

**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): October 31, 2023**

**Apellis Pharmaceuticals, Inc.**

(Exact Name of Registrant as Specified in its Charter)

**Delaware**  
(State or Other Jurisdiction  
of Incorporation)

**001-38276**  
(Commission  
File Number)

**27-1537290**  
(IRS Employer  
Identification No.)

**100 Fifth Avenue**  
**Waltham, MA**  
(Address of Principal Executive Offices)

**02451**  
(Zip Code)

**Registrant's telephone number, including area code: (617) 977-5700**

**Not applicable**  
(Former Name or Former Address, if Changed Since Last Report)

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	APLS	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.**

On November 1, 2023, Apellis Pharmaceuticals, Inc., a Delaware corporation (the “Company”), entered into a Sales Agreement (the “Agreement”) with Cowen and Company, LLC, as agent (“Cowen”), pursuant to which the Company may offer and sell shares of its common stock, \$0.0001 par value per share (the “Shares”), from time to time through Cowen (the “Offering”). The Company has also filed a prospectus supplement with the Securities and Exchange Commission (the “SEC”) in connection with the Offering (the “Prospectus Supplement”) under the Company’s existing automatic shelf Registration Statement on Form S-3 (File No. 333-269899), which became effective on February 22, 2023 (the “Registration Statement”). Pursuant to the Prospectus Supplement, the Company may offer and sell Shares having an aggregate offering price of up to \$300.0 million.

Upon delivery of a placement notice and subject to the terms and conditions of the Agreement, Cowen may sell the Shares at market prices by any method deemed to be an “at the market offering” as defined in Rule 415(a)(4) promulgated under the Securities Act of 1933, as amended (the “Securities Act”), including sales made directly on or through The Nasdaq Global Select Market (“Nasdaq”), the existing trading market for the Company’s common stock.

The Company or Cowen may suspend or terminate the offering of Shares upon notice to the other party, subject to certain conditions. Cowen will act as sales agent on a commercially reasonable efforts basis consistent with its normal trading and sales practices and applicable state and federal law, rules and regulations and the rules of Nasdaq.

The Company has agreed to pay Cowen commissions for its services of acting as agent of up to 3.0% of the gross proceeds from the sale of the Shares pursuant to the Agreement. The Company has also agreed to provide Cowen with customary indemnification and contribution rights.

A copy of the Agreement is attached as Exhibit 1.1 hereto and is incorporated herein by reference. The foregoing description of the material terms of the Agreement is qualified in its entirety by reference to such exhibit.

Wilmer Cutler Pickering Hale and Dorr LLP, counsel to the Company, has issued a legal opinion relating to the Shares. A copy of such legal opinion, including the consent included therein, is attached as Exhibit 5.1 hereto.

The Shares will be sold pursuant to the Registration Statement, and offerings of the Shares will be made only by means of the Prospectus Supplement. This Current Report on Form 8-K shall not constitute an offer to sell or solicitation of an offer to buy the Shares, nor shall there be any sale of the Shares in any state in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities law of such state or jurisdiction.

**Item 1.02 Termination of a Material Definitive Agreement.**

In connection with the entry into the Agreement, on October 31, 2023, the Company terminated its prior Open Market Sale Agreement<sup>SM</sup>, dated as of January 20, 2022 (the “Prior Agreement”), by and between the Company and Jefferies LLC (“Jefferies”), in accordance with its terms. The Prior Agreement provided for Jefferies to sell shares of common stock having an aggregate offering price of up to \$300.0 million by any method deemed to be an “at the market offering” as defined in Rule 415(a)(4) promulgated under the Securities Act. No sales of common stock were made under the Prior Agreement. The Company cannot make any further sales of its common stock pursuant to the Prior Agreement.

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**Item 9.01 Financial Statements and Exhibits.****(d) Exhibits**

<b>Exhibit No.</b>	<b>Description</b>
1.1	<a href="#"><u>Sales Agreement, dated as of November 1, 2023, by and between Apellis Pharmaceuticals, Inc. and Cowen and Company, LLC.</u></a>
5.1	<a href="#"><u>Opinion of Wilmer Cutler Pickering Hale and Dorr LLP, dated November 1, 2023.</u></a>
23.1	<a href="#"><u>Consent of Wilmer Cutler Pickering Hale and Dorr LLP (contained in Exhibit 5.1 above).</u></a>
104	Cover Page Interactive Data File (embedded within the Inline XBRL document).

**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.

**Apellis Pharmaceuticals, Inc.**

Date: November 1, 2023

By: /s/ Timothy Sullivan

Timothy Sullivan

Chief Financial Officer

## SALES AGREEMENT

November 1, 2023

COWEN AND COMPANY, LLC  
599 Lexington Avenue  
New York, New York 10022

Ladies and Gentlemen:

Apellis Pharmaceuticals, Inc., a Delaware corporation (the "Company"), confirms its agreement (this "Agreement") with Cowen and Company, LLC (the "Manager") as follows:

1. Description of Shares. The Company proposes to issue and sell through or to the Manager, as sales agent and/or principal, common stock, \$0.0001 par value per share ("Common Stock") and the shares of Common Stock issued or issuable pursuant to this Agreement, the "Shares", from time to time during the term of this Agreement and on the terms set forth in Section 3 of this Agreement. For purposes of selling the Shares through the Manager, the Company hereby appoints the Manager as exclusive agent of the Company for the purpose of selling the Shares pursuant to this Agreement, and the Manager agrees to use its reasonable efforts to sell the Shares on the terms and subject to the conditions stated herein. The Company agrees that whenever it determines to sell the Shares directly to the Manager as principal, it will enter into a separate agreement (each, a "Terms Agreement") in substantially the form of Annex I hereto, relating to such sale in accordance with Section 3 of this Agreement. Certain terms used herein are defined in Section 19 hereof.

2. Representations and Warranties. The Company represents and warrants to, and agrees with, the Manager at the Execution Time and on each such time the following representations, warranties and agreements are repeated or deemed to be made pursuant to this Agreement unless such representation, warranty or agreement specifies otherwise.

(a) The Company meets the requirements for use of Form S-3 under the Securities Act and has prepared and filed with the Commission an automatic shelf registration statement, as defined in Rule 405 on Form S-3, including a base prospectus, relating to certain securities, including the Common Stock, to be issued from time to time by the Company, as well as a prospectus included as part of the Registration Statement or a prospectus supplement to the base prospectus specifically relating to the sale of the Shares (the "Prospectus"). The Prospectus will contain or contains all information required by the Securities Act and the rules thereunder, and, except to the extent the Manager shall agree in writing to a modification, shall be in all substantive respects in the form furnished to the Manager prior to the Execution Time or prior to any such time this representation is repeated or deemed to be made. The Registration Statement, at the Effective Date will meet, and at each such time this representation is repeated or deemed to be made, and at all times during which a prospectus is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 or any similar rule) in connection with any offer or sale of Shares, meets the requirements set forth in Rule 415(a)(1)(x). The initial Effective Date of the Registration Statement was not earlier

than the date three years before the Execution Time. Any reference herein to the Registration Statement or the Prospectus shall be deemed to refer to and include the documents incorporated by reference therein pursuant to Item 12 of Form S-3 which were filed under the Exchange Act on or before the Effective Date of the Registration Statement or the issue date of the Prospectus, as the case may be; and any reference herein to the terms “amend,” “amendment” or “supplement” with respect to the Registration Statement or the Prospectus shall be deemed to refer to and include the filing of any document under the Exchange Act after the Effective Date of the Registration Statement or the issue date of the Prospectus, as the case may be, deemed to be incorporated therein by reference.

(b) To the extent that the Registration Statement is not available for the sales of the Shares as contemplated by this Agreement or the Company is not a “well-known seasoned issuer” as defined in Rule 405 at the most recent “determination date” as defined in Rule 405, the Company shall, prior to requesting the sale of Shares pursuant to this Agreement, file a new registration statement or a post-effective amendment to the Registration Statement with respect to any additional shares of Common Stock necessary to complete such sales of the Shares and shall cause such registration statement to become effective as promptly as practicable. After the effectiveness of any such registration statement, all references to “Registration Statement” included in this Agreement shall be deemed to include such new registration statement, including all documents incorporated by reference therein pursuant to Item 12 of Form S-3, and all references to “Prospectus” included in this Agreement shall be deemed to include the final form of prospectus, including all documents incorporated therein by reference, included in any such registration statement at the time such registration statement or post-effective amendment became effective.

(c) On each Effective Date, at each Applicable Time and at all times during which a prospectus is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 or any similar rule) in connection with any offer or sale of Shares, the Registration Statement complied and will comply in all material respects with the applicable requirements of the Securities Act and the Exchange Act and the respective rules thereunder and did not and will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading; and on the date of any filing of the Prospectus pursuant to the rules and regulations of the Securities Act, at each Applicable Time and at all times during which a prospectus is required by the Securities Act to be delivered (whether physically or through compliance with Rule 172 or any similar rule) in connection with any offer or sale of Shares, the Prospectus (together with any supplement thereto) complied and will comply in all material respects with the applicable requirements of the Securities Act and the Exchange Act and the respective rules thereunder and did not and will not include 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; provided, however, that the Company makes no representations or warranties as to the information contained in or omitted from the Registration Statement or the Prospectus (or any supplement thereto) in reliance upon and in conformity with information furnished in writing to the Company by the Manager specifically for inclusion in the Registration Statement or the Prospectus (or any supplement thereto).

(d) At the Effective Date and at each Applicable Time, the Disclosure Package did not and will not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The preceding sentence does not apply to statements in or omissions from the Disclosure Package based upon and in conformity with written information furnished to the Company by the Manager specifically for use therein.

(e) (i) At the time of filing the Registration Statement, (ii) at the time of the most recent amendment thereto for the purposes of complying with Section 10(a)(3) of the Securities Act (whether such amendment was by post-effective amendment, incorporated report filed pursuant to Sections 13 or 15(d) of the Exchange Act or form of prospectus), (iii) at the time the Company or any person acting on its behalf (within the meaning, for this clause only, of Rule 163(c)) made any offer relating to the Shares in reliance on the exemption in Rule 163, and (iv) at the Execution Time, the Company was or is (as the case may be) a “well-known seasoned issuer” as defined in Rule 405.

(f) (i) At the earliest time after the filing of the Registration Statement that the Company or another offering participant made a bona fide offer (within the meaning of Rule 164(h)(2)) of the Shares and (ii) as of the Execution Time and the Effective Date and on each such time this representation is repeated or deemed to be made (with such date being used as the determination date for purposes of this clause (ii)), the Company was not and is not an Ineligible Issuer (as defined in Rule 405), without taking account of any determination by the Commission pursuant to Rule 405 that it is not necessary that the Company be considered an Ineligible Issuer.

(g) Each Issuer Free Writing Prospectus, if any, does not include any information that conflicts with the information contained in the Registration Statement, including any document incorporated therein by reference and any prospectus supplement deemed to be a part thereof that has not been superseded or modified. The foregoing sentence does not apply to statements in or omissions from any Issuer Free Writing Prospectus based upon and in conformity with written information furnished to the Company by the Manager specifically for use therein.

(h) The Registration Statement is not the subject of a pending proceeding or examination under Section 8(d) or 8(e) of the Securities Act, and the Company is not the subject of a pending proceeding under Section 8A of the Securities Act in connection with the offering of the Shares.

(i) The Common Stock is an “actively-traded security” exempted from the requirements of Rule 101 of Regulation M under the Exchange Act by subsection (c)(1) of such rule.

(j) The Company has not entered into any other sales agency agreements or other similar arrangements with any agent or any other representative in respect of at the market offerings of the Shares in accordance with Rule 415(a)(4) of the Securities Act.

(k) The Company has not taken and will not take, directly or indirectly, any action designed to or that might be reasonably expected to cause or result in stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares.

(l) 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.

(m) The Company is subject to and in compliance with the reporting requirements of Section 13 or Section 15(d) of the Exchange Act. The documents incorporated or deemed to be incorporated by reference in the Prospectus, at the time they were or hereafter are filed with the Commission, and any Issuer Free Writing Prospectus or amendment or supplement thereto complied and will comply in all material respects with the requirements of the Exchange Act, and, when read together with the other information in the Prospectus, at the time the Registration Statement and any amendments thereto become effective and at each Applicable Time, as the case may be, will not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(n) The interactive data in the eXtensible Business Reporting Language ("XBRL") incorporated by reference into the Registration Statement and the Prospectus 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.

