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

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**FORM 8-K**

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

**Date of Report (Date of earliest event reported): February 9, 2016**

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**Mast Therapeutics, Inc.**  
(Exact name of Registrant as Specified in Its Charter)

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

**001-32157**  
(Commission  
File Number)

**84-1318182**  
(IRS Employer  
Identification No.)

**3611 Valley Centre Drive, Suite 500,  
San Diego, CA**  
(Address of Principal Executive Offices)

**92130**  
(Zip Code)

**Registrant's Telephone Number, Including Area Code: (858) 552-0866**

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

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

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
  - Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
  - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
  - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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**Item 1.01 Entry into a Material Definitive Agreement.**

On February 10, 2016, Mast Therapeutics, Inc. (the “Company”) entered into an Underwriting Agreement (the “Underwriting Agreement”) with Roth Capital Partners, LLC, as the representative of the underwriters identified therein (collectively, the “Underwriters”), pursuant to which the Company agreed to issue and sell to the Underwriters in connection with a public offering (the “Offering”) up to 29,090,910 shares (the “Shares”) of the Company’s common stock, par value \$0.001 per share (“Common Stock”), and warrants to purchase up to an aggregate of 29,090,910 shares of Common Stock (the “Warrants”). The Shares and Warrants will be sold in units (“Units”) with each Unit consisting of (i) one share of Common Stock and (ii) one Warrant to purchase one share of Common Stock. The purchase price per Unit is \$0.275. The Units are immediately separable and the Shares and the Warrants included in the Units will be issued separately.

Each Warrant will have an initial exercise price of \$0.42 per share, will be exercisable six months and one day after the date of issuance, and will expire five (5) years from the date of issuance.

The Company expects to receive gross proceeds from the Offering of \$8 million and net proceeds of approximately \$7.3 million assuming no exercise of the Warrants and after deducting underwriting discounts and commissions and estimated offering expenses.

The Underwriting Agreement contains representations, warranties and covenants, including indemnification obligations, that are customary for transactions of this type. The Company expects to issue and deliver the securities sold in the Offering to the Underwriters against payment therefore on or about February 16, 2016, subject to the satisfaction of customary closing conditions.

In connection with the closing of the Offering, the Company will enter into a Warrant Agreement (the “Warrant Agreement”) with American Stock Transfer & Trust Company, LLC (the “Transfer Agent”), pursuant to which the Company engaged the Transfer Agent to act as registrar and transfer agent for the Warrants. The terms and conditions of the Warrants are set forth in the Warrant Agreement and the form of Warrant Certificate is attached as Exhibit A thereto. The Warrants initially will be issued in book-entry form. The Warrants initially will be represented by one or more permanent global certificates which will be deposited with a custodian for, and registered in the name of, a nominee of The Depository Trust Company, New York, New York (“DTC”), as depository.

The exercise price and the number of shares purchasable upon exercise of the Warrants are subject to adjustment upon certain corporate events, including reclassifications, stock dividends and stock splits. In the event of an extraordinary transaction, as described in the Warrants and generally including any merger with or into another entity, sale of all or substantially all of the Company’s assets, tender offer or exchange offer, or reclassification of Common Stock, the Company or any successor entity will pay at the holder’s option, exercisable at any time concurrently with or within 30 days after the consummation of the extraordinary transaction, an amount of cash equal to the value of the Warrant as determined in accordance with the Black Scholes option pricing model and the terms of the Warrants. The terms of the Warrants prohibit a holder from exercising its Warrants if doing so would result in such holder (together with its affiliates and other persons acting as a group) beneficially owning more than 9.99% of the outstanding shares of Common Stock after giving effect to such exercise, provided that, at the election of a holder and notice to the Company, such beneficial ownership limitation shall be 4.99% of the outstanding shares of Common Stock after giving effect to such exercise. The Warrants will not be listed on the NYSE MKT, any other national securities exchange or any other nationally recognized trading system, and no trading market for the Warrants is expected to develop.

The holders must surrender payment in cash of the aggregate exercise price of the shares being acquired upon exercise of the Warrants. If, however, a registration statement relating to the issuance of the shares underlying the Warrants is not effective or available, the Warrants may be exercised on a cashless basis, where the holder receives the net value of the Warrant in shares of Common Stock. No fractional shares of Common Stock will be issued in connection with the exercise of a warrant. In lieu of a fractional share, the Company will pay the holder an amount in cash equal to the fractional amount multiplied by the exercise price.

The Offering is being made pursuant to the Company's Registration Statement on Form S-3 (Registration No. 333-202960), which was declared effective by the Securities and Exchange Commission (the "SEC") on August 19, 2015, and a prospectus supplement and accompanying base prospectus that forms a part of the Registration Statement.

The Underwriting Agreement, form of Warrant Agreement, and form of Warrant Certificate are filed herewith as Exhibits 1.1, 4.1, and 4.2, respectively, and are incorporated herein by reference. The foregoing description of the Underwriting Agreement, Warrant Agreement and Warrants does not purport to be complete and is qualified in its entirety by reference to such exhibits.

The legal opinion, including the related consent, of DLA Piper LLP (US) is filed as Exhibit 5.1 to this Current Report.

This Current Report contains forward-looking statements that involve risk and uncertainties, such as statements related to the anticipated closing of the Offering and the amount of net proceeds expected from the Offering. The risks and uncertainties involved include the Company's ability to satisfy certain conditions to closing on a timely basis or at all, as well as other risks detailed from time to time in the Company's SEC filings.

**Item 7.01 Regulation FD Disclosure.**

On February 9, 2016, the Company issued a press release announcing that it had commenced the Offering, and on February 10, 2016, the Company issued a press release announcing that it had priced the Offering. Copies of these press releases are furnished as Exhibits 99.1 and 99.2 hereto, respectively.

**Item 9.01 Financial Statements and Exhibits.**

(d) Exhibits.

The list of exhibits called for by this Item is incorporated by reference to the Exhibit Index immediately following the signature page of this report.

The information set forth under Item 7.01 and in Exhibits 99.1 and 99.2 is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934 and is not to be incorporated by reference into any filing of the registrant, whether made before or after the date hereof, regardless of any general incorporation language in any such filing.

**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.

Mast Therapeutics, Inc.

Date: February 10, 2016

By: /s/ Brandi L. Roberts

Brandi L. Roberts

Chief Financial Officer and Senior Vice President

## Exhibit Index

<u>Exhibit Number</u>	<u>Description</u>
1.1	Underwriting Agreement between the Company and Roth Capital Partners, LLC, as the representative of the underwriters named therein, dated February 10, 2016
4.1	Form of Warrant Agreement
4.2	Form of Warrant Certificate
5.1	Opinion of DLA Piper LLP (US)
23.1	Consent of DLA Piper LLP (US) (contained in Exhibit 5.1)
99.1	Press release of Mast Therapeutics, Inc. dated February 9, 2016, titled "Mast Therapeutics Announces Proposed Public Offering of Common Stock and Warrants"
99.2	Press release of Mast Therapeutics, Inc. dated February 10, 2016, titled "Mast Therapeutics Announces Pricing of Underwritten Public Offering"

29,090,910 UNITS,  
EACH UNIT CONSISTING OF ONE SHARE OF COMMON STOCK AND  
ONE WARRANT TO PURCHASE ONE SHARE OF COMMON STOCK,  
OF  
MAST THERAPEUTICS, INC.  
UNDERWRITING AGREEMENT

February 10, 2016

Roth Capital Partners, LLC  
As the Representative of the

Several underwriters, if any, named in Schedule I hereto  
888 San Clemente Drive, Suite 400  
Newport Beach, California 92660

Ladies and Gentlemen:

The undersigned, Mast Therapeutics, Inc., a company incorporated under the laws of the State of Delaware (collectively with its subsidiaries and affiliates, including, without limitation, all entities disclosed or described in the Registration Statement as being subsidiaries or affiliates of Mast Therapeutics, Inc. (the "Company")), hereby confirms its agreement (this "Agreement") with the several underwriters (such underwriters, including the Representative (as defined below), the "Underwriters" and, each, an "Underwriter") named in Schedule I hereto for which Roth Capital Partners, LLC is acting as representative to the several Underwriters (the "Representative" and if there are no Underwriters other than the Representative, references to multiple Underwriters shall be disregarded and the term Representative as used herein shall have the same meaning as Underwriter) on the terms and conditions set forth herein.

It is understood that the several Underwriters are to make a public offering of the Securities as soon as the Representative deems it advisable to do so. The Securities are to be initially offered to the public at the initial public offering price set forth in the Prospectus. The Representative may from time to time thereafter change the public offering price and other selling terms.

It is further understood that you will act as the Representative for the Underwriters in the offering and sale of the Securities in accordance with this Agreement.

**ARTICLE I.  
DEFINITIONS**

1.1 Definitions. In addition to the terms defined elsewhere in this Agreement, for all purposes of this Agreement, the following terms have the meanings set forth in this Section 1.1:

"Action" shall have the meaning ascribed to such term in Section 3.1(k).

"Affiliate" means with respect to any Person, any other Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with such Person as such terms are used in and construed under Rule 405 under the Securities Act.

“Board of Directors” means the board of directors of the Company.

“Business Day” means any day except any Saturday, any Sunday, any day which is a federal legal holiday in the United States or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

“Closing” means the closing of the purchase and sale of the Securities pursuant to Section 2.1.

“Closing Date” means the hour and the date on the Trading Day on which all conditions precedent to (i) the Underwriters’ obligations to pay the Closing Purchase Price and (ii) the Company’s obligations to deliver the Securities, in each case, have been satisfied or waived, but in no event later than 10:00 a.m. (New York City time) on the third Trading Day following the Execution Date or at such earlier time as shall be agreed upon by the Representative and the Company.

“Closing Purchase Price” shall have the meaning ascribed to such term in Section 2.1(b), which aggregate purchase price shall be net of the underwriting discounts and commissions.

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Company Auditor” means PricewaterhouseCoopers LLP, with offices located at 750 B Street, Suite 290, San Diego, California 92101.

“Company Counsel” means DLA Piper LLP (US), with offices located at 4365 Executive Dr., Suite 1100, San Diego, CA 92121.

“Company IP Counsel” means Wolff IP, a Prof. Corp.

“Effective Date” shall have the meaning ascribed to such term in Section 3.1(f).

“EGS” means Ellenoff Grossman & Schole LLP, with offices located at 1345 Avenue of the Americas, New York, New York 10105.

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

“Execution Date” shall mean the date on which the parties execute and enter into this Agreement.

“Exempt Issuance” means the issuance of (a) shares of Common Stock or options to employees, officers or directors of the Company pursuant to any stock or option plan duly adopted for such purpose by a majority of the non-employee members of the Board of Directors or a majority of the members of a committee of non-employee directors established for such purpose, (b) securities upon the exercise or exchange of or conversion of any Securities issued hereunder and/or other securities exercisable or exchangeable for or convertible into shares of Common Stock issued and outstanding on the Execution Date, provided that such securities have not been amended since the Execution Date to increase the number of such securities or to decrease the exercise price, exchange price or conversion price of such securities, (c) securities in connection with the Company’s incurrence or restructuring of indebtedness, provided that

such securities may not be resold until the ninety first (91st) day following the Closing Date and such securities issued under this clause (c) shall not exceed an aggregate of 2,000,000 shares of Common Stock (subject to adjustment for reverse and forward stock splits, recapitalizations and similar transactions), and (d) securities issued pursuant to acquisitions or strategic transactions approved by a majority of the disinterested directors of the Company, provided that any such issuance shall only be to a Person (or to the equity holders of a Person) which is, itself or through its subsidiaries, an operating company or an owner of an asset in a business synergistic with the business of the Company and shall provide to the Company additional benefits in addition to the investment of funds, but shall not include a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities.

“FCPA” means the Foreign Corrupt Practices Act of 1977, as amended.

“FINRA” means the Financial Industry Regulatory Authority.

“GAAP” shall have the meaning ascribed to such term in Section 3.1(i).

“Indebtedness” means (a) any liabilities for borrowed money or amounts owed in excess of \$50,000 (other than trade accounts payable incurred in the ordinary course of business), (b) all guaranties, endorsements and other contingent obligations in respect of indebtedness of others, whether or not the same are or should be reflected in the Company’s consolidated balance sheet (or the notes thereto), except guaranties by endorsement of negotiable instruments for deposit or collection or similar transactions in the ordinary course of business, and (c) the present value of any lease payments in excess of \$50,000 due under leases required to be capitalized in accordance with GAAP.

“Liens” means a lien, charge, pledge, security interest, encumbrance, right of first refusal, preemptive right or other restriction.

“Lock-Up Agreements” means the lock-up agreements, in the form of Exhibit B attached hereto, delivered on the Execution Date by each of the Company’s officers and directors.

“Material Adverse Effect” means (i) a material adverse effect on the legality, validity or enforceability of any Transaction Document, (ii) a material adverse effect on the results of operations, assets, business, prospects or condition (financial or otherwise) of the Company and the Subsidiaries, taken as a whole or (iii) a material adverse effect on the Company’s ability to perform in any material respect on a timely basis its obligations under any Transaction Document.

“Offering” shall have the meaning ascribed to such term in Section 2.1(c).

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Preliminary Prospectus” means, if any, any preliminary prospectus relating to the Securities included in the Registration Statement or filed with the Commission pursuant to Rule 424(b).

“Proceeding” means an action, claim, suit, investigation or proceeding (including, without limitation, an informal investigation or partial proceeding, such as a deposition), whether commenced or threatened.

“Prospectus” means the final prospectus relating to the Securities included in the Registration Statement, as supplemented by the Prospectus Supplement.

“Prospectus Supplement” means, if any, any supplement to the Prospectus relating to the



Securities complying with Rule 424(b) of the Securities Act that is filed with the Commission.

“Registration Statement” means, collectively, the various parts of the registration statement prepared by the Company on Form S-3 (File No. 333-202960) with respect to the Securities, each as amended as of the Execution Date, including the Prospectus and Prospectus Supplement, if any, the Preliminary Prospectus, if any, and all exhibits filed with or incorporated by reference into such registration statement.

“Required Approvals” shall have the meaning ascribed to such term in Section 3.1(e).

“Rule 424” means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“SEC Reports” shall have the meaning ascribed to such term in Section 3.1(i).

“Securities” means the Units.

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

“Shares” means the shares of Common Stock included in the Units.

“Subsidiary” shall have the meaning set forth in Rule 1-02(w) of Regulation S-X of the Exchange Act.

“Trading Day” means a day on which the principal Trading Market is open for trading.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE MKT, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, or the New York Stock Exchange (or any successors to any of the foregoing).

“Transaction Documents” means this Agreement, the Warrant Agreement, and any other documents or agreements executed by the Company in connection with the transactions contemplated hereunder.

“Transfer Agent” means the current transfer agent of the Company and any successor transfer agent of the Company.

“Units” shall have the meaning ascribed to such term in Section 2.1(a).

“Unit Purchase Price” shall have the meaning ascribed to such term in Section 2.1(b).

“Warrant Agreement” means the Warrant Agreement, to be dated as of the Closing Date between the Company and Warrant Agent, in the form of Exhibit A attached hereto.

“Warrant Agent” means American Stock Transfer & Trust Company, LLC or any successor appointed pursuant to the terms of the Warrant Agreement.

“Warrants” means the Common Stock purchase warrants included in the Securities, which Warrants shall have an exercise price of \$0.42 per share of Common Stock, subject to adjustment as provided therein, and shall be initially exercisable six (6) months and one day following the date of issuance and shall have a term of exercise of five (5) years following the date of issuance, in the form and

with the terms included in the Warrant Agreement.

“Warrant Shares” means the shares of Common Stock issuable upon exercise of the Warrants.

## ARTICLE II. PURCHASE AND SALE

### 2.1 Closing.

(a) Upon the terms and subject to the conditions set forth herein, the Company agrees to sell in the aggregate 29,090,910 units (the “Units”), with each Unit consisting of one share of Common Stock and one warrant to purchase one share of Common Stock, and each Underwriter agrees to purchase, severally and not jointly, at the Closing, the number of Units set forth opposite the name of such Underwriter on Schedule I hereof. For purposes of clarity, the Securities shall be immediately separable and the Shares and Warrants included in the Securities shall be issued separately.

(b) The aggregate purchase price for the Securities shall equal the amount set forth opposite the name of such Underwriter on Schedule I hereto (the “Closing Purchase Price”). The purchase price per Unit shall be \$0.2585 (the “Unit Purchase Price”).

(c) On the Closing Date, the Representative shall deliver or cause to be delivered to the Company, via wire transfer, immediately available funds equal to the aggregate Closing Purchase Price for the Securities and the Company shall deliver the Securities to, or as directed by, the Representative and the Company shall deliver to the Representative the other items required pursuant to Section 2.2 deliverable at the Closing. Upon satisfaction of the covenants and conditions set forth in Sections 2.2 and 2.3, the Closing shall occur at the offices of EGS or such other location as the Company and Representative shall mutually agree. The Securities are to be offered initially to the public at the offering price set forth on the cover page of the Prospectus Supplement (the “Offering”).

2.2 Deliveries. The Company shall deliver or cause to be delivered to the Representative the following:

(i) At the Closing Date, the Securities, which Securities shall be delivered via The Depository Trust Company Deposit or Withdrawal at Custodian system in such names and in such denominations as the Representative may direct by notice in writing to the Transfer Agent given at or prior to 9:00 a.m. (New York City time) on the Trading Day preceding the Closing Date;

(ii) At the Closing Date, a legal opinion of Company Counsel addressed to the Underwriters, including, without limitation, a negative assurance letter, in form and substance reasonably satisfactory to the Representative;

(iii) At the Closing Date, a legal opinion of Company IP Counsel addressed to the Underwriters in form and substance reasonably satisfactory to the Representative;

(iv) Contemporaneously herewith, a cold comfort letter, addressed to the Underwriters and in form and substance reasonably satisfactory in all respects to the Representative from the Company Auditor dated, respectively, as of the Execution Date and a bring-down letter dated as of the Closing Date;

(v) On the Closing Date, the duly executed and delivered Officer’s Certificate, substantially in the form required by Exhibit C attached hereto;

- (vi) On the Closing Date, the duly executed and delivered Secretary's Certificate, substantially in the form required by Exhibit D attached hereto;
- (vii) On the Closing Date, the Warrant Agreement duly executed by the Company and the Warrant Agent; and
- (viii) Contemporaneously herewith, the duly executed and delivered Lock-Up Agreements.

2.3 Closing Conditions. The respective obligations of each Underwriter hereunder in connection with the Closing, if any, are subject to the following conditions being met:

(ii) the accuracy in all material respects when made and on the date in question (other than representations and warranties of the Company already qualified by materiality, which shall be true and correct in all respects) of the representations and warranties of the Company contained herein (unless as of a specific date therein);

(iii) all obligations, covenants and agreements of the Company required to be performed at or prior to the date in question shall have been performed in all material respects;

(iv) the delivery by the Company of the items set forth in Section 2.2 of this Agreement;

(v) the Registration Statement shall be effective on the Execution Date and, at the Closing Date, no stop order suspending the effectiveness of the Registration Statement shall have been issued and no proceedings for that purpose shall have been instituted or shall be pending or, to the Company's knowledge, contemplated by the Commission and any request on the part of the Commission for additional information shall have been complied with to the reasonable satisfaction of the Representative;

(vi) by the Execution Date, if required by FINRA, the Underwriters shall have received clearance from FINRA as to the amount of compensation allowable or payable to the Underwriters as described in the Registration Statement;

(vii) the Shares and the Warrant Shares have been approved for listing on the Trading Market; and

(viii) prior to and on the Closing Date: (i) there shall have been no material adverse change or development involving a prospective material adverse change in the condition or prospects or the business activities, financial or otherwise, of the Company from the latest dates as of which such condition is set forth in the Registration Statement and Prospectus; (ii) no action, suit or proceeding, at law or in equity, shall have been pending or, to the knowledge of the Company, threatened against the Company or any Affiliate of the Company before or by any court or federal or state commission, board or other administrative agency wherein an unfavorable decision, ruling or finding may materially adversely affect the business, operations, prospects or financial condition or income of the Company, except as set forth in the Registration Statement and Prospectus; (iii) no stop order shall have been issued under the Securities Act and no proceedings therefor shall have been initiated or threatened by the Commission; and (iv) the Registration Statement and the Prospectus and any amendments or supplements thereto shall contain all material statements which are required to be stated therein in accordance with the Securities Act and the rules and regulations thereunder and shall conform in all material respects to the requirements of the Securities Act and the rules and regulations thereunder, and neither the Registration Statement nor the Prospectus nor any amendment or supplement thereto shall contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading.

