

**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): September 23, 2021

Onconova Therapeutics, Inc.

(Exact name of registrant as specified in its charter)

**Delaware
(State or other jurisdiction
of incorporation)**

**001-36020
(Commission
File Number)**

**22-3627252
(IRS Employer
Identification No.)**

**12 Penns Trail
Newtown, PA
(Address of principal executive offices)**

**18940
(Zip Code)**

Registrant's telephone number, including area code: (267) 759-3680

(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:

- 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:

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common Stock, par value \$0.01 per share	ONTX	The Nasdaq Stock Market LLC

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.

Underwriting Agreement

On September 23, 2021, Onconova Therapeutics, Inc. (the “Company”) entered into an underwriting agreement (the “Underwriting Agreement”) with Guggenheim Securities, LLC (the “Representative”), as representative of the several underwriters identified in Schedule I thereto (the “Underwriters”), in connection with its previously announced public offering (the “Offering”) of 5,000,000 shares (the “Firm Shares”) of the Company’s common stock, \$0.01 par value per share (the “Common Stock”), at a public offering price of \$4.20 per share less underwriting discounts and commissions. Under the terms of the Underwriting Agreement, the Company granted the Underwriters an option, exercisable for 30 days, to purchase up to an additional 750,000 shares of Common Stock at the same price (the “Option Shares,” and together with the Firm Shares, the “Shares”).

The net proceeds to the Company from the Offering, excluding any exercise by the Underwriters of their thirty day option to purchase any of the Option Shares, are expected to be approximately \$19.5 million after deducting underwriting discounts and commissions and estimated offering expenses payable by the Company.

The Representative is acting as sole book-running manager. Ladenburg Thalmann & Co. Inc. and Noble Capital Markets, Inc. are acting as co-managers for the Offering.

The Offering is being made pursuant to a Registration Statement (No. 333-237844) on Form S-3, which was initially filed by the Company with the Securities and Exchange Commission (“SEC”) on April 24, 2020, amended on Form S-3/A that was filed with the SEC on May 15, 2020, and was declared effective by the SEC on May 18, 2020.

The Underwriting Agreement contains customary representations, warranties and covenants by the Company, customary conditions to closing, indemnification obligations of the Company and the Underwriters, including for liabilities under the Securities Act of 1933, as amended, other obligations of the parties and termination provisions. The representations, warranties, and covenants contained in the Underwriting Agreement were made only for purposes of such agreement and as of specific dates, were solely for the benefit of the parties to such agreement, and may be subject to limitations agreed upon by the contracting parties.

The foregoing summary of the Underwriting Agreement is qualified in its entirety by reference to the Underwriting Agreement attached hereto as Exhibit 1.1 and which is incorporated herein by reference. Morgan, Lewis & Bockius LLP, counsel to the Company, delivered an opinion as to legality of the issuance and sale of the Shares in the Offering, a copy of which is attached hereto as Exhibit 5.1 and is incorporated herein by reference.

Item 8.01. Other Events.

On September 24, 2021, the Company issued a press release announcing the Offering. The full text of the press release is filed as Exhibit 99.1 hereto and is incorporated herein by reference.

Item 9.01. Financial Statements and Exhibits.

(a) Exhibits.

Exhibit No	Description
1.1	Underwriting Agreement, dated September 23, 2021, by and between Onconova Therapeutics, Inc. and Guggenheim Securities, LLC
5.1	Opinion of Morgan, Lewis & Bockius LLP
23.1	Consent of Morgan, Lewis & Bockius LLP (contained in Exhibit 5.1)
99.1	Press release dated September 24, 2021
104	Cover page Interactive Data file (embedded with 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.

ONCONOVA THERAPEUTICS, INC.

Date: September 24, 2021

/s/ MARK GUERIN

Name: Mark Guerin

Title: Chief Financial Officer

Common Stock

ONCONOVA THERAPEUTICS, INC.

UNDERWRITING AGREEMENT

September 23, 2021

Guggenheim Securities, LLC
As Representative of the
several Underwriters named in Schedule I attached hereto
c/o Guggenheim Securities, LLC
330 Madison Avenue
New York, New York 10017

Ladies and Gentlemen:

Onconova Therapeutics, Inc., a corporation organized and existing under the laws of the State of Delaware (the “**Company**”), proposes to issue and sell to the several underwriters listed in Schedule 1 hereto (the “**Underwriters**”) an aggregate of 5,000,000 shares of common stock, par value \$0.01 per share (the “**Common Stock**”), of the Company (the “**Firm Shares**”) and, at the option of the Underwriters, up to an additional 750,000 shares of Common Stock (the “**Additional Shares**”). The Firm Shares and any Additional Shares purchased by the Underwriters are referred to herein as the “**Shares**”. Guggenheim Securities, LLC is acting as representative (the “**Representative**”) of the several Underwriters in connection with the offering and sale of the Shares contemplated herein (the “**Offering**”).

As used in this underwriting agreement (this “**Agreement**”), the following defined terms shall apply:

The “**Registration Statement**” means the registration statement on Form S-3 (File No. 333-237844), including the exhibits, schedules and financial statements and any prospectus supplement relating to the Shares that is filed with the Securities and Exchange Commission (the “**Commission**”) pursuant to Rule 424(b) under the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder (the “**Securities Act**”) and deemed part of such registration statement pursuant to Rule 430A, 430B or 430C under the Securities Act, as amended on each Effective Date, and, in the event any post-effective amendment thereto or any registration statement and any amendments thereto filed pursuant to Rule 462(b) under the Securities Act (a “**Rule 462(b) Registration Statement**”) becomes effective prior to the Closing Date (as defined in Section 2(b) hereof), shall also mean such registration statement as so amended or such Rule 462(b) Registration Statement, as the case may be.

The “**Effective Date**” means, with respect to the Registration Statement, each date and time that such Registration Statement, and any post-effective amendment or amendments thereto or any Rule 462(b) Registration Statement became or becomes effective.

The “**Base Prospectus**” means the base prospectus contained in the Registration Statement at the date and time that this Agreement is executed and delivered by the parties hereto (the “**Execution Time**”).

The “**Preliminary Prospectus**” means any preliminary prospectus supplement to the Base Prospectus relating to the Shares that is filed with the Commission pursuant to Rule 424(b) under the Securities Act and used prior to the filing of the Prospectus, together with the Base Prospectus.

The “**Prospectus**” means the Base Prospectus and the prospectus supplement filed in the form first used (or made available pursuant to Rule 173 under the Securities Act) in connection with confirmation of sales of the Shares.

The “**Pricing Disclosure Package**” shall mean, collectively, (i) the Preliminary Prospectus as amended or supplemented immediately prior to the Applicable Time, (ii) any issuer free writing prospectus, as defined in Rule 433 under the Securities Act (an “**Issuer Free Writing Prospectus**”), identified in **Schedule II** hereto and (iii) the information included in **Schedule III** hereto.

As used herein, “**Applicable Time**” is 10:30 p.m. (New York City time) on the date of this Agreement. As used herein, “**Road Show**” means a “**road show**” (as defined in Rule 433(h) under the Securities Act) relating to the offering of the Shares contemplated hereby that is a “**written communication**” (as defined in Rule 405 under the Securities Act). All references in this Agreement to the Registration Statement, any Preliminary Prospectus, the Base Prospectus and the Prospectus shall include the documents incorporated or deemed to be incorporated by reference therein as of the date hereof pursuant to Item 12 of Form S-3 under the Securities Act. All references in this Agreement to financial statements and schedules and other information that are “contained in,” “included in,” “filed with,” “stated in” or “part of” the Registration Statement, the Rule 462(b) Registration Statement, any Preliminary Prospectus, the Pricing Disclosure Package or the Prospectus, and all other references of like import, shall be deemed to mean and include all such financial statements and schedules and other information that is or is deemed to be incorporated by reference in the Registration Statement, the Rule 462(b) Registration Statement, any Preliminary Prospectus, the Base Prospectus, the Pricing Disclosure Package or the Prospectus, as the case may be.

All references in this Agreement to amendments or supplements to the Registration Statement, the Rule 462(b) Registration Statement, any Preliminary Prospectus, the Pricing Disclosure Package or the Prospectus shall be deemed to mean and include the filing of any document under the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder (collectively, the “**Exchange Act**”) that is or is deemed to be incorporated by reference in the Registration Statement, the Rule 462(b) Registration Statement, any Preliminary Prospectus, the Pricing Disclosure Package, or the Prospectus, as the case may be. All references in this Agreement to the Registration Statement, any Preliminary Prospectus, the Base Prospectus or the Prospectus, any amendments or supplements to any of the foregoing, or any free writing prospectus, shall include any copy thereof filed with the Commission pursuant to its Electronic Data Gathering, Analysis and Retrieval System (“**EDGAR**”).

1. Representations and Warranties of the Company. The Company represents and warrants to, and agrees with, each of the Underwriters as of the date hereof, the Applicable Time, the Closing Date (as hereinafter defined) and any Additional Closing Date (as hereinafter defined) that:

(a) The Registration Statement has been declared effective by the Commission under the Securities Act not earlier than three years prior to the date hereof. No stop order suspending the effectiveness of the Registration Statement is in effect and no proceedings for such purpose or pursuant to Section 8A of the Securities Act have been instituted or are pending or, to the Company's knowledge, are contemplated or threatened by the Commission, and no notice of objection of the Commission to the use of the Registration Statement or any post-effective amendment thereto pursuant to Rule 401(g)(2) under the Securities Act has been received by the Company. No order preventing or suspending the use of any Preliminary Prospectus has been issued by the Commission. At the time the Company's Annual Report on Form 10-K for the year ended December 31, 2020 (the "**Annual Report**") was filed with the Commission, the Company met the then-applicable requirements for use of Form S-3 under the Securities Act. The documents incorporated by reference in the Registration Statement, the Prospectus and the Pricing Disclosure Package, when they were filed with the Commission conformed in all material respects to the requirements of the Exchange Act, and none of such documents contained any untrue statement of a material fact or omitted to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; and any further documents so filed and incorporated by reference in the Registration Statement, the Prospectus or the Pricing Disclosure Package, when such documents are filed with the Commission, will conform in all material respects to the requirements of the Exchange Act and will not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(b) The Registration Statement, any Rule 462(b) Registration Statement and any post-effective amendment thereto, as of the applicable Effective Date, complied and, until such time as the Underwriters are no longer required to deliver a Prospectus in order to confirm sales of the Shares, will comply in all material respects with the Securities Act and the rules and regulations of the Commission thereunder (the "**Rules and Regulations**"). Each Preliminary Prospectus included in the Pricing Disclosure Package, at the time of filing thereof, complied in all material respects with the requirements of the Securities Act and the Rules and Regulations. As of the date of the Prospectus and any amendment or supplement thereto and as of the Closing Date and as of any Additional Closing Date, the Prospectus will comply in all material respects with the requirements of the Securities Act and the Rules and Regulations. Each Preliminary Prospectus delivered to the Underwriters for use in connection with this Offering and the Prospectus was or will be identical to the electronically transmitted copies thereof filed with the Commission pursuant to EDGAR, except to the extent permitted by Regulation S-T.

(c) The Registration Statement, when such Registration Statement became effective, did not contain and, as amended or supplemented, if applicable, will not contain, as of the date of such amendment or supplement, any untrue statement of a material fact or omitted or will omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading; *provided, however*, that this representation and warranty shall not apply to any information contained in or omitted from the Registration Statement or any amendment thereto in reliance upon and in conformity with information furnished in writing to the Company by or on behalf of any Underwriter through the Representative specifically for use therein.

(d) No Preliminary Prospectus, at the time of filing thereof, contained any untrue statement of a material fact or omitted to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The Pricing Disclosure Package, as of the Applicable Time, did not, and as of the Closing Date or as of any Additional Closing Date, will not, contain an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The Prospectus will not, as of its date, as of the Closing Date or as of any Additional Closing Date, contain an 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. Each Issuer Free Writing Prospectus complies in all material respects with the applicable provisions of the Securities Act and the Rules and Regulations, and does not conflict with the information contained in the Registration Statement, the Pricing Disclosure Package or the Prospectus. and, when taken together with the Preliminary Prospectus accompanying, or delivered prior to delivery of, such Issuer Free Writing Prospectus, did not, and as of the Closing Date or as of any Additional Closing Date, will not, contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. No representation and warranty is made in this Section 1(d) with respect to any information contained in or omitted from the Preliminary Prospectus, the Pricing Disclosure Package, the Prospectus or any Issuer Free Writing Prospectus in reliance upon and in conformity with information furnished in writing to the Company by or on behalf of any Underwriter through the Representative specifically for use therein. The parties hereto agree that such information provided by or on behalf of any Underwriter through the Representative consists solely of the material referred to in Section 16 hereof.