(o) The 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 nonassessable, and the issuance and sale of the Shares is not subject to any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase the Shares except as set forth in the Disclosure Package and the Prospectus.

(p) Each of the Company and its subsidiaries (for purposes of this Agreement, as defined in Rule 405 under the Securities Act) (i) has been duly incorporated and is validly existing as a corporation in good standing (where such concept exists) under the laws of the jurisdiction in which it is chartered or organized with full corporate power and authority to own or lease, as the case may be, and to operate its properties and conduct its business as described in the Disclosure Package and the Prospectus, and (ii) is duly qualified to do business as a foreign corporation and is in good standing under the laws of each jurisdiction which requires such qualification, except where the failure to be so qualified or in good standing would not reasonably be expected, individually or in the aggregate, to have a material adverse effect on the condition (financial or otherwise), prospects, earnings, business or properties of the Company and its subsidiaries, taken as a whole, whether or not arising from transactions in the ordinary course of business (a "Material Adverse Effect").



(q) The Company's issued share capital conforms to the description thereof contained in the Disclosure Package and the Prospectus; and, except as set forth in the Disclosure Package and the Prospectus, no options, warrants or other rights to purchase, agreements or other obligations to issue, or rights to convert any obligations into or exchange any securities for shares or ownership interests in the Company are outstanding.

(r) All the outstanding shares of capital stock of each subsidiary have been duly and validly authorized and issued and are fully paid and nonassessable, and, except as otherwise set forth in the Disclosure Package and the Prospectus, all outstanding shares of capital stock of the subsidiaries are owned by the Company either directly or through wholly owned subsidiaries free and clear of any perfected security interest or any other security interests, claims, liens or encumbrances.

(s) There is no franchise, contract or other document of a character required to be described in the Registration Statement or Prospectus, or to be filed as an exhibit thereto, which is not described or filed as required; and the statements in the Prospectus under the heading "Description of Capital Stock", insofar as such statements summarize legal matters, agreements, documents or proceedings discussed therein, are accurate and fair summaries of such legal matters, agreements, documents or proceedings.

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

(u) The Company is not, and, after giving effect to the offering and sale of the Shares and the application of the proceeds thereof as described in the Disclosure Package and the Prospectus, will not be an "investment company" as defined in the Investment Company Act of 1940, as amended (the "Investment Company Act").

(v) No consent, approval, authorization, filing with or order of any court or governmental agency or body is required in connection with the transactions contemplated herein, except such as have been obtained or as may be required under the Securities Act, the Exchange Act, the listing rules of the Nasdaq Global Select Market, applicable Financial Industry Regulatory Authority, Inc. ("FINRA") rules and the blue sky laws of any jurisdiction in connection with the purchase and distribution of the Shares by the Manager in the manner contemplated herein and in the Disclosure Package and the Prospectus.

(w) Neither the issue and sale of the Shares nor the consummation of any other of the transactions contemplated herein nor the fulfillment of the terms hereof will conflict with, result in a breach or violation of, or imposition of any lien, charge or encumbrance upon any property or assets of the Company or any of its subsidiaries pursuant to, (i) the charter or by-laws of the Company or any of its subsidiaries, (ii) the terms of any indenture, contract, lease, mortgage, deed of trust, note agreement, loan agreement or other agreement, obligation, condition, covenant or instrument to which the Company or any of its subsidiaries is a party or bound or to which its or their property is subject, or (iii) any statute, law, rule, regulation, judgment, order or decree applicable to the Company or any of its subsidiaries of any court, regulatory body, administrative agency, governmental body, arbitrator or other authority having jurisdiction over the Company or any of its subsidiaries or any of its or their properties, except in the case of clauses (ii) and (iii) as would not have a Material Adverse Effect or an adverse effect on the consummation of the transactions contemplated hereby.

(x) No holders of securities of the Company have rights to the registration of such securities under the Registration Statement except for such rights that have been waived in writing.

(y) The consolidated historical financial statements and schedules of the Company and its consolidated subsidiaries included in the Disclosure Package and the Prospectus present fairly in all material respects the financial condition, results of operations and cash flows of the Company as of the dates and for the periods indicated, comply as to form in all material respects with the applicable accounting requirements of the Securities Act and have been prepared in conformity with generally accepted accounting principles in the United States applied on a consistent basis throughout the periods involved (except as otherwise noted in the related notes thereto). The financial data included in the Company's most recently filed annual report on Form 10-K derived from the audited financial statements included therein incorporated by reference into the Registration Statement, fairly present in all material respects, on the basis stated in the Disclosure Package and the Prospectus, the information included therein.

(z) There is 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 or its or their property is pending or, to the best knowledge of the Company, threatened that (i) could reasonably be expected to have a material adverse effect on the performance of this Agreement or the consummation of any of the transactions contemplated herein or (ii) could reasonably be expected to have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(aa) Each of the Company and each of its subsidiaries owns or leases all such properties as are necessary to the conduct of its operations as presently conducted in all material respects.

(bb) Neither the Company nor any subsidiary of the Company is in violation or default of (i) any provision of its charter or bylaws, (ii) the terms of any indenture, contract, lease, mortgage, deed of trust, note agreement, loan agreement or other agreement, obligation, condition, covenant or instrument to which it is a party or bound or to which its property is subject, or (iii) any statute, law, rule, regulation, judgment, order or decree of any court, regulatory body, administrative agency, governmental body, arbitrator or other authority having jurisdiction over the Company or such subsidiary or any of its properties, as applicable, except in the case of clauses (ii) and (iii), for such violation or default as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(cc) Deloitte & Touche LLP, which has audited certain financial statements of the Company and its consolidated subsidiaries and delivered their report with respect to certain audited consolidated financial statements and schedules included or incorporated by reference in the Disclosure Package and the Prospectus, are independent public accountants with respect to the Company within the meaning of the Securities Act and the applicable published rules and regulations thereunder.

(dd) There are no transfer taxes or other similar fees or charges under U.S. federal law or the laws of any state, or any political subdivision thereof, required to be paid in connection with the execution and delivery of this Agreement or the issuance by the Company or sale by the Company of the Shares.

(ee) The Company has filed all applicable tax returns that are required to be filed or has requested extensions thereof, except in any case in which the failure to so file would not have a Material Adverse Effect (except as set forth in or contemplated in the Disclosure Package and the Prospectus) and has paid all taxes required to be paid by it and any other assessment, fine or penalty levied against it, to the extent that any of the foregoing is due and payable, except for any such assessment, fine or penalty that is currently being contested in good faith or as would not have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(ff) No labor problem or dispute with the employees of the Company or any of its subsidiaries exists or, to the Company's knowledge, is threatened or imminent, and the Company is not aware of any existing or imminent labor disturbance by the employees of any of its or its subsidiaries' principal suppliers, contractors or customers, except as would not have a Material Adverse Effect, and except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(gg) The Company and each of its subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as the Company reasonably believes are prudent and customary in the businesses in which they are engaged; all policies of insurance and fidelity or surety bonds insuring the Company or any of its subsidiaries or their respective businesses, assets, employees, officers and directors are in full force and effect; the Company and its subsidiaries are in compliance with the terms of such policies and instruments in all material respects; there are no claims by the Company or any of its subsidiaries under any such policy or instrument as to which any insurance company is denying liability or defending under a reservation of rights clause; neither the Company nor any such subsidiary has been refused any insurance coverage sought or applied for; and neither the Company nor any such subsidiary has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(hh) No subsidiary of the Company is currently prohibited, directly or indirectly, from paying any dividends to the Company, from making any other distribution on such subsidiary's capital stock, from repaying to the Company any loans or advances to such subsidiary from the Company or from transferring any of such subsidiary's property or assets to the Company or any other subsidiary of the Company, except as described in or contemplated by the Registration Statement and the Prospectus.

(ii) The Company and its subsidiaries possess all licenses, certificates, permits and other authorizations issued by all applicable authorities necessary to conduct their respective businesses, except for the lack of which would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect, and neither the Company nor any such subsidiary has received any notice of proceedings relating to the revocation or modification of any such certificate, authorization or permit which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, would have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(jj) The Company and each of its subsidiaries 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 authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles in the United States and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management's general or specific authorization; (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences; and (v) the interactive data in XBRL included or incorporated by reference in the Registration Statement and the Prospectus is in compliance with the Commission's published rules, regulations and guidelines applicable thereto. The Company's and its subsidiaries' internal controls over financial reporting are effective and the Company and its subsidiaries are not aware of any material weakness in their internal control over financial reporting.

(kk) The Company and its subsidiaries maintain "disclosure controls and procedures" (as such term is defined in Rule 13a-15(e) under the Exchange Act); such disclosure controls and procedures are effective.

(ll) Except as would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect, the Company and its subsidiaries (i) are in compliance with any and all applicable laws and regulations relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants (collectively, the "Environmental Laws"), (ii) have received and are in compliance with all permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses and (iii) have not received notice of any actual or potential liability under any Environmental Law, except as set forth in or contemplated in the Disclosure Package and the Prospectus. Except as set forth in the Disclosure Package and the Prospectus, neither the Company nor any of its subsidiaries has been named as a "potentially responsible party" under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.

(mm) None of the following events has occurred or exists: (i) a failure to fulfill the obligations, if any, under the minimum funding standards of Section 302 of the United States Employee Retirement Income Security Act of 1974, as amended (“ERISA”), and the regulations and published interpretations thereunder with respect to a Plan that is required to be funded, determined without regard to any waiver of such obligations or extension of any amortization period that would reasonably be expected to have a Material Adverse Effect; (ii) an audit or investigation by the Internal Revenue Service, the U.S. Department of Labor, the Pension Benefit Guaranty Corporation or any other U.S. federal or state governmental agency or any foreign regulatory agency with respect to the employment or compensation of employees by the Company or any of its subsidiaries that would reasonably be expected to have a Material Adverse Effect; (iii) any breach of any contractual obligation, or any violation of law or applicable qualification standards, with respect to the employment or compensation of employees by the Company or any of its subsidiaries that would reasonably be expected to have a Material Adverse Effect. None of the following events has occurred or is reasonably likely to occur: (i) a material increase in the aggregate amount of contributions required to be made to all Plans in the current fiscal year of the Company and its subsidiaries compared to the amount of such contributions made in the most recently completed fiscal year of the Company and its subsidiaries; (ii) a material increase in the “accumulated post-retirement benefit obligations” (within the meaning of Statement of Financial Accounting Standards 106) of the Company and its subsidiaries compared to the amount of such obligations in the most recently completed fiscal year of the Company and its subsidiaries; (iii) any event or condition giving rise to a liability under Title IV of ERISA that would reasonably be expected to have a Material Adverse Effect; or (iv) the filing of a claim by one or more employees or former employees of the Company or any of its subsidiaries related to their employment that would reasonably be expected to have a Material Adverse Effect. For purposes of this paragraph, the term “Plan” means a plan (within the meaning of Section 3(3) of ERISA) subject to Title IV of ERISA with respect to which the Company or any of its subsidiaries may have any liability.

(nn) There is and has been no failure on the part of the Company and 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, including Section 402 relating to loans and Sections 302 and 906 relating to certifications, as applicable.

(oo) Neither the Company nor any of its subsidiaries nor, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company or other person acting on behalf of the Company or any of its subsidiaries is aware of or has (i) taken any action, directly or indirectly, that would result in a violation or a sanction for violation by such persons of the U.S. Foreign Corrupt Practices Act of 1977 or the U.K.

Bribery Act 2010, each as may be amended, or any similar law of any other relevant jurisdiction, or the rules or regulations thereunder (collectively, “Anti-Corruption Laws”); (ii) promised, offered, provided, attempted to provide, or authorized the provision of money or anything of value, directly or indirectly, to any person for the purpose of obtaining or retaining business, influencing any act or decision of the recipient, or securing any improper advantage; or (iii) made, offered, agreed, or requested any unlawful bribe or 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 and maintain policies and procedures designed to ensure compliance with Anti-Corruption Laws. No part of the proceeds of the offering will be used, directly or indirectly, in violation of Anti-Corruption Laws.

(pp) 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 and the money laundering statutes and the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the “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 Money Laundering Laws is pending or, to the knowledge of the Company, threatened.