**ARTICLE III.  
REPRESENTATIONS AND WARRANTIES**

3.1 Representations and Warranties of the Company. The Company represents and warrants to the Underwriters as of the Execution Date and as of the Closing Date, as follows:

(a) Subsidiaries. All of the direct and indirect Subsidiaries of the Company are set forth in the SEC Reports. The Company owns, directly or indirectly, all of the capital stock or other equity interests of each Subsidiary free and clear of any Liens, and all of the issued and outstanding shares of capital stock of each Subsidiary are validly issued and are fully paid, non-assessable and free of preemptive and similar rights to subscribe for or purchase securities. If the Company has no Subsidiaries, all other references to the Subsidiaries or any of them in the Transaction Documents shall be disregarded.

(b) Organization and Qualification. The Company and each of the Subsidiaries is an entity duly incorporated or otherwise organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation or organization, with the requisite power and authority to own and use its properties and assets and to carry on its business as currently conducted. Neither the Company nor any Subsidiary is in violation nor default of any of the provisions of its respective certificate or articles of incorporation, bylaws or other organizational or charter documents. Each of the Company and the Subsidiaries is duly qualified to conduct business and is in good standing as a foreign corporation or other entity in each jurisdiction in which the nature of the business conducted or property owned by it makes such qualification necessary, except where the failure to be so qualified or in good standing, as the case may be, would not have or would not reasonably be expected to result in a Material Adverse Effect and no Proceeding has been instituted in any such jurisdiction revoking, limiting or curtailing or seeking to revoke, limit or curtail such power and authority or qualification.

(c) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by this Agreement and each of the other Transaction Documents to which it is a party and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of this Agreement and each of the other Transaction Documents by the Company and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary action on the part of the Company and no further action is required by the Company, the Board of Directors or the Company's stockholders in connection herewith or therewith other than in connection with the Required Approvals. This Agreement and each other Transaction Document to which it is a party has been (or upon delivery will have been) duly executed by the Company and, when delivered in accordance with the terms hereof and thereof, will constitute the valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(d) No Conflicts. The execution, delivery and performance by the Company of this Agreement and the other Transaction Documents to which it is a party, the issuance and sale of the Securities and the consummation by it of the transactions contemplated hereby and thereby do not and will not (i) conflict with or violate any provision of the Company's or any Subsidiary's certificate or articles of incorporation, bylaws or other organizational or charter documents, (ii) conflict with, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, result in the creation of any Lien upon any of the properties or assets of the Company or any Subsidiary, or give to others any rights of termination, amendment, acceleration or cancellation (with or without notice, lapse of time or both) of, any agreement, credit facility, debt or other instrument (evidencing a Company or Subsidiary debt or otherwise) or other understanding to which the Company or any Subsidiary is a party or by which any property or asset of the Company or any Subsidiary is bound or affected, or (iii) subject to the Required Approvals, conflict with or result in a violation of any law, rule, regulation, order, judgment, injunction,

decree or other restriction of any court or governmental authority to which the Company or a Subsidiary is subject (including federal and state securities laws and regulations), or by which any property or asset of the Company or a Subsidiary is bound or affected; except in the case of each of clauses (ii) and (iii), such as would not have or would not reasonably be expected to result in a Material Adverse Effect.

(e) Filings, Consents and Approvals. The Company is not required to obtain any consent, waiver, authorization or order of, give any notice to, or make any filing or registration with, any court or other federal, state, local or other governmental authority or other Person in connection with the execution, delivery and performance by the Company of the Transaction Documents, other than: (i) the filing with the Commission of the Prospectus Supplement and one or more Current Reports on Form 8-K relating to the Offering, (ii) as may be required by the Trading Market, (iii) as may be required by FINRA, and (iv) such filings as are required to be made under applicable state securities laws (collectively, the “Required Approvals”).

(f) Registration Statement. The Company has filed with the Commission the Registration Statement under the Securities Act, which became effective on August 19, 2015 (the “Effective Date”), for the registration under the Securities Act of the Securities. At the time of such filing, the Company met the requirements of Form S-3 under the Securities Act. The Registration Statement meets the requirements set forth in Rule 415(a)(1)(x) under the Securities Act and complies with said Rule and the Prospectus Supplement will meet the requirements set forth in Rule 424(b). Any reference in this Agreement to the Registration Statement, the Prospectus or the Prospectus Supplement shall be deemed to refer to and include the documents incorporated by reference therein pursuant to Item 12 of Form S-3 which were filed under the Exchange Act, on or before the Execution Date, or the issue date of the Prospectus or the Prospectus Supplement, as the case may be; and any reference in this Agreement to the terms “amend,” “amendment” or “supplement” with respect to the Registration Statement, the Prospectus or the Prospectus Supplement shall be deemed to refer to and include the filing of any document under the Exchange Act after the Execution Date, or the issue date of the Prospectus or the Prospectus Supplement, as the case may be, deemed to be incorporated therein by reference. All references in this Agreement to financial statements and schedules and other information which is “contained,” “included,” “described,” “referenced,” “set forth” or “stated” in the Registration Statement, the Prospectus or the Prospectus Supplement (and all other references of like import) shall be deemed to mean and include all such financial statements and schedules and other information which is or is deemed to be incorporated by reference in the Registration Statement, the Prospectus or the Prospectus Supplement, as the case may be. No stop order suspending the effectiveness of the Registration Statement or the use of the Prospectus or the Prospectus Supplement has been issued, and no proceeding for any such purpose is pending or has been initiated or, to the Company’s knowledge, is threatened by the Commission. For purposes of this Agreement, “free writing prospectus” has the meaning set forth in Rule 405 under the Securities Act. The Company will not, without the prior consent of the Representative, prepare, use or refer to, any free writing prospectus.

(g) Issuance of Securities. The Securities are duly authorized and, when issued and paid for in accordance with the applicable Transaction Documents, will be duly and validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company. The Warrant Shares, when issued in accordance with the terms of the Warrants, will be validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company. The Company has reserved from its duly authorized capital stock the maximum number of shares of Common Stock issuable pursuant to this Agreement, including the Warrant Shares issuable upon exercise of the Warrants. The holder of the Securities will not be subject to personal liability by reason of being such holders. The Securities are not and will not be subject to the preemptive rights of any holders of any security of the Company or similar contractual rights granted by the Company. All corporate action required to be taken for the authorization, issuance and sale of the Securities has been duly and validly taken. The Securities conform in all material respects to all statements with respect thereto contained in the Registration Statement.

(h) Capitalization. The capitalization of the Company is as set forth in the SEC Reports, except with respect to the warrants of the Company that expired in January 2016 and employee stock

options that were granted under the Company's equity incentive plan since September 30, 2015 or have expired since September 30, 2015. The Company has not issued any capital stock since its most recently filed periodic report under the Exchange Act, other than pursuant to the exercise of employee stock options under the Company's equity incentive plans, the issuance of shares of Common Stock to employees pursuant to the Company's employee stock purchase plans, the issuance of shares of Common Stock pursuant to the Company's "at-the-market" offering with Cowen and Company, LLC as sales agent (the "ATM") and pursuant to the conversion and/or exercise of Common Stock Equivalents outstanding as of the date of the most recently filed periodic report under the Exchange Act. No Person has any right of first refusal, preemptive right, right of participation, or any similar right to participate in the transactions contemplated by the Transaction Documents, other than pursuant to that certain Loan and Security Agreement by and among the Company, Hercules Technology III, L.P. and Hercules Technology Growth Capital, Inc., as amended to date (the "Loan and Security Agreement"). Except as a result of the purchase and sale of the Securities, there are no outstanding options, warrants, scrip rights to subscribe to, calls or commitments of any character whatsoever relating to, or securities, rights or obligations convertible into or exercisable or exchangeable for, or giving any Person any right to subscribe for or acquire, any shares of Common Stock, or contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or may become bound to issue additional shares of Common Stock or Common Stock Equivalents, other than those set forth in the SEC Reports, pursuant to the Loan and Security Agreement, or with respect to employee stock options that were granted under the Company's equity incentive plan since September 30, 2015. The issuance and sale of the Securities will not obligate the Company to issue shares of Common Stock or other securities to any Person (other than the Underwriters) and will not result in a right of any holder of Company securities to adjust the exercise, conversion, exchange or reset price under any of such securities. All of the outstanding shares of capital stock of the Company are duly authorized, validly issued, fully paid and nonassessable, have been issued in compliance with all federal and state securities laws, and none of such outstanding shares was issued in violation of any preemptive rights or similar rights to subscribe for or purchase securities. The authorized shares of the Company conform in all material respects to all statements relating thereto contained in the Registration Statement and the Prospectus. The offers and sales of the Company's securities were at all relevant times either registered under the Securities Act and the applicable state securities or Blue Sky laws or, based in part on the representations and warranties of the purchasers, exempt from such registration requirements. Except as disclosed in the SEC Reports, there are no stockholders agreements, voting agreements or other similar agreements with respect to the Company's capital stock to which the Company is a party or, to the knowledge of the Company, between or among any of the Company's stockholders.

(i) **SEC Reports; Financial Statements.** The Company has filed all reports, schedules, forms, statements and other documents required to be filed by the Company under the Securities Act and the Exchange Act, including pursuant to Section 13(a) or 15(d) thereof, for the two years preceding the Execution Date (or such shorter period as the Company was required by law or regulation to file such material) (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, together with the Prospectus and the Prospectus Supplement, being collectively referred to herein as the "SEC Reports") on a timely basis or has received a valid extension of such time of filing and has filed any such SEC Reports prior to the expiration of any such extension. The financial statements of the Company included in the SEC Reports comply in all material respects with applicable accounting requirements and the rules and regulations of the Commission with respect thereto as in effect at the time of filing. Such financial statements have been prepared in accordance with United States generally accepted accounting principles applied on a consistent basis during the periods involved ("GAAP"), except as may be otherwise specified in such financial statements or the notes thereto and except that unaudited financial statements may not contain all footnotes required by GAAP, and fairly present in all material respects the financial position of the Company and its consolidated Subsidiaries as of and for the dates thereof and the results of operations and cash flows for the periods then ended, subject, in the case of unaudited statements, to normal, immaterial, year-end audit adjustments. The agreements and documents described in the Registration Statement, the Prospectus, the Prospectus Supplement and the SEC Reports conform to the descriptions thereof contained therein and there are no agreements or other documents required by the Securities Act and the rules and regulations thereunder to be described in the Registration Statement, the Prospectus, the Prospectus Supplement or the SEC Reports or to be filed with the Commission as exhibits

to the Registration Statement, that have not been so described or filed. Each agreement or other instrument (however characterized or described) to which the Company is a party or by which it is or may be bound or affected and (i) that is referred to in the Registration Statement, the Prospectus, the Prospectus Supplement or the SEC Reports, or (ii) is material to the Company's business, has been duly authorized and validly executed by the Company, is in full force and effect in all material respects and is enforceable against the Company and, to the Company's knowledge, the other parties thereto, in accordance with its terms, except (x) as such enforceability may be limited by bankruptcy, insolvency, reorganization or similar laws affecting creditors' rights generally, (y) as enforceability of any indemnification or contribution provision may be limited under the federal and state securities laws, and (z) that the remedy of specific performance and injunctive and other forms of equitable relief may be subject to the equitable defenses and to the discretion of the court before which any proceeding therefore may be brought. None of such agreements or instruments has been assigned by the Company, and neither the Company nor, to the best of the Company's knowledge, any other party is in default thereunder and, to the best of the Company's knowledge, no event has occurred that, with the lapse of time or the giving of notice, or both, would constitute a default thereunder. To the best of the Company's knowledge, performance by the Company of the material provisions of such agreements or instruments will not result in a violation of any existing applicable law, rule, regulation, judgment, order or decree of any governmental agency or court, domestic or foreign, having jurisdiction over the Company or any of its assets or businesses, including, without limitation, those relating to environmental laws and regulations.

(j) Material Changes; Undisclosed Events, Liabilities or Developments. Since the date of the latest audited financial statements included within the SEC Reports, except as specifically disclosed in a subsequent SEC Report filed prior to the Execution Date, (i) there has been no event, occurrence or development that has had or is reasonably likely to result in a Material Adverse Effect, (ii) the Company has not incurred any liabilities (contingent or otherwise) other than (A) trade payables and accrued expenses incurred in the ordinary course of business consistent with past practice and (B) liabilities not required to be reflected in the Company's financial statements pursuant to GAAP or disclosed in filings made with the Commission, (iii) the Company has not altered its method of accounting, (iv) the Company has not declared or made any dividend or distribution of cash or other property to its stockholders or purchased, redeemed or made any agreements to purchase or redeem any shares of its capital stock, (v) the Company has not issued any equity securities to any officer, director or Affiliate, except pursuant to existing Company equity incentive plans and (vi) no executive officer or director of the Company has resigned from any position with the Company. The Company does not have pending before the Commission any request for confidential treatment of information. Except for the issuance of the Securities contemplated by this Agreement, no event, liability, fact, circumstance, occurrence or development has occurred or exists or is reasonably expected to occur or exist with respect to the Company or its Subsidiaries or their respective businesses, prospects, properties, operations, assets or financial condition that would be required to be disclosed by the Company under applicable securities laws at the time this representation is made or deemed made that has not been publicly disclosed at least 1 Trading Day prior to the date that this representation is made. Unless otherwise disclosed in an SEC Report filed prior to the Execution Date, the Company has not: (i) incurred any liability or obligation, direct or contingent, for borrowed money; or (ii) declared or paid any dividend or made any other distribution on or in respect to its capital stock.

(k) Litigation. There is no action, suit, inquiry, notice of violation, proceeding or investigation pending or, to the knowledge of the Company, threatened against or affecting the Company, any Subsidiary or any of their respective properties before or by any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign) (collectively, an "Action") which (i) adversely affects or challenges the legality, validity or enforceability of any of the Transaction Documents or the Securities or (ii) would, if there were an unfavorable decision, have or reasonably be expected to result in a Material Adverse Effect. Neither the Company nor any Subsidiary, nor, to the knowledge of the Company, any director or executive officer thereof, is or has been the subject of any Action involving a claim of violation of or liability under federal or state securities laws or a claim of breach of fiduciary duty. There has not been, and to the knowledge of the Company, there is not

pending or contemplated, any investigation by the Commission involving the Company or any current director or executive officer of the Company. The Commission has not issued any stop order or other order suspending the effectiveness of any registration statement filed by the Company or any Subsidiary under the Exchange Act or the Securities Act.

(l) Labor Relations. No labor dispute exists or, to the knowledge of the Company, is imminent with respect to any of the employees of the Company, which is reasonably likely to result in a Material Adverse Effect. None of the Company's or its Subsidiaries' employees is a member of a union that relates to such employee's relationship with the Company or such Subsidiary, and neither the Company nor any of its Subsidiaries is a party to a collective bargaining agreement, and the Company and its Subsidiaries believe that their relationships with their employees are good. To the knowledge of the Company, no executive officer of the Company or any Subsidiary, is, or is now expected to be, in violation of any material term of any employment contract, confidentiality, disclosure or proprietary information agreement or non-competition agreement, or any other contract or agreement or any restrictive covenant in favor of any third party, and the continued employment of each such executive officer does not subject the Company or any of its Subsidiaries to any liability with respect to any of the foregoing matters. The Company and its Subsidiaries are in compliance with all applicable U.S. federal, state, local and foreign laws and regulations relating to employment and employment practices, terms and conditions of employment and wages and hours, except where the failure to be in compliance would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(m) Compliance. Neither the Company nor any Subsidiary: (i) is in default under or in violation of (and no event has occurred that has not been waived that, with notice or lapse of time or both, would result in a default by the Company or any Subsidiary under), nor has the Company or any Subsidiary received notice of a claim that it is in default under or that it is in violation of, any indenture, loan or credit agreement or any other agreement or instrument to which it is a party or by which it or any of its properties is bound (whether or not such default or violation has been waived), (ii) is in violation of any judgment, decree or order of any court, arbitrator or other governmental authority or (iii) is, or within the past twelve months has been, in violation of any statute, rule, ordinance or regulation of any governmental authority, including without limitation all applicable foreign, federal, state and local laws relating to taxes, environmental protection, occupational health and safety, product quality and safety and employment and labor matters, except in each case as would not have or would not reasonably be expected to result in a Material Adverse Effect.

(n) Regulatory Permits. The Company and the Subsidiaries possess all certificates, authorizations and permits issued by the appropriate federal, state, local or foreign regulatory authorities necessary to conduct their respective businesses as described in the SEC Reports, except where the failure to possess such permits would not reasonably be expected to result in a Material Adverse Effect (each, a "Material Permit"), and neither the Company nor any Subsidiary has received any notice of proceedings relating to the revocation or modification of any Material Permit. The disclosures in the Registration Statement concerning the effects of applicable Federal, State, local and foreign regulation on the Company's business as currently contemplated are correct in all material respects.

(o) Title to Assets. The Company and the Subsidiaries have good and marketable title in fee simple to, or have valid and marketable rights to lease or otherwise use, all real property and all personal property that is material to the business of the Company and the Subsidiaries, in each case free and clear of all Liens, except for (i) Liens pursuant to the Loan and Security Agreement, (ii) Liens as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company and the Subsidiaries and (iii) Liens for the payment of federal, state or other taxes, for which appropriate reserves have been made in accordance with GAAP, and the payment of which is neither delinquent nor subject to penalties. Any real property and facilities held under lease by the Company and the Subsidiaries are held by them under valid, subsisting and enforceable leases with which the Company and the Subsidiaries are in compliance in all material respects.



(p) Intellectual Property. The Company and each of its Subsidiaries owns or possesses or has valid right to use all patents, patent applications, trademarks, service marks, trade names, trademark registrations, service mark registrations, copyrights, licenses, inventions, trade secrets and similar rights (“Intellectual Property”) necessary for the conduct of the business of the Company and its subsidiaries as currently carried on and as described in the Registration Statement, the Prospectus and the Prospectus Supplement. To the knowledge of the Company, no action or use by the Company or any of its subsidiaries will involve or give rise to any infringement of, or license or similar fees for, any Intellectual Property of others, except where such action, use, license or fee is not reasonably likely to result in a Material Adverse Effect. To the knowledge of the Company, all such issued patents and trademarks are enforceable and there is no existing infringement by another Person of any of the Intellectual Property, except where such inability to enforce or such infringement, as applicable, is not reasonably likely to result in a Material Adverse Effect. Neither the Company nor any of its subsidiaries has received any notice alleging any such infringement or fee.

(q) Insurance. The Company and the Subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as are prudent and customary in the businesses in which the Company and the Subsidiaries are engaged, including, but not limited to, directors and officers insurance coverage. Neither the Company nor any Subsidiary has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business.

(r) Transactions With Affiliates and Employees. Except as set forth in the SEC Reports, none of the officers or directors of the Company or any Subsidiary and, to the knowledge of the Company, none of the employees of the Company or any Subsidiary is presently a party to any transaction with the Company or any Subsidiary (other than for services as employees, officers and directors), including any contract, agreement or other arrangement providing for the furnishing of services to or by, providing for rental of real or personal property to or from, providing for the borrowing of money from or lending of money to or otherwise requiring payments to or from, any officer, director or such employee or, to the knowledge of the Company, any entity in which any officer, director, or any such employee has a substantial interest or is an officer, director, trustee, stockholder, member or partner, in each case in excess of \$120,000 other than for (i) payment of salary or consulting fees for services rendered, (ii) reimbursement for expenses incurred on behalf of the Company and (iii) other employee benefits, including stock option agreements under any stock option plan of the Company.

