other terms of the Notes are to be determined upon pricing of the Notes Offering.

Repligen intends to use the net proceeds from the offerings for working capital and other general corporate purposes, including up to approximately \$115,000,000 to finance the redemption, or a portion of the consideration due in connection with a conversion or exchange, of Repligen's existing 2.125% Convertible Senior Notes due 2021 (the "2016 Notes"). Net proceeds from the offerings may also be used to fund possible acquisitions of, or investments in, complementary businesses, products, services and technologies. Repligen has not entered into any agreements or commitments with respect to any acquisitions or investments at this time.

Contemporaneously with the pricing of the offerings, Repligen may enter into privately negotiated exchange transactions with certain holders of the 2016 Notes to exchange a portion of the 2016 Notes for a combination of cash in an amount equal to the principal amount exchanged and accrued and unpaid interest thereon and shares of Repligen's common stock in excess thereof. Furthermore, contemporaneously with the closing of the offerings, Repligen intends to issue a notice of redemption in respect of the remaining 2016 Notes, which Repligen expects would result in the conversion of all or

substantially all of the remaining 2016 Notes in accordance with their terms prior to the end of Repligen's third fiscal quarter of 2019. Repligen intends to settle conversions of the remaining 2016 Notes with cash in an amount equal to the principal amount thereof and shares of Repligen's common stock in excess thereof.

Repligen expects that holders of 2016 Notes that exchange their 2016 Notes in negotiated transactions with Repligen, if any, may enter into or unwind various derivatives with respect to Repligen's common stock (including entering into derivatives with an affiliate of one of the underwriters in the Notes Offering) and/or purchase or sell shares of Repligen's common stock in the market. In addition, Repligen expects that certain purchasers of the Notes may establish a short position with respect to Repligen's common stock by short selling Repligen's common stock or by entering into short derivative positions with respect to Repligen's common stock (including entering into derivatives with an affiliate of one of the underwriters).

in the Notes Offering), in each case, in connection with the Notes Offering. Any of the above market activities by holders of the 2016 Notes or purchasers of the Notes, as applicable, could increase (or reduce the size of any decrease in) or decrease (or reduce the size of any increase in) the market price of Repligen's common stock or the Notes at that time and Repligen cannot predict the magnitude of such market activity or the overall effect it will have on the price of the Notes or Repligen's common stock.

J.P. Morgan Securities LLC, Stephens Inc. and Janney Montgomery Scott are acting as joint book-running managers for the Shares Offering. J.P. Morgan Securities LLC is acting as the sole book-running manager for the Notes Offering.

The Shares Offering and the Notes Offering are being made pursuant to Repligen's shelf registration statement (including a base prospectus), a preliminary prospectus supplement related to the Shares Offering (together with such base prospectus, the "Shares Prospectus") and a preliminary prospectus supplement related to the Notes Offering (together with such base prospectus, the "Notes Prospectus"), all of which Repligen filed or will file with the Securities and Exchange Commission ("SEC"). Before investing in the Shares or the Notes, investors should read the Shares Prospectus and the Notes Prospectus, respectively, in each case, including the documents incorporated by reference therein, and any free writing prospectus related to the Shares Offering and the Notes Offering, as the case may be. These documents may be freely obtained by visiting EDGAR on the SEC website at www.sec.gov. Alternatively, copies may be obtained, when available, from J.P. Morgan Securities LLC, Attention: Broadridge Financial Solutions, 1155 Long Island Avenue, Edgewood, NY 11717, or by telephone at (866) 803-9204, or by email at prospectus-eq_fi@jpmchase.com, from Stephens Inc., Attention: Equity Syndicate Desk, 111 Center Street, Little Rock, AR 72201, or by telephone at (800) 643-9691, or by email at prospectus@stephens.com or from Janney Montgomery Scott, Attention: Equity Syndicate, 60 State Street, 35th Floor, Boston, MA 02109, or by telephone at (617) 557-2971, or by email at prospectus@janney.com.