(qq) Neither the Company nor any of its subsidiaries nor, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company or any of its subsidiaries (i) is, or is controlled or 50% or more owned in the aggregate by or is acting on behalf of, one or more individuals or entities that are currently the subject of any sanctions administered or enforced by the United States (including any administered or enforced by the Office of Foreign Assets Control of the U.S. Department of the Treasury, the U.S. Department of State or the Bureau of Industry and Security of the U.S. Department of Commerce), the United Nations Security Council, the European Union, a member state of the European Union (including sanctions administered or enforced by His Majesty’s Treasury of the United Kingdom) or other relevant sanctions authority (collectively, “Sanctions” and such persons, “Sanctioned Persons” and each such person, a “Sanctioned Person”), (ii) is located, organized or resident in a country or territory that is the subject or target of Sanctions, including without limitation, the Crimea Region and the non-government controlled areas of the Zaporizhzhia and Kherson Regions of Ukraine, the so-called Donetsk People’s Republic, the so-called Luhansk People’s Republic, Cuba, Iran, North Korea and Syria (collectively, “Sanctioned Countries” and each, a “Sanctioned Country”) nor (iii) will, directly or indirectly, use the proceeds of this offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other individual or entity, to fund or facilitate any activities of or business with a Sanctioned Person, Sanctioned Country or any entity, that, at the time of such facilitation or funding, is the subject of Sanctions, or in any other manner that could result in a violation of any Sanctions by, or could result in the imposition of Sanctions against, any individual or entity (including any individual or entity participating in the offering, whether as underwriter, advisor, investor or otherwise).

(rr) Neither the Company nor any of its subsidiaries has engaged in any dealings or transactions with or for the benefit of a Sanctioned Person, or with or in a Sanctioned Country, in the preceding three years, nor does the Company or any of its subsidiaries have any plans to engage in dealings or transactions with or for the benefit of a Sanctioned Person, or with or in a Sanctioned Country.

(ss) 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 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 maintained 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.

(tt) The subsidiaries listed on Exhibit 21.1, as incorporated by reference into the Company's most recent Annual Report on Form 10-K, are the only significant subsidiaries of the Company as defined by Rule 1-02 of Regulation S-X.

(uu) Except as described in the Disclosure Package and the Prospectus, the Company and its subsidiaries own, possess, license or have other rights to use all patents, patent applications, trade and service marks, trade and service mark registrations, trade names, copyrights, licenses, inventions, trade secrets, technology, know-how and other intellectual property (collectively, the "Intellectual Property") necessary for the conduct of the Company's business in all material respects as now conducted or as proposed in the Disclosure Package and the Prospectus to be conducted. Except as set forth in the Disclosure Package and the Prospectus, (a) there are no rights of third parties to any such Intellectual Property, including no liens, security interests, or other encumbrances; (b) to the Company's knowledge, there is no infringement by third parties of any such Intellectual Property having or expected to have a Material Adverse Effect on Company's ability to conduct its business, as presently conducted or as proposed in the Disclosure Package and the Prospectus to be conducted; (c) there is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others challenging the Company's rights in or to any such Intellectual Property, and, except as would not reasonably be expected to have a Material Adverse Effect, the Company is aware of no

factual basis for any such claim; (d) such Intellectual Property has not been adjudged by a court of competent jurisdiction invalid or unenforceable, in whole or in part; (e) there is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others challenging the validity or scope of any such Intellectual Property, including interferences, oppositions, reexaminations, or government proceedings, and, except as would not reasonably be expected to have a Material Adverse Effect, the Company is aware of no factual basis for any such claim; (f) there is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others that (i) the Company infringes, misappropriates, or otherwise violates any patent, trademark, copyright, trade secret or other proprietary rights of others or (ii) the Company would, upon the commercialization of any product or service set forth in the Disclosure Package and the Prospectus, infringe, misappropriate, or otherwise violate any patent, trademark, copyright, trade secret or other proprietary rights of others and, except as would not reasonably be expected to have a Material Adverse Effect, the Company is aware of no factual basis for any such claim; (g) to the Company's knowledge, no employee of the Company is in or has been in violation of any term of any employment contract, patent disclosure agreement, invention assignment agreement, non-competition agreement, non-solicitation agreement, nondisclosure agreement or any restrictive covenant to or with a former employer where the basis of such violation relates to such employee's employment with the Company or actions undertaken by the employee in his or her capacity as an employee with the Company; (h) to the Company's knowledge, there is no patent or published patent application in the U.S. or other jurisdiction which contains valid claims that dominate any Intellectual Property described in the Disclosure Package and the Prospectus as being owned by or licensed to the Company or that would form the basis for an interference with the issued or pending claims of any such Intellectual Property; (i) the Company is not aware of any prior art that may render any patent held by the Company invalid or any patent application held by the Company unpatentable; and (j) the Company has complied with United State Patent and Trademark Office regulations in regard to the duty of good faith and candor pursuant to U.S. patent law (including 37 C.F.R. 1.56) and counterparts in other jurisdictions. The Company has complied in all material respects with all license agreements to which it is a party relating to the Intellectual Property and has not received any asserted or threatened claim of material breach of any of the same.

(vv) Since the date of the most recent financial statements of the Company included or incorporated by reference in the Disclosure Package and the Prospectus, (i) there has not been any change in the capital stock (other than the issuance of the Shares under this Agreement, shares of Common Stock upon the conversion of securities outstanding at the Execution Time, shares of Common Stock upon exercise of stock options and the grant of options and awards under existing equity incentive plans described in the Disclosure Package and the Prospectus or in accordance with Nasdaq Stock Market Rule 5635(c)(4)), short-term debt or long-term debt of the Company or any of its subsidiaries, or any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock or any material adverse change, or any development involving a prospective material adverse change, in or affecting the condition (financial or otherwise), prospects, earnings, business, management or properties of the Company and its subsidiaries, taken as a whole, other



than, in each case, as described in the Disclosure Package and the Prospectus; (ii) neither the Company nor any of its subsidiaries has entered into any transaction or agreement (whether or not in the ordinary course of business) that is material to the Company and its subsidiaries taken as a whole or incurred any liability or obligation, direct or contingent, that is material to the Company and its subsidiaries taken as a whole, other than, in each case, as described in the Disclosure Package and the Prospectus; and (iii) neither the Company nor any of its subsidiaries has sustained any loss or interference with its business that is material to the Company and its subsidiaries taken as a whole and that is either from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor disturbance or dispute or any action, order or decree of any court or arbitrator or governmental or regulatory authority, except in each case as otherwise disclosed in the Disclosure Package and the Prospectus.

(ww) All of the information provided to the Manager or to counsel for the Manager by the Company and, to the Company's knowledge, 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 Shares is true, complete, correct and compliant with FINRA rules and any letters, filings or other supplemental information provided to FINRA pursuant to FINRA Rules or NASD Conduct Rules is true, complete and correct in all material respects. The Company meets the definition of the term "experienced issuer" specified in FINRA Rule 5110(j)(6), unless the Company has otherwise notified the Manager in writing.

(xx) Except as described in the Disclosure Package and the Prospectus, as applicable, the Company (i) is and at all times has been in compliance with all statutes, rules and regulations applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, advertising, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product manufactured or distributed by the Company, including, without limitation, the Federal Food, Drug and Cosmetic Act (21 U.S.C. § 301 et seq.), the federal Anti-kickback Statute (42 U.S.C. § 1320a-7b(b)), the Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Affordability Reconciliation Act of 2010, the regulations promulgated pursuant to such laws, and any successor government programs, and comparable state laws, regulations relating to Good Clinical Practices and Good Laboratory Practices and all other local, state, federal, national, and foreign laws, and final administrative guidance relating to the regulation of the Company (collectively, the "Applicable Laws"), except for such non-compliance as would not, individually or in the aggregate, have a Material Adverse Effect; (ii) has not received any written notice from any court or arbitrator or governmental or regulatory authority or third party alleging or asserting non-compliance with any Applicable Laws or any licenses, exemptions, certificates, approvals, clearances, authorizations, permits, registrations and supplements or amendments thereto required by any such Applicable Laws ("Authorizations"), except for such non-compliance as would not, individually or in the aggregate, have a Material Adverse Effect; (iii) possesses all Authorizations and such Authorizations are valid and in full force and effect and are not in violation of any term of any such Authorizations,

except for such violations as would not, individually or in the aggregate, have a Material Adverse Effect; (iv) has not received written notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any court or arbitrator or governmental or regulatory authority or third party alleging that any product operation or activity is in violation of any Applicable Laws or Authorizations nor, to the Company's knowledge, is any such claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action threatened; (v) has not received written notice that any court or arbitrator or governmental or regulatory authority has taken, is taking or intends to take action to materially limit, suspend, materially modify or revoke any Authorizations nor, to the Company's knowledge, is any such limitation, suspension, modification or revocation threatened; (vi) has filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and accurate on the date filed in all material respects (or were corrected or supplemented by a subsequent submission); and (vii) is not a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement orders, or similar agreements with or imposed by any governmental or regulatory authority. Additionally, neither the Company nor its employees, officers or directors has been excluded, suspended or debarred from participation in any U.S. federal health care program or human clinical research or, to the knowledge of the Company, is subject to a governmental inquiry, investigation, proceeding, or other similar action that would reasonably be expected to result in debarment, suspension, or exclusion.

(yy) The Company possesses all material licenses, certificates, permits and other authorizations (collectively, "Permits") issued by, and has made all declarations and filings with, the applicable federal, state, local or foreign governmental or regulatory authorities that are necessary for the ownership or lease of its properties or the conduct of its business as described in the Disclosure Package and the Prospectus, or to permit all clinical trials and nonclinical studies and trials conducted by or on behalf of the Company, including, without limitation, all necessary U.S. Food and Drug Administration (the "FDA") and applicable foreign regulatory agency approvals; the Company is not in violation of, or in default under, any such Permit, except for such violation or default as would not have a Material Adverse Effect; and the Company has not received notice of any revocation, suspension or modification of any such Permit and does not have any reason to believe that any such Permit will not be renewed in the ordinary course. The Company has not received any FDA Form 483, written notice of adverse finding, warning letter, untitled letter or other correspondence or written notice from any court or arbitrator or governmental or regulatory authority alleging or asserting non-compliance with (A) any Applicable Laws or (B) any Permits required by any such Applicable Laws.

(zz) The clinical trials and preclinical studies conducted by or on behalf of or sponsored by the Company, or in which the Company has participated, that are described in the Disclosure Package and the Prospectus or the results of which are referred to in the Disclosure Package and the Prospectus, as applicable, and are intended to be submitted to

Regulatory Authorities as a basis for product approval, were and, if still pending, are being conducted in all material respects in accordance with standard medical and scientific research procedures and all applicable statutes, rules and regulations of the FDA and comparable drug regulatory agencies outside of the United States to which it is subject (collectively, the “Regulatory Authorities”), and current Good Clinical Practices and Good Laboratory Practices; the descriptions in the Disclosure Package or the Prospectus of the results of such studies and trials are accurate and complete in all material respects and fairly present the data derived from such trials; the Company has no knowledge of any other trials the results of which are inconsistent with or otherwise call into question the results described or referred to in the Disclosure Package and the Prospectus; the Company has operated and is currently in compliance in all material respects with all applicable statutes, rules and regulations of the Regulatory Authorities; the Company has not received any written notices, correspondence or other communication from the Regulatory Authorities or any other governmental agency which could lead to the termination or suspension of any clinical trials or preclinical studies that are described in the Disclosure Package and the Prospectus or the results of which are referred to in the Disclosure Package or the Prospectus, and, to the Company’s knowledge, there are no reasonable grounds for same.

(aaa) To the Company’s knowledge, the manufacturing facilities and operations of its suppliers are operated in compliance in all material respects with all applicable statutes, rules, regulations and policies of the Regulatory Authorities.

(bbb) Neither the Company nor any of its subsidiaries nor any of its or their properties or assets has any immunity from the jurisdiction of any court or from any legal process (whether through service or notice, attachment prior to judgment, attachment in aid of execution or otherwise) under the laws of the State of New York.

(ccc) The Common Stock is registered pursuant to Section 12(b) or 12(g) of the Exchange Act and is listed on the Nasdaq Global Select Market. 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 Global Select Market, nor has the Company received any notification that the Commission or the Nasdaq Global Select Market is contemplating terminating such registration or listing. To the Company’s knowledge, it is in compliance with all applicable listing requirements of the Nasdaq Global Select Market.

(ddd) The statistical and market-related data included in the Disclosure Package and the Prospectus are based on or derived from sources which the Company reasonably and in good faith believes are reliable and accurate in all material respects.

