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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 OR 15(d)
of The Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): June 18, 2019

Calithera Biosciences, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

001-36644
(Commission
File Number)

27-2366329
(IRS Employer
Identification No.)

343 Oyster Point Blvd., Suite 200
South San Francisco, California
(Address of Principal Executive Offices)

94080
(Zip Code)

Registrant's telephone number, including area code: (650) 870-1000

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

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

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, \$0.0001 par value	CALA	The Nasdaq Global Select Market

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

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

In this report, “Calithera,” “we,” “us” and “our” refer to Calithera Biosciences, Inc.

Item 8.01 Other Events.*Underwriting Agreement*

On June 18, 2019, Calithera Biosciences, Inc. entered into an underwriting agreement (the “*Underwriting Agreement*”) with Leerink Partners LLC, Wells Fargo Securities, LLC and William Blair & Company L.L.C., as representatives of the several underwriters named therein (collectively, the “*Underwriters*”), relating to the issuance and sale (the “*Offering*”) of 12,500,000 shares of its common stock, par value \$0.0001 per share. The price to the public in the Offering is \$4.00 per share, and the Underwriters have agreed to purchase the shares from Calithera pursuant to the Underwriting Agreement at a price of \$3.76 per share. The net proceeds to Calithera from this Offering are expected to be approximately \$46,700,000, after deducting underwriting discounts and commissions and other estimated offering expenses payable by us. The Underwriters have a 30-day option to purchase up to an additional 1,875,000 shares of common stock. All of the shares in the Offering are being sold by Calithera. The closing of the Offering is expected to occur on or about June 21, 2019, subject to the satisfaction of customary closing conditions.

The Offering is being made pursuant to our effective registration statement on Form S-3 (Registration Statement No. 333-219791), as previously filed with the Securities and Exchange Commission and a related prospectus and prospectus supplement.

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

The Underwriting Agreement is filed as Exhibit 1.1 to this report, and the description of the terms of the Underwriting Agreement is qualified in its entirety by reference to such exhibit. A copy of the opinion of Cooley LLP relating to the legality of the issuance and sale of the shares in the Offering is attached as Exhibit 5.1 hereto.

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

<u>Exhibit No.</u>	<u>Description</u>
1.1	Underwriting Agreement, dated June 18, 2019.
5.1	Opinion of Cooley LLP.
23.1	Consent of Cooley LLP (contained in Exhibit 5.1).

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.

Dated: June 19, 2019

Calithera Biosciences, Inc.

By: /s/ Susan M. Molineaux

Susan M. Molineaux

President and Chief Executive Officer

Calithera Biosciences, Inc.

12,500,000 Shares
Common Stock
(\$0.0001 par value)

Underwriting Agreement

June 18, 2019

SVB Leerink LLC
Wells Fargo Securities, LLC
William Blair & Company, L.L.C.

As Representatives of the several Underwriters,

c/o SVB Leerink LLC
255 California Street, 12th Floor
San Francisco, CA 94111

c/o Wells Fargo Securities, LLC
375 Park Avenue, 4th Floor
New York, NY 10152

c/o William Blair & Company, L.L.C.
150 North Riverside Plaza,
Chicago, Illinois 60606

Ladies and Gentlemen:

Calithera Biosciences, Inc., a corporation organized under the laws of Delaware (the "Company"), proposes to sell to the several underwriters named in Schedule I hereto (the "Underwriters"), for whom you (the "Representatives") are acting as representatives, 12,500,000 shares of common stock, \$0.0001 par value ("Common Stock") of the Company (said shares to be issued and sold by the Company being hereinafter called the "Underwritten Securities"). The Company also proposes to grant to the Underwriters an option to purchase up to 1,875,000 additional shares of Common Stock (the "Option Securities"; the Option Securities, together with the Underwritten Securities, being hereinafter called the "Securities"). To the extent there are no additional Underwriters listed on Schedule I other than you, the term Representatives as used herein shall mean you, as Underwriter, and the terms Representatives and Underwriters shall mean either the singular or plural as the context requires. Certain terms used herein are defined in Section 20 hereof.