(e) Each Issuer Free Writing Prospectus conformed or will conform in all material respects to the requirements of the Securities Act and the Rules and Regulations on the date of first use, and the Company has complied with the requirements of Rule 433 under the Securities Act with respect to each Issuer Free Writing Prospectus including, without limitation, all prospectus delivery, filing, record retention and legending requirements applicable to any such Issuer Free Writing Prospectus. The Company (including its agents and representatives, other than the Underwriters in their capacity as such) has not (i) distributed any offering material in connection with the Offering other than the Registration Statement, any Preliminary Prospectus, the Prospectus, and any Issuer Free Writing Prospectus set forth on **Schedule II** hereto, or (ii) filed, referred to, approved, used or authorized the use of any “free writing prospectus” or any “written communication” (as such terms are defined in Rule 405 under the Securities Act) with respect to the Offering or the Shares, except for any Issuer Free Writing Prospectus set forth in **Schedule II** hereto and any electronic road show previously approved by the Representative. The Company has retained in accordance with the Securities Act and the Rules and Regulations all Issuer Free Writing Prospectuses that were not required to be filed pursuant to the Securities Act and the Rules and Regulations.

(f) Ernst & Young LLP, who have certified the financial statements and supporting schedules and information of the Company and its subsidiaries that are included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus, is an independent registered public accounting firm with respect to the Company and its subsidiaries as required by the Securities Act, the Exchange Act, the Rules and Regulations and the rules of the Public Company Accounting Oversight Board.

(g) Subsequent to the respective dates as of which information is given in the Registration Statement, the Pricing Disclosure Package and the Prospectus, except as disclosed therein, (i) the Company has not declared or paid any dividends, or made any other distribution of any kind, on or in respect of its capital stock, (ii) there has not been any change in the capital stock or long-term or short-term debt of the Company or any of its subsidiaries, (iii) there have been no transactions entered into by the Company or any of its subsidiaries, other than in the ordinary course of business, which are material with respect to the Company and its subsidiaries, taken as a whole, (iv) neither the Company nor any of its subsidiaries has sustained any material loss or interference with its business or properties from fire, explosion, flood, earthquake, hurricane, accident or other calamity, whether or not covered by insurance, or from any labor dispute or dispute or any action or decree of any court or arbitrator or governmental or regulatory authority, except in each case as otherwise disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, and (v) there has not been any material adverse change, or any development involving a prospective material adverse change, in or affecting the business, management, condition (financial or otherwise), results of operations, stockholders’ equity, properties or prospects of the Company and its subsidiaries, taken as a whole (a “**Material Adverse Change**”). Since the date of the latest balance sheet included, or incorporated by reference, in the Registration Statement, the Pricing Disclosure Package or the Prospectus, neither the Company nor any of its subsidiaries has incurred or undertaken any liabilities or obligations, whether direct or indirect, liquidated or contingent, matured or unmatured, or entered into any transactions, including any acquisition or disposition of any business or asset, which are material to the Company and the subsidiaries, taken as a whole, except for liabilities, obligations and transactions which are disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

(h) The Company has an authorized capitalization as set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus, and all of the issued and outstanding shares of capital stock of the Company are fully paid and non-assessable and have been duly authorized and validly issued, in compliance with all applicable state, federal and foreign securities laws and not in violation of or subject to any preemptive or similar right that entitles any person to acquire from the Company or any of its subsidiaries any Common Stock or other security of the Company or any security convertible into, or exercisable or exchangeable for, Common Stock or any other such security of the Company (any “**Relevant Security**”), except as described in or expressly contemplated by the Registration Statement, the Pricing Disclosure Package and the Prospectus. Except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, all of the issued shares of capital stock of or other ownership interests in each subsidiary owned, directly or indirectly, by the Company have been duly authorized and validly issued and are fully paid and non-assessable and are owned directly or indirectly by the Company free and clear of any lien, charge, mortgage, pledge, security interest, claim, equity, trust or other encumbrance, preferential arrangement, defect or restriction of any kind whatsoever (any “**Lien**”).

(i) The Common Stock and the Shares conform to the descriptions thereof contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus. Except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company has no outstanding warrants, options to purchase, or any preemptive rights or other rights to subscribe for or to purchase, or any contracts or commitments to issue or sell, any Relevant Security. Except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, no holder of any Relevant Security has any rights to require registration under the Securities Act of any Relevant Security in connection with the offer and sale of the Shares contemplated hereby, and any such rights so disclosed have either been fully complied with by the Company or effectively waived by the holders thereof.

(j) [Reserved]

(k) The Company and each of its subsidiaries has been duly organized and validly exists as a corporation, partnership or limited liability company (as the case may be) in good standing under the laws of its jurisdiction of organization and has corporate, partnership or limited liability company power and authority (as the case may be) to own or lease its properties and conduct its business as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus. The Company and each of its subsidiaries is qualified to do business and is in good standing as a foreign corporation, partnership or limited liability company (as the case may be) in each jurisdiction in which the character or location of its properties (owned, leased or licensed) or the nature or conduct of its business makes such qualification necessary, except for those failures to be so qualified or in good standing which (individually and in the aggregate) would not reasonably be expected to result in a (i) Material Adverse Change; or (ii) a material adverse effect on the performance by the Company of its obligations under this Agreement and the consummation of the transactions to be undertaken by the Company as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus (a “**Material Adverse Effect**”).

(l) Neither the Company nor any of its subsidiaries (i) is in violation of its certificate or articles of incorporation, by-laws, certificate of formation, limited liability company agreement, partnership agreement or other organizational documents, (ii) is in default under, and no event has occurred which, with notice or lapse of time or both, would constitute a default under or result in the creation or imposition of any Lien upon any property or assets of the Company or any of its subsidiaries pursuant to, any indenture, mortgage, deed of trust, note, lease, loan agreement or other agreement or instrument to which it is a party or by which it is bound or to which any of its property or assets is subject, or (iii) is in violation of any statute, law, rule, regulation, ordinance, directive, judgment, writ, decree or order of any court or judicial, regulatory or other legal or governmental agency or body, foreign or domestic, having jurisdiction over the Company or any of its subsidiaries except (in the case of clauses (ii) and (iii) above) for violations or defaults that would not (individually or in the aggregate) reasonably be expected to have a Material Adverse Effect.

(m) The Company and each of its subsidiaries has all requisite power and authority, and all necessary consents, approvals, authorizations, orders, registrations, qualifications, licenses, sub-licenses, certificates, filings and permits of, with and from all judicial, regulatory and other legal or governmental agencies and bodies and all third parties, foreign and domestic (collectively, the “**Consents**”), to own, lease and operate its properties and conduct its business as it is now being conducted and as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, and each such Consent is valid and in full force and effect, except in each case as would not reasonably be expected to have a Material Adverse Effect. Neither the Company nor any of its subsidiaries has received notice of any investigation or proceedings which, if decided adversely to the Company or any of its subsidiaries, would reasonably be expected to result in the revocation of, or imposition of a materially burdensome restriction on, any such Consent.

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

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

(p) The execution, delivery and performance by the Company of this Agreement, the issuance and sale of the Shares and the consummation of the transactions contemplated by this Agreement do not and will not (i) conflict with or result in a breach or violation of any of the terms and provisions of, or constitute a default (or an event which with notice or lapse of time, or both, would constitute a default) under, result in the termination, modification or acceleration of, or result in the creation or imposition of any Lien upon any property, right or asset of the Company or any of its subsidiaries pursuant to, any indenture, mortgage, deed of trust, note, lease, loan agreement or other agreement, instrument, franchise, license or permit to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries or their respective properties, operations or assets may be bound, (ii) violate or conflict with any provision of the certificate or articles of incorporation, by-laws, certificate of formation, limited liability company agreement, partnership agreement or other organizational documents (as the case may be) of the Company or any of its subsidiaries, or (iii) violate or conflict with any statute, law, rule, regulation, ordinance, directive, judgment, writ, decree or order of any court or judicial, regulatory, administrative or other legal or governmental agency or body, domestic or foreign, having jurisdiction over the Company or any of its subsidiaries, except (in the case of clauses (i) and (iii) above) as would not reasonably be expected to have a Material Adverse Effect.

(q) No Consent is required for the execution, delivery and performance by the Company of this Agreement and the consummation by the Company of the transactions contemplated hereby and by the Registration Statement, the Pricing Disclosure Package and the Prospectus, except for such consents as have been received by the Company and such consents, approvals, authorizations, registrations or qualifications as may be required under state securities, or Blue Sky, laws or the rules and regulations of the Nasdaq Stock Market, LLC or the Financial Industry Regulatory Authority in connection with the purchase and distribution of the Shares by the Underwriters.

(r) Except as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, there is no judicial, regulatory, arbitral or other legal or governmental proceeding or other litigation or arbitration, domestic or foreign (collectively, “**Actions**”), pending to which the Company or any of its subsidiaries is or may be a party or of which any property, operations or assets of the Company or any of its subsidiaries is or may be the subject which, individually or in the aggregate, if determined adversely to the Company or any of its subsidiaries, could reasonably be expected to have a Material Adverse Effect, or which might materially and adversely affect the consummation of the transactions contemplated in this Agreement or the performance by the Company of its obligations hereunder; to the Company’s knowledge, no such Action is threatened or contemplated; and the defense of all such Actions against or involving the Company or any of its subsidiaries would not reasonably be expected to have a Material Adverse Effect. There are no current or pending Actions that are required under the Securities Act to be described in the Registration Statement, the Pricing Disclosure Package or the Prospectus that are not so described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, and there are no statutes, regulations or contracts or other documents that are required under the Securities Act to be filed as exhibits to the Registration Statement or described in the Registration Statement, the Pricing Disclosure Package or the Prospectus, that are not so filed as exhibits to the Registration Statement or described in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

(s) The financial statements, including the notes thereto, and the supporting schedules included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus, comply in all material respects with the applicable requirements of the Securities Act and the Exchange Act, as applicable, and present fairly the consolidated financial position as of the dates indicated and the cash flows and results of operations for the periods specified of the Company and its consolidated subsidiaries; said financial statements have been prepared in conformity with GAAP applied on a consistent basis throughout the periods involved; and the supporting schedules, if any, included in the Registration Statement, the Pricing Disclosure Package and the Prospectus present fairly in all material respects in accordance with GAAP the information required to be stated therein. The other financial and statistical information included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus present fairly in all material respects the information included therein and have been prepared on a basis consistent with that of the financial statements that are included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus and the books and records of the respective entities presented therein.

(t) Nothing has come to the attention of the Company that has caused the Company to believe that the statistical and market-related data included or incorporated by reference in each of the Registration Statement, the Pricing Disclosure Package and the Prospectus is not based on or derived from sources that are reliable and accurate in all material respects.

(u) Except as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company has not received an oral or written notification from The Nasdaq Capital Market LLC (“**Nasdaq**”) or any court or any governmental authority of any inquiry or investigation or other action that would cause the Shares to stop being quoted on Nasdaq.

(v) The Company and its subsidiaries maintain a system of internal accounting and other controls sufficient to provide reasonable assurances that (i) transactions are executed in accordance with management’s general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain accountability for assets, (iii) access to assets is permitted only in accordance with management’s general or specific authorization, (iv) the recorded accounting for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences and (v) the interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package 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. Based on the Company’s most recent evaluation of its internal controls over financial reporting pursuant to Rule 13a-15(c) of the Exchange Act, there are no material weaknesses in the Company’s internal controls. The Company’s auditors and the Audit Committee of the Board of Directors of the Company have been advised of: (i) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which have adversely affected or are reasonably likely to adversely affect the Company’s ability to record, process, summarize and report financial information; and (ii) any fraud, whether or not material, that involves management or other employees who have a significant role in the Company’s internal controls over financial reporting.

(w) The Company and its subsidiaries maintain an effective system of “disclosure controls and procedures” (as such term is defined in Rule 13a-15(e) under the Exchange Act) that complies with the requirements of the Exchange Act; such disclosure controls and procedures have been designed to ensure that information required to be disclosed by the Company in reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission’s rules and forms, including controls and procedures designed to ensure that such information is accumulated and communicated to the Company’s management as appropriate to allow timely decisions regarding required disclosure. The Company and its subsidiaries have carried out evaluations of the effectiveness of their disclosure controls and procedures as required by Rule 13a-15 of the Exchange Act.

(x) There is and has been no failure on the part of the Company or any of the Company’s directors or executive officers, in their capacities as such, to comply with any provision of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated in connection therewith (the “**Sarbanes-Oxley Act**”), including Section 402 related to loans and Sections 302 and 906 related to certifications.