(eee) 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 by all necessary corporate action, including, as applicable, approval

by the board of directors of the Company (the “Board”) (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 and all other applicable laws and regulatory rules or requirements, and (iv) each such grant was properly accounted for in accordance with generally accepted accounting principles in the United States in the financial statements (including the related notes) of the Company.

Any certificate signed by any officer of the Company and delivered to the Manager or counsel for the Manager in connection with this Agreement or any Terms Agreement shall be deemed a representation and warranty by the Company, as to matters covered thereby, to the Manager.

The Company acknowledges that the Manager and, for purposes of the opinions to be delivered pursuant to Section 4 and Section 6 hereof, each counsel to the Company and counsel to the Manager, will rely upon the accuracy and truthfulness of the foregoing representations and hereby consents to such reliance.

### 3. Sale and Delivery of Shares.

(a) Subject to the terms and conditions and in reliance upon the representations and warranties herein set forth, the Company agrees to issue and sell Shares from time to time through the Manager, acting as sales agent, and the Manager agrees to use its reasonable efforts to sell, as sales agent for the Company, the Shares on the following terms.

(i) Each time that the Company wishes to issue and sell any Shares hereunder (each, a “Placement”), it will notify the Manager by email notice (or other method mutually agreed to in writing by the parties) (a “Placement Notice”) containing the parameters in accordance with which it desires such Shares to be sold, which shall at a minimum include the number of Shares to be issued, the time period during which sales are requested to be made, any limitation on the number of Shares that may be sold in any Trading Day and any minimum price below which sales may not be made, a form of which containing such minimum sales parameters necessary is attached hereto as Schedule 1. Subject to the terms and conditions hereof, the Manager shall use its reasonable efforts to sell all of the Shares subject to a Placement Notice in the time frame specified therein.

(ii) The Placement Notice shall originate from any of the individuals from the Company set forth on Schedule 2 (with a copy to each of the other individuals from the Company listed on such schedule), and shall be addressed to each of the individuals from the Manager set forth on Schedule 2, as such Schedule 2 may be amended from time to time. The Placement Notice shall be effective upon receipt by the Manager unless and until (i) the entire amount of the Shares to be sold under the Placement Notice have been sold, (ii) the Company suspends or terminates the Placement Notice for any reason in its sole discretion, (iii) the Company issues a subsequent Placement Notice with parameters

superseding those on the earlier dated Placement Notice or (iv) this Agreement has been terminated under the provisions of Section 8 hereof. It is expressly acknowledged and agreed that neither the Company nor the Manager will have any obligation whatsoever with respect to a Placement or any Shares unless and until the Company delivers a Placement Notice to the Manager, and then only upon the terms specified therein and herein.

(iii) The Company acknowledges and agrees that (A) there can be no assurance that the Manager will be successful in selling the Shares, (B) the Manager will incur no liability or obligation to the Company or any other person or entity if it does not sell Shares for any reason other than a failure by the Manager to use its reasonable efforts consistent with its normal trading and sales practices and applicable law and regulations to sell such Shares as required under this Agreement, and (C) the Manager shall be under no obligation to purchase Shares on a principal basis pursuant to this Agreement, except as otherwise specifically agreed by the Manager and the Company.

(iv) The Company shall not authorize the issuance and sale of, and the Manager shall not be obligated to use its reasonable efforts to sell, any Share at a price lower than the minimum price therefor designated from time to time by the Board, or a duly authorized committee thereof, and notified to the Manager in writing in the Placement Notice. The Company or the Manager may, upon notice to the other party hereto by telephone (confirmed promptly by electronic mail), suspend the offering of the Shares for any reason and at any time; provided, however, that such suspension shall not affect or impair the parties' respective obligations with respect to the Shares sold hereunder prior to the giving of such notice.

(v) The Manager hereby covenants and agrees not to make any sales of the Shares on behalf of the Company, pursuant to this Section 3(a), other than (A) by means of ordinary brokers' transactions between members of the Nasdaq Stock Market LLC that qualify for delivery of a Prospectus to the Nasdaq Stock Market LLC in accordance with Rule 153 (such transactions are hereinafter referred to as "Continuous Offerings") and (B) such other sales of the Shares on behalf of the Company in its capacity as agent of the Company as shall be agreed by the Company and the Manager pursuant to a Terms Agreement.

(vi) The compensation to the Manager for sales of the Shares with respect to which the Manager acts as sales agent under this Agreement shall be up to 3.0% of the gross sales price of the Shares sold pursuant to this Section 3(a) and payable as described in the succeeding subsection (viii) below. The foregoing rate of compensation shall not apply when the Manager acts as principal, in which case the Company may sell Shares to the Manager as principal at a price agreed upon at the relevant Applicable Time pursuant to a Terms Agreement. The remaining proceeds, after further deduction for any transaction fees imposed by any governmental or self-regulatory organization in respect of such sales (the "Transaction Fees"), shall constitute the net proceeds to the Company for such Shares (the "Net Proceeds").

(vii) The Manager shall provide written confirmation (which may be by electronic mail) to the Company following the close of trading on the Nasdaq Global Select Market each day on which the Shares are sold under this Section 3(a) setting forth the number of the Shares sold on such day, the aggregate gross sales proceeds and the Net Proceeds to the Company, and the compensation payable by the Company to the Manager with respect to such sales. Such compensation shall be set forth and invoiced in periodic statements from the Manager to the Company, with payment to be made by the Company promptly after its receipt thereof.

(viii) Settlement for sales of the Shares pursuant to this Section 3(a) will occur on the second business day following the date on which such sales are made (each such day, a "Settlement Date"). On each Settlement Date, the Shares sold through the Manager for settlement on such date shall be issued and delivered by the Company to the Manager against payment of the aggregate gross sales proceeds less any Transaction Fees for the sale of such Shares. Settlement for all such Shares shall be effected by free delivery of the Shares to the Manager's account at The Depository Trust Company ("DTC") in return for payments in same day funds delivered to the account designated by the Company. If the Company or its transfer agent (if applicable) shall default on its obligation to deliver the Shares on any Settlement Date, the Company shall (A) indemnify and hold the Manager harmless against any loss, claim or damage arising from or as a result of such default by the Company and (B) pay the Manager any commission to which it would otherwise be entitled absent such default. If the Manager breaches this Agreement by failing to deliver the aggregate gross sales proceeds less any Transaction Fees to the Company on any Settlement Date for the Shares delivered by the Company, the Manager will pay the Company interest based on the effective overnight federal funds rate on such unpaid amount less any compensation due to the Manager.

(ix) At each Applicable Time and Representation Date (as defined in Section 4(k) of this Agreement), the Company shall be deemed to have affirmed each representation and warranty contained in this Agreement as if such representation and warranty were made as of such date, modified as necessary to relate to the Registration Statement and the Prospectus as amended as of such date. Any obligation of the Manager to use its reasonable efforts to sell the Shares on behalf of the Company shall be subject to the continuing accuracy of the representations and warranties of the Company herein, to the performance by the Company of its obligations hereunder and to the continuing satisfaction of the additional conditions specified in Section 6 of this Agreement.

(b) If the Company wishes to issue and sell the Shares pursuant to this Agreement to the Manager as principal, it will propose the terms of such sale to the Manager. If the Manager, acting as principal, wishes to accept such proposed terms (which it may decline to do for any reason in its sole discretion) or, following discussions with the Company wishes to accept amended terms, the Manager and the Company will enter into a Terms Agreement setting forth the terms of such Placement. The terms set forth in a Terms Agreement will not be binding on the Company or the Manager unless and until each of the Company and the Manager has executed such Terms Agreement accepting all of the terms of such Terms Agreement. In the event of a conflict between the terms of this Agreement and the terms of a Terms Agreement, the terms of such Terms Agreement will control.

(c) Each sale of the Shares to the Manager as principal shall be made in accordance with the terms of this Agreement and, if applicable, a Terms Agreement, which will provide for the sale of such Shares to, and the purchase thereof by, the Manager. A Terms Agreement may also specify certain provisions relating to the reoffering of such Shares by the Manager. The commitment of the Manager to purchase the Shares pursuant to any Terms Agreement shall be deemed to have been made on the basis of the representations and warranties of the Company herein contained and shall be subject to the terms and conditions herein set forth. Each Terms Agreement shall specify the number of the Shares to be purchased by the Manager pursuant thereto, the price to be paid to the Company for such Shares, any provisions relating to rights of, and default by, underwriters acting together with the Manager in the reoffering of the Shares, and the time and date (each such time and date being referred to herein as a “Time of Delivery”) and place of delivery of and payment for such Shares. Such Terms Agreement shall also specify any requirements for opinions of counsel, accountants’ letters and officers’ certificates pursuant to Section 6 of this Agreement and any other information or documents required by the Manager.

(d) Under no circumstances shall the number and aggregate gross sales price of the Shares sold pursuant to this Agreement and any Terms Agreement exceed (i) the number of shares of the Common Stock available for issuance under the currently effective Registration Statement or (ii) the number and aggregate amount of the Shares authorized from time to time to be issued and sold under this Agreement by the Board, or a duly authorized committee thereof, and notified to the Manager in writing in the Placement Notice.

(e) If either party has reason to believe that the exemptive provisions set forth in Rule 101(c)(1) of Regulation M under the Exchange Act are not satisfied with respect to the Shares, it shall promptly notify the other party and sales of the Shares under this Agreement and any Terms Agreement shall be suspended until that or other exemptive provisions have been satisfied in the judgment of each party.

(f) Notwithstanding any other provision of this Agreement the Company shall not request the sale of any Shares that would be sold, and the Manager shall not be obligated to sell, during any period in which the Company is, or would reasonably be deemed to be, in possession of material non-public information.

4. Agreements. The Company agrees with the Manager that:

(a) During any period when the delivery of a prospectus relating to the Shares is required (including in circumstances where such requirement may be satisfied pursuant to Rule 172) to be delivered under the Securities Act, the Company will not file any amendment of the Registration Statement or supplement to the Prospectus (other than an amendment or supplement relating to an offering of the Company's securities which is unrelated to the offering of Shares hereunder or any amendment pursuant to Section 10(a)(3) of the Securities Act deemed effected pursuant to the filing of an Annual Report on Form 10-K by the Company) unless the Company has furnished to the Manager a copy for its review prior to filing and will not file any such proposed amendment or supplement to which the Manager reasonably objects. The Company will properly complete the Prospectus, in a form approved by the Manager, and file such Prospectus, with the Commission and will cause any supplement to the Prospectus to be properly completed, in a form approved by the Manager, and will file such supplement with the Commission pursuant to the applicable paragraph of Rule 424(b) within the time period prescribed thereby and will provide evidence satisfactory to the Manager of such timely filing. The Company will promptly advise the Manager (i) when the Prospectus, and any supplement thereto, shall have been filed (if required) with the Commission pursuant to Rule 424(b), (ii) when, during any period when the delivery of a prospectus (whether physically or through compliance with Rule 172 or any similar rule) is required under the Securities Act in connection with the offering or sale of the Shares, any amendment to the Registration Statement shall have been filed or become effective, (iii) of any request by the Commission or its staff for any amendment of the Registration Statement, or for any supplement to the Prospectus or for any additional information, (iv) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or of any notice objecting to its use or the institution or threatening of any proceeding for that purpose and (v) of the receipt by the Company of any notification with respect to the suspension of the qualification of the Shares for sale in any jurisdiction or the institution or threatening of any proceeding for such purpose. Notwithstanding the foregoing, the Company shall not be obligated to provide notice of or furnish copies of any report or statement filed with the Commission to the extent it is available on the Commission's Electronic Data Gathering, Analysis, and Retrieval System. The Company will use its best efforts to prevent the issuance of any such stop order or the occurrence of any such suspension or objection to the use of the Registration Statement and, upon such issuance, occurrence or notice of objection, to obtain as soon as possible the withdrawal of such stop order or relief from such occurrence or objection, including, if necessary, by filing an amendment to the Registration Statement or a new registration statement and using its best efforts to have such amendment or new registration statement declared effective as soon as practicable.

(b) If, at any time on or after an Applicable Time but prior to the related Settlement Date or Time of Delivery, any event occurs as a result of which the Disclosure Package would include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein in the light of the circumstances under which they were made or the circumstances then prevailing not misleading, the Company will (i) notify promptly the Manager so that any use of the Disclosure Package may cease until it is amended or supplemented; (ii) amend or supplement the Disclosure Package to correct such statement or omission; and (iii) supply any amendment or supplement to the Manager in such quantities as the Manager may reasonably request.