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

1. Representations and Warranties. The Company represents and warrants to, and agrees with, each Underwriter as set forth below in this Section 1.

(a) The Company meets the requirements for use of Form S-3 under the Act and has prepared and filed with the Commission a shelf registration statement, as defined in Rule 405 on Form S-3 (file number 333-219791), including a related Base Prospectus, for registration under the Act of the offering and sale of the Securities. Such Registration Statement, including any amendments thereto filed prior to the Execution Time, has been declared effective. The proposed offering of the Securities may be made pursuant to General Instruction I.B.1 of Form S-3. The Company may have filed with the Commission, as part of an amendment to the Registration Statement or pursuant to Rule 424(b), one or more preliminary prospectus supplements relating to the Securities, each of which has previously been furnished to you. The Company will file with the Commission a final prospectus supplement relating to the Securities in accordance with Rule 424(b). As filed, such final prospectus supplement shall contain all information required by the Act and the rules thereunder and shall be in all substantive respects in the form furnished to you prior to the Execution Time or, to the extent not completed at the Execution Time contain only such specific additional information and other changes (beyond that contained in the latest preliminary Prospectus) as the Company has advised you, prior to the Execution Time, will be included or made therein. The Registration Statement, at the Execution Time, meets the requirements set forth in Rule 415(a)(1)(x). The initial Effective Date of the Registration Statement was not earlier than the date three years before the Execution Time.

(b) On each Effective Date, the Registration Statement did, and when the Prospectus is first filed in accordance with Rule 424(b) and on the Closing Date (as defined herein) and on any date on which Option Securities are purchased, if such date is not the Closing Date (a “settlement date”), the Prospectus (and any supplement thereto) will, comply in all material respects with the applicable requirements of the Act and the rules thereunder; on each Effective Date at the Execution Time and on the Closing Date, the Registration Statement did not and will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading; and on the date of any filing pursuant to Rule 424(b) and on the Closing Date and any settlement date, the Prospectus (together with any supplement thereto) will not include any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, however,

that the Company makes no representations or warranties as to the information contained in or omitted from the Registration Statement, or the Prospectus (or any supplement thereto) in reliance upon and in conformity with information furnished in writing to the Company by or on behalf of any Underwriter through the Representatives specifically for inclusion in the Registration Statement or the Prospectus (or any supplement thereto), it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 8 hereof.

(c) (i) The Disclosure Package and the price to the public, the number of Underwritten Securities and the number of Option Securities to be included on the cover page of the Prospectus, when taken together as a whole, (ii) each electronic road show, when taken together as a whole with the Disclosure Package and the price to the public, the number of Underwritten Securities and the number of Option Securities to be included on the cover page of the Prospectus, and (iii) any individual Written Testing-the-Waters Communication, when taken together as a whole with the Disclosure Package and the price to the public, the number of Underwritten Securities and the number of Option Securities to be included on the cover page of the Prospectus, does not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The preceding sentence does not apply to statements in or omissions from the Disclosure Package based upon and in conformity with written information furnished to the Company by any Underwriter through the Representatives specifically for use therein, it being understood and agreed that the only such information furnished by or on behalf of any Underwriter consists of the information described as such in Section 8 hereof.

(d) (i) At the time of filing the Registration Statement and (ii) as of the Execution Time (with such date being used as the determination date for purposes of this clause (ii)), the Company was not and is not an Ineligible Issuer (as defined in Rule 405), without taking account of any determination by the Commission pursuant to Rule 405 that it is not necessary that the Company be considered an Ineligible Issuer.

(e) From the time of initial filing of the Registration Statement with the Commission through the Execution Time, the Company has been and is an “emerging growth company,” as defined in Section 2(a) of the Act (an “Emerging Growth Company”).