(y) No relationship, direct or indirect, exists between or among any of the Company or any of its subsidiaries, on the one hand, and any director, officer, stockholder, customer or supplier of the Company or any affiliate of the Company, on the other hand, which is required by the Securities Act or the Exchange Act to be described in the Registration Statement, the Pricing Disclosure Package or the Prospectus that is not so described as required.

(z) Neither the Company nor any of its subsidiaries or affiliates (within the meaning of Rule 144 under the Securities Act) has taken, directly or indirectly, any action which constitutes or is designed to cause or result in, or which would reasonably be expected to constitute, cause or result in, any stabilization or manipulation of the price of the Shares pursuant to Regulation M under the Exchange Act.

(aa) Neither the Company nor any of its affiliates (within the meaning of Rule 144 under the Securities Act) has, prior to the date hereof, made any offer or sale of any securities which could be “integrated” (within the meaning of the Securities Act and the Rules and Regulations) with the sale of the Shares hereunder.

(bb) The Company is not and, at all times up to and including consummation of the transactions contemplated by this Agreement, will not be, required to register as an “investment company” under the Investment Company Act of 1940, as amended, and the rules and regulations of the Commission thereunder (collectively, the “**Investment Company Act**”), and is not and will not be an entity “controlled” by an “investment company” within the meaning of the Investment Company Act.

(cc) Neither the Company nor any of its subsidiaries is a party to any contract, agreement or understanding with any person (other than this Agreement) that would give rise to a valid claim against any of them or any Underwriter for a brokerage commission, finder’s fee or like payment in connection with the sale of the Shares.

(dd) The Company and each of its subsidiaries owns or leases all such properties as are necessary to the conduct of its business as presently operated and as proposed to be operated as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus. The Company and each of its subsidiaries have good and marketable title in fee simple to all real property and good and marketable title to all personal property owned by them, in each case free and clear of any and all Liens except such as are described in the Registration Statement, the Pricing Disclosure Package and the Prospectus or such as do not (individually or in the aggregate) materially affect the value of such property or materially interfere with the use made or proposed to be made of such property by the Company and each of its subsidiaries; and any real property and buildings held under lease or sublease by the Company and each of its subsidiaries are held by them under valid, subsisting and enforceable leases with such exceptions as are not material to, and do not materially interfere with, the use made and proposed to be made of such property and buildings by the Company and each of its subsidiaries. Neither the Company nor any of its subsidiaries has received any notice of any claim adverse to its ownership of any real or personal property or of any claim against the continued possession of any real property, whether owned or held under lease or sublease by the Company or any of its subsidiaries.

(ee)

- (i) Except as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company owns or has valid, binding and enforceable licenses or other rights under the patents, patent applications, licenses, inventions, copyrights, know how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems or procedures), trademarks, service marks, trade names or other intellectual property necessary for, or used in the conduct, or the proposed conduct, of the business of the Company in the manner described in the Registration Statement, the Pricing Disclosure Package and the Prospectus (collectively, the “**Intellectual Property**”); the patents, trademarks, and copyrights, if any, included within the Intellectual Property are valid, enforceable, and subsisting; other than as disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, (A) the Company is not obligated to pay a material royalty, grant a license to, or provide other material consideration to any third party in connection with the Intellectual Property, (B) the Company has not received any notice of any claim of infringement, misappropriation or conflict with any asserted rights of others with respect to any of the Company’s drug candidates, services, conduct of the business, processes or Intellectual Property, (C) to the knowledge of the Company, neither the conduct of the business, sale nor use of any of the discoveries, inventions, drug candidates, services or processes of the Company referred to in the Registration Statement, the Pricing Disclosure Package or the Prospectus do or will infringe, misappropriate or violate any right or valid patent claim of any third party, (D) none of the technology employed by the Company has been obtained or is being used by the Company in material violation of any contractual obligation binding on the Company or, to the Company’s knowledge, upon any of its officers, directors or employees or otherwise in violation of the rights of any persons, (E) to the knowledge of the Company, no third party has any ownership right in or to any Intellectual Property that is owned by the Company, other than any co-owner of any patent constituting Intellectual Property who is listed on the records of the U.S. Patent and Trademark Office (the “**USPTO**”) and any co-owner of any patent application constituting Intellectual Property who is named in such patent application, and, to the knowledge of the Company, no third party has any ownership right in or to any Intellectual Property in any field of use that is exclusively licensed to the Company, other than any licensor to the Company of such Intellectual Property, (F) there is no infringement by third parties of any Intellectual Property, (G) 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 Intellectual Property, and (H) 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 Intellectual Property. The Company is in material compliance with the terms of each agreement pursuant to which Intellectual Property has been licensed to the Company, and all such agreements are in full force and effect.
- (ii) All patents and patent applications owned by or licensed to the Company or under which the Company has rights have, to the knowledge of the Company, been duly and properly filed and maintained; to the knowledge of the Company, the parties prosecuting such patent applications have complied with their duty of candor and disclosure to the USPTO in connection with such applications; and the Company is not aware of any facts required to be disclosed to the USPTO that were not disclosed to the USPTO and which would preclude the grant of a patent in connection with any such application or would reasonably be expected to form the basis of a finding of invalidity with respect to any patents that have issued with respect to such applications. To the Company’s knowledge, all patents and patent applications owned by the Company and filed with the USPTO or any foreign or international patent authority (the “**Company Patent Rights**”) and all patents and patent applications in-licensed by the Company and filed with the USPTO or any foreign or international patent authority (the “**In-licensed Patent Rights**”) have been duly and properly filed; the Company believes it has complied with its duty of candor and disclosure to the USPTO for the Company Patent Rights and, to the Company’s knowledge, the licensors of the In-licensed Patent Rights have complied with their duty of candor and disclosure to the USPTO for the In-licensed Patent Rights.

(ff) 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 and, except as would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect, to the Company's knowledge, 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.

(gg) The Company and its subsidiaries maintain insurance in such amounts and covering such risks as the Company reasonably considers adequate for the conduct of its business and the value of its properties and as is customary for companies engaged in similar businesses in similar industries, all of which insurance is in full force and effect, except where the failure to maintain such insurance would not reasonably be expected to have a Material Adverse Effect. There are no material 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 of its subsidiaries has received notice from any insurer or agent of such insurer that capital improvements or other expenditures are required or necessary to be made in order to continue such insurance. The Company reasonably believes that it will be able to renew its existing insurance as and when such coverage expires or will be able to obtain replacement insurance adequate for the conduct of the business and the value of its properties at a cost that would not have a Material Adverse Effect.

(hh) Except as would not reasonably be expected to result in a Material Adverse Effect, each of the Company and each of its subsidiaries has accurately prepared and timely filed all federal, state, foreign and other tax returns that are required to be filed by it or have been granted extensions thereof and has paid or made provision for the payment of all taxes, including without limitation, all taxes which the Company or any such subsidiary is obligated to withhold from amounts owing to employees, creditors and third parties, with respect to the periods covered by such tax returns (whether or not such amounts are shown as due on any tax return). Except as would not reasonably be expected to result in a Material Adverse Effect, no deficiency assessment with respect to a proposed adjustment of the Company's or any of its subsidiaries' federal, state, local or foreign taxes is pending or, to the Company's knowledge, threatened. The accruals and reserves on the books and records of the Company and its subsidiaries in respect of tax liabilities for any taxable period not finally determined are adequate to meet any assessments and related liabilities for any such period and, since December 31, 2020, except as would not reasonably be expected to have a Material Adverse Effect, the Company and its subsidiaries have not incurred any liability for taxes other than in the ordinary course of its business. There is no tax lien, whether imposed by any federal, state, foreign or other taxing authority, outstanding against the assets, properties or business of the Company or any of its subsidiaries, other than any such tax lien arising automatically under applicable law with respect to taxes not yet due and payable or being contested in good faith.

(ii) No labor disturbance by or dispute with the employees of the Company or any of its subsidiaries exists or, to the Company's knowledge, is imminent, contemplated or threatened and the Company is not aware of any existing or imminent labor disturbances by the employees of any of its or any of its subsidiaries principal suppliers, manufacturers, customers or contractors, which, in either case (individually or in the aggregate), could reasonably be expected to have a Material Adverse Effect.

(jj) Each employee benefit plan, within the meaning of Section 3(3) of the Employee Retirement Income Security Act of 1974, as amended ("**ERISA**"), that is maintained, administered or contributed to by the Company or any Subsidiary for employees or former employees of the Company and its affiliates has been maintained in compliance with its terms and the requirements of any applicable statutes, orders, rules and regulations, including but not limited to ERISA and the Internal Revenue Code of 1986, as amended (the "**Code**"), except to the extent that failure to so comply, individually or in the aggregate, would not have a Material Adverse Effect. No prohibited transaction, within the meaning of Section 406 of ERISA or Section 4975 of the Code has occurred with respect to any such plan excluding transactions effected pursuant to a statutory or administrative exemption.

(kk) Neither the Company nor any of the Subsidiaries is in violation of any statute or any rule, regulation, decision or order of any governmental agency or body or any court, domestic or foreign, relating to the use, production, disposal or release of hazardous or toxic substances or relating to the protection or restoration of the environment or human exposure to hazardous or toxic substances (collectively, "**Environmental Laws**"), owns or operates any real property contaminated with any substance that is subject to any Environmental Laws, is liable for any off-site disposal or contamination pursuant to any Environmental Laws, or is subject to any claim relating to any Environmental Laws, which violation, contamination, liability or claim, individually or in the aggregate, would have a Material Adverse Effect; and the Company is not aware of any pending investigation which would reasonably be expected to lead to such a claim.

(ll) Neither the Company nor any of its subsidiaries, nor any director, officer or employee of the Company or any of its subsidiaries nor, to the knowledge of the Company, any agent, affiliate or other person associated with or acting on behalf of the Company or any of its subsidiaries has (i) used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity; (ii) made or taken an act in furtherance of an offer, promise or authorization of any direct or indirect unlawful payment or benefit to any foreign or domestic government official or employee, including of any government-owned or controlled entity or of a public international organization, or any person acting in an official capacity for or on behalf of any of the foregoing, or any political party or party official or candidate for political office; (iii) violated or is in violation of any provision of the Foreign Corrupt Practices Act of 1977, as amended, or any applicable law or regulation implementing the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, or committed an offence under the Bribery Act 2010 of the United Kingdom or any other applicable anti-bribery or anti-corruption law; or (iv) made, offered, agreed, requested or taken an act in furtherance of any unlawful bribe or other unlawful benefit, including, without limitation, any rebate, payoff, influence payment, kickback or other unlawful or improper payment or benefit. The Company and its subsidiaries have instituted, maintain and enforce, and will continue to maintain and enforce policies and procedures designed to promote and ensure compliance with all applicable anti-bribery and anti-corruption laws.

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

(nn) Neither the Company nor any of its subsidiaries, directors, officers or employees, nor, to the knowledge of the Company, any agent, affiliate or other person associated with or acting on behalf of the Company or any of its subsidiaries is currently the subject or the target of any sanctions administered or enforced by the U.S. government (including, without limitation, the Office of Foreign Assets Control of the U.S. Department of the Treasury (“**OFAC**”) or the U.S. Department of State and including, without limitation, the designation as a “specially designated national” or “blocked person”), the United Nations Security Council (“**UNSC**”), the European Union, Her Majesty’s Treasury (“**HMT**”) or other relevant sanctions authority (collectively, “**Sanctions**”), nor is the Company or any of its subsidiaries located, organized or resident in a country or territory that is the subject or target of Sanctions, including, without limitation, Crimea, Cuba, Iran, North Korea and Syria (each, a “**Sanctioned Country**”). For the past five years, the Company and its subsidiaries have not knowingly engaged in and are not now knowingly engaged in any dealings or transactions with any person that at the time of the dealing or transaction is or was the subject or the target of Sanctions or with any Sanctioned Country.

(oo) At the time of filing the Registration Statement and any post-effective amendment thereto, and at the date hereof, the Company was not and is not an “ineligible issuer,” as defined in Rule 405 under the Securities Act.

(pp) There are (and prior to the Closing Date and any Additional Closing Date, will be) no debt securities, convertible securities or preferred stock issued or guaranteed by the Company or any of its subsidiaries that are rated by any “nationally recognized statistical rating organization,” as such term is defined in Section 3(a)(62) of the Exchange Act.

(qq) No forward-looking statement (within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act) included or incorporated by reference in any of the Registration Statement, the Pricing Disclosure Package or the Prospectus has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

(rr) The sale and delivery of the Shares as described in each of the Registration Statement, the Pricing Disclosure Package and the Prospectus will not violate Regulation T, U or X of the Board of Governors of the Federal Reserve System or any other regulation of such Board of Governors.