(c) During any period when the delivery of a prospectus relating to the Shares is required (including in circumstances where such requirement may be satisfied pursuant to Rule 172) to be delivered under the Securities Act, any event occurs as a result of which the Prospectus as then supplemented would include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein in the light of the circumstances under which they were made at such time not misleading, or if it shall be necessary to amend the Registration Statement, file a new registration statement or supplement the Prospectus to comply with the Securities Act or the Exchange Act or the respective rules thereunder, including in connection with use or delivery of the Prospectus, the Company promptly will (i) notify the Manager of any such event, (ii) prepare and file with the Commission, subject to the second sentence of paragraph (a) of this Section 4, an amendment or supplement or new registration statement which will correct such statement or omission or effect such compliance, (iii) use its best efforts to have any amendment to the Registration Statement or new registration statement declared effective as soon as practicable in order to avoid any disruption in use of the Prospectus and (iv) supply any supplemented Prospectus to the Manager in such quantities as the Manager may reasonably request. Notwithstanding the foregoing, in the alternative the Company can suspend or terminate the Placement Notice upon written notice to the Manager and delay the filing of any amendment or supplement, if in the judgment of the Company, it is in the best interest of the Company.

(d) As soon as practicable, the Company will make generally available to its security holders and to the Manager an earnings statement or statements of the Company and its subsidiaries which will satisfy the provisions of Section 11(a) of the Securities Act and Rule 158.

(e) The Company will furnish to the Manager and counsel for the Manager, without charge, signed copies of the Registration Statement (including exhibits thereto) and, so long as delivery of a prospectus by the Manager or dealer may be required by the Securities Act (including in circumstances where such requirement may be satisfied pursuant to Rule 172), as many copies of the Prospectus and each Issuer Free Writing Prospectus and any supplement thereto as the Manager may reasonably request. The Company will pay the expenses of printing or other production of all documents relating to the offering.

(f) The Company will arrange, if necessary, for the qualification of the Shares for sale under the laws of such jurisdictions as the Manager may reasonably designate and will maintain such qualifications in effect so long as required for the distribution of the Shares; provided that in no event shall the Company be obligated to qualify to do business in any jurisdiction where it is not now so qualified or to take any action that would subject it to service of process in suits, other than those arising out of the offering or sale of the Shares, in any jurisdiction where it is not now so subject.

(g) The Company agrees that, unless it has or shall have obtained the prior written consent of the Manager, and the Manager agrees with the Company that, unless it has or shall have obtained, as the case may be, the prior written consent of the Company, it has not made and will not make any offer relating to the Shares that would constitute an Issuer Free Writing Prospectus or that would otherwise constitute a “free writing prospectus” (as defined in Rule 405) required to be filed by the Company with the Commission or retained by the Company under Rule 433; provided that the prior written consent of the parties hereto shall be deemed to have been given in respect of the Free Writing Prospectuses included in Schedule 3 hereto. Any such free writing prospectus consented to by the Manager or the Company is hereinafter referred to as a “Permitted Free Writing Prospectus.” The Company agrees that (i) it has treated and will treat, as the case may be, each Permitted Free Writing Prospectus as an Issuer Free Writing Prospectus and (ii) it has complied and will comply, as the case may be, with the requirements of Rules 164 and 433 applicable to any Permitted Free Writing Prospectus, including in respect of timely filing with the Commission, legending and record keeping.

(h) Without the prior written consent of the Manager, the Company will not offer, sell, contract to sell, pledge, or otherwise dispose of, or file a registration statement with the Commission in respect of (other than any Registration Statement on Form S-8 or Form S-4, or any successors to such forms), any other shares of Common Stock or any securities convertible into, or exercisable, or exchangeable for, shares of Common Stock, effect a reverse stock split, recapitalization, share consolidation, reclassification or similar transaction affecting the outstanding Common Stock, or publicly announce an intention to effect any such transaction during the period beginning on the third Trading Day immediately prior to the date on which any Placement Notice is delivered to the Manager hereunder and ending on the third Trading Day immediately following the later of (x) the final Settlement Date with respect to Shares sold pursuant to such Placement Notice or (y) the termination or suspension by the Company of such Placement Notice; and will not directly or indirectly enter into any other “at the market” or continuous equity transaction to offer to sell, sell, contract to sell, grant any option to sell or otherwise dispose of any Common Stock (other than the Shares offered pursuant to this Agreement) or securities convertible into or exchangeable for Common Stock, warrants or any rights to purchase or acquire, Common Stock prior to the termination of this Agreement; provided, however, that the Company may, (i) issue and sell Common Stock pursuant to this Agreement or any Terms Agreement; (ii) issue, grant or sell Common Stock or options or other equity awards pursuant to any equity incentive plan, inducement plan, any employee stock purchase plan, stock ownership plan or dividend reinvestment plan of the Company in effect at the Execution Time or approved by the Board thereafter; (iii) issue or sell Common Stock pursuant to any dividend reinvestment plan that the Company may adopt from time to time provided the implementation of such is disclosed to the Manager in advance; (iv) issue Common Stock upon the conversion of securities or the exercise of warrants; (v) issue Common Stock or securities convertible into or exchangeable for Common Stock in satisfaction of contractual payment obligations described in Disclosure Package and the Prospectus, including the issuance of Common Stock as repayment of indebtedness of the Company in accordance with the terms thereof; (vi) issue Common Stock or securities convertible into or exchangeable for Common Stock in connection with an acquisition, merger or sale or purchase of assets

occurring after the date of this Agreement which are not used for capital raising purposes, provided that the aggregate number of Common Stock or securities convertible into or exchangeable for Common Stock issued or sold under this subsection (vi) shall not exceed 5% of the number of Common Stock outstanding immediately prior to giving effect to such sale of issuance; and (vii) issue Common Stock or securities convertible into or exchangeable for Common Stock offered and sold in connection with any strategic investment (including any joint venture, strategic alliance or partnership) occurring after the date of this Agreement which are not used for capital raising purposes, provided that the aggregate number of Common Stock or securities convertible into or exchangeable for Common Stock issued or sold under this subsection (vii) shall not exceed 5% of the number of Common Stock outstanding immediately prior to giving effect to such sale of issuance.

(i) The Company will not (i) take, directly or indirectly, any action designed to or that would constitute or that might reasonably be expected to cause or result in, under the Exchange Act or otherwise, stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares or (ii) sell, bid for, purchase Common Stock in violation of Regulation M under the Exchange Act or pay any person (other than as contemplated by this Agreement or any Terms Agreement) any compensation for soliciting purchases of the Shares; provided, however, that the Company may bid for and purchase shares of its common stock in accordance with Rule 10b-18 under the Exchange Act.

(j) The Company will, simultaneously upon delivering to the Manager a Placement Notice or, at any time during the pendency of a Placement Notice, advise the Manager promptly after it shall have received notice or obtain knowledge thereof, of any information or fact that would alter or affect in any material respect any opinion, certificate, letter and other document provided to the Manager pursuant to Section 6 herein.

(k) On or prior to the first delivery of a Placement Notice under this Agreement and each time thereafter during the term of this Agreement the Company (i) amends or supplements the Registration Statement or the Prospectus (other than a prospectus supplement filed in accordance with Section 4(q) of this Agreement or a prospectus supplement relating solely to the offering of securities other than the Shares) by means of a post-effective amendment, sticker, or supplement but not by means of incorporation of document(s) by reference to the Registration Statement or the Prospectus, (ii) files an Annual Report on Form 10-K under the Exchange Act, (iii) files a Quarterly Report on Form 10-Q under the Exchange Act, (iv) files a Current Report on Form 8-K under the Exchange Act containing amended financial information (other than an earnings release or other information "furnished" pursuant to Items 2.02 or 7.01 of Form 8-K) under the Exchange Act, (v) delivers Shares to the Manager as principal at the Time of Delivery pursuant to a Terms Agreement and (vi) the Company effects a sale of Shares that would constitute a "block" within the meaning of Rule 10b-18(a)(5) under the Exchange Act (the date on which the Company first delivers a Placement Notice and each such date referred to in (i), (ii), (iii), (iv), (v) and (vi) above, a "Representation Date"), the Company shall furnish or cause to be furnished to the Manager forthwith a certificate

dated and delivered the date of such Representation Date, in form reasonably satisfactory to the Manager with a certificate, in the form attached hereto as Exhibit 4(k) on or prior to any Representation Date if requested by the Manager; provided, however, in the case of clause (iv) above a certificate will only be required if (1) a Placement Notice is pending and (2) the Manager reasonably determines that the information contained in such Form 8-K is material to a holder of Common Stock. The requirement to deliver a certificate under this Section 4(k) shall be automatically waived for any Representation Date occurring at a time at which no Placement Notice is pending or no Terms Agreement is in effect (a "Waiver"), which Waiver, in each case, shall not apply the next time the Company delivers its next Placement Notice or enters into a Terms Agreement; provided, however, that such Waiver shall not apply for any Representation Date on which the Company files its Annual Report on Form 10-K. Notwithstanding the foregoing, if the Company subsequently decides to sell Shares following a Representation Date when the Company relied on a Waiver and did not provide the Manager with a certificate under this Section 4(k), then before the Company delivers the Placement Notice or the Manager sells any Shares, the Company shall provide the Manager with a certificate, in the form attached hereto as Exhibit 4(k), dated the date of the Placement Notice.

(l) On or prior to the first delivery of a Placement Notice under this Agreement and on or prior to each Representation Date with respect to which the Company is obligated to deliver a certificate attached hereto as Exhibit 4(k) for which no Waiver is applicable, the Company shall furnish or cause to be furnished forthwith to the Manager and to counsel to the Manager:

(i) a written opinion of Wilmer Cutler Pickering Hale and Dorr LLP, counsel to the Company ("Company Counsel"), or other counsel satisfactory to the Manager, dated and delivered on the date that the opinion is required to be delivered, in form and substance reasonably satisfactory to the Manager, substantially similar to the form previously provided to the Manager and its counsel, modified, as necessary, to relate to the Registration Statement and the Prospectus as then amended or supplemented;

(ii) a written opinion of Choate, Hall & Stuart LLP, intellectual property counsel to the Company ("Company IP Counsel"), or other counsel satisfactory to the Manager, dated and delivered on the date that the opinion is required to be delivered, in form and substance reasonably satisfactory to the Manager, substantially similar to the form previously provided to the Manager and its counsel, modified, as necessary, to relate to the Registration Statement and the Prospectus as then amended or supplemented;

provided, however, that in lieu of such opinions for subsequent Representation Dates, in each case, counsel may furnish the Manager with a letter (a "Reliance Letter") to the effect that the Manager may rely on a prior opinion delivered under this Section 4(l)(i) or (ii), as applicable, to the same extent as if it were dated the date of such Reliance Letter (except that statements in such prior opinion shall be deemed to relate to the Registration Statement and the Prospectus as amended or supplemented at such

Representation Date). Notwithstanding the foregoing, if the Company subsequently decides to sell Shares following a Representation Date when the Company relied on such waiver/exemption and did not provide the Manager with the opinions under this Section 4(l), then before the Company delivers the Placement Notice or the Manager sells any Shares, the Manager may, in its discretion, require the Company to provide the Manager with some or all of the opinions under this Section 4(l), substantially similar to the forms previously provided to the Manager, each dated the date of the Placement Notice; provided, the Company shall be required to furnish to the Manager no more than one of each such opinion hereunder per annual report on Form 10-K and quarterly report on Form 10-Q.

(m) On or prior to the first delivery of a Placement Notice under this Agreement and on or prior to each Representation Date with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 4(k) for which no Waiver is applicable, the Company shall cause Deloitte & Touche LLP or other independent accountants reasonably satisfactory to the Manager (the "Accountants") forthwith, to furnish the Manager a letter (the "Comfort Letter") dated the date that the letter is delivered, in form reasonably satisfactory to the Manager (i) confirming that they are independent accountants within the meaning of the Securities Act and the Exchange Act and the respective applicable rules and regulations adopted by the Commission thereunder, (ii) that they have performed a review of any unaudited interim financial information of the Company included or incorporated by reference in the Registration Statement and the Prospectus in accordance with Statement on Auditing Standards No. 100 (the first such letter, the "Initial Comfort Letter") and (iii) updating the Initial Comfort Letter with any information that would have been included in the Initial Comfort Letter had it been given on such date and modified as necessary to relate to the Registration Statement and the Prospectus, as amended and supplemented to the date of such letter; provided that the Company shall be required to furnish to the Manager no more than one Comfort Letter hereunder per annual report on Form 10-K and quarterly report on Form 10-Q.