(f) The Company (i) has not alone engaged in any Testing-the-Waters Communication, and (ii) has not authorized anyone to engage in Testing-the-Waters Communications. The Company has not distributed any Written Testing-the-Waters Communications. “Testing-the-Waters Communication” means any oral or written communication with potential investors undertaken in reliance on Section 5(d) of the Act. “Written Testing-the-Waters Communication” means any Testing-the-Waters Communication that is a written communication within the meaning of Rule 405 under the Act.

(g) Each Issuer Free Writing Prospectus does not include any information that conflicts with the information contained in the Registration Statement on file at the time of issuance of such Issuer Free Writing Prospectus, including any document incorporated by reference therein and any prospectus supplement deemed to be a part thereof that has not been superseded or modified. The foregoing sentence does not apply to statements in or omissions from any Issuer Free Writing Prospectus based upon and in conformity with written information furnished to the Company by any Underwriter through the Representatives specifically for use therein, it being understood and agreed that the only such information furnished by or on behalf of any Underwriter consists of the information described as such in Section 8 hereof.

(h) The Company has no subsidiaries.

(i) There is no franchise, contract or other document of a character required to be described in the Registration Statement or Prospectus, or to be filed as an exhibit thereto, which is not described or filed as required (and the Preliminary Prospectus contains in all material respects the same description of the foregoing matters contained in the Prospectus); and the statements in the Preliminary Prospectus and the Prospectus (including the documents incorporated by reference therein) (a) under the headings “Description of Capital Stock” and “Material U.S. Federal Income Tax Consequences for Non-U.S. Holders” and (b) the statements incorporated by reference from the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2018 under the headings “Risk Factors— Risks Related to our Intellectual Property,” “Risk Factors – Risks Related to Regulatory Approval of Our Product Candidates and Other Legal Compliance Matters,” Business – Intellectual Property,” “Business – Government Regulation,” “Business – Foreign Regulation,” and “Business – New Legislation and Regulations,” in each case insofar as such statements summarize legal matters, agreements, documents or proceedings discussed therein, are accurate and fair summaries of such legal matters, agreements, documents or proceedings.

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

(k) The Securities have been duly and validly authorized, and, when issued and delivered to and paid for by the Underwriters pursuant to this Agreement, will be fully paid and nonassessable.

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

(m) Except as otherwise disclosed in the Registration Statement, the Disclosure Package and the Prospectus, subsequent to the respective dates as of which information is given in the Disclosure Package and the Prospectus: (i) there has been no Material Adverse Effect, (ii) the Company has not incurred any material liability or obligation, indirect, direct or contingent, not in the ordinary course of business nor entered into any material transaction or agreement not in the ordinary course of business, and (iii) there has been no dividend or distribution of any kind declared, paid or made by the Company.

(n) The Company has been duly incorporated and is validly existing as a corporation in good standing under the laws of the State of Delaware and has corporate power and authority to own, lease and operate its properties and to conduct its business as described in the Disclosure Package and the Prospectus, except for intellectual property which is separately addressed in subsection (ff) below, and to enter into and perform its obligations under this Agreement. The Company is duly qualified as a foreign corporation or foreign partnership to transact business and is in good standing in the State of California and each other jurisdiction in which such qualification is required, whether by reason of the ownership or leasing of property or the conduct of business, except for such jurisdictions (other than the State of California) where the failure to so qualify or to be in good standing would not, individually or in the aggregate, result in a Material Adverse Effect.

(o) The Common Stock conforms in all material respects to the description thereof contained in or incorporated by reference into the Disclosure Package and the Prospectus. All of the issued and outstanding shares of Common Stock have been duly authorized and validly issued, are fully paid and nonassessable and have been issued in compliance with federal and state securities laws. None of the outstanding shares of Common Stock were issued in violation of any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase securities of the Company. There are no authorized or outstanding options, warrants, preemptive rights, rights of first refusal or other rights to purchase, or equity or debt securities convertible into or exchangeable or exercisable for, any capital stock of the Company other than those accurately described in all material respects in the Prospectus. The description of the Company's stock option, stock bonus and other stock plans or arrangements, and the options or other rights granted thereunder, included in or incorporated by reference into the Disclosure Package and the Prospectus fairly presents in all material respects the information required to be shown with respect to such plans, arrangements, options and rights.