(s) Sarbanes-Oxley; Internal Accounting Controls. The Company and the Subsidiaries are in compliance with any and all applicable requirements of the Sarbanes-Oxley Act of 2002 that are effective as of the Execution Date, and any and all applicable rules and regulations promulgated by the Commission thereunder that are effective as of the Execution Date and as of the Closing Date. Except as disclosed in the SEC Reports, the Company and the Subsidiaries maintain a system of internal accounting controls sufficient to provide reasonable assurance that: (i) transactions are executed in accordance with management’s general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management’s general or specific authorization, and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. The Company and the Subsidiaries have established disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the Company and the Subsidiaries and designed such disclosure controls and procedures to ensure that information required to be disclosed by the Company in the reports 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. The Company’s certifying officers have evaluated the effectiveness of the disclosure controls and procedures of the Company and the Subsidiaries as of the end of the period covered by the most recently filed periodic report under the Exchange Act (such date, the “Evaluation Date”). The Company presented in its most recently filed periodic report under the Exchange Act the conclusions of the certifying officers about the effectiveness of the disclosure controls and procedures based on their

evaluations as of the Evaluation Date. Since the Evaluation Date, there have been no changes in the internal control over financial reporting (as such term is defined in the Exchange Act) of the Company and its Subsidiaries that have materially affected, or is reasonably likely to materially affect, the internal control over financial reporting of the Company and its Subsidiaries.

(t) Certain Fees. Except as set forth in the Prospectus Supplement, no brokerage or finder's fees or commissions are or will be payable by the Company, any Subsidiary or Affiliate of the Company to any broker, financial advisor or consultant, finder, placement agent, investment banker, bank or other Person with respect to the transactions contemplated by the Transaction Documents. To the Company's knowledge, there are no other arrangements, agreements or understandings of the Company or, to the Company's knowledge, any of its stockholders that may affect the Underwriters' compensation, as determined by FINRA. The Company has not made any direct or indirect payments (in cash, securities or otherwise) to: (i) any person, as a finder's fee, consulting fee or otherwise, in consideration of such person raising capital for the Company or introducing to the Company persons who raised or provided capital to the Company; (ii) any FINRA member; or (iii) any person or entity that has any direct or indirect affiliation or association with any FINRA member, within the twelve months prior to the Execution Date, other than to Cowen and Company, LLC in its capacity as sales agent for the ATM. None of the net proceeds of the Offering will be paid by the Company to any participating FINRA member or its affiliates, except as specifically authorized herein.

(u) Investment Company. The Company is not, and immediately after receipt of payment for the Securities will not be, an "investment company" within the meaning of the Investment Company Act of 1940, as amended. The Company shall conduct its business in a manner so that it will not become an "investment company" subject to registration under the Investment Company Act of 1940, as amended.

(v) Registration Rights. No Person has any right to cause the Company or any Subsidiary to effect the registration under the Securities Act of any securities of the Company or any Subsidiary.

(w) Listing and Maintenance Requirements. The Common Stock is registered pursuant to Section 12(b) of the Exchange Act, and the Company has taken no action designed to, or which to its knowledge is likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act nor has the Company received any notification that the Commission is contemplating terminating such registration. The Company has not, in the 12 months preceding the Execution Date, received notice from any Trading Market on which the Common Stock is or has been listed or quoted to the effect that the Company is not in compliance with the listing or maintenance requirements of such Trading Market. The Company is, and has no reason to believe that it will not in the foreseeable future continue to be, in compliance with all such listing and maintenance requirements, except as would not have or would not reasonably be expected to result in a Material Adverse Effect.

(x) Application of Takeover Protections. The Company and the Board of Directors have taken all necessary action, if any, in order to render inapplicable any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or other similar anti-takeover provision under the Company's certificate of incorporation (or similar charter documents) or the laws of its state of incorporation that is or could become applicable as a result of the Underwriters and the Company fulfilling their obligations or exercising their rights under the Transaction Documents.

(y) Disclosure; 10b-5. The Registration Statement (and any further documents to be filed with the Commission in connection with the Offering) contains all exhibits and schedules as required by the Securities Act. Each of the Registration Statement and any post-effective amendment thereto, if any, at the time it became effective, complied in all material respects with the Securities Act and the applicable rules and regulations under the Securities Act and did not and, as amended or supplemented, if applicable, will not, contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading. The Prospectus and the Prospectus Supplement, each as of its respective date,

comply in all material respects with the Securities Act and the applicable rules and regulations. Each of the Prospectus and the Prospectus Supplement, as amended or supplemented, did not and will not contain as of the date thereof any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. The SEC Reports, when they respectively were filed with the Commission, conformed in all material respects to the requirements of the Securities Act and the Exchange Act, as applicable, and the applicable rules and regulations, and none of such documents, when they respectively were filed with the Commission, contained any untrue statement of a material fact or omitted to state a material fact necessary to make the statements therein (with respect to the SEC Reports incorporated by reference in the Prospectus or Prospectus Supplement), in light of the circumstances under which they were made not misleading; and any further documents so filed and incorporated by reference in the Prospectus or Prospectus Supplement, when such documents are filed with the Commission, will conform in all material respects to the requirements of the Exchange Act and the applicable rules and regulations, as applicable, 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 light of the circumstances under which they were made not misleading. No post-effective amendment to the Registration Statement reflecting any facts or events arising after the date thereof which represent, individually or in the aggregate, a fundamental change in the information set forth therein is required to be filed with the Commission. There are no documents required to be filed with the Commission in connection with the transaction contemplated hereby that (x) have not been filed as required pursuant to the Securities Act or (y) will not be filed within the requisite time period. There are no contracts or other documents required to be described in the Prospectus or Prospectus Supplement, or to be filed as exhibits or schedules to the Registration Statement, which have not been described or filed as required.

(z) No Integrated Offering. The Company has not, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under circumstances that would cause this offering of the Securities to be integrated with prior offerings by the Company for purposes of any applicable shareholder approval provisions of any Trading Market on which any of the securities of the Company are listed or designated.

(aa) Solvency. The Company does not intend to incur debts beyond its ability to pay such debts as they mature (taking into account the timing and amounts of cash to be payable on or in respect of its debt). The Company has no knowledge of any facts or circumstances which lead it to believe that it will file for reorganization or liquidation under the bankruptcy or reorganization laws of any jurisdiction within one year from the Closing Date. The SEC Reports set forth as of the Execution Date all outstanding secured and unsecured Indebtedness of the Company or any Subsidiary, or for which the Company or any Subsidiary has material commitments.

(bb) Tax Status. Except for matters that would not, individually or in the aggregate, have or reasonably be expected to result in a Material Adverse Effect, the Company and its Subsidiaries each (i) has made or filed all applicable United States federal, state and local income and foreign income and franchise tax returns, reports and declarations required by any jurisdiction to which it is subject, (ii) has paid all taxes and other governmental assessments and charges that are material in amount, shown or determined to be due on such returns, reports and declarations and (iii) has set aside on its books provision reasonably adequate for the payment of all material taxes for periods subsequent to the periods to which such returns, reports or declarations apply. There are no unpaid taxes in any material amount claimed to be due by the taxing authority of any jurisdiction, and the executive officers of the Company or of any Subsidiary know of no basis for any such claim. The provisions for taxes payable, if any, shown on the financial statements filed with or as part of the Registration Statement are sufficient for all accrued and unpaid taxes, whether or not disputed, and for all periods to and including the dates of such consolidated financial statements. The term "taxes" mean all federal, state, local, foreign, and other net income, gross income, gross receipts, sales, use, ad valorem, transfer, franchise, profits, license, lease, service, service use, withholding, payroll, employment, excise, severance, stamp, occupation, premium, property, windfall profits, customs, duties or other taxes, fees, assessments, or charges of any kind whatsoever, together with any interest and any penalties, additions to tax, or additional amounts with respect thereto. The term

“returns” means all returns, declarations, reports, statements, and other documents required to be filed in respect to taxes.

(cc) Foreign Corrupt Practices. Neither the Company nor any Subsidiary, nor to the knowledge of the Company or any Subsidiary, any agent or other person acting on behalf of the Company or any Subsidiary, has (i) directly or indirectly, used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses related to foreign or domestic political activity, (ii) made any unlawful payment to foreign or domestic government officials or employees or to any foreign or domestic political parties or campaigns from corporate funds, (iii) failed to disclose fully any contribution made by the Company or any Subsidiary (or made by any person acting on its behalf of which the Company is aware) which is in violation of law, or (iv) violated in any material respect any provision of FCPA. The Company has taken reasonable steps to ensure that its accounting controls and procedures are sufficient to cause the Company to comply in all material respects with the FCPA.

(dd) Accountants. To the knowledge and belief of the Company, the Company Auditor (i) is an independent registered public accounting firm as required by the Exchange Act and (ii) shall express its opinion with respect to the financial statements to be included in the Company’s Annual Report for the fiscal year ending December 31, 2015. Except as disclosed in the SEC Reports, the Company Auditor has not, during the periods covered by the financial statements included in the Prospectus, provided to the Company any non-audit services, as such term is used in Section 10A(g) of the Exchange Act.

(ee) FDA. As to each product subject to the jurisdiction of the U.S. Food and Drug Administration (“FDA”) under the Federal Food, Drug and Cosmetic Act, as amended, and the regulations thereunder (“FDCA”) that is manufactured, packaged, labeled, tested, distributed, sold, and/or marketed by the Company or any Subsidiary (each such product, a “Pharmaceutical Product”), such Pharmaceutical Product is being manufactured, packaged, labeled, tested, and distributed for testing by the Company in compliance with all applicable requirements under FDCA and similar laws, rules and regulations relating to the conduct of preclinical and clinical testing of the Pharmaceutical Products and the manufacture of such products for investigational use, including good manufacturing practices, good laboratory practices, good clinical practices, labeling, record keeping and filing of reports, except where the failure to be in compliance would not have a Material Adverse Effect. Except as otherwise disclosed in the Registration Statement, Prospectus, Prospectus Supplement or SEC Reports, neither the Company nor any Subsidiary has received any notice of adverse finding, warning letter or clinical hold notice from the FDA, or any non-U.S. counterpart, of any of the foregoing, or any untitled letter or other correspondence or notice from the FDA, or any non-U.S. counterpart, or any institutional or ethical review board alleging or asserting noncompliance with any applicable law, rule or regulation, or requiring or requesting the termination, suspension or modification of any preclinical or clinical study of a Pharmaceutical Product conducted by, or on behalf of, the Company or any Subsidiary or in which the Company or any Subsidiary has participated except for such notices, letters or other correspondence alleging or asserting such noncompliance as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. Except as disclosed in the Registration Statement, Prospectus, Prospectus Supplement or SEC Reports, neither the Company nor any Subsidiary has, either voluntarily or involuntarily, initiated, conducted or issued, or caused to be initiated, conducted or issued, any recall, field correction, market withdrawal or replacement, safety alert, warning, “dear doctor” letter, investigator notice, or other notice or action relating to an alleged or potential lack of safety or efficacy of any Pharmaceutical Product, any alleged product defect of any Pharmaceutical Product, or any violation of any material applicable law, rule, regulation or any clinical trial license, approval, permit or authorization for any Pharmaceutical Product, and the Company is not aware of any facts or information that would cause it to initiate any such notice or action and has no knowledge or reason to believe that the FDA, or any non-U.S. counterpart, or any institutional or ethical review board or other non-governmental authority intends to impose, require, request or suggest such notice or action, except in each case as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. None of the Company’s or any Subsidiary’s Pharmaceutical Products have been approved for marketing or sale and neither the Company nor any Subsidiary has sold or marketed a Pharmaceutical Product.

(ff) Office of Foreign Assets Control. Neither the Company nor any Subsidiary nor, to the Company's knowledge, any director, officer, agent, employee or affiliate of the Company or any Subsidiary is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department.

(gg) U.S. Real Property Holding Corporation. The Company is not and has never been a U.S. real property holding corporation within the meaning of Section 897 of the Internal Revenue Code of 1986, as amended, and the Company shall so certify upon the Representative's request.

(hh) Bank Holding Company Act. Neither the Company nor any of its Subsidiaries or Affiliates is subject to the Bank Holding Company Act of 1956, as amended (the "BHCA") and to regulation by the Board of Governors of the Federal Reserve System (the "Federal Reserve"). Neither the Company nor any of its Subsidiaries or Affiliates owns or controls, directly or indirectly, five percent (5%) or more of the outstanding shares of any class of voting securities or twenty-five percent (25%) or more of the total equity of a bank or any entity that is subject to the BHCA and to regulation by the Federal Reserve. Neither the Company nor any of its Subsidiaries or Affiliates exercises a controlling influence over the management or policies of a bank or any entity that is subject to the BHCA and to regulation by the Federal Reserve.

(ii) Money Laundering. The operations of the Company and its Subsidiaries are and have been conducted at all times in material compliance with applicable financial record-keeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, applicable money laundering statutes and applicable rules and regulations thereunder (collectively, the "Money Laundering Laws"), and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any Subsidiary with respect to the Money Laundering Laws is pending or, to the knowledge of the Company or any Subsidiary, threatened.

(jj) D&O Questionnaires. To the Company's knowledge, all information contained in the questionnaires completed by each of the Company's directors and officers most recently prior to the Offering as well as in the Lock-Up Agreement provided to the Underwriters is true and correct in all material respects and the Company has not become aware of any information which would cause the information disclosed in such questionnaires become inaccurate and incorrect in any material respect.

(kk) FINRA Affiliation. No officer, director or, to the Company's knowledge, any beneficial owner of 5% or more of the Company's unregistered securities has any direct or indirect affiliation or association with any FINRA member (as determined in accordance with the rules and regulations of FINRA).

(ll) Officers' Certificate. Any certificate signed by any duly authorized officer of the Company and delivered to the Underwriters or to EGS in connection with the Offering shall be deemed a representation and warranty by the Company to the Underwriters as to the matters covered thereby.

(mm) Board of Directors. The Board of Directors is comprised of the persons set forth in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2014 under the caption of "Directors, Executive Officers, and Corporate Governance", as updated from time to time by the SEC Reports. The qualifications of the persons serving as board members and the overall composition of the Board of Directors comply with the Sarbanes-Oxley Act of 2002 and the rules promulgated thereunder applicable to the Company and the rules of the Trading Market. At least one member of the Board of Directors qualifies as a "financial expert" as such term is defined under the Sarbanes-Oxley Act of 2002 and the rules promulgated thereunder and the rules of the Trading Market. In addition, at least a majority of the persons serving on the Board of Directors qualify as "independent" as defined under the rules of the Trading Market.

**ARTICLE IV.**  
**OTHER AGREEMENTS OF THE PARTIES**

4.1 Amendments to Registration Statement. The Company has delivered, or, upon request of the Representative, will as promptly as practicable deliver, to the Underwriters complete conformed copies of the Registration Statement and of each consent and certificate of experts, as applicable, filed as a part thereof, and conformed copies of the Registration Statement (without exhibits), the Prospectus and the Prospectus Supplement, as amended or supplemented, in such quantities and at such places as an Underwriter reasonably requests. Neither the Company nor any of its directors and officers has distributed and none of them will distribute, prior to the Closing Date, any offering material in connection with the offering and sale of the Securities other than the Prospectus, the Prospectus Supplement, the Registration Statement, and copies of the documents incorporated by reference therein. The Company shall not file any amendment or supplement to the Registration Statement, Prospectus or Prospectus Supplement to which the Representative shall reasonably object in writing within two Business Days, provided that the Company may file any document or report determined by the Company to be required to be filed pursuant to the Securities Act or the Exchange Act or the rules and regulations promulgated thereunder within the time periods required for such filing irrespective of any such objection by the Representative.

4.2 Federal Securities Laws.

(a) Compliance. During the time when a Prospectus is required to be delivered under the Securities Act, the Company will use its best efforts to comply with all requirements imposed upon it by the Securities Act and the rules and regulations thereunder and the Exchange Act and the rules and regulations thereunder, as from time to time in force, so far as necessary to permit the continuance of sales of or dealings in the Securities in accordance with the provisions hereof and the Prospectus. If at any time when a Prospectus relating to the Securities is required to be delivered under the Securities Act, any event shall have occurred as a result of which, in the opinion of counsel for the Company or counsel for the Underwriters, the Prospectus, as then amended or supplemented, includes an untrue statement of a material fact or omits to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, or if it is necessary at any time to amend the Prospectus to comply with the Securities Act, the Company will notify the Representative promptly and prepare and file with the Commission, subject to Section 4.1 hereof, an appropriate amendment or supplement in accordance with Section 10 of the Securities Act.

(b) Filing of Final Prospectus Supplement. The Company will file the Prospectus Supplement (in form and substance reasonably satisfactory to the Representative) with the Commission pursuant to the requirements of Rule 424.

(c) Exchange Act Registration. For a period of one year from the Execution Date, the Company will use its commercially reasonable efforts to maintain the registration of the Common Stock under the Exchange Act. For a period of one year from the Execution Date, the Company will not deregister the Common Stock under the Exchange Act without the prior written consent of the Representative, other than in the event that the Company is the party to a going-private transaction or the non-surviving party to an acquisition transaction or where a failure to take such action would be inconsistent with the Board of Directors' fiduciary duties to the Company's stockholders under applicable law.

(d) Free Writing Prospectuses. The Company represents and agrees that it has not made and will not make any offer relating to the Securities that would constitute an issuer free writing prospectus, as defined in Rule 433 of the rules and regulations under the Securities Act, without the prior written consent of the Representative. Any such free writing prospectus consented to by the Representative is hereinafter referred to as a "Permitted Free Writing Prospectus." The Company represents that it will treat each Permitted Free Writing Prospectus as an "issuer free writing prospectus" as defined in rule and regulations under the Securities Act, and has complied and will comply with the applicable requirements of Rule 433 of the Securities Act, including timely Commission filing where required, legending and record keeping.

4.3 Delivery to the Underwriters of Prospectuses. The Company will deliver to the Underwriters, without charge, from time to time during the period when the Prospectus is required to be delivered under the Securities Act or the Exchange Act such number of copies of each Prospectus as the Underwriters may reasonably request.

4.4 Effectiveness and Events Requiring Notice to the Underwriters. The Company will use its commercially reasonable efforts to cause the Registration Statement to remain effective with a current prospectus until twelve (12) months following the Execution Date. While any Warrants remain outstanding, the Company will notify the Representative and confirm the notice in writing: (i) of the effectiveness of the Registration Statement and any amendment thereto; (ii) of the issuance by the Commission of any stop order relating to the Registration Statement or of the initiation, or the threatening, of any proceeding for that purpose or if the Registration Statement (or any subsequent registration statement registering the sale or resale of the Warrant Shares) is not effective or is not otherwise available for the sale of the Warrant Shares; (iii) of the issuance by any state securities commission of any proceedings for the suspension of the qualification of the Securities for offering or sale in any jurisdiction or of the initiation, or the threatening, of any proceeding for that purpose; (iv) of the mailing and delivery to the Commission for filing of any amendment or supplement to the Registration Statement or Prospectus; (v) of the receipt of any comments or request for any additional information from the Commission; and (vi) of the happening of any event during the period described in this Section 4.4 that, in the judgment of the Company, makes any statement of a material fact made in the Registration Statement or the Prospectus untrue or that requires the making of any changes in the Registration Statement or the Prospectus in order to make the statements therein, in light of the circumstances under which they were made, not misleading. If the Commission or any state securities commission shall enter a stop order or suspend such qualification at any time, the Company will make every reasonable effort to obtain promptly the lifting of such order.

#### 4.5 Expenses Related to the Offering.

(a) General Expenses Related to the Offering. The Company hereby agrees to pay on the Closing Date all expenses incident to the performance of the obligations of the Company under this Agreement, including, but not limited to: (a) all filing fees and communication expenses relating to the registration of the Securities to be sold in the Offering with the Commission; (b) all FINRA Public Offering Filing System fees associated with the review of the Offering by FINRA; all fees and expenses relating to the listing of such Shares and Warrant Shares on the Trading Market and such other stock exchanges as the Company and the Representative together determine; (c) all fees, expenses and disbursements relating to the registration or qualification of such Securities under the "blue sky" securities laws of such states and other foreign jurisdictions as the Representative may reasonably designate; (d) the costs of all mailing and printing of the Registration Statements, Prospectuses and all amendments, supplements and exhibits thereto and as many preliminary and final Prospectuses as the Representative may reasonably deem necessary; (e) the costs of preparing, printing and delivering the Securities; (f) fees and expenses of the Transfer Agent for the Securities (including, without limitation, any fees required for same-day processing of any instruction letter delivered by the Company); (g) stock transfer and/or stamp taxes, if any, payable upon the transfer of securities from the Company to the Underwriters; (h) the fees and expenses of the Company's accountants; and (i) the fees and expenses of the Company's legal counsel and other agents and representatives. The Underwriters may deduct from the net proceeds of the Offering payable to the Company on the Closing Date the expenses set forth in this Section 4.5(a) to be paid by the Company to the Underwriters.