(n) On or prior to the first delivery of a Placement Notice under this Agreement and on or prior to each Representation Date with respect to which the Company is obligated to deliver a certificate in the form attached hereto as Exhibit 4(k) for which no Waiver is applicable, the Company shall furnish the Manager a certificate executed by the Secretary of the Company, signing in such capacity, dated the date of delivery (i) certifying that attached thereto are true and complete copies of the resolutions duly adopted by the Board (or any committee thereof) of the Company authorizing the execution and delivery of this Agreement and the consummation of the transactions contemplated hereby (including, without limitation, the issuance of the Shares pursuant to this Agreement), which authorization shall be in full force and effect on and as of the date of such certificate, (ii) certifying and attesting to the office, incumbency, due authority and specimen signatures of each person who executed this Agreement for or on behalf of the Company, and (iii) containing any other certification that the Manager shall reasonably request.

(o) On or prior to the first delivery of a Placement Notice under this Agreement and at each Representation Date on which an opinion of counsel is requested by the Manager pursuant to Section 6(d) of this Agreement, the Manager may request that the Company conduct a due diligence session, in form and substance reasonably satisfactory to the Manager. The Company shall cooperate timely with any reasonable due diligence request from or review conducted by the Manager or its agents from time to time in connection with the transactions contemplated by this Agreement, including, without limitation, providing information and available documents and access to appropriate senior corporate officers during regular business hours and at the Company's principal offices as the Manager may reasonably request.

(p) The Company acknowledges and agrees that the Manager may trade in the Common Stock for the Manager's own account and for the account of its clients at the same time as sales of the Shares occur pursuant to this Agreement or pursuant to a Terms Agreement.

(q) The Company will either (i) in its Annual Reports on Form 10-K and Quarterly Reports on Form 10-Q, as applicable, or (ii) in a prospectus supplement filed with the Commission under the applicable paragraph of Rule 424(b) under the Securities Act, disclose the number of Shares sold through the Manager under this Agreement, the Net Proceeds to the Company and the compensation paid by the Company to the Manager with respect to sales of Shares pursuant to this Agreement during the relevant quarter.

(r) Each execution and delivery by the Company of a Terms Agreement, shall be deemed to be an affirmation to the Manager that the representations and warranties of the Company contained in or made pursuant to this Agreement are true and correct as of the date of such Terms Agreement as though made at and as of such date, and an undertaking that such representations and warranties will be true and correct as of the Time of Delivery relating to such sale, as though made at and as of such date (except that such representations and warranties shall be deemed to relate to the Registration Statement and the Prospectus as amended and supplemented relating to such Shares).

(s) The Company shall ensure that there are at all times sufficient shares of Common Stock to provide for the issuance, free of any preemptive rights, out of its authorized but unissued shares of Common Stock or shares of Common Stock held in treasury, of the maximum aggregate number of Shares authorized for issuance by the Board pursuant to the terms of this Agreement. The Company will use its commercially reasonable efforts to cause the Shares to be listed for trading on the Nasdaq Global Select Market and to maintain such listing.

(t) During any period when the delivery of a prospectus relating to the Shares is required (including in circumstances where such requirement may be satisfied pursuant to Rule 172) to be delivered under the Securities Act, the Company 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 and the regulations thereunder.

(u) The Company shall cooperate with the Manager and use its reasonable efforts to permit the Shares to be eligible for clearance and settlement through the facilities of DTC.

(v) The Company will apply the Net Proceeds from the sale of the Shares in the manner set forth in the Prospectus.

(w) The Company shall not invest, or otherwise use, the proceeds received by the Company from its sale of the Shares in such a manner as would require the Company or any of its subsidiaries to register as an investment company under the Investment Company Act.

5. Payment of Expenses. The Company agrees to pay the costs and expenses incident to the performance of its obligations under this Agreement, whether or not the transactions contemplated hereby are consummated, including without limitation: (i) the preparation, printing or reproduction and filing with the Commission of the Registration Statement (including financial statements and exhibits thereto), the Prospectus and each Issuer Free Writing Prospectus, and each amendment or supplement to any of them; (ii) the printing (or reproduction) and delivery (including postage, air freight charges and charges for counting and packaging) of such copies of the Registration Statement, the Prospectus, and each Issuer Free Writing Prospectus, and all amendments or supplements to any of them, as may, in each case, be reasonably requested for use in connection with the offering and sale of the Shares; (iii) the preparation, printing, authentication, issuance and delivery of certificates for the Shares, including any stamp or transfer taxes in connection with the original issuance and sale of the Shares; (iv) the printing (or reproduction) and delivery of this Agreement, any blue sky memorandum and all other agreements or documents printed (or reproduced) and delivered in connection with the offering of the Shares; (v) the registration of the Shares under the Exchange Act and the listing of the Shares on the Nasdaq Global Select Market; (vi) any registration or qualification of the Shares for offer and sale under the securities or blue sky laws of the several states (including filing fees and the reasonable fees and expenses of counsel for the Manager relating to such registration and qualification); (vii) any filings required to be made with FINRA, including filing fees, as well as and the reasonable fees and expenses of counsel for the Manager relating to such filings; (viii) the transportation and other expenses incurred by or on behalf of Company representatives in connection with presentations to prospective purchasers of the Shares; (ix) the fees and expenses of the Company's accountants and the fees and expenses of counsel (including local and special counsel) for the Company; (x) the reasonable documented out-of-pocket expenses of the Manager, including the reasonable fees, disbursements and expenses of counsel for the Manager in connection with this Agreement and the Registration Statement and ongoing services in connection with the transactions contemplated hereunder, including the fees set forth in clause (vii) above shall not exceed (A) \$75,000 in connection with the execution of this Agreement and (B) \$15,000 in connection with each Representation Date (as defined below) on which the Company is required to provide a certificate pursuant to Section 4(k) of this Agreement.

6. Conditions to the Obligations of the Manager. The obligations of the Manager under this Agreement with respect to a Placement and any Terms Agreement shall be subject to (i) the accuracy of the representations and warranties on the part of the Company contained herein as of the Execution Time, each Representation Date, and as of each Applicable Time and Time of Delivery, (ii) to the performance by the Company of its obligations hereunder and (iii) the following additional conditions:

(a) Any supplement to the Prospectus required by Rule 424 to be filed with the Commission have been filed in the manner and within the time period required by Rule 424(b) with respect to any sale of Shares; any other 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 periods prescribed for such filings by Rule 433; and no stop order suspending the effectiveness of the Registration Statement or any notice objecting to its use shall have been issued and no proceedings for that purpose shall have been instituted or threatened.

(b) The Company shall have requested and caused Company Counsel, to furnish to the Manager, on the dates specified in Section 4(l)(i) of this Agreement, its opinion, dated as of such date and addressed to the Manager, in form and substance reasonably satisfactory to the Manager.

(c) The Company shall have requested and caused Company IP Counsel, intellectual property counsel for the Company, to furnish to the Manager, on the dates specified in Section 4(l)(ii) of this Agreement, its opinion, dated as of such date and addressed to the Manager, in form and substance reasonably satisfactory to the Manager.

(d) The Manager shall have received from Cooley LLP, counsel for the Manager on each date which the delivery of the Company Counsel legal opinion is required pursuant to Section 4(l)(i) of this Agreement, such opinion or opinions, dated as of such date and addressed to the Manager, with respect to the issuance and sale of the Shares, the Registration Statement, the Disclosure Package, the Prospectus (together with any supplement thereto) and other related matters as the Manager may reasonably require, and the Company shall have furnished to such counsel such documents as they request for the purpose of enabling them to pass upon such matters.

(e) The Company shall have furnished or caused to be furnished to the Manager, on the dates specified in Section 4(k) of this Agreement, a certificate of the Company, signed by the Chairman of the Board, the President, the Chief Executive Officer or the principal financial or principal accounting officer of the Company, dated as of such date, to the effect that the signer of such certificate has carefully examined the Registration Statement, the Disclosure Package and the Prospectus and any supplements or amendments thereto and this Agreement and that:

(i) the representations and warranties of the Company in this Agreement are true and correct on and as of such date with the same effect as if made on such date and the Company has complied with all the agreements and satisfied all the conditions on its part to be performed or satisfied at or prior to such date;



(ii) no stop order suspending the effectiveness of the Registration Statement or any notice objecting to its use has been issued and no proceedings for that purpose have been instituted or, to the Company's knowledge, threatened; and

(iii) since the date of the most recent financial statements included in the Disclosure Package, there has been no Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(f) The Company shall have requested and caused the Accountants to have furnished to the Manager, on every date specified in Section 4(m) hereof, the Comfort Letter that is required to be delivered pursuant to Section 4(m) hereof (which may refer to letters previously delivered to the Manager), dated as of such date, in form and substance reasonably satisfactory to the Manager.

(g) Since the respective dates as of which information is disclosed in the Registration Statement, the Disclosure Package and the Prospectus, except as otherwise stated therein, there shall not have been (i) any change or decrease in financial statement items specified in the letter or letters referred to in paragraph (f) of this Section 6 or (ii) any change, or any development involving a prospective change, in or affecting the condition (financial or otherwise), earnings, business or properties of the Company and its subsidiaries taken as a whole, whether or not arising from transactions in the ordinary course of business, except as set forth or contemplated in the Disclosure Package, the effect of which is, in any case referred to in clause (i) or (ii) above, in the sole judgment of the Manager, so material and adverse as to make it impractical or inadvisable to market the Shares on the terms and in the manner contemplated in the Disclosure Package and the Prospectus.

(h) The Company shall have paid the required Commission filing fees relating to the Shares within the time period required by Rule 456(b)(1)(i) of the Securities Act without regard to the proviso therein and otherwise in accordance with Rules 456(b) and 457(r) of the Securities Act and, if applicable, shall have updated the "Calculation of Registration Fee" table in accordance with Rule 456(b)(1)(ii) either in a post-effective amendment to the Registration Statement or on the cover page of a prospectus or prospectus supplement filed pursuant to Rule 424(b).

(i) Between the Execution Time and the time of any sale of Shares through the Manager, there shall not have been any decrease in the rating of any of the Company's debt securities by any "nationally recognized statistical rating organization" (as defined for purposes of Rule 436(g) under the Securities Act) or any notice given of any intended or potential decrease in any such rating or of a possible change in any such rating that does not indicate the direction of the possible change.

(j) If applicable, FINRA shall not have raised any objection with respect to the fairness and reasonableness of the terms and arrangements under this Agreement.

(k) The Shares shall have been listed and admitted and authorized for trading on the Nasdaq Global Select Market, and satisfactory evidence of such actions shall have been provided to the Manager.

(l) Prior to each Settlement Date and Time of Delivery, as applicable, the Company shall have furnished to the Manager such further information, certificates and documents as the Manager may reasonably request.

If any of the conditions specified in this Section 6 shall not have been fulfilled when and as provided in this Agreement, or if any of the opinions and certificates mentioned above or elsewhere in this Agreement shall not be reasonably satisfactory in form and substance to the Manager and counsel for the Manager, this Agreement and all obligations of the Manager hereunder may be canceled at, or at any time prior to, any Settlement Date or Time of Delivery, as applicable, by the Manager. Notice of such cancellation shall be given to the Company in writing or by telephone or electronic mail and confirmed in writing.

The documents required to be delivered by this Section 6 shall be delivered at the office of Cooley LLP, counsel for the Manager, at 55 Hudson Yards, New York, New York 10001-2157, on each such date as provided in this Agreement.

#### 7. Indemnification and Contribution.

(a) The Company agrees to indemnify and hold harmless the Manager, the directors, officers, employees, affiliates and agents of the Manager and each person who controls the Manager within the meaning of either the Securities Act or the Exchange Act against any and all losses, claims, damages or liabilities, to which the Manager or such director, officer, employee, affiliate, agent or controlling person may become subject under the Securities Act, the Exchange Act or other U.S. federal or state statutory law or regulation, at common law or otherwise, insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon any untrue statement or alleged untrue statement of a material fact contained in the registration statement for the registration of the Shares as originally filed or in any amendment thereof or the Prospectus, or any Issuer Free Writing Prospectus, or in any amendment thereof or supplement thereto 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 in order to make the statements therein not misleading, and agrees to reimburse each such indemnified party, as incurred, for any documented legal or other expenses reasonably incurred by them in connection with investigating or defending any such loss, claim, damage, liability or action, provided, however, that the Company will not be liable in any such case to the extent that any such loss, claim, damage or liability 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 conformity with written information furnished to the Company by the Manager specifically for inclusion therein. This indemnity agreement will be in addition to any liability that the Company may otherwise have. The Company acknowledges that the first sentence of the tenth paragraph under the caption "Plan of Distribution" in the Prospectus constitutes the only information furnished in writing by or on behalf of the Manager for inclusion in the Prospectus.