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

(q) Neither the issue and sale of the Securities nor the consummation of any other of the transactions herein contemplated nor the fulfillment of the terms hereof will conflict with, result in a breach or violation of, or imposition of any lien, charge or encumbrance upon any property or assets of the Company pursuant to, (i) the charter or bylaws of the Company, (ii) the terms of any indenture, contract, lease, mortgage, deed of

trust, note agreement, loan agreement or other agreement, obligation, condition, covenant or instrument to which the Company is a party or bound or to which its property is subject, or (iii) any statute, law, rule, regulation, judgment, order or decree applicable to the Company of any court, regulatory body, administrative agency, governmental body, arbitrator or other authority having jurisdiction over the Company or any of its properties, except in the case of clauses (ii) and (iii) for such breach or violation as would not reasonably be expected to have a Material Adverse Effect, or would not have a material adverse effect on the Company's ability to consummate any of the transactions contemplated herein.

(r) No holders of securities of the Company have rights to the registration of such securities under the Registration Statement, except to the extent such registration rights have been waived in connection with the offering of the Securities.

(s) The historical financial statements of the Company included in or incorporated by reference into the Registration Statement, the Disclosure Package and the Prospectus present fairly the financial condition, results of operations and cash flows of the Company as of the dates and for the periods indicated, comply as to form, in all material respects, with the applicable accounting requirements of the Act and have been prepared in conformity with United States generally accepted accounting principles ("U.S. GAAP") applied on a consistent basis throughout the periods involved (except as otherwise noted therein). The financial data included or incorporated in the Disclosure Package and the Prospectus fairly present, in all material respects, on the basis stated in the Preliminary Prospectus, the Prospectus and the Registration Statement, the information included therein.

(t) No action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or its property is pending or, to the knowledge of the Company, threatened that would reasonably be expected to have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(u) The Company owns or leases all such properties as are necessary to the conduct of its operations as presently conducted, except for intellectual property which is separately addressed in subsection (aa) below and except as would not reasonably be expected to have a Material Adverse Effect.

(v) The Company is not in violation or default of (i) any provision of its charter or bylaws, (ii) the terms of any indenture, contract, lease, mortgage, deed of trust, note agreement, loan agreement or other agreement, obligation, condition, covenant or instrument to which it is a party or bound or to which its property is subject, or (iii) any statute, law, rule, regulation, judgment, order or decree of any court, regulatory body, administrative agency, governmental body, arbitrator or other authority having jurisdiction over the Company or any of its properties, as applicable, except in the case of clauses (ii) and (iii), for such breach or violation as would not reasonably be expected to have a Material Adverse Effect.

(w) Ernst & Young, LLP, who have certified certain financial statements of the Company and delivered their report with respect to the audited consolidated financial statements and schedules included in the Disclosure Package and the Prospectus, are independent public accountants with respect to the Company within the meaning of the Act and the applicable published rules and regulations thereunder.

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

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

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

(aa) The Company is insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as the Company reasonably believes is prudent and customary in the businesses in which it is engaged; all policies of insurance and fidelity or surety bonds insuring the Company or its business, assets, employees, officers and directors are in full force and effect; the Company is in compliance with the terms of such policies and instruments in all material respects; and there are no claims by the Company under any such policy or instrument as to which any insurance company is denying liability or defending under a reservation of rights clause; The Company has not been refused any insurance coverage sought or applied for; and the Company has no reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not reasonably be expected to have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(bb) The Company possesses all licenses, certificates, permits and other authorizations required to be issued by all applicable authorities necessary to conduct its business as presently conducted, except where the failure to possess such licenses, certificates permits and other authorizations would not reasonably be expected to have a