(b) Other Expenses. The Company further agrees that, in addition to the expenses payable pursuant to Section 4.5(a), on the Closing Date, the Company will reimburse the Representative up to \$75,000 for its reasonable and documented out-of-pocket expenses, including, without limitation, the fees and expenses of counsel to the Representative, by deduction from the proceeds of the Offering contemplated herein. For purposes of clarity, notwithstanding the foregoing, (i) the Company shall not be obligated to reimburse out-of-pocket expenses, including, without limitation, the fees and expenses of counsel, of any Underwriter other than the Representative pursuant to Section 4.5(a) or 4.5(b) and (ii) any

fees and expenses of counsel to the Representative payable by the Company pursuant to Section 4.5(a), if any, shall be subject to the maximum reimbursement amount set forth in this Section 4.5(b).

4.6 Application of Net Proceeds. The Company will apply the net proceeds from the Offering received by it in a manner consistent with the application described under the caption "Use of Proceeds" in the Prospectus.

4.7 Delivery of Earnings Statements to Security Holders. The Company will make generally available to its security holders as soon as practicable, but not later than the first day of the fifteenth full calendar month following the Execution Date, an earnings statement (which need not be certified by independent public or independent certified public accountants unless required by the Securities Act or the Rules and Regulations under the Securities Act, but which shall satisfy the provisions of Rule 158(a) under Section 11(a) of the Securities Act) covering a period of at least twelve consecutive months beginning after the Execution Date.

4.8 Stabilization. Neither the Company, nor, to its knowledge, any of its employees, directors or shareholders (without the consent of the Representative) has taken or will take, directly or indirectly, any action designed to or that has constituted or that might reasonably be expected to cause or result in, under the Exchange Act, or otherwise, stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Securities.

4.9 Internal Controls. The Company will use its commercially reasonable efforts to maintain a system of internal accounting controls sufficient to provide reasonable assurances that: (i) transactions are executed in accordance with management's general or specific authorization; (ii) transactions are recorded as necessary in order to permit preparation of financial statements in accordance with GAAP and to maintain accountability for assets; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (iv) the recorded accountability for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

4.10 Accountants. The Company shall continue to retain a nationally recognized independent certified public accounting firm for a period of at least one year after the Execution Date. The Underwriters acknowledge that the Company Auditor is acceptable to the Underwriters.

4.11 FINRA. The Company shall advise the Representative (who shall make an appropriate filing with FINRA) if it is aware that any 5% or greater shareholder of the Company becomes an affiliate or associated person of a FINRA member that is participating in the Offering for a period of 60 days following the Execution Date.

4.12 No Fiduciary Duties. The Company acknowledges and agrees that the Underwriters' responsibility to the Company is solely contractual and commercial in nature, based on arms-length negotiations and that neither the Underwriters nor their affiliates or any selected dealer shall be deemed to be acting in a fiduciary capacity, or otherwise owes any fiduciary duty to the Company or any of its affiliates in connection with the Offering and the other transactions contemplated by this Agreement. Notwithstanding anything in this Agreement to the contrary, the Company acknowledges that the Underwriters may have financial interests in the success of the Offering that are not limited to the difference between the price to the public and the purchase price paid to the Company by the Underwriters for the shares and the Underwriters have no obligation to disclose, or account to the Company for, any of such additional financial interests. 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 breach or alleged breach of fiduciary duty.

4.13 Warrant Shares. If all or any portion of a Warrant is exercised at a time when there is an effective registration statement to cover the issuance of the Warrant Shares or if the Warrant is exercised via cashless exercise at a time when such Warrant Shares would be eligible for resale under Rule 144, in each case by a non-affiliate of the Company, the Warrant Shares issued pursuant to any such exercise shall be issued free of all restrictive legends.



4.14 Securities Laws Disclosure; Publicity. At the request of the Representative, by 9:00 a.m. (New York City time) on the Execution Date, the Company shall issue a press release disclosing the material terms of the Offering; provided, however, that, if this Agreement is entered into after 4:00 p.m. (New York City time) on the Execution Date, then such press release shall be issued by 9:00 a.m. (New York City time) on the Trading Day immediately following the Execution Date. The Company and the Representative shall consult with each other in issuing any other press releases with respect to the Offering, and neither the Company nor any Underwriter shall issue any such press release nor otherwise make any such public statement without the prior consent of the Company, with respect to any press release of such Underwriter, or without the prior consent of such Underwriter, with respect to any press release of the Company, which consent shall not unreasonably be withheld or delayed, except if such disclosure is required by law, in which case the disclosing party shall promptly provide the other party with prior notice of such public statement or communication.

4.15 Shareholder Rights Plan. No claim will be made or enforced by the Company or, with the consent of the Company, any other Person, that any Underwriter of the Securities is an "Acquiring Person" under any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or similar anti-takeover plan or arrangement in effect or hereafter adopted by the Company, or that any Underwriter of Securities could be deemed to trigger the provisions of any such plan or arrangement, by virtue of receiving Securities.

4.16 Reservation of Common Stock. As of the Execution Date, the Company has reserved and the Company shall continue to reserve and keep available at all times, free of preemptive rights, a sufficient number of shares of Common Stock for the purpose of enabling the Company to issue Shares and the Warrant Shares pursuant to any exercise of the Warrants.

4.17 Listing of Common Stock. The Company hereby agrees to use commercially reasonable efforts to maintain the listing or quotation of the Common Stock on the Trading Market on which it is currently listed, and concurrently with the Closing, the Company shall apply to list or quote all of the Shares and Warrant Shares on such Trading Market and promptly secure the listing of all of the Shares and Warrant Shares on such Trading Market. The Company further agrees, if the Company applies to have the Common Stock traded on any other Trading Market, it will then include in such application all of the Shares and Warrant Shares, and will take such other action as is necessary to cause all of the Shares and Warrant Shares to be listed or quoted on such other Trading Market as promptly as possible. Until such date that no Warrants remain outstanding, the Company will then take all action reasonably necessary to continue the listing and trading of its Common Stock on a Trading Market, other than in the event that the Company seeks to deregister the Common Stock under the Exchange Act in the event that the Company is the party to a going-private transaction or the non-surviving party to an acquisition transaction or where a failure to take such action would be inconsistent with the Board of Directors' fiduciary duties to the Company's stockholders under applicable law, and will comply in all respects with the Company's reporting, filing and other obligations under the bylaws or rules of the Trading Market.

4.18 Subsequent Equity Sales. From the Execution Date until ninety (90) days following the Execution Date, neither the Company nor any Subsidiary shall issue, enter into any agreement to issue or announce the issuance or proposed issuance of any shares of Common Stock or Common Stock Equivalents; provided, however, that, with respect to issuances pursuant to the ATM, the prohibition in this Section 4.18 shall apply until sixty (60) days following the Execution Date. Notwithstanding the foregoing, this Section 4.18 shall not apply in respect of an Exempt Issuance.

4.19 Research Independence. In addition, the Company acknowledges that each Underwriter's research analysts and research departments, if any, are required to be independent from their respective investment banking divisions and are subject to certain regulations and internal policies, and that such Underwriter's research analysts may hold 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 its investment bankers. The Company hereby waives and releases, to the fullest extent permitted by law, any claims that the Company may have against such Underwriter with respect to any conflict of interest that may arise from the fact that the views expressed by their independent research analysts and research departments may be different from or inconsistent with the views or advice

communicated to the Company by such Underwriter's investment banking divisions. The Company acknowledges that the Representative 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 position in debt or equity securities of the Company.

#### **ARTICLE V. DEFAULT BY UNDERWRITERS**

If on the Closing Date, any Underwriter shall fail to purchase and pay for the portion of the Securities which such Underwriter has agreed to purchase and pay for on such date (otherwise than by reason of any default on the part of the Company), the Representative, or if the Representative is the defaulting Underwriter, the non-defaulting Underwriters, shall use their reasonable efforts to procure within 36 hours thereafter one or more of the other Underwriters, or any others, to purchase from the Company such amounts as may be agreed upon and upon the terms set forth herein, the Securities which the defaulting Underwriter or Underwriters failed to purchase. If during such 36 hours the Representative shall not have procured such other Underwriters, or any others, to purchase the Securities agreed to be purchased by the defaulting Underwriter or Underwriters, then (a) if the aggregate number of Securities with respect to which such default shall occur does not exceed 10% of the Securities covered hereby, the other Underwriters shall be obligated, severally, in proportion to the respective numbers of Securities which they are obligated to purchase hereunder, to purchase the Securities which such defaulting Underwriter or Underwriters failed to purchase, or (b) if the aggregate number of Securities with respect to which such default shall occur exceeds 10% of the Securities covered hereby, the Company or the Representative will have the right to terminate this Agreement without liability on the part of the non-defaulting Underwriters or of the Company except to the extent provided in Article VI hereof. In the event of a default by any Underwriter or Underwriters, as set forth in this Article V, the applicable Closing Date may be postponed for such period, not exceeding seven days, as the Representative, or if the Representative is the defaulting Underwriter, the non-defaulting Underwriters, may determine in order that the required changes in the Prospectus or in any other documents or arrangements may be effected. The term "Underwriter" includes any person substituted for a defaulting Underwriter. Any action taken under this Section shall not relieve any defaulting Underwriter from liability in respect of any default of such Underwriter under this Agreement.

#### **ARTICLE VI. INDEMNIFICATION**

6.1 Indemnification of the Underwriters. Subject to the conditions set forth below, the Company agrees to indemnify and hold harmless each Underwriter, and each dealer selected by each Underwriter that participates in the offer and sale of the Securities (each a "Selected Dealer") and each of their respective directors, officers and employees and each Person, if any, who controls such Underwriter or any Selected Dealer ("Controlling Person") within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, against any and all loss, liability, claim, damage and expense whatsoever (including but not limited to any and all legal or other expenses reasonably incurred in investigating, preparing or defending against any litigation, commenced or threatened, or any claim whatsoever, whether arising out of any action between such Underwriter and the Company or between such Underwriter and any third party or otherwise) to which they or any of them may become subject under the Securities Act, the Exchange Act or any other statute or at common law or otherwise or under the laws of foreign countries, arising out of or based upon any untrue statement or alleged untrue statement of a material fact contained in (i) any Preliminary Prospectus, if any, the Registration Statement or the Prospectus (as from time to time each may be amended and supplemented); (ii) any materials or information provided to investors by, or with the approval of, the Company in connection with the marketing of the offering of the Securities, including any "road show" or investor presentations made to investors by the Company (whether in person or electronically); or (iii) any application or other document or written communication (in this Article VI, collectively called "application") executed by the Company or based upon written information furnished by the Company in any jurisdiction in order to qualify the Securities under the securities laws thereof or filed with the Commission, any state securities commission or agency, Trading Market or any securities exchange; or the omission or alleged omission therefrom of a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances

under which they were made, not misleading, unless such statement or omission was made in reliance upon and in conformity with written information furnished to the Company with respect to the applicable Underwriter by or on behalf of such Underwriter expressly for use in any Preliminary Prospectus, if any, the Registration Statement or Prospectus, or any amendment or supplement thereto, or in any application, as the case may be. With respect to any untrue statement or omission or alleged untrue statement or omission made in the Preliminary Prospectus, if any, the indemnity agreement contained in this Section 6.1 shall not inure to the benefit of an Underwriter to the extent that any loss, liability, claim, damage or expense of such Underwriter results from the fact that a copy of the Prospectus was not given or sent to the Person asserting any such loss, liability, claim or damage at or prior to the written confirmation of sale of the Securities to such Person as required by the Securities Act and the rules and regulations thereunder, and if the untrue statement or omission has been corrected in the Prospectus, unless such failure to deliver the Prospectus was a result of non-compliance by the Company with its obligations under this Agreement. The Company agrees promptly to notify the Representative of the commencement of any litigation or proceedings against the Company or any of its officers, directors or Controlling Persons in connection with the issue and sale of the Securities to the public or in connection with the Registration Statement or Prospectus.

6.2 Procedure. If any action is brought against an Underwriter, a Selected Dealer or a Controlling Person in respect of which indemnity may be sought against the Company pursuant to Section 6.1, such Underwriter, such Selected Dealer or Controlling Person, as the case may be, shall promptly notify the Company in writing of the institution of such action and the Company shall assume the defense of such action, including the employment and fees of counsel (subject to the reasonable approval of such Underwriter or such Selected Dealer, as the case may be) and payment of actual expenses. Such Underwriter, such Selected Dealer or Controlling Person 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 Underwriter, such Selected Dealer or Controlling Person unless (i) the employment of such counsel at the expense of the Company shall have been authorized in writing by the Company in connection with the defense of such action, or (ii) the Company shall not have employed counsel to have charge of the defense of such action, or (iii) such indemnified party or parties shall have reasonably concluded that there may be defenses available to it or them which are different from or additional to those available to the Company (in which case the Company 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 the reasonable fees and expenses of not more than one additional firm of attorneys selected by such Underwriter (in addition to local counsel), Selected Dealer and/or Controlling Person shall be borne by the Company. Notwithstanding anything to the contrary contained herein, if any Underwriter, Selected Dealer or Controlling Person shall assume the defense of such action as provided above, the Company shall have the right to approve the terms of any settlement of such action which approval shall not be unreasonably withheld.

6.3 Indemnification of the Company. Each Underwriter severally and not jointly agrees to indemnify and hold harmless the Company, its directors, officers and employees and agents who control the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act against any and all loss, liability, claim, damage and expense described in the foregoing indemnity from the Company to such Underwriter, as incurred, but only with respect to untrue statements or omissions, or alleged untrue statements or omissions made in any Preliminary Prospectus, if any, the Registration Statement or Prospectus or any amendment or supplement thereto or in any application, in reliance upon, and in strict conformity with, written information furnished to the Company with respect to such Underwriter by or on behalf of such Underwriter expressly for use in such Preliminary Prospectus, if any, the Registration Statement or Prospectus or any amendment or supplement thereto or in any such application. In case any action shall be brought against the Company or any other Person so indemnified based on any Preliminary Prospectus, if any, the Registration Statement or Prospectus or any amendment or supplement thereto or any application, and in respect of which indemnity may be sought against such Underwriter, such Underwriter shall have the rights and duties given to the Company, and the Company and each other Person so indemnified shall have the rights and duties given to such Underwriter by the provisions of this Article VI. Notwithstanding the provisions of this Section 6.3, no Underwriter shall be required to indemnify the Company for any amount in excess of the underwriting discounts and commissions applicable to the Securities purchased by such Underwriter. The Underwriters' obligations in this Section 6.3 to indemnify the Company are several in proportion to their respective underwriting obligations and not joint.

6.4 Contribution.

(a) **Contribution Rights.** In order to provide for just and equitable contribution under the Securities Act in any case in which (i) any Person entitled to indemnification under this Article VI makes a claim for indemnification pursuant hereto but it is judicially determined (by the entry of a final judgment or decree by a court of competent jurisdiction and the expiration of time to appeal or the denial of the last right of appeal) that such indemnification may not be enforced in such case notwithstanding the fact that this Article VI provides for indemnification in such case, or (ii) contribution under the Securities Act, the Exchange Act or otherwise may be required on the part of any such Person in circumstances for which indemnification is provided under this Article VI, then, and in each such case, the Company and each Underwriter, severally and not jointly, shall contribute to the aggregate losses, liabilities, claims, damages and expenses of the nature contemplated by said indemnity agreement incurred by the Company and such Underwriter, as incurred, in such proportions that such Underwriter is responsible for that portion represented by the percentage that the underwriting discount appearing on the cover page of the Prospectus bears to the initial offering price appearing thereon and the Company is responsible for the balance; provided that no Person guilty of a 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. If the allocation provided for in the preceding sentence is not permitted by applicable law, the Company and each Underwriter, severally and not jointly, shall contribute to the aggregate losses, liabilities, claims, damages and expenses of the nature contemplated by said indemnity agreement incurred by the Company and such Underwriter, as incurred, in such proportion as is appropriate to reflect not only the allocation referred to in the preceding sentence but also the relative fault of the Company, on the one hand, and such Underwriter, on the other, with respect to the statements or omissions that resulted in such loss, liability, claim, damage or expense. The relative fault shall be determined by reference to whether the untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the Company or the Underwriter, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such statement or omission. For purposes of this Section, each director, officer and employee of such Underwriter or the Company, as applicable, and each Person, if any, who controls such Underwriter or the Company, as applicable, within the meaning of Section 15 of the Securities Act shall have the same rights to contribution as such Underwriter or the Company, as applicable. Notwithstanding the provisions of this Section 6.4, no Underwriter shall be required to contribute any amount in excess of the underwriting discounts and commissions applicable to the Securities purchased by such Underwriter. The Underwriters' obligations in this Section 6.4 to contribute are several in proportion to their respective underwriting obligations and not joint.

(b) **Contribution Procedure.** Within fifteen days after receipt by any party to this Agreement (or its representative) of notice of the commencement of any action, suit or proceeding, such party will, if a claim for contribution in respect thereof is to be made against another party ("**contributing party**"), notify the contributing party of the commencement thereof, but the failure to so notify the contributing party will not relieve it from any liability which it may have to any other party other than for contribution hereunder. In case any such action, suit or proceeding is brought against any party, and such party notifies a contributing party or its representative of the commencement thereof within the aforesaid fifteen days, the contributing party will be entitled to participate therein with the notifying party and any other contributing party similarly notified. Any such contributing party shall not be liable to any party seeking contribution on account of any settlement of any claim, action or proceeding affected by such party seeking contribution without the written consent of such contributing party. The contribution provisions contained in this Section 6.4 are intended to supersede, to the extent permitted by law, any right to contribution under the Securities Act, the Exchange Act or otherwise available.

## **ARTICLE VII. MISCELLANEOUS**

### **7.1 Termination.**

(a) **Termination Right.** The Representative shall have the right to terminate this Agreement at any time prior to any Closing Date, (i) if any domestic or international event or act or occurrence has

materially disrupted, or in its opinion will in the immediate future materially disrupt, general securities markets in the United States; or (ii) if trading on any Trading Market shall have been suspended or materially limited, or minimum or maximum prices for trading shall have been fixed, or maximum ranges for prices for securities shall have been required by FINRA or by order of the Commission or any other government authority having jurisdiction, or (iii) if the United States shall have become involved in a new war or an increase in major hostilities, or (iv) if a banking moratorium has been declared by a New York State or federal authority, or (v) if a moratorium on foreign exchange trading has been declared which materially adversely impacts the United States securities markets, or (vi) if the Company shall have sustained a material loss by fire, flood, accident, hurricane, earthquake, theft, sabotage or other calamity or malicious act which, whether or not such loss shall have been insured, will, in the Representative's opinion, make it inadvisable to proceed with the delivery of the Securities, or (vii) if the Company is in material breach of any of its representations, warranties or covenants hereunder, or (viii) if the Representative shall have become aware after the Execution Date of such a material adverse change in the conditions or prospects of the Company, or such adverse material change in general market conditions as in the Representative's judgment would make it impracticable to proceed with the offering, sale and/or delivery of the Securities or to enforce contracts made by the Underwriters for the sale of the Securities.

(b) Expenses. In the event this Agreement shall be terminated pursuant to Section 7.1(a), within the time specified herein or any extensions thereof pursuant to the terms herein, the Company shall be obligated to reimburse the Representative up to \$35,000 for its actual, reasonable and documented out-of-pocket expenses related to the transactions contemplated herein then due and payable, including the fees and disbursements of EGS (provided, however, that such expense cap in no way limits or impairs the indemnification and contribution provisions of this Agreement set forth in Article VI). For purposes of clarity, if this Agreement shall be terminated pursuant to Section 7.1(a), the Company shall have no obligation to reimburse any Underwriter's expenses other than those of the Representative as set forth in this Section 7.1(b).

(c) Indemnification. Notwithstanding any contrary provision contained in this Agreement, any election hereunder or any termination of this Agreement, and whether or not this Agreement is otherwise carried out, the provisions of Article VI shall not be in any way effected by such election or termination or failure to carry out the terms of this Agreement or any part hereof.