(ss) Except as described in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company: (A) is and at all times has been in material compliance with all statutes, rules and regulations of the U.S. Food and Drug Administration (the “**FDA**”) and other comparable governmental authorities applicable to the ownership, testing (including clinical trials and pre-clinical studies), development, manufacture, packaging, processing, use, labeling, storage, import, export or disposal of any product under development, manufactured by the Company (“**Applicable Laws**”); (B) has not received any FDA Form 483, notice of adverse finding, warning letter, untitled letter or other correspondence or other formal notice from the FDA or any governmental authority alleging or asserting material noncompliance with any Applicable Laws or any licenses, certificates, permits and supplements or amendments thereto required by any such Applicable Laws (“**Authorizations**”); (C) possesses all material Authorizations and such Authorizations are valid and in full force and effect and the Company is not in material violation of any term of any such Authorizations; (D) has not received written notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from the FDA or any governmental authority or third party alleging that any product operation or activity is in material violation of any Applicable Laws or Authorizations and has no knowledge that the FDA, Health Canada or any governmental authority or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding; (E) has not received any formal notice that the FDA, Health Canada or any governmental authority has taken, is taking or intends to take action to materially limit, suspend, modify or revoke any material Authorizations and has no knowledge that the FDA, Health Canada or any governmental authority is considering such action; and (F) 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 materially complete and correct on the date filed (or were corrected or supplemented by a subsequent submission).

(tt) To the extent applicable, the Company has operated and currently is in compliance with all applicable health care laws, rules and regulations (except where such failure to operate or non-compliance would not, singly or in the aggregate, result in a Material Adverse Effect), including, without limitation, (i) the Federal, Food, Drug and Cosmetic Act (21 U.S.C. §§ 301 et seq.) and the rules and regulations promulgated thereunder (collectively, “**FFDCA**”); (ii) all applicable federal, state, and local and all applicable similar foreign healthcare laws, including, without limitation, the federal Anti-kickback Statute (42 U.S.C. § 1320a-7b(b)), the U.S. Physician Payments Sunshine Act (42 U.S.C. § 1320a-7h), the civil False Claims Act (31 U.S.C. §§ 3729 et seq.), the criminal False Claims Law (42 U.S.C. § 1320a-7b(a)), all criminal laws relating to healthcare fraud and abuse, including but not limited to 18 U.S.C. Sections 286 and 287, the healthcare fraud criminal provisions under the U.S. Health Insurance Portability and Accountability Act of 1996 (“**HIPAA**”) (42 U.S.C. Section 1320d et seq.); (iii) HIPAA, as amended by the Health Information Technology for Economic Clinical Health Act (42 U.S.C. Sections 17921 - 17931); (iv) the regulations promulgated pursuant to such laws; and (vii) any other similar local, state, federal, or foreign laws (collectively, the “**Health Care Laws**”). The Company has not received written notice or other formal communication of any claim, action, suit, audit, survey, proceeding, hearing, enforcement, investigation, arbitration or other action (“**Health Care Law Action**”) from any court or arbitrator or governmental authority or regulatory authority or third party alleging that any product operation or activity is in violation of any Health Care Laws, and, to the Company’s knowledge, no such Health Care Law Action is threatened. The Company is not a party to and does not have any ongoing reporting obligations pursuant to any corporate integrity agreement, deferred prosecution agreement, monitoring agreement, consent decree, settlement order, plan of correction or similar agreement imposed by any governmental or regulatory authority. Additionally, neither the Company, nor to the Company’s actual knowledge, any of its employees, officers or directors, has been excluded, suspended or debarred from participation in any U.S. state or federal health care program or human clinical research pursuant to 42 U.S.C. § 1320a-7, 21 U.S.C. § 335a, or similar laws, or, to the knowledge of the Company, is subject to a governmental inquiry, investigation, proceeding, or other similar action that could reasonably be expected to result in debarment, suspension, or exclusion.

(uu) The non-clinical studies and clinical trials conducted by or, to the Company's knowledge, on behalf of the Company were and, if still ongoing, are being conducted in all material respects in accordance with applicable experimental protocols, procedures and controls pursuant to accepted professional scientific standards, current good clinical practices and current good laboratory practices as required under applicable laws and all Authorizations and Applicable Laws, including, without limitation, the FDCA, and the International Conference on Harmonization Guidelines; the descriptions of the results of such studies and clinical trials contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus are, to the Company's knowledge, accurate and complete in all material respects and fairly present the material data derived from such studies and clinical trials; except to the extent disclosed in the Registration Statement, the Pricing Disclosure Package and the Prospectus, the Company is not aware of any studies or clinical trials, the results of which the Company believes reasonably call into question the study or trial results described or referred to in the Registration Statement, the Pricing Disclosure Package and the Prospectus when viewed in the context in which such results are described and the clinical state of development; and, except to the extent disclosed in the Registration Statement, the Pricing Disclosure Package or the Prospectus, the Company has not received any written notices or correspondence from the FDA or any governmental authority requiring the termination or suspension of any studies or clinical trials conducted by or on behalf of the Company, other than ordinary course communications with respect to modifications in connection with the design and implementation of such clinical trials.

Any certificate signed by or on behalf of the Company and delivered to the Representative or to counsel for the Underwriters shall be deemed to be a representation and warranty by the Company to each Underwriter as to the matters covered thereby.

2. Purchase, Sale and Delivery of the Shares.

(a) On the basis of the representations, warranties, covenants and agreements herein contained, and subject to the terms and conditions herein set forth, the Company agrees to sell to each Underwriter and each Underwriter, severally and not jointly, agrees to purchase from the Company, at a purchase price per share of \$3.948, the number of Firm Shares set forth opposite their respective names on **Schedule I** hereto together with any additional number of Shares which such Underwriter may become obligated to purchase pursuant to the provisions of Section 8 hereof, subject, however, to such adjustments to eliminate fractional shares as the Representative in its sole discretion shall make.

(b) The closing of the issuance of the Firm Shares shall be held at the office of White & Case LLP ("**Underwriters' Counsel**"), or at such other place as shall be agreed upon by the Representative and the Company, at 10:00 A.M., New York City time, on September 28, 2021, or such other time and date as the Representative and the Company may agree upon in writing (such time and date of payment and delivery being herein called the "**Closing Date**"). Payment of the purchase price for the Firm Shares shall be made by wire transfer in same day funds to the account specified by the Company upon delivery of the Firm Shares to the Representative through the facilities of The Depository Trust Company ("**DTC**") for the respective accounts of the several Underwriters. The Firm Shares shall be registered in such name or names and shall be in such denominations as the Representative may request in writing not later than the business day immediately prior to the Closing Date.

(c) In addition, the Company hereby grants to the Underwriters, acting severally and not jointly, the option to purchase up to 750,000 Additional Shares at the same purchase price per share to be paid by the Underwriters for the Firm Shares as set forth in Section 2(a) above. This option may be exercised at any time and from time to time, in whole or in part on one or more occasions, on or before the thirtieth (30th) day following the date of the Prospectus, by written notice from the Representative to the Company. Such notice shall set forth the aggregate number of Additional Shares as to which the option is being exercised and the date and time, as reasonably determined by the Representative, when the Additional Shares are to be delivered (any such date and time being herein sometimes referred to as an “**Additional Closing Date**”); *provided, however*, that no Additional Closing Date shall occur earlier than the Closing Date. On the basis of the representations, warranties, covenants and agreements herein contained, but subject to the terms and conditions herein set forth, upon any exercise of the option as to all or any portion of the Additional Shares, each Underwriter, acting severally and not jointly, agrees to purchase from the Company the number of Additional Shares that bears the same proportion of the total number of Additional Shares then being purchased as the number of Firm Shares set forth opposite the name of such Underwriter in **Schedule I** hereto (or such number increased as set forth in Section 8 hereof) bears to the total number of Firm Shares that the Underwriters have agreed to purchase hereunder, subject, however, to such adjustments to eliminate fractional shares as the Representative in its sole discretion shall make. In the event that the Underwriters exercise less than their full option to purchase Additional Shares, the number of Additional Shares to be sold by the Company shall be, as nearly as practicable, in the same proportion as the maximum number of Additional Shares to be sold by the Company and the number of Additional Shares to be sold.

(d) The closing of the issuance of the Additional Shares shall be held at the office of Underwriters’ Counsel, or at such other place as shall be agreed upon by the Representative and the Company, at 10:00 A.M., New York City time, on any Additional Closing Date, or such other time as shall be agreed upon by the Representative and the Company. Payment of the purchase price for the Additional Shares shall be made by wire transfer in same day funds to the account specified by the Company upon delivery of the Additional Shares to the Representative through the facilities of DTC for the respective accounts of the several Underwriters. The Additional Shares shall be registered in such name or names and shall be in such denominations as the Representative may request in writing not later than the business day immediately prior to the Closing Date.

3. Covenants.

In addition to the other covenants and agreements of the Company contained herein, the Company further covenants and agrees with each of the Underwriters that:

(a) The Company shall prepare the Prospectus in a form approved by you and file such Prospectus pursuant to, and within the time period specified in, Rule 424(b) and Rule 430A, 430B or 430C under the Securities Act; prior to the last date on which an Additional Closing Date, if any, may occur, the Company shall file no further amendment to the Registration Statement or amendment or supplement to the Prospectus to which you shall object in writing after being furnished in advance a copy thereof and given a reasonable opportunity to review and comment thereon; the Company shall notify you promptly (and, if requested by the Representative, confirm such notice in writing) (i) when the Registration Statement and any amendments thereto become effective, (ii) of any request by the Commission for any amendment of or supplement to the Registration Statement or the Prospectus, including any document incorporated by reference therein or for any additional information, (iii) of the Company’s intention to file, or prepare any supplement or amendment to, the Registration Statement, any Preliminary Prospectus, the Prospectus or any Issuer Free Writing Prospectus, (iv) of the mailing or the delivery to the Commission for filing of any amendment of or supplement to the Registration Statement or the Prospectus, including but not limited to Rule 462(b) under the Securities Act, (v) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or any post-effective amendment thereto, or suspending the use of any Preliminary Prospectus, the Prospectus or any Issuer Free Writing Prospectus or, in each case, of the initiation or threatening of any proceedings therefore, (vi) of the receipt of any comments from the Commission, and (vii) 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 initiation or threatening of any proceeding for that purpose. If the Commission shall propose or enter a stop order at any time, the Company will make every reasonable effort to prevent the issuance of any such stop order and, if issued, to obtain the lifting of such order as soon as possible.

(b) If at any time when a prospectus relating to the Shares (or, in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act) is required to be delivered under the Securities Act, any event shall have occurred as a result of which the Pricing Disclosure Package (prior to the availability of the Prospectus) or the Prospectus as then amended or supplemented would, in the judgment of the Underwriters or the Company, include an 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 existing at the time of delivery of such Pricing Disclosure Package or Prospectus (or, in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act) to the purchaser, not misleading, or if to comply with the Securities Act, the Exchange Act or the Rules and Regulations it shall be necessary at any time to amend or supplement the Pricing Disclosure Package, the Prospectus or the Registration Statement, or to file any document incorporated by reference in the Registration Statement or the Prospectus or in any amendment thereof or supplement thereto, the Company will notify you promptly and prepare and file with the Commission an appropriate amendment, supplement or document (in form and substance satisfactory to the Representative) that will correct such statement or omission or effect such compliance, and will use its reasonable best efforts to have any amendment to the Registration Statement declared effective as soon as possible.

(c) The Company will not, without the prior consent of the Representative, (i) make any offer relating to the Shares that would constitute a “free writing prospectus” as defined in Rule 405 under the Securities Act, except for any Issuer Free Writing Prospectus set forth in **Schedule II** hereto and any electronic road show previously approved by the Representative, or (ii) file, refer to, approve, use or authorize the use of any “free writing prospectus” as defined in Rule 405 under the Securities Act with respect to the Offering or the Shares. If at any time any event shall have occurred as a result of which any Issuer Free Writing Prospectus as then amended or supplemented would, in the judgment of the Underwriters or the Company, conflict with the information in the Registration Statement, the Pricing Disclosure Package or the Prospectus as then amended or supplemented or would, in the judgment of the Underwriters or the Company, include an 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 existing at the time of delivery to the purchaser, not misleading, or if to comply with the Securities Act or the Rules and Regulations it shall be necessary at any time to amend or supplement any Issuer Free Writing Prospectus, the Company will notify the Representative promptly and, if requested by the Representative, prepare and furnish without charge to each Underwriter an appropriate amendment or supplement (in form and substance satisfactory to the Representative) that will correct such statement, omission or conflict or effect such compliance.