(b) The Manager agrees to indemnify and hold harmless the Company, each of its directors, each of its officers who signs the Registration Statement, and each person who controls the Company within the meaning of either the Securities Act or the Exchange Act, to the same extent as the foregoing indemnity from the Company to the Manager, but only with reference to written information relating to the Manager furnished to the Company by or on behalf of the Manager specifically for inclusion in the documents referred to in the foregoing indemnity. This indemnity agreement will be in addition to any liability which the Manager may otherwise have.

(c) Promptly after receipt by an indemnified party under this Section 7 of notice of the commencement of any action, such indemnified party will, if a claim in respect thereof is to be made against the indemnifying party under this Section 7, notify the indemnifying party in writing of the commencement thereof; but the failure so to notify the indemnifying party (i) will not relieve it from liability under paragraph (a) or (b) above unless and to the extent it did not otherwise learn of such action and such failure results in the forfeiture by the indemnifying party of substantial rights and defenses and (ii) will not, in any event, relieve the indemnifying party from any obligations to any indemnified party other than the indemnification obligation provided in paragraph (a) or (b) above. The indemnifying party shall be entitled to appoint counsel of the indemnifying party's choice at the indemnifying party's expense to represent the indemnified party in any action for which indemnification is sought (in which case the indemnifying party shall not thereafter be responsible for the fees and expenses of any separate counsel retained by the indemnified party or parties except as set forth below); provided, however, that such counsel shall be reasonably satisfactory to the indemnified party. Notwithstanding the indemnifying party's election to appoint counsel to represent the indemnified party in an action, the indemnified party shall have the right to employ separate counsel (including local counsel), and the indemnifying party shall bear the reasonable fees, costs and expenses of such separate counsel (which, if the Company is the indemnifying party, shall be limited to one such separate counsel for the Manager together with directors, officers, employees, affiliates, agents and all persons who control the Manager, within the meaning of either the Securities Act or the Exchange Act) if (i) the use of counsel chosen by the indemnifying party to represent the indemnified party would present such counsel with a conflict of interest, (ii) the actual or potential defendants in, or targets of, any such action include both the indemnified party and the indemnifying party and the indemnified party shall have reasonably concluded that there may be legal defenses available to it and/or other indemnified parties which are different from or additional to those available to the indemnifying party, (iii) the indemnifying party shall not have employed counsel reasonably satisfactory to the indemnified party to represent the indemnified party within a reasonable time after notice of the institution of such action or (iv) the indemnifying party shall authorize the indemnified party to employ separate counsel at the expense of the indemnifying party. An indemnifying party will not, without the prior written consent of the indemnified parties, settle or compromise or consent to the entry of any judgment with respect to any pending or threatened claim, action, suit or proceeding in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified parties are actual or potential parties to such claim or action) unless such settlement, compromise or consent: (i) includes an unconditional release of each indemnified party from all liability arising out of such claim, action, suit or proceeding and (ii) does not include an admission of fault.

(d) In the event that the indemnity provided in paragraph (a), (b) or (c) of this Section 7 is unavailable to or insufficient to hold harmless an indemnified party for any reason, the Company and the Manager agree to contribute to the aggregate losses, claims, damages and liabilities (including legal or other expenses reasonably incurred in connection with investigating or defending the same) (collectively "Losses") to which the Company and the Manager may be subject in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and by the Manager on the other from the offering of the Shares. If the allocation provided by the immediately preceding sentence is unavailable for any reason, the Company and the Manager severally shall contribute 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 of the Manager on the other in connection with the statements or omissions which resulted in such Losses as well as any other relevant equitable considerations. Benefits received by the Company shall be deemed to be equal to the total net proceeds from the offering (before deducting expenses) received by it, and benefits received by the Manager shall be deemed to be equal to the total gross compensation received by the Manager (before deducting expenses) with respect to Shares purchased under this Agreement, in each case as determined by this Agreement or any applicable Terms Agreement. Relative fault shall be determined by reference to, among other things, whether any untrue or any alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information provided by the Company on the one hand or the Manager on the other, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. The Company and the Manager agree that it would not be just and equitable if contribution were determined by pro rata allocation or any other method of allocation which does not take account of the equitable considerations referred to above. Notwithstanding the provisions of this paragraph (d), in no event shall the Manager be required to contribute any amount in excess of the amount by which the total gross compensation received by the Manager (before deducting expenses) with respect to Shares purchased under this Agreement exceeds the amount of any damages that the Manager 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. For purposes of this Section 7, each person who controls the Manager within the meaning of either the Securities Act or the Exchange Act and each director, officer, employee, affiliate and agent of the Manager shall have the same rights to contribution as the Manager, and each person who controls the Company within the meaning of either the Securities Act or the Exchange Act, each officer of the Company who shall have signed the Registration Statement and each director of the Company shall have the same rights to contribution as the Company, subject in each case to the applicable terms and conditions of this paragraph (d).

## 8. Termination.

(a) The Company shall have the right, by giving written notice as hereinafter specified, to terminate the provisions of this Agreement relating to the solicitation of offers to purchase the Shares in its sole discretion at any time. Any such termination shall be without liability of any party to any other party except that (i) if Shares have been sold through the Manager for the Company, then Section 4(r) of this Agreement shall remain in full force and effect, (ii) with respect to any pending sale, through the Manager for the Company, the obligations of the Company, including in respect of compensation of the Manager, shall remain in full force and effect notwithstanding the termination and (iii) the provisions of Sections 2, 5, 7, 9, 10, 12 and 14 of this Agreement shall remain in full force and effect notwithstanding such termination.

(b) The Manager shall have the right, by giving written notice as hereinafter specified, to terminate the provisions of this Agreement relating to the solicitation of offers to purchase the Shares in its sole discretion at any time. Any such termination shall be without liability of any party to any other party except that the provisions of Sections 2, 5, 7, 9, 10, 12 and 14 of this Agreement shall remain in full force and effect notwithstanding such termination.

(c) This Agreement shall remain in full force and effect unless terminated pursuant to Sections 8(a) or (b) above or otherwise by mutual agreement of the parties; provided that any such termination by mutual agreement shall in all cases be deemed to provide that Sections 2, 5, 7 and 9 of this Agreement shall remain in full force and effect.

(d) Any termination of this Agreement shall be made by giving written notice as required by this Agreement, upon ten (10) Trading Days' prior written notice to the other party. If such termination shall occur prior to the Settlement Date or Time of Delivery for any sale of the Shares, such sale shall settle in accordance with the provisions of Section 3(a)(viii) of this Agreement.

(e) In the case of any purchase of Shares by the Manager pursuant to a Terms Agreement, the obligations of the Manager pursuant to such Terms Agreement shall be subject to termination, in the absolute discretion of the Manager, by notice given to the Company prior to the Time of Delivery relating to such Shares, if at any time prior to such delivery and payment (i) trading in the Company's Common Stock shall have been suspended by the Commission or the Nasdaq Global Select Market or trading in securities generally on the New York Stock Exchange or the Nasdaq Global Select Market shall have been suspended or limited or minimum prices shall have been established on either of such exchanges, (ii) a banking moratorium shall have been declared either by U.S. federal or New York State authorities or (iii) there shall have occurred any outbreak or escalation of hostilities, declaration by the United States of a national emergency or war, or other calamity or crisis the effect of which on financial markets is such as to make it, in the judgment of the Manager, impractical or inadvisable to proceed with the offering or delivery of the Shares as contemplated by the Prospectus (exclusive of any amendment or supplement thereto).

9. Representations and Indemnities to Survive. The respective agreements, representations, warranties, indemnities and other statements of the Company or its officers and of the Manager set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation made by the Manager or the Company or any of the officers, directors, employees, affiliates, agents or controlling persons referred to in Section 7 hereof, and will survive delivery of and payment for the Shares.

10. Notices. All communications hereunder will be in writing and effective only on receipt, and, if sent to Cowen, will be mailed, delivered or telefaxed to Cowen and Company, LLC, 599 Lexington Avenue, New York, New York 10022, fax no. 646-562-1130, Attention: General Counsel, email [ ]; or, if sent to the Company, will be mailed or delivered to and confirmed to it at 100 Fifth Avenue, Waltham, MA 02451, Attention: General Counsel, email: [ ].

11. Successors. This Agreement will inure to the benefit of and be binding upon the parties hereto and their respective successors and the officers, directors, employees, agents and controlling persons referred to in Section 7 hereof, and no other person will have any right or obligation hereunder.

12. No Fiduciary Duty. The Company hereby acknowledges that (a) the purchase and sale of the Shares pursuant to this Agreement is an arm's-length commercial transaction between the Company, on the one hand, and the Manager and any affiliate through which it may be acting, on the other, (b) the Manager is acting solely as sales agent and/or principal in connection with the purchase and sale of the Company's securities and not as a fiduciary of the Company and (c) the Company's engagement of the Manager in connection with the offering and the process leading up to the offering is as independent contractors and not in any other capacity. Furthermore, the Company agrees that it is solely responsible for making its own judgments in connection with the offering (irrespective of whether the Manager has advised or is currently advising the Company on related or other matters). The Company agrees that it will not claim that the Manager has rendered advisory services of any nature or respect, or owe an agency, fiduciary or similar duty to the Company, in connection with such transaction or the process leading thereto.

13. Integration. This Agreement and any Terms Agreement supersede all prior agreements and understandings (whether written or oral) between the Company and the Manager with respect to the subject matter hereof.

14. Applicable Law. This Agreement shall be governed by and construed in accordance with the internal laws of the State of New York applicable to agreements made and to be performed in such state. Any legal suit, action or proceeding arising out of or based upon this Agreement or the transactions contemplated hereby may be instituted in the federal courts of the United States of America located in the Borough of Manhattan in the City of New York or the courts of the State of New York in each case located in the Borough of Manhattan in the City of New York (collectively, the "Specified Courts"), and each party irrevocably submits to the exclusive jurisdiction (except for proceedings instituted in regard to the enforcement of a judgment of any such court, as to which such jurisdiction is non-exclusive) of such courts in any such suit, action or proceeding. Service of any process, summons, notice or document by mail to such party's address set forth above shall be effective service of process for any suit, action or other proceeding brought in any such court. The parties irrevocably and unconditionally waive any objection to the laying of venue of any suit, action or other proceeding in the Specified Courts and irrevocably and unconditionally waive and agree not to plead or claim in any such court that any such suit, action or other proceeding brought in any such court has been brought in an inconvenient forum.

15. Waiver of Jury Trial. The Company 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, any Terms Agreement or the transactions contemplated hereby or thereby.

16. Counterparts. This Agreement and any Terms Agreement may be signed in two or more counterparts, each of which shall constitute an original and all of which together shall constitute one and the same agreement. Counterparts may be delivered via facsimile, electronic mail (including any electronic signature covered by the U.S. federal ESIGN Act of 2000, Uniform Electronic Transactions Act, the Electronic Signatures and Records Act or other applicable law, e.g., www.docusign.com) or other transmission method by a portable document format (PDF) file and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes.

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

(a) In the event that Cowen is a Covered Entity and becomes subject to a proceeding under a U.S. Special Resolution Regime, the transfer from Cowen 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.

(b) In the event that Cowen is a Covered Entity and Cowen or a BHC Act Affiliate of Cowen becomes subject to a proceeding under a U.S. Special Resolution Regime, Default Rights under this Agreement that may be exercised against Cowen 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.

(c) For purposes of this Section 17; (a) "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), (b) "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), (c) "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, and (d) "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.

18. Headings. The section headings used in this Agreement and any Terms Agreement are for convenience only and shall not affect the construction hereof.

19. Definitions. The terms that follow, when used in this Agreement and any Terms Agreement, shall have the meanings indicated.

“Applicable Time” shall mean, with respect to any Shares, the time of sale of such Shares pursuant to this Agreement or any relevant Terms Agreement.

“Business Day” shall mean any day other than a Saturday, a Sunday or a legal holiday or a day on which banking institutions or trust companies are authorized or obligated by law to close in New York City.

“Commission” shall mean the Securities and Exchange Commission.