Material Adverse Effect, and the Company has not received any notice of proceedings relating to the revocation or modification of any such license, certificate, permit or other authorization which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, would reasonably be expected to have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(cc) Except as set forth in the Registration Statement, the Disclosure Package and the Prospectus, and except as would not reasonably be expected to have a Material Adverse Effect: (i) the Company and, to its knowledge, its collaborators and contractors are and have been in compliance with statutes, laws, ordinances, rules and regulations applicable to the Company and its collaborators and contractors for the ownership, testing, development, manufacture, packaging, processing, use, labeling, storage, or disposal of any product manufactured by or on behalf of the Company including without limitation, the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 301, et seq., similar laws of other Governmental Entities and the regulations promulgated pursuant to such laws (collectively, "Applicable Laws"); (ii) the Company and, to its knowledge, its collaborators and contractors, possess all licenses, certificates, approvals, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws and/or for the ownership of its properties or the conduct of its business as described in the Registration Statement, the Disclosure Package and the Prospectus (collectively, "Authorizations") and such Authorizations are valid and in full force and effect and the Company and, to its knowledge, its collaborators and contractors are not in violation of any term of any such Authorizations; (iii) neither the Company nor, to its knowledge, its collaborators and contractors, have received any written notice of adverse finding, warning letter or other written correspondence or notice from the U.S. Food and Drug Administration ("FDA") or any other Governmental Entity alleging or asserting noncompliance with any Applicable Laws or Authorizations; (iv) the Company has not received written notice of any ongoing claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any Governmental Entity or third party alleging that any product, operation or activity is in violation of any Applicable Laws or Authorizations or has any knowledge that any such Governmental Entity or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding, nor, to the Company's knowledge, has there been any noncompliance with or violation of any Applicable Laws by the Company or its collaborators and contractors that could reasonably be expected to require the issuance of any such written notice or result in an investigation, corrective action, or enforcement action by the FDA or similar Governmental Entity; (v) the Company and, to its knowledge, its collaborators and contractors have not received written notice that any Governmental Entity has taken, is taking or intends to take action to limit, suspend, modify or revoke any Authorizations or has any knowledge that any such Governmental Entity has threatened or is considering such action; and (vi) the Company and, to its knowledge, its collaborators and contractors have filed, obtained, maintained or submitted all reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete, correct and not misleading on the date filed (or were corrected or supplemented by a subsequent

submission). To the Company's knowledge, neither the Company nor any of its directors, officers, employees or agents, has made, or caused the making of, any false statements on, or material omissions from, any other records or documentation prepared or maintained to comply with the requirements of the FDA or any other Governmental Entity.

(dd) The documents incorporated by reference into the Registration Statement, the Disclosure Package and the Prospectus, at the time they were filed with the Commission, complied in all material respects with the requirements of the Exchange Act and the rules and regulations of the Commission thereunder, and, when read together with the other information in the Registration Statement, the Disclosure Package and the Prospectus, as of their respective dates, do not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(ee) The clinical trials and other studies conducted by the Company, or to the knowledge of the Company, by its collaborators or contractors on behalf of the Company, have been and, if still pending, are being conducted in all material respects pursuant to all Applicable Laws and Authorizations; the descriptions of the results of such clinical trials and other studies contained in or incorporated by reference into the Registration Statement, the Disclosure Package and the Prospectus are accurate in all material respects and fairly present the data derived from such clinical trials and other studies; except to the extent disclosed in the Registration Statement, the Disclosure Package and the Prospectus, the Company is not aware of any clinical trials or other studies, the results of which the Company believes reasonably call into question the research, non-clinical study results or clinical trial results described or referred to in the Registration Statement, the Disclosure Package and the Prospectus, when viewed in the context in which such results are described; and the Company has not received any written notices or other correspondence from any Governmental Entity requiring the termination, suspension or material modification of any clinical trial or other study conducted by or on behalf of the Company.