(d) The Company has complied and will comply with the requirements of Rule 433 with respect to each Issuer Free Writing Prospectus including, without limitation, all prospectus delivery, filing, record retention and legending requirements applicable to each such Issuer Free Writing Prospectus.

(e) At the request of the Representative, the Company will promptly deliver to each of you and Underwriters’ Counsel a signed copy of the Registration Statement, as initially filed and all amendments thereto, including all consents and exhibits filed therewith. At the request of the Representative, the Company will promptly deliver to each of the Underwriters such number of copies of any Preliminary Prospectus, the Prospectus, the Registration Statement, all amendments of and supplements to such documents, if any, and all documents incorporated by reference in the Registration Statement and Prospectus or any amendment thereof or supplement thereto, as you may reasonably request. Prior to 3:00 P.M., New York City time, on the business day next succeeding the date of this Agreement and from time to time thereafter, at the request of the Representative, the Company will furnish the Underwriters with copies of the Prospectus in New York City in such quantities as you may reasonably request.

(f) The Company will make generally available to its security holders and to the Representative as soon as practicable an earnings statement of the Company and each of its subsidiaries (which need not be audited) covering a period of at least twelve months beginning with the first fiscal quarter of the Company commencing after the date of this Agreement that will satisfy the provisions of Section 11(a) of the Securities Act and the Rules and Regulations (including, at the option of the Company, Rule 158).

(g) For a period of 90 days after the date of the Prospectus, the Company will not (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend or otherwise transfer or dispose of, directly or indirectly, or submit to, or file with, the Commission a registration statement under the Securities Act relating to, any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock, or publicly disclose the intention to undertake any of the foregoing, or (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the Common Stock or any such other securities, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise, without the prior written consent of the Representative. The restrictions described above do not apply to (i) the issuance of shares of Common Stock or securities convertible into or exercisable for shares of Common Stock pursuant to the conversion or exchange of convertible or exchangeable securities or the exercise of warrants or options (including net exercise), in each case outstanding on the date of this Agreement and described in the Prospectus; (ii) grants of stock options, stock awards, restricted stock, or other equity awards and the issuance of shares of Common Stock or securities convertible into or exercisable or exchangeable for shares of Common Stock (whether upon the exercise of stock options or otherwise) to the Company's employees, officers, directors, advisors, or consultants pursuant to the terms of an equity compensation plan in effect as of the Closing Date and described in the Prospectus; (iii) the filing of any registration statement on Form S-8 relating to securities granted or to be granted pursuant to any plan in effect on the date of this Agreement and described in the Prospectus or any assumed benefit plan pursuant to an acquisition or similar strategic transaction; (iv) the transactions contemplated hereby; and (v) the issuance of shares of Common Stock or any securities convertible into or exchangeable for, or any options or rights to purchase or acquire, Common Stock, in an amount not exceeding, when aggregated with all other issuances under this clause (v), 15% of the total number of shares of Common Stock issued and outstanding on the date of this Agreement, as consideration for mergers, acquisitions, other business combinations or joint ventures or strategic alliances, including without limitation, in-licensing and out-licensing agreements, occurring after the date of this Agreement which (a) are not for the primary purpose of raising capital and (b) are negotiated on an arm's length basis with an unaffiliated third party, and the filing of related registration statements on Form S-3, provided that each recipient of shares of Common Stock or securities convertible into or exercisable for Common Stock shall execute a lock-up agreement substantially in the form of Exhibit A hereto (a "**Lock-Up Agreement**") which shall permit the filing of the related registration statement on Form S-3 as set forth in this clause (v).

(h) [Reserved.]

(i) During the period of two years from the date of the Prospectus, the Company will furnish to the Representative copies of all reports or other communications (financial or other) furnished to security holders or from time to time published or publicly disseminated by the Company, and will deliver to the Representative as soon as they are available, copies of any reports, financial statements and proxy or information statements furnished to or filed with the Commission or any national securities exchange on which any class of securities of the Company is listed; provided, that the Company will be deemed to have furnished such reports, other communications, financial statements and proxy or information statements to the Representative to the extent they are filed on EDGAR.

(j) The Company will use its reasonable best efforts to maintain the listing of the Shares on the Nasdaq Capital Market.

(k) The Company, during the period when a prospectus (or, in lieu thereof, the notice referred to in Rule 173(a) under the Securities Act) is required to be delivered under the Securities Act in connection with the offer or sale of the Shares, will file all reports and other documents required to be filed by the Company with the Commission pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act and the Rules and Regulations within the time periods required thereby.

(l) If the Company elects to rely upon Rule 462(b) under the Securities Act, the Company shall file a Rule 462(b) Registration Statement with the Commission in compliance with Rule 462(b) by 10:00 p.m. (New York City time), on the date of this Agreement, and the Company shall at the time of filing either pay to the Commission the filing fee for the Rule 462(b) Registration Statement or give irrevocable instructions for the payment of such fee pursuant to Rule 111(b) under the Securities Act.

(m) Neither the Company nor its subsidiaries or affiliates will take, directly or indirectly, any action designed to or that could reasonably be expected to cause or result in any stabilization or manipulation of the price of the Common Stock.

(n) The Company will do and perform all things required or necessary to be done and performed under this Agreement by it prior to each Closing Date, and to satisfy all conditions precedent to the Underwriters' obligations hereunder to purchase the Shares.

(o) If immediately prior to the third anniversary (the "**Renewal Deadline**") of the initial effective date of the Registration Statement, any of the Shares remain unsold by the Underwriters, the Company will, prior to the Renewal Deadline, file, if it has not already done so and is eligible to do so, a new automatic shelf registration statement relating to the Shares, in a form satisfactory to the Representative. If the Company is not eligible to file an automatic shelf registration statement, the Company will, prior to the Renewal Deadline, if it has not already done so, file a new shelf registration statement relating to the Shares, in a form satisfactory to the Representative, and will use its best efforts to cause such registration statement to be declared effective within 180 days after the Renewal Deadline. The Company will take all other action necessary or appropriate to permit the issuance and sale of the Shares to continue as contemplated in the expired registration statement relating to the Shares. References herein to the Registration Statement shall include such new automatic shelf registration statement or such new shelf registration statement, as the case may be.

4. Payment of Expenses. Whether or not the transactions contemplated by this Agreement, the Registration Statement and the Prospectus are consummated or this Agreement is terminated, the Company hereby agrees to pay all costs and expenses incident to the performance of its obligations hereunder, including the following: (i) all expenses in connection with the preparation, printing and filing of the Registration Statement, any Preliminary Prospectus, any Issuer Free Writing Prospectus, the Prospectus and any and all amendments and supplements thereto and the mailing and delivering of copies thereof to the Underwriters and dealers; (ii) the fees, disbursements and expenses of the Company's counsel and accountants in connection with the registration of the Shares under the Securities Act and the Offering; (iii) the cost of producing this Agreement and any agreement among Underwriters, blue sky survey, closing documents and other instruments, agreements or documents (including any compilations thereof) in connection with the Offering; (iv) all expenses (up to \$10,000 in the aggregate) in connection with the qualification of the Shares for offering and sale under state or foreign securities or blue sky laws, including the fees and disbursements of counsel for the Underwriters in connection with such qualification or offering and in connection with any blue sky survey; (v) the filing fees incident to, and the reasonable and documented fees and disbursements of counsel for the Underwriters (up to \$25,000 in the aggregate) in connection with, securing any required review by the Financial Industry Regulatory Authority, Inc. ("**FINRA**") of the terms of the Offering; (vi) all fees and expenses in connection with listing the Shares on Nasdaq; (vii) the reasonable and documented fees, disbursements and expenses of counsel to the Underwriters; (viii) the costs and expenses of the Company relating to investor presentations on any Road Show undertaken in connection with the marketing of the Shares, including without limitation, expenses associated with the production and distribution (including electronic) of Road Show slides and graphics, travel and lodging expenses of the representatives and officers of the Company; and (ix) any stock transfer taxes incurred in connection with the transfer of the Shares to be sold by the Company to the Underwriters pursuant to this Agreement (excluding, for the avoidance of doubt, any income tax). The Company also will pay or cause to be paid: (x) the cost of preparing stock certificates, if any, representing the Shares; (y) the cost and charges of any transfer agent, registrar or custodian for the Shares; and (z) all other costs and expenses incident to the offering of the Shares or the performance of the obligations of the Company under this Agreement; *provided, however*, that reimbursable fees and expenses under clauses (vii) and (viii) of this Section 4 shall not exceed \$100,000 in the aggregate without the Company's prior approval (such approval not to be unreasonably withheld, conditioned or delayed). It is understood that, except as provided in Sections 4, 6, 7 and 10 hereof, the Underwriters will pay all of their own costs and expenses, including the fees of their counsel and stock transfer taxes on resale of any of the Shares by them.

5. Conditions of Underwriters' Obligations. The several obligations of the Underwriters to purchase and pay for the Firm Shares and the Additional Shares, as provided herein, shall be subject to the accuracy of the representations and warranties of the Company herein contained, as of the date hereof and as of the applicable Closing Date (for purposes of this Section 5, "**Closing Date**" shall refer to the Closing Date for the Firm Shares and any Additional Closing Date, if different, for the Additional Shares), to the performance by the Company of all of its obligations hereunder, and to each of the following additional conditions:

(a) The Prospectus shall have been filed with the Commission in a timely fashion in accordance with Section 3(i)(a) hereof; no stop order suspending the effectiveness of the Registration Statement or any post-effective amendment thereto, and no stop order suspending or preventing the use of any Preliminary Prospectus, any Issuer Free Writing Prospectus or the Prospectus, shall have been issued by the Commission and no proceedings therefor shall have been initiated or threatened by the Commission; all requests for additional information on the part of the Commission shall have been complied with to your reasonable satisfaction; if the Company has elected to rely on Rule 462(b) under the Securities Act, the Rule 462(b) Registration Statement shall have become effective by 10:00 p.m. (New York City time) on the date of this Agreement; and all necessary regulatory or stock exchange approvals shall have been received.

(b) At the Closing Date you shall have received (i) the written opinion and negative assurance statement of Morgan, Lewis & Bockius LLP, counsel for the Company, dated the Closing Date and addressed to the Representative, in form and substance reasonably satisfactory to you; and (ii) the written opinion of Khalilian Sira LLC, intellectual property counsel for the Company, dated the Closing Date and addressed to the Representative, in form and substance reasonably satisfactory to you.

(c) At the Closing Date, you shall have received the written opinion and negative assurance statement of Underwriters' Counsel, dated the Closing Date and addressed to the Representative, in form and substance satisfactory to you.

(d) At the Closing Date you shall have received a certificate of the Chief Executive Officer and Chief Financial Officer of the Company, dated the Closing Date, in form and substance satisfactory to you, as to the accuracy of the representations and warranties of the Company set forth in Section 1 hereof as of the date hereof and as of the Closing Date, as to the performance by the Company of all of its obligations hereunder to be performed at or prior to the Closing Date, as to the matters set forth in subsections (a) and (f) of this Section 5, and as to such other matters as you may reasonably request.

(e) At the time this Agreement is executed and at the Closing Date, you shall have received a comfort letter, from Ernst & Young LLP, independent public accountants for the Company, dated, respectively, as of the date of this Agreement and as of the Closing Date, addressed to the Underwriters and in form and substance satisfactory to the Underwriters and Underwriters' Counsel, containing statements and information of the type ordinarily included in accountants' "comfort letters" to underwriters with respect to the financial statements and certain financial information contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

(f) (i) Neither the Company nor any of its subsidiaries shall have sustained, since the date of the latest audited financial statements included or incorporated by reference in the Registration Statement, the Pricing Disclosure Package and the Prospectus, any material loss or interference with its business or properties from fire, explosion, flood, earthquake, hurricane, accident or other calamity, whether or not covered by insurance, or from any labor dispute or any legal or governmental proceeding, other than as set forth in the Registration Statement, the Pricing Disclosure Package and the Prospectus (exclusive of any supplement thereto); and (ii) subsequent to the dates as of which information is given in the Registration Statement (exclusive of any amendment thereto subsequent to the date hereof) and the Pricing Disclosure Package and the Prospectus (exclusive of any supplement thereto), there shall not have been any change in the capital stock or long-term or short-term debt of the Company or any of its subsidiaries or any change or any development involving a change, whether or not arising from transactions in the ordinary course of business, in the business, general affairs, management, condition (financial or otherwise), results of operations, stockholders' equity, properties or prospects of the Company and its subsidiaries, individually or taken as a whole, the effect of which, in any such case described above, is, in the judgment of the Representative, so material and adverse as to make it impracticable or inadvisable to proceed with the Offering on the terms and in the manner contemplated in the Registration Statement, the Pricing Disclosure Package and the Prospectus (exclusive of any such supplement).