7.2 Entire Agreement. The Transaction Documents, together with the exhibits and schedules thereto, the Prospectus and the Prospectus Supplement, contain the entire understanding of the parties with respect to the subject matter hereof and thereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into such documents, exhibits and schedules. Notwithstanding anything herein to the contrary, the Engagement Agreement, dated January 27, 2016 (the "Engagement Agreement"), between the Company and the Representative shall continue to be effective and the terms therein shall continue to survive and be enforceable by the Representative in accordance with its terms, provided that, in the event of a conflict between the terms of the Engagement Agreement and this Agreement, the terms of this Agreement shall prevail.

7.3 Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of: (a) the date of transmission, if such notice or communication is delivered via facsimile or e-mail at the facsimile number or email address set forth on the signature pages attached hereto at or prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile or e-mail at the facsimile number or email address as set forth on the signature pages attached hereto on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (c) the second (2<sup>nd</sup>) Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service or (d) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications shall be as set forth on the signature pages attached hereto.

7.4 Amendments; Waivers. No provision of this Agreement may be waived, modified, supplemented or amended except in a written instrument signed, in the case of an amendment, by the Company and the Representative. No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of any party to exercise any right hereunder in any manner impair the exercise of any such right.

7.5 Headings. The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof.

7.6 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns.

7.7 Governing Law. All questions concerning the construction, validity, enforcement and interpretation of the Transaction Documents shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Agreement and any other Transaction Documents (whether brought against a party hereto or its respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein (including with respect to the enforcement of any of the Transaction Documents), and hereby irrevocably waives, and agrees not to assert in any action, suit or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is improper or is an inconvenient venue for such proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If either party shall commence an action or proceeding to enforce any provisions of the Transaction Documents, then, in addition to the obligations of the Company under Article VI, the prevailing party in such action, suit or proceeding shall be reimbursed by the other party for its reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding.

7.8 Survival. The representations and warranties contained herein shall survive the Closing and the delivery of the Securities.

7.9 Execution. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to each other party, it being understood that the parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original thereof.

7.10 Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the

remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

7.11 Remedies. In addition to being entitled to exercise all rights provided herein or granted by law, including recovery of damages, the Underwriters and the Company will be entitled to specific performance under the Transaction Documents. The parties agree that monetary damages may not be adequate compensation for any loss incurred by reason of any breach of obligations contained in the Transaction Documents and hereby agree to waive and not to assert in any action for specific performance of any such obligation the defense that a remedy at law would be adequate.

7.12 Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then such action may be taken or such right may be exercised on the next succeeding Business Day.

7.13 Construction. The parties agree that each of them and/or their respective counsel have reviewed and had an opportunity to revise the Transaction Documents and, therefore, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of the Transaction Documents or any amendments thereto. In addition, each and every reference to share prices and shares of Common Stock in any Transaction Document shall be subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the Execution Date.

**7.14 WAIVER OF JURY TRIAL. IN ANY ACTION, SUIT, OR PROCEEDING IN ANY JURISDICTION BROUGHT BY ANY PARTY AGAINST ANY OTHER PARTY ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY, THE PARTIES EACH KNOWINGLY AND INTENTIONALLY, TO THE GREATEST EXTENT PERMITTED BY APPLICABLE LAW, HEREBY ABSOLUTELY, UNCONDITIONALLY, IRREVOCABLY AND EXPRESSLY WAIVE FOREVER ANY RIGHT TO TRIAL BY JURY.**

*(Signature Pages Follow)*

If the foregoing correctly sets forth the understanding between the Underwriters and the Company, please so indicate in the space provided below for that purpose, whereupon this letter shall constitute a binding agreement among the Company and the several Underwriters in accordance with its terms.

Very truly yours,

**MAST THERAPEUTICS, INC.**

By: /s/ Brian M. Culley  
Name: Brian M. Culley  
Title: CEO

Address for Notice:  
3611 Valley Centre Drive, Suite 500  
San Diego, California 92130  
Facsimile: (858) 552-0876  
Email: Broberts@mastthera.com  
Attention: Chief Financial Officer

Copy to:  
DLA Piper LLP (US)  
4365 Executive Drive, Suite 1100  
San Diego, CA 92121  
Facsimile: (858) 638-5122  
Email: Michael.kagnoff@dlapiper.com  
Attention: Michael Kagnoff

Accepted on the date first above written.  
**ROTH CAPITAL PARTNERS, LLC**  
as the Representative of the several  
Underwriters listed on Schedule I

By: /s/ Aaron M. Gurewitz  
Name: Aaron M. Gurewitz  
Title: Head of Equity Capital Markets

Address for Notice:  
888 San Clemente Drive  
Newport Beach, California 92660  
Email: RothECM@roth.com  
Attention: Roth Equity Capital Markets

Copy to:  
Ellenoff Grossman & Schole LLP  
1345 Avenue of the Americas  
New York, New York 10105  
Facsimile: (212) 401-4741  
Attention: Robert F. Charron



**SCHEDULE I**

SCHEDULE OF UNDERWRITERS

<u>Underwriters</u>	<u>Units</u>	<u>Closing Purchase Price</u>
Roth Capital Partners, LLC	23,272,728	\$ 6,016,000.19
Maxim Group LLC	5,818,182	\$ 1,504,000.05
Total	29,090,910	\$ 7,520,000.24

## [FORM OF WARRANT AGREEMENT]

**WARRANT AGREEMENT**

THIS WARRANT AGREEMENT (this “**Agreement**”) is dated February , 2016, between Mast Therapeutics, Inc., a Delaware corporation (the “**Company**”), and American Stock Transfer & Trust Company, LLC, acting as warrant agent (the “**Warrant Agent**”).

WHEREAS, the Company proposes to issue warrants (the “**Warrants**”) to acquire up to shares, subject to adjustment as provided herein, of common stock, \$0.001 par value per share (“**Common Stock**”), of the Company (collectively, the “**Warrant Shares**”);

WHEREAS, each whole Warrant shall represent the right to purchase from the Company, at an initial price of \$0.42 per share (the “**Exercise Price**”), one share of Common Stock, subject to adjustment as provided hereunder; and

WHEREAS, American Stock Transfer & Trust Company, LLC is willing to serve as the Warrant Agent in connection with the issuance of Warrant Certificates and the other matters as provided herein.

NOW, THEREFORE, in consideration of the foregoing and for the purpose of defining the terms and provisions of the Warrants and the respective rights and obligations thereunder of the Company, the Warrant Agent and the record holders from time to time of the Warrants or, if the Warrants are held in “street name”, a Participant (as defined below) or a designee appointed by such Participant (each, a “**Holder**” and collectively, the “**Holders**”), the parties hereby agree as follows:

1. *Definitions.* For the purposes hereof, the following terms shall have the following meanings:

“**Aggregate Exercise Price**” means, with respect to each exercise of Warrants held by the Holder, the Exercise Price multiplied by the aggregate number of Warrant Shares (which must be a whole number) that such Holder intends to purchase pursuant to such exercise.

“**Business Day**” means any day except Saturday, Sunday and any day which shall be a federal legal holiday in the United States or a day on which banking institutions in The City of New York are authorized or required by law or other government action to close.

“**Common Stock Equivalents**” means the securities of the Company that would entitle the Holder to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the Holder to receive, Common Stock.

“**Date of Exercise**” means the date on which the Holder shall have delivered to the Warrant Agent an appropriately completed and duly signed Form of Election to Purchase (with the Warrant Shares Exercise Log attached to it and reference to the relevant Warrant Certificate sufficient to identify it).

“**Exchange Act**” means the Securities Exchange Act of 1934, as amended, and the rules and regulations of the Securities and Exchange Commission (the “**Commission**”) promulgated thereunder.

“**Expiration Date**” means February , 2021.

“**Form of Election to Purchase**” means a Form of Election to Purchase substantially in the form attached hereto as Exhibit B.

“**Initial Exercise Date**” means August , 2016.<sup>1</sup>

“**Initial Issuance Date**” means February , 2016.

“**Market Price**” of a share of Common Stock on any date shall mean the arithmetic mean of the VWAP on each of the five consecutive Trading Days immediately preceding such date. The Market Price shall be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during such period.

“**Person**” means a corporation, association, partnership, limited liability corporation, organization, business, individual, trust, government or political subdivision thereof or governmental agency.

“**Prospectus**” means the final prospectus relating to the Warrant Shares included in the Registration Statement, as supplemented by the Prospectus Supplement.

“**Registration Statement**” means, collectively, the various parts of the registration statement prepared by the Company on Form S-3 (File No. 333-202960) with respect to the Warrant Shares, each as amended as of the date hereof, including the Prospectus therein, as supplemented by any prospectus supplement pursuant to Rule 424(b) of the Securities Act of 1933, as amended (the “**Securities Act**”), and all exhibits filed with or incorporated by reference into such registration statement.

“**Trading Day**” means (i) a day on which the shares of Common Stock are traded on The Nasdaq Global Select Market, The Nasdaq Global Market, The Nasdaq Capital Market, New York Stock Exchange, NYSE MKT or other national securities exchange on which the shares of Common Stock are then listed or quoted, or (ii) if the shares of Common Stock are not listed on any such exchange or market, a day on which the shares of Common Stock are traded in the over-the-counter market, as reported by the OTC Bulletin Board, or (iii) if the shares of Common Stock are not listed on any such exchange or market or quoted on the OTC Bulletin Board, a day on which the shares of Common Stock are quoted in the over-the-counter market as reported by the National Quotation Bureau Incorporated (or any similar organization or agency succeeding its functions of reporting prices); provided, that in the event that the shares of Common Stock are not listed or quoted as set forth in clause (i), (ii) or (iii) hereof, then Trading Day shall mean a Business Day.

“**VWAP**” on any Trading Day means the per share volume-weighted average price of the Common Stock as reported by Bloomberg, L.P. (“**Bloomberg**”) (or its equivalent successor if such page is not available) in respect of the period from the scheduled open of trading until the scheduled close of trading of the primary trading session on such Trading Day. VWAP shall be determined without regard to after-hours trading or any other trading outside of the regular trading session trading hours. If VWAP cannot be calculated on such date on any of the foregoing bases, the VWAP on such date shall be the fair market value of the Common Stock as mutually determined by the Company and the Holder.

“**Warrant Certificate**” means a certificate in substantially the form attached hereto as Exhibit A representing such number of Warrants set forth on the Warrant Certificate.

## 2. *Form of Warrant.*

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<sup>1</sup> date that is 6 months and 1 day following the Initial Issuance Date.

(a) *Warrants in Global Form.* The Warrants shall initially be issuable in book-entry registration only and evidenced by one or more global Warrant Certificates (the “**Global Warrant Certificates**”) deposited with the Depository Trust Company (the “**Depository**”) and registered in the name of Cede & Co. (“**Cede**”), a nominee of the Depository. Ownership of beneficial interests in the Warrants shall be shown on, and the transfer of such ownership shall be effected through, records maintained by (i) the Depository or its nominee for each Global Warrant Certificate or (ii) institutions that have accounts with the Depository (such institutions, with respect to a Warrant in its account, each a “**Participant**”). For purposes of this Agreement, the delivery of a notice from the Depository or a Participant of the transfer or exercise of Warrants in the form of a Global Warrant Certificate shall be deemed to constitute the delivery of a Warrant Certificate with respect to such transfer or exercise. If the Depository subsequently ceases to make its book-entry settlement system available for the Warrants, the Company may instruct the Warrant Agent regarding other arrangements for book-entry settlement. If an event of default has occurred and is continuing with respect to the Warrants, or if the Company determines, in its sole discretion, not to have securities represented by the Global Warrant Certificates, the Company will instruct the Warrant Agent to prepare and deliver physical certificates evidencing the Warrants in exchange for the beneficial interests in the Global Warrant Certificates, based on directions received by the Depository from its Participants with respect to ownership of beneficial interests in the Global Warrant Certificates. In such event, any physical certificates evidencing the Warrants shall represent one or more Warrants as set forth on the Warrant Certificate and be issued in registered form only as definitive Warrant Certificates and shall be substantially in the form attached hereto as Exhibit A, shall be dated the date of issuance thereof (whether upon initial issuance, register of transfer, exchange or replacement) and shall bear such legends and endorsements typed, stamped, printed, lithographed or engraved thereon as the Company may deem appropriate and as are not inconsistent with the provisions of this Agreement.

(b) *Effect of Signature.* Warrant Certificates shall be signed by, or bear the facsimile or electronic signature of, the Chair of the Board, Chief Executive Officer, President, Chief Financial Officer, Treasurer, any Vice President, or Secretary of the Company. In the event the person whose facsimile or electronic signature has been placed upon any Warrant Certificate shall have ceased to serve in the capacity in which such person signed the Warrant Certificate before such Warrant Certificate is issued, it may be issued with the same effect as if he or she had not ceased to be such at the date of issuance.

(c) *Effect of Countersignature.* Unless and until countersigned by the Warrant Agent pursuant to this Agreement, a Warrant Certificate shall be invalid and of no effect and may not be exercised by the holder thereof. Such signature by the Warrant Agent upon any Warrant Certificate executed by the Company shall be conclusive evidence that such Warrant Certificate has been duly issued under the terms of this Agreement.

(d) *Warrant Register.* The Warrant Agent shall maintain books (the “**Warrant Register**”), for the registration of original issuance and the registration of transfer of the Warrants. Upon the initial issuance of the Warrants, the Warrant Agent shall issue and register the Warrants in the names of the respective holders thereof in such denominations and otherwise in accordance with instructions delivered to the Warrant Agent by or on behalf of the Company. The Company and the Warrant Agent may deem and treat the registered Holder of each Warrant Certificate as the absolute owner of the Warrants represented thereby for the purpose of any exercise thereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary. Any Person in whose name ownership of a beneficial interest in the Warrants evidenced by a Global Warrant Certificate is recorded in the records maintained by the Depository or its nominee shall be deemed the “beneficial owner” thereof; provided, that all such beneficial interests shall be held through a Participant, which shall be the registered holder of such Warrants.

(e) *Registration of Transfers.* The Warrant Agent shall register the transfer of any portion of a Warrant Certificate in the Warrant Register, upon surrender of the Warrant Certificate, with the Form of Assignment attached thereto, to the Warrant Agent at its address specified for notice set forth in Section 14 below. Upon any such registration or transfer, a new Warrant Certificate substantially in the form attached hereto as Exhibit A (any such new Warrant Certificate, a “**New Warrant Certificate**”), evidencing the portion of the Warrant Certificate so transferred shall be issued to the transferee and a New Warrant Certificate evidencing the remaining portion of the Warrant Certificate not so transferred, if any, shall be issued to the transferring Holder. Upon issuance and delivery of the New Warrant Certificate, the Warrant Certificate surrendered to the Warrant Agent shall be clearly marked “cancelled” or bear a similar statement to that effect. The delivery of the New Warrant Certificate by the Warrant Agent to the transferee thereof shall be deemed to constitute acceptance by such transferee of all of the rights and obligations of a holder of a Warrant Certificate. Notwithstanding the foregoing, so long as the Warrants are evidenced by Global Warrant Certificates deposited with the Depository, ownership of beneficial interests in the Warrants shall be shown on, and the transfer of such ownership shall be effected through, records maintained (i) by the Depository or its nominee for each Warrant; (ii) by Participants; or (iii) directly on the book-entry records of the Warrant Agent with respect only to owners of beneficial interests that represent such direct registration.

(f) Notwithstanding the foregoing and anything else herein to the contrary, the Warrants may be issued in uncertificated form if so specified by the Company.

3. *Term of Warrants.* Warrants shall be exercisable by the registered Holder at any time and from time to time on or after the Initial Exercise Date until 5:00 p.m. (New York time) on the Expiration Date. At 5:00 p.m. (New York time) on the Expiration Date, any Warrant not exercised prior thereto (including without limitation, by payment of the applicable Aggregate Exercise Price on or prior to 5:00 p.m. (New York time) on the Expiration Date) shall be and become void and of no value.

#### 4. *Exercise of Warrants and Delivery of Warrant Shares.*

(a) *Cashless Exercise.* A Holder may exercise the Warrants through a cashless exercise (a “**Cashless Exercise**”) pursuant to Sections 4(b) and 10 below if, and only if, an effective registration statement is not then available for the issuance of the Warrant Shares. If an effective registration statement is available for the issuance of the Warrant Shares, a Holder may only exercise the Warrants through a cash exercise (a “**Cash Exercise**”) in accordance with Section 4(c) below. The delivery of a Form of Election to Purchase shall be irrevocable by the Holder except in connection with the exercise by the Holder of its option as a result of the Buy-In to reinstate a portion of the Warrant and equivalent number of Warrant Shares for which an exercise was not honored (in which case such exercise shall be deemed rescinded) in accordance with Section 4(h) below.

(b) In accordance with Section 4(a) above, the Holder may effect a Cashless Exercise by delivering Warrant Certificates to the Company, if applicable, and noting on the Form of Election to Purchase that the Holder wishes to effect a Cashless Exercise, upon which the Company shall issue, or cause to be issued, to the Holder the number of Warrant Shares determined as follows:

$$X = Y \times (A-B)/A$$

where:

X = the number of Warrant Shares to be issued to the Holder;

Y = the number of Warrant Shares with respect to which the Warrant Certificates are being exercised;

A = the Market Price as of the Date of Exercise; and

B = the Exercise Price.

If the foregoing calculation results in zero or a negative number, then no Warrant Shares shall be issued upon such a Cashless Exercise pursuant to this subsection 4(b). If Warrant Shares are issued in such a Cashless Exercise, the Company acknowledges and agrees that, in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised and the Company agrees not to take any position contrary to this subsection 4(b).

(c) *Exercise Procedure.* At such times, and upon such representations and agreements, upon delivery of an appropriately completed and duly signed Form of Election to Purchase (with the Warrant Shares Exercise Log attached and reference to the applicable Warrant Certificate sufficient to identify it) to the Warrant Agent (or, in the case of a Global Warrant Certificate, properly delivered by the Participant in accordance with the Depository's procedures), at its address for notice set forth in Section 14, and, in the case of a Cash Exercise, payment of the Aggregate Exercise Price by the date that is one (1) Trading Day after the Date of Exercise, the Company shall, on or prior to the date that is the later of (A) the date that is three (3) Trading Days after the Date of Exercise and (B) the date that is two (2) Trading Days after the date on which the Aggregate Exercise Price has been paid in accordance with Section 10 below (such later date, the "**Warrant Share Delivery Date**"), (i) provided that the Company's transfer agent (the "**Transfer Agent**") is participating in the Depository's Fast Automated Securities Transfer Program and either an effective registration statement is available for the issuance of the Warrant Shares or the Warrants are exercised through a Cashless Exercise, credit such aggregate number of Warrant Shares to which the Holder or Participant, as the case may be, is entitled pursuant to such exercise to the Holder's, Participant's, or its designee's balance account with the Depository through its Deposit Or Withdrawal At Custodian system, or (ii) if the Transfer Agent is not participating in the Depository's Fast Automated Securities Transfer Program, issue and dispatch by overnight courier to the address as specified in the Form of Election to Purchase, a certificate, registered in the Company's share register in the name of the Holder or its designee, for the number of shares of Common Stock to which the Holder is entitled pursuant to such exercise. Any Person so designated by the Holder to receive Warrant Shares shall be deemed to have become holder of record of such Warrant Shares as of the time that the Holder shall have delivered to the Warrant Agent an appropriately completed and duly signed Form of Election to Purchase (with the Warrant Shares Exercise Log attached to it and reference to the relevant Warrant Certificate sufficient to identify it), provided that the Holder delivers the Aggregate Exercise Price by the date that is one (1) Trading Day after the Date of Exercise.

(d) If the Holder delivers a Form of Election to Purchase but fails, within one Trading Day after the Date of Exercise, to deliver the Aggregate Exercise Price, then the Holder shall only be deemed to be the holder of record of the Warrant Shares upon delivery of the Aggregate Exercise Price, so long as such Aggregate Exercise Price is delivered within three (3) Trading Days of the Date of Exercise. If the Holder has taken all actions necessary under the terms of this Agreement for such Holder to receive Warrant Shares subject to a Form of Election to Purchase on a Warrant Share Delivery Date and the Company fails for any reason to deliver or cause to be delivered to the Holder such Warrant Shares by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP on the date of the applicable Form of Election to Purchase), \$10 per Trading Day (increasing to \$20 per Trading Day on the fifth Trading Day after such liquidated damages begin to accrue) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered.