(ff) The Company owns, possesses, licenses or otherwise has sufficient rights to use, or can acquire on reasonable terms, all patents, patent applications, trade and service marks, trade and service mark registrations, trade names, copyrights, licenses, inventions, trade secrets, technology, know-how and other intellectual property (collectively, the "Intellectual Property") necessary for the conduct of the Company's business as now conducted as described in the Disclosure Package and Prospectus, except where the failure to so own, possess, license or otherwise hold or acquire would not reasonably be expected to have a Material Adverse Effect. Except as set forth in or incorporated by reference into the Disclosure Package and the Prospectus, (a) there are no rights of third parties to any material Intellectual Property of the Company; (b) to the Company's knowledge there is no material infringement by third parties of any such Intellectual Property; (c) there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others challenging the Company's rights in or to any such Intellectual Property, and the Company is unaware of any facts which

would form a reasonable basis for any such claim; (d) there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others challenging the validity or scope of any such Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (e) there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others that the Company infringes or otherwise violates any patent, trademark, copyright, trade secret or other proprietary rights of others, and the Company is unaware of any act which would form a reasonable basis for any such claim; and (f) there is no prior art of which the Company is aware that may render any U.S. patent held by the Company invalid or any U.S. patent application held by the Company unpatentable which has not been disclosed to the U.S. Patent and Trademark Office.

(gg) The Company (i) does not have any material lending or other relationship with any bank or lending affiliate of any of the Underwriters and (ii) does not intend to use any of the proceeds from the sale of the Securities hereunder to repay any outstanding debt owed to any affiliate of any of the Underwriters.

(hh) The Company maintains 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 U.S. 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's internal controls over financial reporting are effective at the reasonable assurance level and the Company is not aware of any material weakness in its internal controls over financial reporting. Except as described in the Disclosure Package and the Prospectus, since the end of the Company's most recent audited fiscal year, there has been (A) no material weakness in the Company's internal control over financial reporting (whether or not remediated) and (B) no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting (it being understood that, as of the date hereof, the Company is not required to comply with Section 404 of the Sarbanes-Oxley Act of 2002).

(ii) The Company maintains "disclosure controls and procedures" (as such term is defined in Rule 13a-15(e) under the Exchange Act) that comply with the requirements of the Exchange Act; such disclosure controls and procedures have been designed to ensure that material information required to be disclosed by the Company in reports that it files or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission's rules and forms, including controls and procedures designed to ensure that such information is accumulated and communicated to the Company's management to allow timely decisions regarding disclosures. The Company has conducted evaluations of the effectiveness of their disclosure controls as required by Rule 13a-15 of the Exchange Act.

(jj) The Company has not taken, directly or indirectly, without giving effect to activities by the Underwriters any action designed to or that would constitute or that would 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.

(kk) The Company (i) is in compliance with any and all applicable foreign, federal, state and local laws and regulations relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants (“Environmental Laws”), (ii) has received and are in compliance with all permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses and (iii) has not received notice of any actual or potential liability under any environmental law, except where such non-compliance with Environmental Laws, failure to receive and hold required permits, licenses or other approvals, or liability would not reasonably be expected to have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus. Except as set forth in the Disclosure Package and the Prospectus, the Company has not been named as a “potentially responsible party” under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.

(ll) The Company periodically reviews the effect of Environmental Laws on the business, operations and properties of the Company, in the course of which it identifies and evaluates associated costs and liabilities (including, without limitation, any capital or operating expenditures required for clean-up, closure of properties or compliance with Environmental Laws, or any permit, license or approval, any related constraints on operating activities and any potential liabilities to third parties). On the basis of such review, the Company has reasonably concluded that such associated costs and liabilities would not, singly or in the aggregate, have a Material Adverse Effect, except as set forth in or contemplated in the Disclosure Package and the Prospectus.