This press release does not constitute an offer to sell or a solicitation of an offer to buy, nor shall there be any offer or sale of, the Shares or the Notes (or any shares of Repligen's common stock issuable upon conversion of the Notes) in any state or jurisdiction in which the offer, solicitation, or sale of the Shares or the Notes (or any shares of Repligen's common stock issuable upon conversion of the Notes) would be unlawful prior to the registration or qualification thereof under the securities laws of any such state or jurisdiction.

About Repligen Corporation

Repligen Corporation is a global bioprocessing company that develops and commercializes highly innovative products that deliver cost and process efficiencies to biological drug manufacturers worldwide. Repligen's corporate headquarters are in Waltham, MA (USA), with additional administrative and manufacturing operations in Marlborough, MA; Bridgewater, NJ; Rancho Dominguez, CA; Lund, Sweden; Breda, The Netherlands and Ravensburg, Germany.

Cautionary Language Concerning Forward-Looking Statements

This press release contains forward-looking statements regarding our future business expectations, which are subject to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Investors are cautioned that statements in this press release which are not strictly historical statements, constitute forward-looking statements, including, without limitation, statements regarding the size of the proposed offerings, completion of the proposed offerings, the anticipated use of proceeds of the proposed offerings, the market activities of certain holders of the 2016 Notes and the Notes and exchanges, conversions or redemptions of the 2016 Notes, constitute forward-looking statements identified by words like "believe," "expect," "may," "will," "should," "seek," "anticipate," or "could" and similar expressions. Such forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated, including, without limitation, uncertainties related to market conditions and the completion of the public offering on the anticipated terms or at all. These and other risks and uncertainties are described in greater detail in the section entitled "Risk Factors" in Repligen's most recent Annual Report on Form 10-K on file with the Securities and Exchange Commission and the other reports that Repligen periodically files with the Securities and Exchange Commission. Actual results may differ materially from those Repligen contemplated by these forward-looking statements. These forward-looking statements reflect management's current views and

Repligen does not undertake to update any of these forward-looking statements to reflect a change in its views or events or circumstances that occur after the date hereof except as required by law.

Source:
Repligen Corporation
Sondra Newman
Global Head of Investor Relations
(781) 419-1881
snewman@repligen.com
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Section 7: EX-99.2 (EX-99.2)

Exhibit 99.2



Source: Repligen Corporation

July 17, 2019 00:14 ET

Repligen Corporation Announces Pricing of Public Offerings of \$120 million of Common Stock and \$250 million of 0.375% Convertible Senior Notes due 2024

WALTHAM, Mass., July 17, 2019 (GLOBE NEWSWIRE) — Repligen Corporation (NASDAQ: RGEN) (“Repligen”) today announced the pricing of concurrent underwritten public offerings of 1,380,000 shares of its common stock (the “Shares”) at a public offering price of \$87.00 per share for gross proceeds, before deducting underwriting discounts and commissions and estimated offering expenses, of approximately \$120 million, and \$250 million aggregate principal amount of 0.375% Convertible Senior Notes due 2024 (the “Notes”). In addition, Repligen has granted the underwriters of the offering of Shares (the “Shares Offering”) a 30-day option to purchase up to an additional 207,000 Shares and the underwriters of the offering of Notes (the “Notes Offering”) a 13-day option to purchase up to \$37.5 million aggregate principal amount of additional Notes solely to cover over-allotments. The sale of the Shares to the underwriters in the Shares Offering is expected to settle on July 19, 2019, subject to customary closing conditions, and is expected to result in approximately \$113.6 million in net proceeds to Repligen after deducting underwriting discounts and commissions and other estimated offering expenses payable by Repligen (assuming no exercise of the underwriters’ option to purchase additional Shares). The sale of the Notes to the underwriters in the Notes Offering is expected to settle on July 19, 2019, subject to customary closing conditions, and is expected to result in approximately \$242.0 million in net proceeds to Repligen after deducting underwriting discounts and commissions and other estimated offering expenses payable by Repligen (assuming no exercise of the underwriters’ option to purchase additional Notes). Neither offering is contingent on the completion of the other offering.