(e) For so long as there is a then effective registration statement covering the issuance of the Warrant Shares, the Warrant is exercised by a Cashless Exercise, or if the Warrant Shares are freely tradable by the Holder without restriction under Rule 144 promulgated under the Securities Act, upon issuance, the Warrant Shares shall be issued free of all restrictive legends.

(f) No ink-original Form of Election to Purchase shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Form of Election to Purchase be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender any Warrant Certificate to the Company or Warrant Agent until all of the Warrant Shares issuable thereunder have been purchased and all of the Warrants evidenced by such Warrant Certificate have been exercised in full, in which case, the Holder shall surrender such Warrant Certificate to the Company or Warrant Agent for cancellation within five (5) Trading Days of the date the final Form of Election to Purchase is delivered to the Warrant Agent. Partial exercises of such Warrant Certificate resulting in purchases of a portion of the total number of Warrant Shares available thereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable thereunder in an amount equal to the applicable number of Warrant Shares purchased. **The Holder and any assignee, by acceptance of a Warrant Certificate, acknowledge and agree that, by reason of the provisions of this paragraph, following a partial exercise of such Warrant Certificate, the number of Warrant Shares issuable upon exercise of such Warrant Certificate at any given time may be less than the amount stated on the face thereof.**

(g) If fewer than all Warrant Shares issuable upon exercise of the relevant Warrant Certificate are purchased upon any exercise thereof, then promptly following the date on which the Holder has taken all actions necessary under the terms of this Agreement for such Holder to receive Warrant Shares and be deemed to have become the holder of record of such Warrant Shares and at the request of the Holder (provided that the Holder has delivered the original physical Warrant Certificate to the Warrant Agent for cancellation), the Company will execute and deliver to the Holder or its assigns a New Warrant Certificate (dated the date such Holder is deemed to have become the holder of record of such Warrant Shares) evidencing the unexercised portion of the relevant Warrant Certificate. If fewer than all the Warrants evidenced by a Global Warrant Certificate are exercised, a notation shall be made to the records maintained by the Depository, its nominee for each Global Warrant Certificate, or a Participant, as appropriate, evidencing the balance of the Warrants remaining after such exercise.

(h) In addition to any other rights available to the Holder, if the Holder has taken all actions necessary under the terms of this Agreement for such Holder to receive Warrant Shares subject to a Form of Election to Purchase on a Warrant Share Delivery Date and the Company fails, or fails to cause the Warrant Agent, to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 4(c) above on or before the applicable Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases shares of Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of

Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of a Buy-In and evidence of the amount of such loss.

#### 5. *Ownership Limitations on Exercise*

(a) A Holder shall not have the right to exercise any portion of the Warrants, pursuant to Section 4 or otherwise, to the extent that after giving effect to the issuance of Warrant Shares or any other security otherwise deliverable pursuant to such exercise, as set forth on the applicable Form of Election to Purchase, such Holder (together with such Holder's affiliates (as defined in Rule 13e-3 of the rules promulgated under the Exchange Act, an "**Affiliate**"), and any other Persons acting as a group together with such Holder or any of such Holder's Affiliates), would have Beneficial Ownership (as defined below) of more than 9.99% of the number of outstanding shares of Common Stock or any other class of equity security of the Company (other than an exempted security) that is registered pursuant to Section 12 of the Exchange Act (a "**Class**") (the "**9.99% Ownership Limitation**").

(b) Notwithstanding the provisions of subsection 5(a) above, at the election of the Holder and notice to the Company, a Holder shall not have the right to exercise any portion of the Warrants, pursuant to Section 4 or otherwise, to the extent that after giving effect to the issuance of Warrant Shares or any other security otherwise deliverable pursuant to such exercise, as set forth on the applicable Form of Election to Purchase, such Holder (together with such Holder's Affiliates and any other Persons acting as a group together with such Holder or any of such Holder's Affiliates), would have Beneficial Ownership of more than 4.99% of the number of outstanding shares of Common Stock or any other Class (the "**4.99% Ownership Limitation**").

(c) For purposes of subsections 5(a) and 5(b) above, the number of shares of Common Stock or any other Class that a Holder and its Affiliates (and any other Persons acting as a group together with a Holder or any of such Holder's Affiliates) has "**Beneficial Ownership**" shall include the number of shares of Common Stock or any other Class issuable upon exercise of the Warrants with respect to which such determination is being made, but shall exclude the number of shares of Common Stock or any other Class which would be issuable upon (i) exercise of the remaining, nonexercised portion of the Warrants beneficially owned by such Holder or any of its Affiliates (and any other Persons acting as a group together with such Holder or any of such Holder's Affiliates) and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company exercisable for or convertible into Common Stock or any other Class that are subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by such Holder or any of its Affiliates (and any other Persons acting as a group together with such Holder or any of such Holder's Affiliates). Except as set forth in the preceding sentence, for purposes of subsections 5(a) and 5(b) above, Beneficial Ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by each Holder that the Company is not representing to any Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and each Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that a limitation contained in subsections 5(a) and 5(b) above applies, the determination of whether the Warrants owned by a Holder are exercisable (in relation to other securities owned by such Holder together with its Affiliates (and any other Persons acting as a group together with such Holder or any of such Holder's Affiliates)) and of which portion of the Warrants owned by such Holder is exercisable shall be in the sole discretion of such Holder, and the submission of a Form of Election to Purchase to the Warrant Agent or the Company, as applicable, shall be deemed to be such Holder's determination of whether the Warrants owned by such Holder are exercisable (in relation to other securities owned by such Holder together with any of its Affiliates (and any other Persons acting as a group together with such



Holder or any of such Holder's Affiliates)) and of which portion of such Warrants are exercisable, in each case subject to the 9.99% Ownership Limitation or 4.99% Ownership Limitation, as applicable, and neither the Company nor the Warrant Agent shall have any obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of subsections 5(a) and 5(b) above, in determining the number of outstanding shares of Common Stock or any other Class, a Holder may rely on the number of outstanding shares of Common Stock or any other Class as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company setting forth the number of shares of Common Stock or such other Class outstanding. Upon the written or oral request of a Holder, the Company shall, within three Trading Days, confirm orally and/or in writing to the Holder the number of shares of Common Stock or any other Class then outstanding. In any case, the number of outstanding shares of Common Stock or any other Class shall be determined after giving effect to the conversion or exercise of securities of the Company, including the Warrants, by the Holder or its Affiliates (and any other Persons acting as a group together with such Holder or any of such Holder's Affiliates) since the date as of which such number of outstanding shares of Common Stock or any other Class was reported.

(d) A Holder, upon written notice to the Company, may increase or decrease the 4.99% Ownership Limitation to any other percentage not in excess of the 9.99% Ownership Limitation, provided that any increase of the 4.99% Ownership Limitation will not be effective until the 61st day after such notice is delivered to the Company. Any such increase or decrease will apply only to the Holder providing such notice and not to any other holder of the Warrants.

(e) The provisions of subsections 5(a) and 5(b) above shall be construed and implemented in a manner otherwise than in strict conformity with their terms in order to correct any portion thereof which may be defective or inconsistent with the intended beneficial ownership limitations therein contained or to make changes or supplements necessary or desirable to properly give effect to such limitations. The limitations contained in subsections 5(a) through 5(d) above shall apply to a successor holder of the Warrants. The Warrant Agent shall not be responsible for monitoring the exercise or ownership limitations contained in this Section 5.

(f) Notwithstanding anything contained herein to the contrary, the provisions of this Section 5 do not and will not prohibit any transfer of the Warrants to or from, or the holding of the Warrants by, a record holder, such as Cede, as nominee for the Depository, which will routinely hold of record the Warrants for a variety of its Participants (such as members of the Depository, including without limitation brokerage houses and banks) who may hold for beneficial owners, nor will the provisions of this Section 5 prohibit or restrict the Depository from transferring interests in the Warrants on the books of the Depository. The provisions of subsections 5(a) and 5(b) above shall not be applicable to any holder that holds Warrants as record holder for the benefit of other record holders or beneficial owners but not themselves as beneficial owners, including without limitation, Cede, as nominee for the Depository. The provisions of subsections 5(a) and 5(b) above shall not, therefore, prevent companies which regularly hold the Warrants for others in "street name" from so doing. Provided that such companies are holding the Warrants as record holder for the benefit of other record holders or beneficial owners but not themselves as beneficial owners, the provisions of subsections 5(a) and 5(b) above are not intended to impair (i) transfers of the Warrants into, or out of, the name of Cede, or (ii) transfers of interests in the Warrant on the books of the Depository.

6. *Charges, Taxes and Expenses.* Issuance and delivery of certificates for Warrant Shares shall be made without charge to the Holder for any issue or transfer tax, or transfer agent fee in respect of the issuance of such certificates, all of which taxes shall be paid by the Company; provided, however, that the Company shall not be obligated to pay any tax which may be payable in respect of any transfer involved

in the registration of any certificates for Warrant Shares or Warrants in a name other than that of the Holder. The Holder shall be responsible for all other tax liabilities that may arise as a result of holding or transferring any Warrant Certificate. The Company shall pay all Warrant Agent and Transfer Agent fees required for same-day processing of any Form of Election to Purchase and all fees to the Depository (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

7. *Replacement of Warrant Certificate.* If any Warrant Certificate is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation thereof, or in lieu of and substitution for such Warrant Certificate, a New Warrant Certificate, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction and customary and reasonable indemnity, if requested (which shall in no event include the posting of any bond). Applicants for a New Warrant Certificate under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Company may prescribe.

8. *Reservation of Warrant Shares.* The Company covenants that it will at all times reserve and keep available out of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of all outstanding Warrants as herein provided, the number of Warrant Shares which are then issuable and deliverable upon the exercise of all outstanding Warrants (taking into account any adjustments pursuant to Section 9 below). The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized and issued, and be fully paid and nonassessable.

9. *Certain Adjustments.* The Exercise Price and number of Warrant Shares issuable upon exercise of each Warrant then outstanding are subject to adjustment from time to time as set forth in this Section 9.

(a) *Stock Dividends and Splits.* If the Company, (i) pays a dividend in the form of shares of its Common Stock on its Common Stock, (ii) subdivides outstanding shares of Common Stock into a greater number of shares, or (iii) combines outstanding shares of Common Stock into a lesser number of shares, then in each such case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend, and any adjustment pursuant to clause (ii) or (iii) of this paragraph shall become effective immediately after the effective date of such subdivision or combination.

(b) *Number of Warrant Shares.* Simultaneously with any adjustment to the Exercise Price pursuant to subsection 9(a) above, the number of Warrant Shares that may be purchased upon exercise of each Warrant shall be increased or decreased proportionately, as the case may be, so that after such adjustment the aggregate Exercise Price payable hereunder for the adjusted number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment.

(c) *Subsequent Rights Offerings.* In addition to any adjustments pursuant to Section 9(a) herein, if at any time the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "**Purchase Rights**"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant

(without regard to any limitation on exercise thereof, including without limitation, the 4.99% Ownership Limitation or 9.99% Ownership Limitation, as applicable, in Section 5 herein) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the 4.99% Ownership Limitation or 9.99% Ownership Limitation, as applicable, in Section 5 herein, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the beneficial ownership limitation in Section 5).

(d) *Pro Rata Distributions.* The Holder, as the holder of this Warrant, shall be entitled to receive such dividends paid and distributions of any kinds made to the holders of Common Stock of the Company to the same extent as if the Holder had exercised this Warrant into Common Stock (without regard to any limitations on exercise herein or elsewhere and without regard to whether or not a sufficient number of shares are authorized or reserved to effect any such exercise and issuance) and had held such shares of Common Stock on the record date for such dividends and distributions. Payments under the preceding sentence shall be made concurrently with the dividend or distribution to holders of the Common Stock.

(e) *Extraordinary Transactions.* If, (i) the Company, directly or indirectly, in one or more related transactions, effects any merger or consolidation of the Company with or into another Person (other than a merger solely for the purpose of changing the Company's domicile to another state of the United States or solely with respect to a name change of the Company), (ii) the Company effects any sale, assignment, conveyance or disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any purchase offer, tender offer or exchange offer by the Company is completed pursuant to which holders of Common Stock are permitted to tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock, (iv) the Company, directly or indirectly, in one or more related transactions, effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than a reclassification in which the Company's stockholders remain the same) or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme or arrangement) with another Person or group of Persons, whereby such other Person or group acquires more than 50% of the outstanding shares of Common Stock (not including any shares of Common Stock held by the other Person or other Persons making or party to, or associated or affiliated with the other Persons making or party to, such stock or share purchase agreement or other business combination) (in any such case, an "**Extraordinary Transaction**"), then each Holder's Warrants will become the right thereafter to receive, upon exercise of his or her Warrants, the same amount and kind of securities, cash or property as such Holder would have been entitled to receive upon the occurrence of such Extraordinary Transaction if it had been, immediately prior to such Extraordinary Transaction (without regard to any limitation in Sections 5(a) and 5(b) above on the exercise of the applicable Warrant), the holder of the number of Warrant Shares then issuable upon exercise in full of the relevant Warrant (the "**Alternate Consideration**") in lieu of Common Stock. The aggregate Exercise Price for each Warrant will not be affected by any such Extraordinary Transaction, but the Company shall apportion such aggregate Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in an Extraordinary Transaction, then each Holder, to the extent practicable, shall be given the same choice as to the Alternate Consideration it receives upon any exercise of his or her Warrant following such Extraordinary Transaction.

Notwithstanding anything to the contrary, the Company or any Successor Entity shall, at the Holder's option, exercisable at any time concurrently with, or within 30 days after, the consummation of the Extraordinary Transaction, purchase this Warrant from the Holder by paying to the Holder an amount of cash equal to the Black Scholes Value of the remaining unexercised portion of this Warrant on the date of the consummation of such Extraordinary Transaction. For purposes of this Section 9(e), "**Black Scholes Value**" means the value of this Warrant based on the Black and Scholes Option Pricing Model obtained from the "OV" function on Bloomberg determined as of the day of consummation of the applicable Extraordinary Transaction for pricing purposes and reflecting (A) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the time between the date of the public announcement of the applicable Extraordinary Transaction and the Expiration Date, (B) an expected volatility equal to the greater of 100% and the 100 day volatility obtained from the HVT function on Bloomberg as of the Trading Day immediately following the public announcement of the applicable Extraordinary Transaction, (C) the underlying price per share used in such calculation shall be the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Extraordinary Transaction (as determined in good faith by the Board of Directors of the Company (the "**Board**")) and (D) a remaining option time equal to the time between the date of the public announcement of the applicable Extraordinary Transaction and the Expiration Date. In addition, at the request of each Holder, upon surrender of such Holder's Warrant, any successor entity in an Extraordinary Transaction in which the Company is not the surviving entity (the "**Successor Entity**") in such Extraordinary Transaction shall issue to such Holder a new warrant consistent with the foregoing provisions and evidencing the Holder's right to purchase the Alternate Consideration for the aggregate Exercise Price upon exercise thereof. Each Warrant (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to an Extraordinary Transaction.

(f) *Calculations.* All calculations under this Section 9 shall be made to the nearest cent or the nearest 1/100th of a share, as applicable.

(g) *Notice of Adjustments.* Upon the occurrence of each adjustment pursuant to this Section 9, the Company at its expense will promptly calculate such adjustment in accordance with the terms of this Agreement and prepare a certificate setting forth such adjustment, including a statement of the adjusted Exercise Price and adjusted number of Warrant Shares or type of Alternate Consideration issuable upon exercise of each Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. The Company will reasonably promptly deliver or cause to be delivered to each Holder who makes a request in writing and to the Warrant Agent, a copy of each such certificate.

(h) *Notice of Corporate Events.* If the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock (other than a dividend payable solely in shares of Common Stock) or (ii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then the Company shall deliver or cause to be delivered to each Holder a notice describing the material terms and conditions of such dividend, distribution or transaction. Notwithstanding anything to the contrary in this Section 9(h), the failure to deliver any notice under this Section 9(h) or any defect therein shall not affect the validity of the corporate action required to be described in such notice. Until the exercise of its, his or her Warrant or any portion of such Warrant, a Holder shall not have nor exercise any rights by virtue of ownership of a Warrant as a stockholder of the Company (including without limitation the right to notification of stockholder meetings or the right to receive any notice or other communication concerning the business and affairs of the Company other than as provided in this Section 9(h)), except as expressly set forth in this Section 9.

(i) *Notices to Holders on Registration Statement.* If, at any time while any Warrants remain outstanding, the Registration Statement (or any subsequent registration statement registering the

sale or resale of the Warrant Shares) is not effective or is not otherwise available for the sale of the Warrant Shares, the Company shall deliver notice to the record Holders that such registration statement is not then effective for the sale of Warrant Shares and shall deliver notice to the record Holders if and when the registration statement is effective again and available for the sale of the Warrant Shares (it being understood and agreed that the foregoing shall not limit the ability of the Company to issue, or any holder thereof to sell, any of the Warrant Shares in compliance with applicable federal and state securities laws).

(j) To the extent that any notice provided to the Holders under this Agreement constitutes, or contains, material, non-public information regarding the Company or any of the Company's subsidiaries, the Company shall simultaneously file such notice with the Commission on a Current Report on Form 8-K.

10. *Payment of Exercise Price.* Except in the case of a Cashless Exercise pursuant to subsection 4(b) above, the Holder shall pay the Aggregate Exercise Price by paying, in lawful money of the United States, by certified check payable to the Warrant Agent, as agent for the Company, or bank draft payable to the order of the Company or by wire transfer of immediately available funds to an account designated in writing by the Company (or as otherwise agreed to by the Company) delivered to the Warrant Agent not later than one Trading Day after the Date of Exercise.

11. *Holder Not Deemed a Stockholder.* The Holder, solely in such Person's capacity as a Holder, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in the Warrants be construed to confer upon the Holder, solely in such Person's capacity as a Holder, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which such Person is then entitled to receive upon the due exercise of the Warrants, except as expressly set forth in Section 9.

12. *No Fractional Shares.* No fractional shares will be issued in connection with any exercise of a Warrant. In lieu of any fractional shares which would otherwise be issuable, the Company shall pay cash equal to the product of such fraction multiplied by the Exercise Price.

13. *Exchange Act Filings.* The Holder agrees and acknowledges that it shall have sole responsibility for making any applicable filings with the U.S. Securities and Exchange Commission pursuant to Sections 13 and 16 of the Exchange Act as a result of its acquisition of any Warrant and the Warrant Shares and any future retention or transfer thereof.

14. *Notices.* Any and all notices or other communications or deliveries hereunder (including without limitation any Form of Election to Purchase) shall be in writing and shall be deemed given and effective on the earliest of (a) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section 14 prior to 5:00 p.m. (New York time) on a Business Day, (b) the next Business Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section 14 on a day that is not a Business Day or later than 5:00 p.m. (New York time) on any Business Day, (c) the Business Day following the date of mailing, if sent by nationally recognized overnight courier service, or (d) upon actual receipt by the party to whom such notice is required to be given. The addresses for such communications shall be:

if to the Company:

Mast Therapeutics, Inc.  
3611 Valley Centre Drive, Suite 500  
San Diego, CA 92130  
Fax: (858) 552-0876  
Attention: Chief Financial Officer

With a copy to: [warrantnotices@mastthera.com](mailto:warrantnotices@mastthera.com)

if to the Warrant Agent:

American Stock Transfer & Trust Company, LLC  
6201 15<sup>th</sup> Avenue  
Brooklyn, NY 11219  
Fax: (718) 765-8713  
Attention: Corporate Trust Department

if to the Holder:

to the address or facsimile number appearing on the Warrant Register or such other address or facsimile number as the Holder may provide to the Company in accordance with this Section 14.

15. *Warrant Agent.*

(a) The Company and the Warrant Agent hereby agree that the Warrant Agent will serve as an agent of the Company as set forth in this Agreement.

(b) The Warrant Agent shall not by any act hereunder be deemed to make any representation as to validity or authorization of the Warrants or the Warrant Certificates (except as to its countersignature thereon) or of any securities or other property delivered upon exercise of any Warrant, or as to the number or kind or amount of securities or other property deliverable upon exercise of any Warrant or the correctness of the representations of the Company made in such certificates that the Warrant Agent receives.