(g) No Underwriter shall have discovered and disclosed to the Company on or prior to such Closing Date that the Registration Statement, the Pricing Disclosure Package or the Prospectus, or any amendment or supplement thereto, contains an untrue statement of a fact which, in the opinion of Underwriters' Counsel, is material or omits to state a fact which, in the opinion of such counsel, is material and is required to be stated therein or is necessary to make the statements therein not misleading.

(h) As of the date of this Agreement, the Representative shall have received a duly executed Lock-Up Agreement from each person who is a director or executive officer of the Company and each stockholder and other person or entity listed on **Schedule IV** hereto, in each case substantially in the form attached hereto as **Exhibit A**.

(i) On or before the Closing Date, FINRA shall have confirmed that it has not raised any objection with respect to the fairness and reasonableness of the underwriting terms and arrangements relating to the Offering of the Shares.

(j) At the Closing Date, all stock transfer or other taxes (other than income taxes), if any, that are required to be paid in connection with the sale and transfer of the Shares to be sold by the Company to the several Underwriters hereunder will be fully paid or provided for by the Company, and all laws imposing such taxes will be fully complied with.

(k) The Company shall have furnished the Underwriters and Underwriters' Counsel with such other certificates, opinions or other documents as they may have reasonably requested.

(l) At the time this Agreement is executed and at the Closing Date, you shall have received a certificate from the Chief Financial Officer of the Company, in form and substance reasonably satisfactory to you, concerning the accuracy of certain financial information contained in the Registration Statement, the Pricing Disclosure Package and the Prospectus.

If any of the conditions specified in this Section 5 shall not have been fulfilled when and as required by this Agreement, or if any of the certificates, opinions, written statements or letters furnished to you or to Underwriters' Counsel pursuant to this Section 5 shall not be satisfactory in form and substance to the Representative and to Underwriters' Counsel, all obligations of the Underwriters hereunder may be cancelled by the Representative at, or at any time prior to, the Closing Date and the obligations of the Underwriters to purchase the Additional Shares may be cancelled by the Representative at, or at any time prior to, any Additional Closing Date. Notice of such cancellation shall be given to the Company in writing or by telephone. Any such telephone notice shall be confirmed promptly thereafter in writing.

6. Indemnification.

(a) The Company shall indemnify and hold harmless each Underwriter, its affiliates, directors, officers, employees and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, against any and all losses, liabilities, claims, damages and expenses whatsoever as incurred (including but not limited to attorneys' fees and any and all expenses whatsoever incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, and any and all amounts paid in settlement of any claim or litigation), joint or several, to which they or any of them may become subject under the Securities Act, the Exchange Act or otherwise, insofar as such losses, liabilities, claims, damages or expenses (or actions in respect thereof) arise out of or are based upon (i) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, or any amendment thereto, or the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading or (ii) any untrue statement or alleged untrue statement of a material fact included (A) in any Preliminary Prospectus or the Prospectus, or in any supplement thereto or amendment thereof, or in any Issuer Free Writing Prospectus, or in any "issuer information" (as defined in Rule 433(h)(2) under the Securities Act) filed or required to be filed pursuant to Rule 433(d) under the Securities Act, or (B) in any other materials or information provided to investors by, or with the approval of, the Company in connection with the Offering, including in any Road Show for the Offering ("**Marketing Materials**"), or the omission or alleged omission to state in any Preliminary Prospectus or the Prospectus, or in any supplement thereto or amendment thereof, or in any Issuer Free Writing Prospectus, or in any "issuer information" (as defined in Rule 433(h)(2) under the Securities Act) filed or required to be filed pursuant to Rule 433(d) under the Securities Act, or in any Marketing Materials, 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 will not be liable in any such case to the extent but only to the extent that any such loss, liability, claim, damage or expense arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made therein in reliance upon and in conformity with written information furnished to the Company by or on behalf of any Underwriter through the Representative expressly for use therein. The parties agree that such information provided by or on behalf of any Underwriter through the Representative consists solely of the material referred to in Section 16 hereof. This indemnity agreement will be in addition to any liability which the Company may otherwise have, including but not limited to other liability under this Agreement.

(b) Each Underwriter, severally and not jointly, shall indemnify and hold harmless the Company, each of the directors of the Company, each of the officers of the Company who shall have signed the Registration Statement, and each other person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, against any losses, liabilities, claims, damages and expenses whatsoever as incurred (including but not limited to attorneys' fees and any and all expenses whatsoever incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, and any and all amounts paid in settlement of any claim or litigation), joint or several, to which they or any of them may become subject under the Securities Act, the Exchange Act or otherwise, insofar as such losses, liabilities, claims, damages or expenses (or actions in respect thereof) arise out of or are based upon (i) any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, or any amendment thereto, or the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading or (ii) any untrue statement or alleged untrue statement of a material fact contained in any related Preliminary Prospectus or the Prospectus, or in any amendment thereof or supplement thereto, or arise out of or are based upon the omission or alleged omission 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, in each case to the extent, but only to the extent, that any such loss, liability, claim, damage or expense arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made therein in reliance upon and in conformity with information furnished in writing to the Company by or on behalf of any Underwriter through the Representative specifically for use therein; *provided, however*, that in no case shall any Underwriter be liable or responsible for any amount in excess of the underwriting discount applicable to the Shares to be purchased by such Underwriter hereunder. The parties agree that such information provided by or on behalf of any Underwriter through the Representative consists solely of the material referred to in Section 16 hereof.

(c) Promptly after receipt by an indemnified party under subsection (a) or (b) above of notice of any claims or the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such subsection, notify each party against whom indemnification is to be sought in writing of the claim or the commencement thereof (but the failure so to notify an indemnifying party shall not relieve the indemnifying party from any liability which it may have under this Section 7 to the extent that it is not materially prejudiced as a result thereof or otherwise has notice of any such action, and in any event shall not relieve it from any liability that such indemnifying party may have otherwise than on account of the indemnity agreement hereunder). In case any such claim or action is brought against any indemnified party, and it notifies an indemnifying party of the commencement thereof, the indemnifying party will be entitled to participate, at its own expense in the defense of such action, and to the extent it may elect by written notice delivered to the indemnified party promptly after receiving the aforesaid notice from such indemnified party, to assume the defense thereof with counsel satisfactory to such indemnified party; provided however, that counsel to the indemnifying party shall not (except with the written consent of the indemnified party) also be counsel to the indemnified party. Notwithstanding the foregoing, the indemnified party or parties shall have the right to employ its or their own counsel in any such case, but the fees and expenses of such counsel shall be at the expense of such indemnified party or parties unless (i) the employment of such counsel shall have been authorized in writing by one of the indemnifying parties in connection with the defense of such action, (ii) the indemnifying parties shall not have employed counsel to have charge of the defense of such action within a reasonable time after notice of commencement of the action, (iii) the indemnifying party does not diligently defend the action after assumption of the defense, or (iv) such indemnified party or parties shall have reasonably concluded that there may be defenses available to it or them which are different from or additional to those available to one or all of the indemnifying parties (in which case the indemnifying parties shall not have the right to direct the defense of such action on behalf of the indemnified party or parties), in any of which events such fees and expenses shall be borne by the indemnifying parties hereof, then, in addition to the fees and expenses of such counsel for the indemnified parties, the indemnifying party shall be liable for the reasonable fees and expenses of not more than one counsel (in addition to any local counsel) separate from its own counsel. No indemnifying party shall, without the prior written consent of the indemnified parties, effect any settlement or compromise of, or consent to the entry of judgment with respect to, any pending or threatened claim, investigation, action or proceeding in respect of which indemnity or contribution may be or could have been sought by an indemnified party under this Section 6 or Section 7 hereof (whether or not the indemnified party is an actual or potential party thereto), unless such settlement, compromise or judgment (i) includes an unconditional release of the indemnified party from all liability arising out of such claim, investigation, action or proceeding and (ii) does not include a statement as to or an admission of fault, culpability or any failure to act, by or on behalf of the indemnified party.

7. Contribution. In order to provide for contribution in circumstances in which the indemnification provided for in Section 6 hereof is for any reason held to be unavailable from any indemnifying party or is insufficient to hold harmless a party indemnified thereunder, the Company and the Underwriters, severally, shall contribute to the aggregate losses, claims, damages, liabilities and expenses of the nature contemplated by such indemnification provision (including any investigation, legal and other expenses incurred in connection with, and any amount paid in settlement of, any action, suit or proceeding or any claims asserted, but after deducting in the case of losses, claims, damages, liabilities and expenses suffered by the Company, any contribution received by the Company from persons, other than the Underwriters, who may also be liable for contribution, including persons who control the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, officers of the Company who signed the Registration Statement and directors of the Company) as incurred to which the Company and one or more of the Underwriters may be subject, in such proportions as is appropriate to reflect the relative benefits received by the Company on the one hand and by the Underwriters on the other from the Offering or, if such allocation is not permitted by applicable law, in such proportions as are appropriate to reflect not only the relative benefits referred to above but also the relative fault of the Company on the one hand and the Underwriters on the other in connection with the statements or omissions which resulted in such losses, claims, damages, liabilities or expenses, as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other shall be deemed to be in the same proportion as the total proceeds from the Offering (net of underwriting discounts and commissions but before deducting expenses) received by the Company on the one hand and the underwriting discount and commissions received by the Underwriters on the other, in each case as set forth in the table on the cover page of the Prospectus, bear to the aggregate initial public offering price of the Shares as set in the table on the cover page of the Prospectus. The relative fault of each of the Company on the one hand and of the Underwriters on the other shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company or the Underwriters and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company, the and the Underwriters agree that it would not be just and equitable if contribution pursuant to this Section 7 were determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take account of the equitable considerations referred to above in this Section 7. The aggregate amount of losses, liabilities, claims, damages and expenses incurred by an indemnified party and referred to above in this Section 7 shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in investigating, preparing or defending against any litigation, or any investigation or proceeding by any judicial, regulatory or other legal or governmental agency or body, commenced or threatened, or any claim whatsoever based upon any such untrue or alleged untrue statement or omission or alleged omission. Notwithstanding the provisions of this Section 7, (i) no Underwriter shall be required to contribute any amount in excess of the amount by which the discounts and commissions applicable to the Shares underwritten by it and distributed to the public exceeds the amount of any damages which such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission and, (ii) 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 of the Underwriter's affiliates, directors, officers, employees and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act shall have the same rights to contribution as such Underwriter, and each person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of 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 clauses (i) and (ii) of the immediately preceding sentence. Any party entitled to contribution will, promptly after receipt of notice of commencement of any action, suit or proceeding against such party in respect of which a claim for contribution may be made against another party or parties, notify each party or parties from whom contribution may be sought, but the omission to so notify such party or parties shall not relieve the party or parties from whom contribution may be sought from any obligation it or they may have under this Section 8 or otherwise. The obligations of the Underwriters to contribute pursuant to this Section 7 are several in proportion to the respective number of Shares to be purchased by each of the Underwriters hereunder and not joint.

8. Underwriter Default.

(a) If any Underwriter or Underwriters shall default in its or their obligation to purchase Firm Shares or Additional Shares hereunder, and if the Firm Shares or Additional Shares with respect to which such default relates (the “**Default Shares**”) do not (after giving effect to arrangements, if any, made by the Representative pursuant to subsection (b) below) exceed in the aggregate 10% of the number of Firm Shares or Additional Shares, each non-defaulting Underwriter, acting severally and not jointly, agrees to purchase from the Company that number of Default Shares that bears the same proportion of the total number of Default Shares then being purchased as the number of Firm Shares set forth opposite the name of such Underwriter in Schedule I hereto bears to the aggregate number of Firm Shares set forth opposite the names of the non-defaulting Underwriters, subject, however, to such adjustments to eliminate fractional shares as the Representative in its sole discretion shall make.

(b) In the event that the aggregate number of Default Shares exceeds 10% of the number of Firm Shares or Additional Shares, as the case may be, the Representative may in its discretion arrange for itself or for another party or parties (including any non-defaulting Underwriter or Underwriters who so agree) to purchase the Default Shares on the terms contained herein. In the event that within five calendar days after such a default the Representative does not arrange for the purchase of the Default Shares as provided in this Section 8, this Agreement or, in the case of a default with respect to the Additional Shares, the obligations of the Underwriters to purchase and of the Company to sell the Additional Shares shall thereupon terminate, without liability on the part of the Company and the Company with respect thereto (except in each case as provided in Sections 4, 6, 7, 9 and 10(d)) or the Underwriters, but nothing in this Agreement shall relieve a defaulting Underwriter or Underwriters of its or their liability, if any, to the other Underwriters and the Company for damages occasioned by its or their default hereunder.