The Notes will be senior, unsecured obligations of Repligen, and will bear interest at a rate of 0.375% per year. Interest will be payable semi-annually in arrears on January 15 and July 15 of each year, beginning on January 15, 2020. The Notes will mature on July 15, 2024, unless earlier repurchased or converted. The initial conversion rate for the Notes is 8.6749 shares of Repligen’s common stock per \$1,000 principal amount of Notes (which is equivalent to an initial conversion price of approximately \$115.28 per share, which represents a premium of approximately 32.5% over the public offering price of Repligen’s common stock in the concurrent Shares Offering of \$87.00 per share). Prior to the close of business on the business day immediately preceding April 15, 2024, the Notes will be convertible at the option of the holders of Notes only upon the satisfaction of specified conditions and during certain periods. Thereafter until the close of business on the second scheduled trading day preceding the maturity date, the Notes will be convertible at the option of the holders of Notes at any time regardless of these conditions. Conversions of the Notes will be settled in cash, shares of Repligen’s common stock or a combination thereof, at Repligen’s election.

The Notes are not redeemable by Repligen prior to maturity.

Holders of Notes may require Repligen to repurchase their Notes upon the occurrence of certain events that constitute a fundamental change under the indenture governing the Notes at a purchase price equal to 100% of the principal amount thereof, plus accrued and unpaid interest to, but excluding, the date of repurchase. In connection with certain corporate events, Repligen will, under certain circumstances, increase the conversion rate for holders of Notes who elect to convert their Notes in connection with such corporate event.

Repligen intends to use a portion of the net proceeds to exchange, with a limited number of holders in privately negotiated transactions, approximately \$92.0 million aggregate principal amount of its existing 2.125% Convertible Senior Notes due 2021 (the “2016 Notes”) for a combination of cash and shares of Repligen’s common stock to be completed concurrently with the closing of the Notes Offering (the “Note Exchanges”). Repligen expects to pay approximately \$92.3 million in cash, which includes accrued and unpaid interest, and issue approximately 1.85 million shares of common stock, to settle the Note Exchanges. Contemporaneously with the closing of the offerings, Repligen intends to issue a notice of redemption in respect of the remaining approximately \$23.0 million principal amount of 2016 Notes, which Repligen expects would result in the conversion of all or substantially all of the remaining 2016 Notes in accordance with their terms prior to the end of Repligen’s third fiscal quarter of 2019. Repligen intends to settle conversions of the remaining 2016 Notes with cash in an amount equal to the principal amount thereof and shares of Repligen’s common stock in excess thereof.

In connection with the Notes Exchanges, the holders of 2016 Notes that exchange their 2016 Notes may enter into or unwind various derivatives with respect to Repligen’s common stock (including entering into derivatives with an affiliate of one of the underwriters in the Notes Offering) and/or purchase or sell shares of Repligen’s common stock in the market. In addition, Repligen expects that certain purchasers of the Notes may establish a short position with respect to Repligen’s common stock by short selling Repligen’s common stock or by entering into short derivative positions with respect to Repligen’s common stock (including entering into derivatives with an affiliate of one of the underwriters in the Notes Offering), in each case, in connection with the Notes Offering. Any of the above market activities by holders of the 2016 Notes or purchasers of the Notes, as applicable, could increase (or reduce the size of any decrease in) or decrease (or reduce the size of any increase in) the market price of Repligen’s common stock or the Notes at that time and Repligen cannot predict the magnitude of such market activity or the overall effect it will have on the price of the Notes or Repligen’s common stock.

Repligen intends to use the remainder of the net proceeds from the offerings for working capital and other general corporate purposes, including to fund possible acquisitions of, or investments in, complementary businesses, products, services and technologies. Repligen has not entered into any agreements or commitments with respect to any acquisitions or investments at this time.