(c) The Warrant Agent shall not have any duty to calculate or determine any required adjustments with respect to the Exercise Price or the kind and amount of securities or other property receivable by Holders upon the exercise of Warrants, nor to determine the accuracy or correctness of any such calculation.

(d) The Warrant Agent shall not (i) be liable for any recital or statement of fact contained herein or in the Warrant Certificates or for any action taken, suffered or omitted by it in good faith in the belief that any Warrant Certificate or any other document or any signature is genuine or properly authorized, (ii) be responsible for any failure by the Company to comply with any of its obligations contained in this Agreement or in the Warrant Certificates, (iii) be liable for any act or omission in connection with this Agreement except for its own gross negligence or willful misconduct or (iv) have any responsibility to determine whether a transfer of a Warrant complies with applicable securities laws.

(e) The Warrant Agent is hereby authorized to accept instructions with respect to the performance of its duties hereunder solely on behalf of the Company from the Chief Executive Officer, the President, the

Chief Financial Officer, any Senior Vice President, or the Secretary or any Assistant Secretary of the Company and to apply to any such officer for written instructions (which will then be reasonably promptly given) and the Warrant Agent shall not be liable for any action taken or suffered to be taken by it in good faith in accordance with the instructions of any such officer, except for its own gross negligence or willful misconduct, but in its discretion the Warrant Agent may in lieu thereof accept other evidence of such or may require such further or additional evidence as it may deem reasonable.

(f) The Warrant Agent may exercise any of the rights and powers hereby vested in it or perform any duty hereunder either itself or by or through its attorneys, agents or employees, provided reasonable care has been exercised in the selection and in the continued employment of any persons. The Warrant Agent shall not be under any obligation or duty to institute, appear in or defend any action, suit or legal proceeding in respect hereof, unless first indemnified to its satisfaction. The Warrant Agent shall promptly notify the Company in writing of any claim made or action, suit or proceeding instituted against or arising out of or in connection with this Agreement.

(g) The Company will take such action as may reasonably be required by the Warrant Agent in order to enable it to carry out or perform its duties under this Agreement.

(h) The Warrant Agent shall act solely as agent of the Company hereunder. The Warrant Agent shall only be liable for the failure to perform such duties as are specifically set forth herein.

(i) The Warrant Agent may, at its own expense, consult with legal counsel satisfactory to it (who may be legal counsel for the Company), and the Warrant Agent shall incur no liability or responsibility to the Company or to any Holder for any action taken, suffered or omitted by it in good faith in accordance with the opinion or advice of such counsel.

(j) The Company agrees to pay to the Warrant Agent compensation for all services rendered by the Warrant Agent hereunder as the Company and the Warrant Agent may agree from time to time, and to reimburse the Warrant Agent for reasonable expenses incurred in connection with the execution and administration of this Agreement (including the reasonable compensation and expenses of its counsel), and further agrees to indemnify the Warrant Agent for, and hold it harmless against, any loss, liability or expense incurred without gross negligence, bad faith or willful misconduct on its part, arising out of or in connection with the acceptance and administration of this Agreement.

(k) *[Reserved]*.

(l) No resignation or removal of the Warrant Agent and no appointment of a successor warrant agent shall become effective until the acceptance of appointment by the successor warrant agent as provided herein. The Warrant Agent may resign its duties and be discharged from all further duties and liability hereunder (except liability arising as a result of the Warrant Agent's own gross negligence, bad faith or willful misconduct) after giving 60 days prior written notice to the Company. The Company may remove the Warrant Agent upon written notice, and the Warrant Agent shall thereupon in like manner be discharged from all further duties and liabilities hereunder, except as aforesaid. Upon such resignation or removal, the Company shall appoint in writing a new warrant agent. If the Company fails to do so within a period of 30 days after it has been notified in writing of such resignation by the resigning Warrant Agent or after such removal, then the resigning Warrant Agent or the Holder of any Warrant (if such Holder first submits his, her or its Warrant Certificate for inspection by the Company) may apply to any court of competent jurisdiction for the appointment of a new warrant agent, provided that, for purposes of this Agreement, the Company shall be deemed to be the Warrant Agent until a new warrant agent is appointed. After acceptance in writing of such appointment by the new warrant agent, it shall be vested with the same powers, rights, duties and responsibilities as if it had been originally named herein as the

Warrant Agent. Not later than the effective date of any such appointment, the Company shall give notice thereof to the resigning or removed Warrant Agent. Failure to give any notice provided for in this subsection 15(l), however, or any defect therein, shall not affect the legality or validity of the resignation of the Warrant Agent or the appointment of a new warrant agent, as the case may be. The Company shall, or shall cause the successor Warrant Agent to, deliver to each Holder at such Holder's last address as shown on the register of Holders maintained by the Warrant Agent, notice of the appointment of the successor Warrant Agent and such successor Warrant Agent's address for communication.

(m) Any corporation into which the Warrant Agent or any new warrant agent may be merged or converted or any corporation resulting from any consolidation to which the Warrant Agent or any new warrant agent shall be a party or any corporation to which the Warrant Agent transfers substantially all of its corporate trust business shall be a successor Warrant Agent under this Agreement without any further act, provided that such corporation (i) would be eligible for appointment as successor to the Warrant Agent under the provisions of subsection 15(l) above or (ii) is a wholly owned subsidiary of the Warrant Agent. Any such successor Warrant Agent shall promptly cause notice of its succession as Warrant Agent to be mailed (by first class mail, postage prepaid) to each Holder in accordance with Section 14 above.

#### 16. *Miscellaneous.*

(a) *Successors and Assigns.* This Agreement shall be binding on and inure to the benefit of the Company, the Warrant Agent and the Holders, and their respective successors and assigns. Subject to the preceding sentence, nothing in this Agreement shall be construed to give to any Person other than the Company, the Warrant Agent and the Holders any legal or equitable right, remedy or cause of action under this Agreement.

(b) *Amendments and Waivers.* The Company may, without the consent of the Holders, by supplemental agreement or otherwise, add to the covenants and agreements of the Company for the benefit of the Holders, or surrender any rights or power reserved to or conferred upon the Company in this Agreement, provided that such changes or corrections shall not adversely affect the interests of Holders of then outstanding Warrants in any respect. The Company may, with the consent, in writing or at a meeting, of the Holders of outstanding Warrants exercisable for a majority of the Warrant Shares, amend in any way, by supplemental agreement or otherwise, this Agreement and/or all of the outstanding Warrant Certificates; provided, however, that no such amendment shall adversely affect any Warrant differently than it affects all other Warrants, unless the Holder thereof consents thereto. The Warrant Agent shall, at the request of the Company, and without need of independent inquiry as to whether such supplemental agreement is permitted by the terms of this Section 16(b), join with the Company in the execution and delivery of any such supplemental agreements, but shall not be required to join in such execution and delivery for such supplemental agreement to become effective.

(c) *Choice of Law, etc.* All questions concerning the construction, validity, enforcement and interpretation of this Agreement shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party hereto hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Agreement or the transactions contemplated hereby. If either party shall commence an action or proceeding to enforce any provisions of this Agreement, then the prevailing party in such action or proceeding shall be reimbursed by the other party for its attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding.

(d) *Interpretation.* The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof.



(e) *Severability*. In case any one or more of the provisions of this Agreement shall be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Agreement shall not in any way be affected or impaired thereby and the parties will attempt in good faith to agree upon a valid and enforceable provision which shall be a commercially reasonable substitute therefor, and upon so agreeing, shall incorporate such substitute provision in this Agreement.

(f) *Execution*. This Agreement may be executed in counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to each other party, it being understood that the parties need not sign the same counterpart. In the event that any signature is delivered by facsimile or electronic transmission or by e-mail delivery of a “.pdf” format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or “.pdf” signature page were an original thereof.

(g) *Additional Warrants*. The Company may from time to time issue additional warrants (the “**Additional Warrants**”) under this Agreement, without requiring the consent of any Holder, with the same terms as the warrants initially issued hereunder.

[The remainder of this page has been left intentionally blank.]

IN WITNESS WHEREOF, the undersigned has caused this Agreement to be duly executed by its authorized officer as of the date first indicated above.

MAST THERAPEUTICS, INC.

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

*[Signature Page to Warrant Agreement]*

IN WITNESS WHEREOF, the undersigned has caused this Agreement to be duly executed by its authorized officer as of the date first indicated above.

AMERICAN STOCK TRANSFER & TRUST COMPANY,  
LLC, as Warrant Agent

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

*[Signature Page to Warrant Agreement]*

Exhibit A

[UNLESS THIS GLOBAL WARRANT CERTIFICATE IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY, A NEW YORK CORPORATION (“DTC”) TO THE COMPANY OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, AND ANY CERTIFICATE ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR SUCH OTHER NAME AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC (AND ANY PAYMENT IS MADE TO CEDE & CO., OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL INASMUCH AS THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN.

TRANSFERS OF THIS GLOBAL SECURITY SHALL BE LIMITED TO TRANSFERS IN WHOLE, BUT NOT IN PART, TO NOMINEES OF DTC OR TO A SUCCESSOR THEREOF OR SUCH SUCCESSOR’S NOMINEE AND TRANSFERS OF PORTIONS OF THIS GLOBAL SECURITY SHALL BE LIMITED TO TRANSFERS MADE IN ACCORDANCE WITH THE RESTRICTIONS SET FORTH IN THE WARRANT AGREEMENT.

ANY TRANSFER OF THE SECURITIES REPRESENTED BY THIS GLOBAL WARRANT CERTIFICATE IS SUBJECT TO THE CONDITIONS SPECIFIED IN THE WARRANT AGREEMENT (THE “WARRANT AGREEMENT”) DATED AS OF FEBRUARY , 2016 BETWEEN MAST THERAPEUTICS, INC. AND AMERICAN STOCK TRANSFER & TRUST COMPANY, LLC, SOLELY IN ITS CAPACITY AS WARRANT AGENT. BY ACCEPTING DELIVERY OF THE SECURITIES REPRESENTED BY THIS GLOBAL WARRANT CERTIFICATE, ANY TRANSFEREE SHALL BE DEEMED TO HAVE AGREED TO BE BOUND BY THE WARRANT AGREEMENT AS IF THE TRANSFEREE HAD EXECUTED AND DELIVERED THE WARRANT AGREEMENT.]

EXERCISABLE ON OR AFTER AUGUST , 2016  
AND UNTIL 5:00 P.M. (NEW YORK TIME) ON THE EXPIRATION DATE

CUSIP: \_\_\_\_\_  
No. \_\_\_\_\_

Warrants to Purchase [                      ] Shares

Warrant Certificate

WARRANTS TO ACQUIRE COMMON STOCK OF MAST THERAPEUTICS, INC.

This Warrant Certificate certifies that [                      ], or registered assigns, is the registered holder of Warrants (the “**Warrants**”) to acquire from Mast Therapeutics, Inc., a Delaware corporation (the “**Company**”), the aggregate number of fully paid and non-assessable shares of common stock of the Company, \$0.001 par value per share (the “**Common Stock**”), specified above for consideration equal to the Exercise Price (as defined in the Warrant Agreement (as defined below)) per share of Common Stock. The Exercise Price and number of shares of Common Stock and/or type of securities or property issuable upon exercise of the Warrants are subject to adjustment upon the occurrence of certain events as set forth in the Warrant Agreement. The Warrants evidenced by this Warrant Certificate shall not be exercisable after and shall terminate and become void as of 5:00 P.M., New York time, on February , 20 (the “**Expiration Date**”).

The Warrants evidenced by this Warrant Certificate are part of a duly authorized issue of warrants

expiring on the Expiration Date entitling the Holder hereof to receive shares of Common Stock, and is issued or to be issued pursuant to a Warrant Agreement dated February , 2016 (the “**Warrant Agreement**”), duly executed and delivered by the Company to American Stock Transfer & Trust Company, LLC, as warrant agent (the “**Warrant Agent**”, which term includes any successor warrant agent under the Warrant Agreement), which Warrant Agreement is hereby incorporated by reference in and made a part of this instrument and is hereby referred to for a description of the rights, limitation of rights, obligations, duties and immunities thereunder of the Warrant Agent, the Company and the Holders (“ **Holders**” meaning, from time to time, the registered holders of the warrants issued thereunder). To the extent any provisions of this Warrant Certificate conflicts with any provision of the Warrant Agreement, the provisions of the Warrant Agreement shall apply. A copy of the Warrant Agreement may be obtained by the Holder hereof upon written request to the Company at Mast Therapeutics, Inc., 3611 Valley Centre Drive, Suite 500, San Diego, California 92130, Attn: Chief Financial Officer. Capitalized terms not defined herein have the meanings ascribed thereto in the Warrant Agreement.

The Warrants evidenced by this Warrant Certificate may be exercised, in whole or in part, at any time on or after August , 2016 and on or before the Expiration Date, in the manner and subject to the terms of the Warrant Agreement including, but not limited to, Section 4 thereof. Each exercise must be for a whole number of Warrant Shares.

The Warrant Agreement provides that upon the occurrence of certain events the Exercise Price set forth in this Warrant Certificate may, subject to certain conditions, be adjusted, and that upon the occurrence of certain events the number of shares of Common Stock and/or the type of securities or other property issuable upon the exercise of the Warrants evidenced by this Warrant Certificate shall be adjusted. No fractions of a share of Common Stock will be issued upon the exercise of the Warrants evidenced by this Warrant Certificate, but the Company will pay the cash value thereof determined as provided in the Warrant Agreement.

Warrant Certificates, when surrendered at the office of the Warrant Agent by the registered Holder thereof in person or by such Holder’s legal representative or attorney duly appointed and authorized in writing, may be exchanged, in the manner and subject to the limitations provided in the Warrant Agreement, but without payment of any service charge, for another Warrant Certificate or Warrant Certificates of like tenor evidencing in the aggregate the right to purchase a like number of Warrant Shares.

Each taker and holder of this Warrant Certificate, by taking or holding the same, consents and agrees that the holder of this Warrant Certificate when duly endorsed in blank may be treated by the Company, the Warrant Agent and all other persons dealing with this Warrant Certificate as the absolute owner hereof for any purpose and as the person entitled to exercise the rights represented hereby or the person entitled to the transfer hereof on the register of the Company maintained by the Warrant Agent, any notice to the contrary notwithstanding, provided that until such transfer on such register, the Company and the Warrant Agent may treat the registered Holder hereof as the owner for all purposes.

The Warrants evidenced by this Warrant Certificate do not entitle any Holder to any of the rights of a stockholder of the Company.

This Warrant Certificate and the Warrant Agreement are subject to amendment as provided in the Warrant Agreement.

This Warrant Certificate shall not be valid or obligatory for any purpose until it shall have been countersigned by the Warrant Agent.

---

[The remainder of this page has been left intentionally blank.]

IN WITNESS WHEREOF, the undersigned have caused this [Global Warrant] Certificate to be executed as of the date set forth below.

MAST THERAPEUTICS, INC.

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

Dated: \_\_\_\_\_

Countersigned:  
AMERICAN STOCK TRANSFER & TRUST  
COMPANY, LLC,  
as Warrant Agent

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

[Signature page to [Global] Warrant Certificate]

FORM OF ASSIGNMENT

[To be completed and signed only upon transfer of Warrant]

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto the right represented by the within Warrant Certificate to purchase shares of common stock of Mast Therapeutics, Inc. to which the within Warrant Certificate relates and appoints attorney to transfer said right on the books of Mast Therapeutics, Inc. with full power of substitution in the premises.

Dated:

\_\_\_\_\_  
Printed Name of Holder

\_\_\_\_\_  
Signature of Holder (signature must conform in all respects to name of holder as specified on the front page of the Warrant Certificate)

\_\_\_\_\_  
Title of Signatory (if Holder is not a natural person)

Address of Transferee:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature Guaranteed By:

The signature to this Form of Assignment must correspond with the name as it appears on the face of the Warrant Certificate in every particular. Officers signing on behalf of a corporation, partnership, trust or other entity must provide evidence of authority to assign the foregoing Warrant upon request of the Company or Warrant Agent. The signature must be guaranteed by a U.S. chartered bank or by a medallion signature guarantee from a member of a recognized Signature Medallion Guarantee Program.



**Exhibit B**

FORM OF ELECTION TO PURCHASE

To Mast Therapeutics, Inc.:

In accordance with [Warrant Certificate No. enclosed with this Form of Election to Purchase][the Global Warrant Certificate to be delivered in connection with this Form of Election to Purchase in the manner contemplated by the Warrant Agreement], the undersigned hereby irrevocably elects to exercise the Warrants evidenced by this Warrant Certificate with respect to Warrant Shares in accordance with the terms of the Warrant Agreement dated February , 2016, between Mast Therapeutics, Inc., a Delaware corporation, and American Stock Transfer & Trust Company, LLC, as warrant agent (the **“Warrant Agreement”**). Terms used and not defined herein have the meanings specified in the Warrant Agreement.

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

a Cash Exercise; or

a Cashless Exercise (provided, however, that, pursuant to the Warrant Agreement, this form of exercise shall only be available if an effective registration statement is not available for the issuance of the Warrant Shares).

2. Payment of Exercise Price. In the event that the Holder has elected a Cash Exercise with respect to some or all of the Warrant Shares to be issued pursuant hereto, the Holder hereby agrees to pay the Aggregate Exercise Price, in lawful money of the United States, by certified check payable to the Warrant Agent, as agent for the Company, or bank draft payable to the order of the Company or by wire transfer of immediately available funds to an account designated in writing by the Company (or as otherwise agreed to by the Company) delivered to the Warrant Agent, together with any applicable taxes payable by the undersigned pursuant to the terms of the Warrant Agreement.

Unless the Warrant Shares will be delivered electronically via DWAC, the undersigned requests that certificates for the shares of Common Stock issuable upon this exercise be issued in the name of:

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Social Security or Tax I.D. No.: \_\_\_\_\_

If the Warrant Shares will be delivered electronically via DWAC, the undersigned requests that the Warrant Shares issuable upon this exercise be issued to the following account:

Name of DTC Participant: \_\_\_\_\_

DTC Participant Number: \_\_\_\_\_

Name of Account at DTC Participant to be

credited with the Warrant Shares:

---

Account Number at DTC Participant to be  
credited with the Warrant Shares:

---

This Election to Purchase is delivered by:

\_\_\_\_\_  
Signature (and title, if applicable) of Authorized Signatory of  
Holder

\_\_\_\_\_  
Name of Holder

\_\_\_\_\_  
Date

Warrant Shares Exercise Log

<u>Date</u>	<u>Number of Warrant Shares Available to be Exercised</u>	<u>Number of Warrant Shares Exercised</u>	<u>Number of Warrant Shares Remaining to be Exercised</u>

[UNLESS THIS GLOBAL WARRANT CERTIFICATE IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY, A NEW YORK CORPORATION (“DTC”) TO THE COMPANY OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, AND ANY CERTIFICATE ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR SUCH OTHER NAME AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC (AND ANY PAYMENT IS MADE TO CEDE & CO., OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL INASMUCH AS THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN.

TRANSFERS OF THIS GLOBAL SECURITY SHALL BE LIMITED TO TRANSFERS IN WHOLE, BUT NOT IN PART, TO NOMINEES OF DTC OR TO A SUCCESSOR THEREOF OR SUCH SUCCESSOR’S NOMINEE AND TRANSFERS OF PORTIONS OF THIS GLOBAL SECURITY SHALL BE LIMITED TO TRANSFERS MADE IN ACCORDANCE WITH THE RESTRICTIONS SET FORTH IN THE WARRANT AGREEMENT.

ANY TRANSFER OF THE SECURITIES REPRESENTED BY THIS GLOBAL WARRANT CERTIFICATE IS SUBJECT TO THE CONDITIONS SPECIFIED IN THE WARRANT AGREEMENT (THE “WARRANT AGREEMENT”) DATED AS OF FEBRUARY , 2016 BETWEEN MAST THERAPEUTICS, INC. AND AMERICAN STOCK TRANSFER & TRUST COMPANY, LLC, SOLELY IN ITS CAPACITY AS WARRANT AGENT. BY ACCEPTING DELIVERY OF THE SECURITIES REPRESENTED BY THIS GLOBAL WARRANT CERTIFICATE, ANY TRANSFEREE SHALL BE DEEMED TO HAVE AGREED TO BE BOUND BY THE WARRANT AGREEMENT AS IF THE TRANSFEREE HAD EXECUTED AND DELIVERED THE WARRANT AGREEMENT.]