“Disclosure Package” shall mean (i) the Prospectus, (ii) any prospectus supplement to the Prospectus filed with the Commission pursuant to Rule 424(b) of the Securities Act and relating to the Shares, (iii) any Issuer Free Writing Prospectuses, if any, identified in Schedule 3 hereto, (iv) the public offering price of Shares sold at the relevant Applicable Time and (v) any other Free Writing Prospectus that the parties hereto shall hereafter expressly agree in writing to treat as part of the Disclosure Package.

“Effective Date” shall mean each date and time that the Registration Statement, and any post-effective amendment or amendments thereto became or becomes effective.

“Exchange Act” shall mean the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Execution Time” shall mean the date and time that this Agreement is executed and delivered by the parties hereto.

“Free Writing Prospectus” shall mean a free writing prospectus, as defined in Rule 405.

“Issuer Free Writing Prospectus” shall mean an issuer free writing prospectus, as defined in Rule 433.

“Registration Statement” shall mean the registration statement referred to in Section 2(a) above, including exhibits and financial statements and any prospectus supplement relating to the Shares that is filed with the Commission pursuant to Rule 424(b) and deemed part of such registration statement pursuant to Rule 430B, as amended on each Effective Date and, in the event any post-effective amendment thereto becomes effective, shall also mean such registration statement as so amended.

“Rule 153, Rule 158”, “Rule 163”, “Rule 164”, “Rule 172”, “Rule 405”, “Rule 415”, “Rule 424”, “Rule 430B” and “Rule 433” refer to such rules under the Securities Act.



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“Securities Act” shall mean the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Trading Day” means any day on which the Company’s Common Stock is purchased and sold on the Nasdaq Global Select Market or other principal market on which the Common Stock is listed or quoted.

\* \* \* \* \*

If the foregoing is in accordance with your understanding of our agreement, please sign and return to us the enclosed duplicate hereof, whereupon this letter and your acceptance shall represent a binding agreement among the Company and the Manager.

Very truly yours,

Apellis Pharmaceuticals, Inc.

By: /s/ Timothy Sullivan

Name: Timothy Sullivan

Title: Chief Financial Officer

The foregoing Agreement is hereby confirmed and accepted as of the date first written above.

Cowen and Company, LLC

By: /s/ Michael Murphy

Name: Michael Murphy

Title: Managing Director

**SCHEDULE 1**

**Form of Placement Notice**

From: [ ]

Cc: [ ]

To: [ ]

Subject: Sales Agreement — Placement Notice

Ladies and Gentlemen:

Pursuant to the terms and subject to the conditions contained in the Sales Agreement (the “Agreement”), dated November 1, 2023, by and among Apellis Pharmaceuticals, Inc. (the “Company”) and Cowen and Company, LLC (“Cowen”), I hereby request on behalf of the Company that Cowen sell up to [ ] shares of the Company’s common stock, par value \$0.0001 per share, at a minimum market price of \$[ ] per share.

[ADDITIONAL SALES PARAMETERS MAY BE ADDED, SUCH AS THE MAXIMUM AGGREGATE OFFERING PRICE, THE TIME PERIOD IN WHICH SALES ARE REQUESTED TO BE MADE, SPECIFIC DATES THE SHARES MAY NOT BE SOLD ON, THE MANNER IN WHICH SALES ARE TO BE MADE BY COWEN, AND/OR THE CAPACITY IN WHICH COWEN MAY ACT IN SELLING SHARES (AS PRINCIPAL, AGENT, OR BOTH)]

**SCHEDULE 2**

The Company

Cedric Francois, Chief Executive Officer

Timothy Sullivan, Chief Financial Officer

Cowen and Company, LLC

Michael Murphy

William Follis

Adriano Pierroz

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**SCHEDULE 3**

**Schedule of Free Writing Prospectuses included in the Disclosure Package**

None.

**Exhibit 4(k)**

Form of Officer's Certificate

The undersigned, the duly qualified and elected \_\_\_\_\_, of Apellis Pharmaceuticals, Inc. ("Company"), a Delaware corporation, does hereby certify in such capacity and on behalf of the Company, pursuant to Section 6(e) of the Sales Agreement dated November 1, 2023 (the "Agreement") between the Company and Cowen and Company, LLC, that the undersigned has carefully examined the Registration Statement, the Disclosure Package and the Prospectus and any supplements or amendments thereto and the Agreement and that:

- (i) the representations and warranties of the Company set forth in the Agreement are true and correct on and as of the date hereof with the same effect as if made on the date hereof and the Company has complied with all the agreements and satisfied all the conditions on its part to be performed or satisfied at or prior to the date hereof;
- (ii) no stop order suspending the effectiveness of the Registration Statement or any notice objecting to its use has been issued and no proceedings for that purpose have been instituted or, to the Company's knowledge, threatened; and
- (iii) since the date of the most recent financial statements included in the Disclosure Package, there has been no Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

Capitalized terms used herein without definition have the meanings ascribed to them in the Agreement.

Each of Cooley LLP, Wilmer Cutler Pickering Hale and Dorr LLP, and Choate, Hall & Stewart LLP is entitled to rely on this certificate in connection with the opinions such firms are rendering pursuant to Section 6(d), Section 6(b) and Section 6(c), respectively, of the Agreement.

**Apellis Pharmaceuticals, Inc.**

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

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

ANNEX I

APELLIS PHARMACEUTICALS, INC.

Common Stock

TERMS AGREEMENT

\_\_\_\_\_, 20\_\_

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

Dear Ladies and Gentlemen:

Apellis Pharmaceuticals, Inc. (the "Company") proposes, subject to the terms and conditions stated herein and in the Sales Agreement, dated November 1, 2023 (the "Agreement"), between the Company and Cowen and Company, LLC ("Cowen" or the "Manager"), to issue and sell to Cowen the securities specified in the Schedule I hereto (the "Purchased Shares").

Each of the provisions of the Agreement not specifically related to the solicitation by Cowen, as agent of the Company, of offers to purchase securities is incorporated herein by reference in its entirety, and shall be deemed to be part of this Terms Agreement to the same extent as if such provisions had been set forth in full herein. Each of the representations and warranties set forth therein shall be deemed to have been made at and as of the date of this Terms Agreement and the Time of Delivery, except that each representation and warranty in Section 2 of the Agreement which makes reference to the Prospectus (as therein defined) shall be deemed to be a representation and warranty as of the date of the Agreement in relation to the Prospectus, and also a representation and warranty as of the date of this Terms Agreement and the Time of Delivery in relation to the Prospectus as amended and supplemented to relate to the Purchased Shares.

An amendment to the Registration Statement (as defined in the Agreement), or a supplement to the Prospectus, as the case may be, relating to the Purchased Shares, in the form heretofore delivered to the Manager is now proposed to be filed with the Securities and Exchange Commission.

Subject to the terms and conditions set forth herein and in the Agreement which are incorporated herein by reference, the Company agrees to issue and sell to Cowen and the latter agrees to purchase from the Company the number of shares of the Purchased Shares at the time and place and at the purchase price set forth in the Schedule I hereto.

If the foregoing is in accordance with your understanding, please sign and return to us a counterpart hereof, whereupon this Terms Agreement, including those provisions of the Agreement incorporated herein by reference, shall constitute a binding agreement between Cowen and the Company.

Apellis Pharmaceuticals, Inc.

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

ACCEPTED as of the date  
first written above.

Cowen and Company, LLC

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



## Schedule I to Terms Agreement

Title of Purchased Shares:

Common Stock, par value \$0.0001 per share

Number of Shares of Purchased Shares:

Price to Public:

Purchase Price by Cowen and Company, LLC

Method of and Specified Funds for Payment of Purchase Price:

By wire transfer to a bank account specified by the Company in same day funds.

Method of Delivery:

Free delivery of the Shares to the Manager's account at The Depository Trust Company in return for payment of the purchase price.

Time of Delivery:

Closing Location:

Documents to be Delivered:

The following documents referred to in the Sales Agreement shall be delivered as a condition to the closing at the Time of Delivery:

- (1) The opinions referred to in Section 4(l).
- (2) The comfort letter(s) referred to in Section 4(m).
- (3) The secretary's certificate referred to in Section 4(n).
- (4) The officers' certificate referred to in Section 4(k).
- (5) Such other documents as the Manager shall reasonably request.

November 1, 2023

Apellis Pharmaceuticals, Inc.  
100 Fifth Avenue  
Waltham, MA, 02451

Re: Prospectus Supplement to Registration Statement on Form S-3

Ladies and Gentlemen:

This opinion is being furnished to you in connection with (i) the Registration Statement on Form S-3 (File No. 333-269899) (the “Registration Statement”) filed by Apellis Pharmaceuticals, Inc., a Delaware corporation (the “Company”), with the Securities and Exchange Commission (the “Commission”) under the Securities Act of 1933, as amended (the “Securities Act”), for the registration of, among other things, an indeterminate number of shares of the Company’s common stock, \$0.0001 par value per share (the “Common Stock”), which may be issued from time to time on a delayed or continuous basis pursuant to Rule 415 under the Securities Act at an indeterminate aggregate offering price, as set forth in the Registration Statement and the prospectus contained therein (the “Base Prospectus”) and (ii) the prospectus supplement, dated November 1, 2023 (the “Prospectus Supplement”) and, together with the Base Prospectus, the “Prospectus”) relating to the issuance and sale from time to time by the Company of shares of Common Stock with an aggregate offering price of up to \$300,000,000 (the “Shares”).

The Shares are to be issued and sold by the Company pursuant to the Sales Agreement, dated as of November 1, 2023, between the Company and Cowen and Company, LLC (the “Agreement”). The Agreement is being filed with the Commission as Exhibit 1.1 to the Company’s Current Report on Form 8-K, filed on the date hereof.

We are acting as counsel for the Company in connection with the issue and sale by the Company of the Shares pursuant to the Agreement. We have examined and relied upon copies of the Registration Statement and the Prospectus, as filed with the Commission, including the exhibits thereto. We have examined copies of the Registration Statement and the Prospectus as filed with the Commission. We have also examined and relied upon the Agreement, minutes of meetings of the stockholders and the Board of Directors of the Company, including committees thereof as provided to us by the Company, stock record books of the Company as provided to us by the Company, the Certificate of Incorporation and By-laws of the Company, each as restated and/or amended to date, and such other documents as we have deemed necessary for purposes of rendering the opinions hereinafter set forth.

In our examination of the foregoing documents, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as copies, the authenticity of the originals of such latter documents and the legal competence of all signatories to such documents.

Wilmer Cutler Pickering Hale and Dorr LLP, 60 State Street, Boston, Massachusetts 02109

Beijing Berlin Boston Brussels Denver Frankfurt London Los Angeles New York Palo Alto San Francisco Washington

We have relied as to certain matters on information obtained from public officials and officers of the Company, and we have assumed that (i) the Shares will be issued and sold in compliance with applicable federal and state securities laws and in the manner stated in the Registration Statement, the Prospectus and any applicable prospectus supplement; (ii) there will be sufficient shares of Common Stock authorized under the Certificate of Incorporation and not otherwise reserved for issuance; and (iii) the Company will be validly existing as a corporation and in good standing under the laws of the State of Delaware.

We have assumed that there will not have occurred, prior to the date of issuance of the Shares, any change in law affecting the validity of such Shares and that at the time of the issuance and sale of the Shares, the Board of Directors of the Company (or any committee thereof acting pursuant to authority properly delegated to such committee by the Board of Directors) shall not have taken any action to rescind or otherwise reduce its prior authorization of the issuance of the Shares.

We express no opinion herein as to the laws of any state or jurisdiction other than the General Corporation Law of the State of Delaware. We also express no opinion herein with respect to compliance by the Company with the securities or "blue sky" laws of any state or other jurisdiction of the United States or of any foreign jurisdiction.

Based upon and subject to the foregoing, we are of the opinion that the Shares have been duly authorized for issuance and, when the Shares are issued and paid for in accordance with the terms and conditions of the Agreement, the Shares will be validly issued, fully paid and non-assessable.

It is understood that this opinion is to be used only in connection with the offer and sale of the Shares while the Registration Statement is in effect.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

We hereby consent to the filing of this opinion with the Commission in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act as an exhibit to the Current Report on Form 8-K to be filed by the Company on the date hereof in connection with the issuance and sale of the Shares and to the use of our name therein and in the related Prospectus Supplement under the caption "Legal Matters." In giving such consent, we do not hereby 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 of the Commission.

Very truly yours,

/s/ WILMER CUTLER PICKERING HALE AND DORR LLP

WILMER CUTLER PICKERING HALE AND DORR LLP