(mm) None of the following events has occurred or exists: (i) a failure to fulfill the obligations, if any, under the minimum funding standards of Section 302 of the United States Employee Retirement Income Security Act of 1974, as amended (“ERISA”), and the regulations and published interpretations thereunder with respect to a Plan, determined without regard to any waiver of such obligations or extension of any amortization period; (ii) an audit or investigation by the Internal Revenue Service, the U.S. Department of Labor, the Pension Benefit Guaranty Corporation or any other federal or state governmental agency or any foreign regulatory agency with respect to the employment or compensation of employees by the Company that would reasonably be expected to have a Material Adverse Effect; (iii) any breach of any contractual obligation, or any violation of law or applicable qualification standards, with respect to the employment or compensation of employees by the Company that would reasonably be expected to have a Material Adverse Effect. None of the following events has occurred or is reasonably likely to occur: (i) a material increase in the aggregate amount of contributions required to be made to all Plans in the current fiscal year of the Company compared to the amount of such contributions made in the most recently completed fiscal

year of the Company; (ii) a material increase in the “accumulated post-retirement benefit obligations” (within the meaning of Statement of Financial Accounting Standards 106) of the Company compared to the amount of such obligations in the most recently completed fiscal year of the Company; (iii) any event or condition giving rise to a liability under Title IV of ERISA that would reasonably be expected to have a Material Adverse Effect, whether or not arising from transactions in the ordinary course of business; or (iv) the filing of a claim by one or more employees or former employees of the Company related to their employment that would reasonably be expected to have a Material Adverse Effect. For purposes of this paragraph, the term “Plan” means a plan (within the meaning of Section 3(3) of ERISA) subject to Title IV of ERISA with respect to which the Company may have any liability.

(nn) There is and has been no failure on the part of the Company or any of the Company’s directors or officers, in their capacities as such, to comply with any provision of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated in connection therewith (the “Sarbanes-Oxley Act”) that are in effect and with which the Company is required to comply as of the effectiveness of the Registration Statement.

(oo) Neither the Company nor, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company is aware of or has taken any action, directly or indirectly, that would result in a violation or a sanction for violation by such persons of the Foreign Corrupt Practices Act of 1977 or the U.K. Bribery Act 2010, each as may be amended, or similar law of any other relevant jurisdiction, or the rules or regulations thereunder; and the Company has instituted and maintain policies and procedures to ensure compliance therewith. No part of the proceeds of the offering will be used, directly or indirectly, in violation of the Foreign Corrupt Practices Act of 1977 or the U.K. Bribery Act 2010, each as may be amended, or similar law of any other relevant jurisdiction, or the rules or regulations thereunder.

(pp) The operations of the Company are and have been conducted at all times in compliance with applicable financial recordkeeping and reporting requirements and the money laundering statutes and the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any governmental agency (collectively, the “Money Laundering Laws”) and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its subsidiaries with respect to the Money Laundering Laws is pending or, to the best knowledge of the Company, threatened

(qq) Neither the Company nor, to the knowledge of the Company, any director, officer, agent, employee or affiliate of the Company (i) is, or is controlled or 50% or more owned by or is acting on behalf of, an individual or entity that is currently subject to any sanctions administered or enforced by the United States (including any administered or enforced by the Office of Foreign Assets Control of the U.S. Treasury Department, the U.S. Department of State, or the Bureau of Industry and Security of the U.S. Department of Commerce), the United Nations Security Council, the European Union, the United Kingdom (including sanctions administered or enforced by Her Majesty’s Treasury) or other relevant sanctions authority (collectively, “Sanctions” and such persons,

“Sanctioned Persons”), (ii) is located, organized or resident in a country or territory that is, or whose government is, the subject of Sanctions that broadly prohibit dealings with that country or territory (collectively, “Sanctioned Countries” and each, a “Sanctioned Country”) or (iii) will, directly or indirectly, use the proceeds of this offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other individual or entity in any manner that would result in a violation of any Sanctions by, or could result in the imposition of Sanctions against, any individual or entity (including any individual or entity participating in the offering, whether as underwriter, advisor, investor or otherwise).