(c) In the event that any Default Shares are to be purchased by the non-defaulting Underwriters, or are to be purchased by another party or parties as aforesaid, the Representative or the Company shall have the right to postpone the Closing Date or Additional Closing Date, as the case may be for a period, not exceeding five business days, in order to effect whatever changes may thereby be made necessary in the Registration Statement or the Prospectus or in any other documents and arrangements, and the Company agrees to file promptly any amendment or supplement to the Registration Statement or the Prospectus which, in the opinion of Underwriters’ Counsel, may thereby be made necessary or advisable. The term “**Underwriter**” as used in this Agreement shall include any party substituted under this Section 8 with like effect as if it had originally been a party to this Agreement with respect to such Firm Shares and Additional Shares.

9. Survival of Representations and Agreements. All representations and warranties, covenants and agreements of the Underwriters and the Company contained in this Agreement or in certificates of officers of the Company submitted pursuant hereto, including the agreements contained in Section 4, the indemnity agreements contained in Section 6 and the contribution agreements contained in Section 7, shall remain operative and in full force and effect regardless of any investigation made by or on behalf of any Underwriter or any controlling person thereof or by or on behalf of the Company, any of its officers and directors or any controlling person thereof, and shall survive delivery of and payment for the Shares to and by the Underwriters. The representations contained in Section 1 and the agreements contained in Sections 4, 6, 7, 9, 10 and 15 hereof shall survive any termination of this Agreement, including termination pursuant to Section 8 or 10 hereof.

10. Effective Date of Agreement; Termination.

(a) This Agreement shall become effective when the parties hereto have executed and delivered this Agreement.

(b) The Representative shall have the right to terminate this Agreement at any time prior to the Closing Date or to terminate the obligations of the Underwriters to purchase the Additional Shares at any time prior to any Additional Closing Date, as the case may be, if, at or after the Applicable Time, (i) any domestic or international event or act or occurrence has materially disrupted, or in the opinion of the Representative will in the immediate future materially disrupt, the market for the Company's securities or securities in general; or (ii) trading on The New York Stock Exchange ("NYSE") or Nasdaq shall have been suspended or been made subject to material limitations, or minimum or maximum prices for trading shall have been fixed, or maximum ranges for prices for securities shall have been required, on the NYSE or Nasdaq or by order of the Commission or any other governmental authority having jurisdiction; or (iii) a banking moratorium has been declared by any state or federal authority or any material disruption in commercial banking or securities settlement or clearance services shall have occurred; or (iv) (A) there shall have occurred any outbreak or escalation of hostilities or acts of terrorism involving the United States or there is a declaration of a national emergency or war by the United States or (B) there shall have been any other calamity or crisis or any change in political, financial or economic conditions if the effect of any such event in (A) or (B), in the judgment of the Representative, makes it impracticable or inadvisable to proceed with the offering, sale and delivery of the Firm Shares or the Additional Shares, as the case may be, on the terms and in the manner contemplated by the Prospectus; or (v) any of the events described in Sections 5(f) or 5(g) shall have occurred or the Underwriters shall decline to purchase the Shares for any reason permitted under this Agreement.

(c) Any notice of termination pursuant to this Section 10 shall be in writing.

(d) If this Agreement shall be terminated pursuant to any of the provisions hereof, or if the sale of the Shares provided for herein is not consummated because any condition to the obligations of the Underwriters set forth herein is not satisfied or because of any refusal, inability or failure on the part of the Company to perform any agreement herein or comply with any provision hereof, the Company will, subject to demand by the Representative, reimburse the Underwriters for all out-of-pocket expenses (including the reasonable and documented fees and expenses of their counsel), incurred by the Underwriters in connection herewith; *provided, however*, that in the event of a termination pursuant to Section 10 hereof, only the non-defaulting Underwriters shall be entitled to receive such reimbursement.

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

12. No Advisory or Fiduciary Relationship. The Company acknowledges and agrees that (a) the purchase and sale of the Shares pursuant to this Agreement, including the determination of the initial public offering price of the Shares and any related discounts and commissions, is an arm's-length commercial transaction between the Company, on the one hand, and the several Underwriters, on the other hand, (b) in connection with the Offering and the process leading thereto, each Underwriter is and has been acting solely as a principal and is not the agent or fiduciary of the Company, any of its subsidiaries or its stockholders, creditors, employees or any other party, (c) no Underwriter has assumed or will assume an advisory or fiduciary responsibility in favor of the Company with respect to the Offering or the process leading thereto (irrespective of whether such Underwriter has advised or is currently advising the Company or any of its subsidiaries on other matters) and no Underwriter has any obligation to the Company with respect to the Offering except the obligations expressly set forth in this Agreement, (d) the Underwriters and their respective affiliates may be engaged in a broad range of transactions that involve interests that differ from those of the Company, (e) any duties and obligations that the Underwriters may have to the Company shall be limited to those duties and obligations specifically stated herein and (f) the Underwriters have not provided any legal, accounting, regulatory or tax advice with respect to the Offering and the Company has consulted its own respective legal, accounting, regulatory and tax advisors to the extent it deemed appropriate.

13. Notices. All communications hereunder, except as may be otherwise specifically provided herein, shall be in writing, and:

(a) if sent to any Underwriter, shall be mailed, delivered, or faxed and confirmed in writing, to such Underwriter c/o Guggenheim Securities, LLC, 330 Madison Avenue, New York, New York 10017, Attention: General Counsel; and

if sent to the Company, shall be mailed, delivered, or faxed and confirmed in writing to the Company at 12 Penns Trail, Newtown, PA 18940, Attention: Mark Guerin, Chief Financial Officer (fax number (267) 759-3681), with a copy to the Company's counsel at Morgan, Lewis & Bockius LLP, 1701 Market Street, Philadelphia, PA 19103, Attention: Joanne R. Soslow, Esq. (fax number (215) 963-5001);

provided, however, that any notice to an Underwriter pursuant to Section 6 shall be delivered or sent by mail or facsimile transmission to such Underwriter at its address set forth in its acceptance facsimile to the Representative, which address will be supplied to any other party hereto by the Representative upon request. Any such notices and other communications shall take effect at the time of receipt thereof.

14. Parties. This Agreement shall insure solely to the benefit of, and shall be binding upon, the Underwriters and the Company and the controlling persons, affiliates, directors, officers, employees and agents referred to in Section 6 and Section 7 hereof, and their respective successors and assigns, and no other person shall have or be construed to have any legal or equitable right, remedy or claim under or in respect of or by virtue of this Agreement or any provision herein contained. This Agreement and all conditions and provisions hereof are intended to be for the sole and exclusive benefit of the parties hereto and said controlling persons and their respective successors, officers, directors, heirs and legal representatives, and it is not for the benefit of any other person, firm or corporation. The term "successors and assigns" shall not include a purchaser, in its capacity as such, of Shares from any of the Underwriters.

15. Governing Law and Jurisdiction; Waiver of Jury Trial. **This Agreement shall be governed by and construed in accordance with the laws of the State of New York.** The Company irrevocably (a) submits to the jurisdiction of any court of the State of New York located in the City and County of New York, Borough of Manhattan or any federal courts of the United States of America located in the City and County of New York, Borough of Manhattan for the purpose of any suit, action, or other proceeding arising out of this Agreement, or any of the agreements or transactions contemplated by this Agreement, the Registration Statement and the Prospectus (each, a “**Proceeding**”), (b) agrees that all claims in respect of any Proceeding may be heard and determined in any such court, (c) waives, to the fullest extent permitted by law, any immunity from jurisdiction of any such court or from any legal process therein, (d) agrees not to commence any Proceeding other than in such courts, and (e) waives, to the fullest extent permitted by law, any claim that such Proceeding is brought in an inconvenient forum. THE COMPANY (ON BEHALF OF ITSELF AND, TO THE FULLEST EXTENT PERMITTED BY LAW, ON BEHALF OF ITS RESPECTIVE EQUITY HOLDERS AND CREDITORS) HEREBY WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY CLAIM BASED UPON, ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT AND THE TRANSACTIONS CONTEMPLATED BY THIS AGREEMENT, THE REGISTRATION STATEMENT AND THE PROSPECTUS.

16. Underwriter’s Information. The parties acknowledge and agree that, for purposes of Sections 1(c), 1(d) and 6 hereof, the information provided by or on behalf of any Underwriter consists solely of the first sentence of the first paragraph under “Commissions and Discounts; Expenses” and the paragraphs under “Price Stabilization and Short Positions” and “Passive Market Making” under the caption “Underwriting” in each Preliminary Prospectus and the Prospectus.

17. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all such counterparts shall together constitute one and the same instrument. Delivery of a signed counterpart of this Agreement by facsimile or other electronic transmission shall constitute valid and sufficient delivery thereof.

18. Headings. The headings herein are inserted for convenience of reference only and are not intended to be part of, or to affect the meaning or interpretation of, this Agreement.

19. Time is of the Essence. Time shall be of the essence of this Agreement. As used herein, the term “business day” shall mean any day when the Commission’s office in Washington, D.C. is open for business.

[signature page follows]

If the foregoing correctly sets forth your understanding, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement among us.

Very truly yours,

ONCONOVA THERAPEUTICS, INC.

By: /s/ Mark Patrick Guerin
Name: Mark Patrick Guerin
Title: Chief Financial Officer

Accepted as of the date first above written

GUGGENHEIM SECURITIES, LLC

By: /s/ Ronald Gerber
Name: Ronald Gerber
Title: Senior Managing Director

On behalf of itself and the other
Underwriters named in Schedule I hereto.

[Signature Page to Underwriting Agreement]

SCHEDULE I

Underwriter	Total Number of Firm Shares to be Purchased	Number of Additional Shares to be Purchased if Option is Fully Exercised
Guggenheim Securities, LLC	4,500,000	5,175,000
Ladenburg Thalmann & Co. Inc.	300,000	345,000
Noble Capital Markets, Inc.	200,000	230,000
Total	5,000,000	5,750,000

SCHEDULE-I-1

SCHEDULE II

Issuer Free Writing Prospectuses included in the Pricing Disclosure Package

None.

SCHEDULE-II-1

SCHEDULE III

1. The Company is selling an aggregate of 5,000,000 shares of Common Stock.
2. The Company has granted an option to the Underwriters, severally and not jointly, to purchase up to an additional 750,000 shares of Common Stock.
3. The public offering price per share of Common Stock shall be \$4.20.

SCHEDULE-III-1

SCHEDULE IV

Stockholders executing Lock-Up Agreements

Steven M. Fruchtman, M.D.

James J. Marino

Viren Mehta, Pharm D

M. Teresa Shoemaker

Jack E. Stover

Jerome E. Groopman, M.D.

Mark Guerin

Avi Oler

Mark Gelder

SCHEDULE-IV-1

EXHIBIT A

Form of Lock-Up Agreement

September [•], 2021

Guggenheim Securities, LLC
As Representative of the several
Underwriters referred to below
c/o Guggenheim Securities, LLC
330 Madison Avenue
New York, New York 10017

Re: Onconova Therapeutics, Inc. Lock-Up Agreement

Ladies and Gentlemen:

The undersigned understands that you, as Representative of the several Underwriters, propose to enter into an underwriting agreement (the “**Underwriting Agreement**”) with Onconova Therapeutics, Inc., a Delaware corporation (the “**Company**”), providing for the public offering (the “**Public Offering**”) by the several Underwriters named in Schedule I to the Underwriting Agreement (the “**Underwriters**”), of the Company’s common stock, par value \$0.01 per share (“**Common Stock**”). Capitalized terms used herein and not otherwise defined shall have the meanings set forth in the Underwriting Agreement.

In order to induce you and the Underwriters to underwrite the Public Offering, the undersigned hereby agrees that, without the prior written consent of the Representative, during the period from the date hereof until 90 days from the date of the final prospectus supplement for the Public Offering (the “**Lock-Up Period**”), the undersigned will not, directly or indirectly, (a) offer, pledge, sell, contract to sell, solicit offers to purchase, grant any call option or purchase any put option with respect to, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock (including without limitation, Common Stock or such other securities which may be deemed to be beneficially owned by the undersigned in accordance with the rules and regulations of the Securities and Exchange Commission and securities which may be issued upon exercise of a stock option or warrant) (collectively with the Common Stock, the “**Relevant Securities**”), (b) enter into any hedging, swap or other agreement or transaction that transfers, in whole or in part, any of the economic consequences of ownership of the Relevant Securities, whether any such transaction described in clause (a) or (b) above is to be settled by delivery of Relevant Securities, in cash or otherwise, (c) make any demand for, or exercise any right with respect to, the registration of any Relevant Securities, or (d) publicly disclose the intention to do any of the foregoing.