J.P. Morgan Securities LLC, Stephens Inc. and Janney Montgomery Scott are acting as joint book-running managers for the Shares Offering. Craig-Hallum Capital Group and First Analysis Securities Corp. are acting as co-managers for the Shares Offering. J.P. Morgan Securities LLC is acting as the sole book-running manager for the Notes Offering. Stephens Inc., Janney Montgomery Scott and Stifel are acting as co-managers for the Notes Offering.

The Shares Offering and the Notes Offering are being made pursuant to Repligen’s shelf registration statement (including a base prospectus), a preliminary prospectus supplement related to the Shares Offering (together with such base prospectus, the “Shares Prospectus”) and a preliminary prospectus supplement related to the Notes Offering (together with such base prospectus, the “Notes Prospectus”), all of which Repligen filed with the Securities and Exchange Commission (“SEC”). Repligen intends to file final prospectus supplements related to the Shares Offering and the Notes Offering with the SEC. Before investing in the Shares or the Notes, investors should read the Shares Prospectus and the Notes Prospectus, respectively, in each case, including the documents incorporated by reference therein, and any free writing prospectus related to the Shares Offering and the Notes Offering, as the case may be. These documents may be freely obtained by visiting EDGAR on the SEC website at www.sec.gov. Alternatively, copies may be obtained, when available, from J.P. Morgan Securities LLC, Attention: Broadridge Financial Solutions, 1155 Long Island Avenue, Edgewood, NY 11717, or by telephone at (866) 803-9204, or by email at prospectus-efi@jpmchase.com, from Stephens Inc., Attention: Equity Syndicate Desk, 111 Center Street, Little Rock, AR 72201, or by telephone at (800) 643-9691, or by email at prospectus@stephens.com or from Janney Montgomery Scott, Attention: Equity Syndicate, 60 State Street, 35th Floor, Boston, MA 02109, or by telephone at (617) 557-2971, or by email at prospectus@janney.com.

This press release does not constitute an offer to sell or a solicitation of an offer to buy, nor shall there be any offer or sale of, the Shares or the Notes (or any shares of Repligen’s common stock issuable upon conversion of the Notes) in any state or jurisdiction in which the offer, solicitation, or sale of the Shares or the Notes (or any shares of Repligen’s common stock issuable upon conversion of the Notes) would be unlawful prior to the registration or qualification thereof under the securities laws of any such state or jurisdiction.

About Repligen Corporation

Repligen Corporation is a global bioprocessing company that develops and commercializes highly innovative products that deliver cost and process efficiencies to biological drug manufacturers worldwide. Repligen's corporate headquarters are in Waltham, MA (USA), with additional administrative and manufacturing operations in Marlborough, MA; Bridgewater, NJ; Rancho Dominguez, CA; Lund, Sweden; Breda, The Netherlands and Ravensburg, Germany.

Cautionary Language Concerning Forward-Looking Statements

This press release contains forward-looking statements regarding our future business expectations, which are subject to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Investors are cautioned that statements in this press release which are not strictly historical statements, constitute forward-looking statements, including, without limitation, statements regarding the completion of the proposed offerings, the anticipated use of proceeds of the proposed offerings, the market activities of certain holders of the 2016 Notes and the Notes and exchanges, conversions or redemptions of the 2016 Notes, constitute forward-looking statements identified by words like "believe," "expect," "may," "will," "should," "seek," "anticipate," or "could" and similar expressions. Such forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated, including, without limitation, uncertainties related to market conditions and the completion of the public offering on the anticipated terms or at all. These and other risks and uncertainties are described in greater detail in the section entitled "Risk Factors" in Repligen's most recent Annual Report on Form 10-K on file with the Securities and Exchange Commission and the other reports that Repligen periodically files with the Securities and Exchange Commission. Actual results may differ materially from those Repligen contemplated by these forward-looking statements. These forward-looking statements reflect management's current views and Repligen does not undertake to update any of these forward-looking statements to reflect a change in its views or events or circumstances that occur after the date hereof except as required by law.

Source:

Repligen Corporation
Sondra Newman
Global Head of Investor Relations
(781) 419-1881
snewman@repligen.com

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