EXERCISABLE ON OR AFTER AUGUST , 2016  
AND UNTIL 5:00 P.M. (NEW YORK TIME) ON THE EXPIRATION DATE

CUSIP: \_\_\_\_\_  
No. \_\_\_\_\_

Warrants to Purchase [ \_\_\_\_\_ ] Shares

Warrant Certificate

WARRANTS TO ACQUIRE COMMON STOCK OF MAST THERAPEUTICS, INC.

This Warrant Certificate certifies that [ \_\_\_\_\_ ], or registered assigns, is the registered holder of Warrants (the “**Warrants**”) to acquire from Mast Therapeutics, Inc., a Delaware corporation (the “**Company**”), the aggregate number of fully paid and non-assessable shares of common stock of the Company, \$0.001 par value per share (the “**Common Stock**”), specified above for consideration equal to the Exercise Price (as defined in the Warrant Agreement (as defined below)) per share of Common Stock. The Exercise Price and number of shares of Common Stock and/or type of securities or property issuable upon exercise of the Warrants are subject to adjustment upon the occurrence of certain events as set forth in the Warrant Agreement. The Warrants evidenced by this Warrant Certificate shall not be exercisable after and shall terminate and become void as of 5:00 P.M., New York time, on February , 2021 (the “**Expiration Date**”).

The Warrants evidenced by this Warrant Certificate are part of a duly authorized issue of warrants expiring on the Expiration Date entitling the Holder hereof to receive shares of Common Stock, and is issued or to be issued pursuant to a Warrant Agreement dated February , 2016 (the “**Warrant Agreement**”), duly executed and delivered by the Company to American Stock Transfer & Trust Company, LLC, as warrant agent (the “**Warrant Agent**”, which term includes any successor warrant agent under the Warrant Agreement), which Warrant Agreement is hereby incorporated by reference in and made a part of this instrument and is hereby referred to for a description of the rights, limitation of rights, obligations, duties and immunities thereunder of the Warrant Agent, the Company and the Holders (“**Holder**s” meaning, from time to time, the registered holders of the warrants issued

thereunder). To the extent any provisions of this Warrant Certificate conflicts with any provision of the Warrant Agreement, the provisions of the Warrant Agreement shall apply. A copy of the Warrant Agreement may be obtained by the Holder hereof upon written request to the Company at Mast Therapeutics, Inc., 3611 Valley Centre Drive, Suite 500, San Diego, California 92130, Attn: Chief Financial Officer. Capitalized terms not defined herein have the meanings ascribed thereto in the Warrant Agreement.

The Warrants evidenced by this Warrant Certificate may be exercised, in whole or in part, at any time on or after August , 2016 and on or before the Expiration Date, in the manner and subject to the terms of the Warrant Agreement including, but not limited to, Section 4 thereof. Each exercise must be for a whole number of Warrant Shares.

The Warrant Agreement provides that upon the occurrence of certain events the Exercise Price set forth in this Warrant Certificate may, subject to certain conditions, be adjusted, and that upon the occurrence of certain events the number of shares of Common Stock and/or the type of securities or other property issuable upon the exercise of the Warrants evidenced by this Warrant Certificate shall be adjusted. No fractions of a share of Common Stock will be issued upon the exercise of the Warrants evidenced by this Warrant Certificate, but the Company will pay the cash value thereof determined as provided in the Warrant Agreement.

Warrant Certificates, when surrendered at the office of the Warrant Agent by the registered Holder thereof in person or by such Holder's legal representative or attorney duly appointed and authorized in writing, may be exchanged, in the manner and subject to the limitations provided in the Warrant Agreement, but without payment of any service charge, for another Warrant Certificate or Warrant Certificates of like tenor evidencing in the aggregate the right to purchase a like number of Warrant Shares.

Each taker and holder of this Warrant Certificate, by taking or holding the same, consents and agrees that the holder of this Warrant Certificate when duly endorsed in blank may be treated by the Company, the Warrant Agent and all other persons dealing with this Warrant Certificate as the absolute owner hereof for any purpose and as the person entitled to exercise the rights represented hereby or the person entitled to the transfer hereof on the register of the Company maintained by the Warrant Agent, any notice to the contrary notwithstanding, provided that until such transfer on such register, the Company and the Warrant Agent may treat the registered Holder hereof as the owner for all purposes.

The Warrants evidenced by this Warrant Certificate do not entitle any Holder to any of the rights of a stockholder of the Company.

This Warrant Certificate and the Warrant Agreement are subject to amendment as provided in the Warrant Agreement.

This Warrant Certificate shall not be valid or obligatory for any purpose until it shall have been countersigned by the Warrant Agent.

[The remainder of this page has been left intentionally blank.]

IN WITNESS WHEREOF, the undersigned have caused this [Global Warrant] Certificate to be executed as of the date set forth below.

MAST THERAPEUTICS, INC.

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

Dated: \_\_\_\_\_

Countersigned:  
AMERICAN STOCK TRANSFER & TRUST COMPANY,  
LLC,  
as Warrant Agent

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

[Signature page to [Global] Warrant Certificate]

FORM OF ASSIGNMENT

[To be completed and signed only upon transfer of Warrant]

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto \_\_\_\_\_ the right represented by the within Warrant Certificate to purchase \_\_\_\_\_ shares of common stock of Mast Therapeutics, Inc. to which the within Warrant Certificate relates and appoints \_\_\_\_\_ attorney to transfer said right on the books of Mast Therapeutics, Inc. with full power of substitution in the premises.

Dated: \_\_\_\_\_

\_\_\_\_\_  
Printed Name of Holder

\_\_\_\_\_  
Signature of Holder (signature must conform in all respects to name of holder as specified on the front page of the Warrant Certificate)

\_\_\_\_\_  
Title of Signatory (if Holder is not a natural person)

Address of Transferee:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature Guaranteed By:

The signature to this Form of Assignment must correspond with the name as it appears on the face of the Warrant Certificate in every particular. Officers signing on behalf of a corporation, partnership, trust or other entity must provide evidence of authority to assign the foregoing Warrant upon request of the Company or Warrant Agent. The signature must be guaranteed by a U.S. chartered bank or by a medallion signature guarantee from a member of a recognized Signature Medallion Guarantee Program.

FORM OF ELECTION TO PURCHASE

To Mast Therapeutics, Inc.:

In accordance with [Warrant Certificate No. enclosed with this Form of Election to Purchase][the Global Warrant Certificate to be delivered in connection with this Form of Election to Purchase in the manner contemplated by the Warrant Agreement], the undersigned hereby irrevocably elects to exercise the Warrants evidenced by this Warrant Certificate with respect to Warrant Shares in accordance with the terms of the Warrant Agreement dated February , 2016, between Mast Therapeutics, Inc., a Delaware corporation, and American Stock Transfer & Trust Company, LLC, as warrant agent (the "Warrant Agreement"). Terms used and not defined herein have the meanings specified in the Warrant Agreement.

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

a Cash Exercise; or

a Cashless Exercise (provided, however, that, pursuant to the Warrant Agreement, this form of exercise shall only be available if an effective registration statement is not available for the issuance of the Warrant Shares).

2. Payment of Exercise Price. In the event that the Holder has elected a Cash Exercise with respect to some or all of the Warrant Shares to be issued pursuant hereto, the Holder hereby agrees to pay the Aggregate Exercise Price, in lawful money of the United States, by certified check payable to the Warrant Agent, as agent for the Company, or bank draft payable to the order of the Company or by wire transfer of immediately available funds to an account designated in writing by the Company (or as otherwise agreed to by the Company) delivered to the Warrant Agent, together with any applicable taxes payable by the undersigned pursuant to the terms of the Warrant Agreement.

Unless the Warrant Shares will be delivered electronically via DWAC, the undersigned requests that certificates for the shares of Common Stock issuable upon this exercise be issued in the name of:

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Social Security or Tax I.D. No.: \_\_\_\_\_

If the Warrant Shares will be delivered electronically via DWAC, the undersigned requests that the Warrant Shares issuable upon this exercise be issued to the following account:

Name of DTC Participant: \_\_\_\_\_

DTC Participant Number: \_\_\_\_\_

Name of Account at DTC Participant to be credited with the Warrant Shares: \_\_\_\_\_

Account Number at DTC Participant to be credited with the Warrant Shares: \_\_\_\_\_

This Election to Purchase is delivered by:



---

Signature (and title, if applicable) of Authorized Signatory of Holder

---

Name of Holder

---

Date

Warrant Shares Exercise Log

Date

Number of Warrant  
Shares Available to be  
Exercised

Number of Warrant  
Shares Exercised

Number of  
Warrant Shares  
Remaining to be  
Exercised


**DLA Piper LLP (US)**  
4365 Executive Drive  
San Diego, California 92121-2133  
T 858.677.1400  
F 858.677.1401

February 10, 2016

Mast Therapeutics, Inc.  
3611 Valley Centre Drive, Suite 500  
San Diego, CA 92130

Ladies and Gentlemen:

You have requested our opinion with respect to certain matters in connection with the sale and issuance by Mast Therapeutics, Inc., a Delaware corporation (the “**Company**”), of up to an aggregate of 29,090,910 shares (the “**Shares**”) of the Company’s common stock, par value \$0.001 per share (the “**Common Stock**”), together with warrants (the “**Warrants**”) to purchase up to an additional 29,090,910 shares of Common Stock (the “**Warrant Shares**”), pursuant to a Registration Statement on Form S-3 (File No. 333-202960) (the “**Registration Statement**”) filed with the Securities and Exchange Commission (the “**Commission**”) under the Securities Act of 1933, as amended (the “**Act**”), the related prospectus included therein (the “**Prospectus**”) as supplemented by the prospectus supplements dated February 9, 2016 and February 10, 2016 filed with the Commission pursuant to Rule 424(b) promulgated under the Act (the “**Prospectus Supplement**”).

In connection with this opinion, we have examined and relied upon the Registration Statement and the related Prospectus and Prospectus Supplement, the Warrants, the Company’s Amended and Restated Certificate of Incorporation, as amended, and Amended and Restated Bylaws, as amended, each as currently in effect, and the originals or copies certified to our satisfaction of such other documents, records, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below.

In rendering this opinion, we have assumed the genuineness and authenticity of all signatures on original documents; the genuineness and authenticity of all documents submitted to us as originals; the conformity to originals of all documents submitted to us as copies; the accuracy, completeness and authenticity of certificates of public officials; and the due authorization, execution and delivery of all documents where due authorization, execution and delivery are prerequisites to the effectiveness of such documents (other than with respect to the Company). With regard to the Warrant Shares, we have assumed that at the time of issuance or sale, a sufficient number of shares of Common Stock are authorized and available for issuance.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that (i) the Shares have been duly and validly authorized and, when issued and sold pursuant to that certain Underwriting Agreement by and between the Company and Roth Capital Partners, LLC, dated February 10, 2016, and in accordance with the Registration Statement and the related Prospectus and Prospectus Supplement, will be validly issued, fully paid and nonassessable, (ii) provided that the Warrants have been duly executed and delivered by the Company and duly delivered to the purchasers thereof against payment therefor, then the Warrants, when issued and sold in accordance with the terms of the Warrants, will be valid and legally binding obligations of the Company, enforceable against the Company in accordance with their terms, and (iii) the Warrant Shares, when issued and sold against payment therefor in accordance with the terms of the Warrants, will be validly issued, fully paid and nonassessable.

We consent to the reference to our firm under the caption “Legal Matters” in the Prospectus Supplement and to the filing of this opinion as an exhibit to a Current Report of the Company on Form 8-K. In giving our consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission thereunder.

Very truly yours,  
/s/ DLA PIPER LLP (US)

DLA PIPER LLP (US)



## MAST THERAPEUTICS ANNOUNCES PROPOSED PUBLIC OFFERING OF COMMON STOCK AND WARRANTS

**SAN DIEGO – February 9, 2016** – Mast Therapeutics, Inc. (NYSE MKT: MSTX), a biopharmaceutical company developing novel, clinical-stage therapies for sickle cell disease and heart failure, today announced that it intends to offer shares of common stock and warrants to purchase common stock in an underwritten public offering. The offering is subject to market and other conditions, and there can be no assurance as to whether or when the offering may be completed, or as to the actual size or terms of the offering.

Roth Capital Partners is acting as sole manager for the proposed offering.

Mast Therapeutics intends to use the net proceeds from the offering primarily to fund its clinical development programs of vepoloxamer in sickle cell disease and vepoloxamer and AIR001 in heart failure, for regulatory, manufacturing and other commercial-readiness activities for vepoloxamer in sickle cell disease, and for working capital and general corporate purposes.

The securities described above are being offered by Mast Therapeutics pursuant to a shelf registration statement previously filed with and declared effective by the U.S. Securities and Exchange Commission (SEC). The securities may be offered only by means of a prospectus. Once available, copies of the preliminary prospectus supplement and accompanying base prospectus relating to this offering may be obtained from Roth Capital Partners, 888 San Clemente, Newport Beach, CA 92660, (800) 678-9147, or by accessing the SEC's website, <http://www.sec.gov>.

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 Mast Therapeutics

Mast Therapeutics, Inc. is a publicly traded biopharmaceutical company headquartered in San Diego, California. The Company is leveraging its Molecular Adhesion and Sealant Technology (MAST) platform, derived from over two decades of clinical, nonclinical and manufacturing experience with purified and non-purified poloxamers, to develop vepoloxamer (also known as MST-188), its lead product candidate, for serious or life-threatening diseases and conditions typically characterized by impaired microvascular blood flow and damaged cell membranes. The Company is also developing AIR001, a sodium nitrite solution for inhalation via nebulization.

Vepoloxamer is an investigational new drug being evaluated in a pivotal Phase 3 study called EPIC for the treatment of vaso-occlusive crisis in patients with sickle cell disease and in a Phase 2 study for the treatment of patients with chronic heart failure. AIR001 is an investigational new drug in Phase 2a clinical development for the treatment of patients with heart failure with preserved ejection fraction (HFpEF). More information can be found on the Company's web site at [www.masttherapeutics.com](http://www.masttherapeutics.com). (Twitter: [@MastThera](https://twitter.com/MastThera))

Mast Therapeutics™ and the corporate logo are trademarks of Mast Therapeutics, Inc.

### Forward Looking Statements

Mast Therapeutics cautions you that statements included in this press release that are not a description of historical facts are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that are based on the Company's current expectations and assumptions. Such forward-looking statements may be identified by the use of forward-looking words such as "intend," "plan," "anticipate," "believe," "expect," among others, and include, but are not limited to, statements relating to the proposed public offering of the Company's securities and the Company's intended use of proceeds from the offering. There are a number of factors that could cause or contribute to material differences between actual events or results and the expectations indicated by the forward-looking statements. These factors include, but are not limited to: market and other conditions that affect whether and when the public offering may be completed or the size and/or terms of the offering; the inherent uncertainty of outcomes in ongoing and future studies of the Company's product candidates and the risk that its product candidates, including vepoloxamer, may not demonstrate adequate safety, efficacy or tolerability in one

or more such studies, including EPIC; delays in the commencement or completion of clinical studies, including as a result of difficulties in obtaining regulatory agency agreement on clinical development plans or clinical study design, opening trial sites, enrolling study subjects, manufacturing sufficient quantities of clinical trial material, being subject to a “clinical hold,” and/or suspension or termination of a clinical study, including due to patient safety concerns or lack of funding; delays in clinical study closeouts, including blinded data review and quality assurance procedures; the risk that, even if current and planned clinical studies are successful, the FDA or other regulatory agencies may determine they are not sufficient to support a new drug application; the potential that, even if clinical studies of a product candidate in one indication are successful, clinical studies in another indication may not be successful; the Company’s dependence on third parties to assist with important aspects of development of its product candidates, including conduct of its clinical studies and supply and manufacture of clinical trial material, and, if approved, commercial product, and the risk that such third parties may fail to perform as expected; the risk that the Company may be required to repay its outstanding debt obligations on an accelerated basis and/or at a time that could be detrimental to its financial condition, operations and/or business strategy; risk associated with the Company’s ability to manage operating expenses and/or obtain additional funding to support its operations on a timely basis or on acceptable terms, or at all; the potential for the Company to delay, reduce or discontinue current and/or planned development activities, including clinical studies or partner its product candidates at inopportune times if it is unable to raise sufficient additional capital as needed; the risk that, even if the Company successfully develops a product candidate in one or more indications, it may not realize commercial success and may never achieve profitability; the risk that the Company is not able to obtain and maintain effective patent coverage or other market exclusivity protections for its products, if approved, without infringing the proprietary rights of others; and other risks and uncertainties more fully described in the Company’s press releases and periodic filings with the Securities and Exchange Commission. The Company’s public filings with the Securities and Exchange Commission are available at [www.sec.gov](http://www.sec.gov).

You are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date when made. Mast Therapeutics does not intend to revise or update any forward-looking statement set forth in this press release to reflect events or circumstances arising after the date hereof, except as may be required by law.

Contact:

**Mast Therapeutics**

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## MAST THERAPEUTICS ANNOUNCES PRICING OF UNDERWRITTEN PUBLIC OFFERING

**SAN DIEGO – February 10, 2016** – Mast Therapeutics, Inc. (NYSE MKT: MSTX), a biopharmaceutical company developing novel, clinical-stage therapies for sickle cell disease and heart failure, today announced the pricing of an underwritten public offering of 29,090,910 units at a price to the public of \$0.275 per unit. Each unit consists of one share of the Company's common stock and one warrant to purchase one share of the Company's common stock at an exercise price of \$0.42 per share. The warrants are exercisable six months and one day following issuance and have a term of exercise of five years following issuance. The gross proceeds from this offering are expected to be approximately \$8 million and, after deducting the underwriting discount and estimated offering expenses, Mast Therapeutics expects to receive net proceeds of approximately \$7.3 million, not including any future proceeds from the exercise of the warrants. The offering is expected to close on or about February 16, 2016, subject to customary closing conditions.

Roth Capital Partners is acting as sole book-running manager for the offering. Maxim Group LLC is acting as co-manager for the offering.

Mast Therapeutics intends to use the net proceeds from the offering primarily to fund its clinical development programs of vepoloxamer in sickle cell disease and vepoloxamer and AIR001 in heart failure, for regulatory, manufacturing and other commercial-readiness activities for vepoloxamer in sickle cell disease, and for working capital and general corporate purposes.

The securities described above are being offered by Mast Therapeutics pursuant to a shelf registration statement that was previously filed with and declared effective by the U.S. Securities and Exchange Commission (SEC). The securities may be offered only by means of a prospectus supplement relating to the offering and the accompanying base prospectus, which form a part of the shelf registration statement. A preliminary prospectus supplement related to the offering has been filed with the SEC. A final prospectus supplement relating to the offering will be filed with the SEC and will be available on the SEC's website at <http://www.sec.gov>. Copies of the final prospectus supplement and accompanying base prospectus relating to this offering may be obtained from Roth Capital Partners, 888 San Clemente, Newport Beach, CA 92660, (800) 678-9147 or by accessing the SEC's website, <http://www.sec.gov>.

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 Mast Therapeutics

Mast Therapeutics, Inc. is a publicly traded biopharmaceutical company headquartered in San Diego, California. The Company is leveraging its Molecular Adhesion and Sealant Technology (MAST) platform, derived from over two decades of clinical, nonclinical and manufacturing experience with purified and non-purified poloxamers, to develop vepoloxamer (also known as MST-188), its lead product candidate, for serious or life-threatening diseases and conditions typically characterized by impaired microvascular blood flow and damaged cell membranes. The Company is also developing AIR001, a sodium nitrite solution for inhalation via nebulization.

Vepoloxamer is an investigational new drug being evaluated in a pivotal Phase 3 study called EPIC for the treatment of vaso-occlusive crisis in patients with sickle cell disease and in a Phase 2 study for the treatment of patients with chronic heart failure. AIR001 is an investigational new drug in Phase 2a clinical development for the treatment of patients with heart failure with preserved ejection fraction (HFpEF). More information can be found on the Company's web site at [www.masttherapeutics.com](http://www.masttherapeutics.com). (Twitter: [@MastThera](https://twitter.com/MastThera))

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