Notwithstanding the foregoing, the undersigned may transfer the undersigned’s Relevant Securities:

- a) the transfer of Relevant Securities (i) as a bona fide gift or gifts, (ii) by will, other testamentary document or intestate succession, (iii) to a Family Member (as defined below), (iv) to a trust for the direct or indirect benefit of the undersigned and/or one or more Family Members, (v) pursuant to a domestic order, divorce settlement, divorce decree, separation agreement or pursuant to an order of a court of competent jurisdiction enforcing such agreement, (vi) to a charitable trust, or (vii) to a corporation, limited liability company or partnership wholly owned by the undersigned and/or one or more Family Members;
 - b) the transfer of Relevant Securities (i) as forfeitures to satisfy tax withholding obligations of the undersigned in connection with the vesting or exercise of equity awards by the undersigned existing as of the date of the final prospectus supplement and described or incorporated by reference in the final prospectus supplement, (ii) pursuant to a net exercise or cashless exercise (to satisfy exercise price or related withholding obligations) by the undersigned of outstanding equity awards existing as of the date of the final prospectus supplement and described or incorporated by reference in the final prospectus supplement, provided that any shares of Stock acquired upon the net exercise or cashless exercise of equity awards described in this clause (b) shall be subject to the restrictions set forth in this letter agreement;
-

- c) distributions of Relevant Securities to limited partners, members or stockholders of the undersigned;
- d) transactions relating to Relevant Securities acquired in open market transactions after the closing of the Offering; and
- e) the transfer of Relevant Securities pursuant to a bona fide third-party tender offer for all outstanding shares of the Company, merger, consolidation or other similar transaction made to all holders of the Company's securities involving a change of control of the Company (including, without limitation, the entering into of any lock-up, voting or similar agreement pursuant to which the undersigned may agree to transfer, sell, tender or otherwise dispose of Relevant Securities in connection with such transaction, or vote any Relevant Securities in favor of any transaction), provided that in the event that such tender offer, merger, consolidation or other such transaction is not completed, such securities held by the undersigned shall remain subject to the provisions of this letter agreement.

It shall be a further condition to any transfer or distribution pursuant to the preceding clauses (a), (b), (c), or (d) that no public disclosure or filing by any party (donor, donee, transferor or transferee) under the Exchange Act, or other public announcement shall be required or shall be made voluntarily in connection with such transfer or distribution (other than a filing on Form 5 made after the expiration of the Lock-Up Period).

It shall be a condition to any transfer or distribution pursuant to each of the preceding clauses (a) or (c) that (x) any such transfer shall not involve a disposition for value and (y) each resulting transferee or donee of Relevant Securities executes and delivers to you an agreement satisfactory to you in which such transferee agrees to be bound by the terms of this Agreement for the remainder of the Lock-Up Period.

For purposes of this letter agreement, the term "Family Member" shall mean any relationship by blood, domestic partnership, marriage or adoption not more remote than first cousin.

In addition, the restrictions described in this letter agreement shall not apply to the establishment of a trading plan pursuant to Rule 10b5-1 under the Exchange Act, provided that no transfers occur under such plan during the Lock-Up Period and no public announcement or filing shall be required or voluntarily made by any person in connection therewith other than general disclosure in Company periodic reports to the effect that Company directors and officers may enter into such trading plans from time to time.

The undersigned hereby authorizes the Company during the Lock-Up Period to cause any transfer agent for the Relevant Securities to decline to transfer, and to note stop transfer restrictions on the stock register and other records relating to, Relevant Securities for which the undersigned is the record holder and, in the case of Relevant Securities for which the undersigned is the beneficial but not the record holder, agrees during the Lock-Up Period to cause the record holder to cause the relevant transfer agent to decline to transfer, and to note stop transfer restrictions on the stock register and other records relating to, such Relevant Securities.

The undersigned hereby represents and warrants that the undersigned has full power and authority to enter into this Lock-Up Agreement. All authority herein conferred or agreed to be conferred and any obligations of the undersigned shall be binding upon the successors, assigns, heirs or personal representatives of the undersigned.

The undersigned understands that, if (i) the Company notifies the Underwriters that it does not intend to proceed with the Offering, (ii) the Underwriting Agreement does not become effective by October 15, 2021, or (iii) the Underwriting Agreement (other than the provisions thereof which survive termination) shall terminate or be terminated prior to payment for and delivery of the Common Stock to be sold thereunder, the undersigned shall be released from all obligations under this Lock-Up Agreement. The undersigned understands that the Underwriters are entering into the Underwriting Agreement and proceeding with the Public Offering in reliance upon this Lock-Up Agreement.

[Signature page follows]

This Lock-Up Agreement and any claim, controversy or dispute arising under or related to this Lock-Up Agreement shall be governed by and construed in accordance with the laws of the State of New York.

Very truly yours,

[NAME OF STOCKHOLDER]

By:

Name:

Title:

EXHIBIT A-1

Morgan Lewis

September 24, 2021

Onconova Therapeutics, Inc.
12 Penns Trail
Newtown, PA 18940

RE: Onconova Therapeutics, Inc., Registration Statement on Form S-3 (File No. 333-237844)

Ladies and Gentlemen:

We have acted as counsel to Onconova Therapeutics, Inc., a Delaware corporation (the “Company”), in connection with the filing of (i) the preliminary prospectus supplement of the Company dated September 23, 2021, including the accompanying base prospectus dated May 18, 2020 (the “Base Prospectus”), which was filed by the Company with the Securities and Exchange Commission (the “Commission”) on September 23, 2021 pursuant to Rule 424(b)(5) promulgated under the Securities Act (the “Preliminary Prospectus Supplement”), and (ii) the final prospectus supplement of the Company dated September 23, 2021, including the accompanying Base Prospectus, which was filed by the Company with the Commission on September 24, 2021 pursuant to Rule 424(b)(5) promulgated under the Securities Act (the “Prospectus”), relating to the offering and sale by the Company of up to 5,750,000 shares (the “Shares”) of common stock of the Company, \$0.01 par value per share (the “Common Stock”), which includes up to 750,000 shares of Common Stock that the underwriters have an option to purchase, pursuant to the underwriting agreement (the “Underwriting Agreement”), dated as of September 23, 2021, between the Company and Guggenheim Securities, LLC, as Representative of the several underwriters listed in Schedule I thereto.

In connection with this opinion letter, we have examined (i) the Company’s registration statement on Form S-3 (Reg. No. 333-237844) (the “Registration Statement”) filed by the Company with the Commission under the Securities Act, which was declared effective on May 18, 2020, (ii) the Base Prospectus, (iii) the Underwriting Agreement, (iv) the Preliminary Prospectus Supplement, (v) the Prospectus, and (iv) originals, or copies certified or otherwise identified to our satisfaction, of the Tenth Amended and Restated Certificate of Incorporation, as amended, and the Amended and Restated Bylaws of the Company and such other documents, records and other instruments as we have deemed appropriate for purposes of the opinion set forth herein.

We have assumed the genuineness of all signatures, the legal capacity of all natural persons, the authenticity of the documents submitted to us as originals, the conformity with the originals of all documents submitted to us as certified, facsimile or photostatic copies and the authenticity of the originals of all documents submitted to us as copies.

Based upon the foregoing, we are of the opinion that the Shares have been duly authorized by the Company and, when issued and sold by the Company and delivered by the Company against receipt of the purchase price therefor, in the manner contemplated by the Prospectus and the Underwriting Agreement, will be validly issued, fully paid and non-assessable.

The opinions expressed herein are limited to the laws of the State of Delaware. We hereby consent to the use of this opinion as Exhibit 5.1 to the Registration Statement and to the reference to us under the caption “Legal Matters” in the Prospectus included in the Registration Statement. In giving such consent, we do not hereby admit that we are acting within the category of persons whose consent is required under Section 7 of the Securities Act or the rules or regulations of the Commission thereunder.

Very truly yours,

/s/ Morgan, Lewis & Bockius LLP

Onconova Therapeutics, Inc. Announces Pricing of \$21 Million Public Offering of Common Stock

NEWTOWN, PA., Sept. 24, 2021 (GLOBE NEWSWIRE) -- Onconova Therapeutics, Inc. (NASDAQ: ONTX) (“Onconova”), a biopharmaceutical company focused on discovering and developing novel products to treat cancer, today announced the pricing of an underwritten public offering of 5,000,000 shares of its common stock at a public offering price of \$4.20 per share. The gross proceeds of the offering to the Company are expected to be \$21 million, before deducting the underwriting discounts and commissions and other estimated offering expenses. In addition, Onconova granted the underwriters a thirty-day option to purchase up to an additional 750,000 shares of common stock at the public offering price, less underwriting discounts and commissions.

The closing of the offering is expected to occur on or about September 28, 2021, subject to the satisfaction of customary closing conditions.

Guggenheim Securities is acting as sole book-running manager. Ladenburg Thalmann & Co. Inc. and Noble Capital Markets, Inc. are acting as co-managers for the offering.

The securities described above are being offered by Onconova pursuant to a shelf registration statement on Form S-3 (File No. 333-237844) which was initially filed by the Company with the Securities and Exchange Commission (the “SEC”) on April 24, 2020, amended on Form S-3/A that was filed with the SEC on May 15, 2020, and was declared effective by the SEC on May 18, 2020.

A preliminary prospectus supplement relating to the offering was filed with the SEC on September 23, 2021 and is available on the SEC’s website at <http://www.sec.gov>. The final prospectus supplement relating to and describing the terms of the offering will be filed with the SEC and also will be available on the SEC’s website. Before investing in the offering, you should read each of the prospectus supplement and the accompanying prospectus relating to the offering in their entirety as well as the other documents that the Company has filed with the SEC that are incorporated by reference in the prospectus supplement and the accompanying prospectus relating to the offering, which provide more information about the Company and the offering. Copies of the final prospectus supplement, when available, and accompanying prospectus relating to the offering may be obtained from Guggenheim Securities, LLC Attention: Equity Syndicate Department, 330 Madison Avenue, New York, NY 10017 or by telephone at (212) 518-9544, or by email at GSEquityProspectusDelivery@guggenheimpartners.com.

This press release shall not constitute an offer to sell or the solicitation of an offer to buy any of the securities described herein, nor shall there be any sale of these securities in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or jurisdiction.

About Onconova Therapeutics, Inc.

Onconova Therapeutics is a clinical-stage biopharmaceutical company focused on discovering and developing novel products for patients with cancer. The Company has proprietary targeted anti-cancer agents designed to disrupt specific cellular pathways that are important for cancer cell proliferation.

Onconova's novel, proprietary multi-kinase inhibitor ON 123300 is being evaluated in two separate and complementary Phase 1 dose-escalation and expansion studies. These trials are currently underway in the United States and China.

Onconova's product candidate rigosertib is being studied in an investigator-initiated study program, including in a dose-escalation and expansion Phase 1/2a investigator-initiated study with oral rigosertib in combination with nivolumab for patients with KRAS+ non-small cell lung cancer.

Forward-Looking Statements

Some of the statements in this release are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, Section 21E of the Securities Exchange Act of 1934, as amended, and the Private Securities Litigation Reform Act of 1995, and involve risks and uncertainties. These statements relate to Onconova's expectations regarding the offering, its patents and clinical development plans including patient enrollment timelines and indications for its product candidates. Onconova has attempted to identify forward-looking statements by terminology including "believes," "estimates," "anticipates," "expects," "plans," "intends," "may," "could," "might," "will," "should," "approximately" or other words that convey uncertainty of future events or outcomes. Although Onconova believes that the expectations reflected in such forward-looking statements are reasonable as of the date made, expectations may prove to have been materially different from the results expressed or implied by such forward-looking statements. These statements are only predictions and involve known and unknown risks, uncertainties, and other factors, including the success and timing of Onconova's clinical trials and regulatory agency and institutional review board approvals of protocols, Onconova's ability to continue as a going concern, the need for additional financing, Onconova's collaborations, market conditions and those discussed under the heading "Risk Factors" in Onconova's most recent Annual Report on Form 10-K and quarterly reports on Form 10-Q. Any forward-looking statements contained in this release speak only as of its date. Onconova undertakes no obligation to update any forward-looking statements contained in this release to reflect events or circumstances occurring after its date or to reflect the occurrence of unanticipated events.

General Contact

Avi Oler
Onconova Therapeutics, Inc.
267-759-3680
ir@onconova.us
<http://www.onconova.com/contact/>