(rr) Except as has been disclosed to the Underwriters or is not material to the analysis under any Sanctions, the Company has not engaged in any dealings or transactions with or for the benefit of a Sanctioned Person, or with or in a Sanctioned Country, in the preceding 3 years, and the Company does not have any plans to increase its dealings or transactions with or for the benefit of Sanctioned Persons, or with or in Sanctioned Countries.

(ss) The Company’s information technology assets and equipment, computers, systems, networks, hardware, software, websites, applications, and databases (collectively, “IT Systems”) are adequate for, and operate and perform in all material respects as required in connection with the operation of the business of the Company as currently conducted, and to the knowledge of the Company are free and clear of all bugs, errors, defects, Trojan horses, time bombs, malware and other corruptants, except as would not, individually or in the aggregate, result in a Material Adverse Effect. The Company has implemented and maintained or caused to be implemented and maintained commercially reasonable controls, policies, procedures, and safeguards to maintain and protect their material confidential information and the integrity, continuous operation, redundancy and security of all IT Systems and data (including all personal, personally identifiable, sensitive, confidential or regulated data (“Personal Data”)) used in connection with their businesses, and there have been no breaches, violations, outages or unauthorized uses of or accesses to same, except for those that have been remedied without material cost or liability or the duty to notify any other person, nor any incidents under internal review or investigations relating to the same or as would not, individually or in the aggregate, result in a Material Adverse Effect. The Company is presently in compliance with all applicable laws, rules and regulations relating to the privacy and security of IT Systems and Personal Data and to the protection of such IT Systems and Personal Data from unauthorized use, access, misappropriation or modification, except where the failure to be in compliance would not, individually or in the aggregate, result in a Material Adverse Effect. The Company has taken all necessary actions to comply with the European Union General Data Protection Regulation and all other applicable laws and regulations with respect to Personal Data that have been announced as of the date hereof as becoming effective within 12 months after the date hereof, and for which any non-compliance would not, individually or in the aggregate, result in a Material Adverse Effect.

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

(uu) The Company is subject to and in compliance in all material respects with the reporting requirements of Section 13 or Section 15(d) of the Exchange Act. The Common Stock is registered pursuant to Section 12(b) or Section 12(g) of the Exchange Act and is listed on the Nasdaq Global Select Market, and the Company has taken no action designed to, or reasonably likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from the Nasdaq Global Select Market, nor has the Company received any notification that the Commission or the Nasdaq Global Select Market is contemplating terminating such registration or listing.

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

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

2. Purchase and Sale. (a) Subject to the terms and conditions and in reliance upon the representations and warranties herein set forth, the Company agrees to sell to each Underwriter, and each Underwriter agrees, severally and not jointly, to purchase from the Company, at a purchase price of \$3.76 per share, the amount of the Underwritten Securities set forth opposite such Underwriter's name in Schedule I hereto.

(b) Subject to the terms and conditions and in reliance upon the representations and warranties herein set forth, the Company hereby grants an option to the several Underwriters to purchase, severally and not jointly, up to 1,875,000 Option Securities at the same purchase price per share as the Underwriters shall pay for the Underwritten Securities, less an amount per share equal to any dividends or distributions declared by the Company and payable on the Underwritten Securities but not payable on the Option Securities. Said option may be exercised in whole or in part at any time on or before the 30th day after the date of the Prospectus upon written or telegraphic notice by the Representatives to the Company setting forth the number of shares of the Option Securities as to which the several Underwriters are exercising the option and the settlement date. The number of Option Securities to be purchased by each Underwriter shall be the same percentage of the total number of shares of the Option Securities to be purchased by the several Underwriters as such Underwriter is purchasing of the Underwritten Securities, subject to such adjustments as you in your absolute discretion shall make to eliminate any fractional shares.

3. Delivery and Payment. Delivery of and payment for the Underwritten Securities and the Option Securities (if the option provided for in Section 2(b) hereof shall have been exercised on or before the third Business Day immediately preceding the Closing Date) shall be made at 10:00 AM, New York City time, on June 21, 2019, or at such time on such later date not more than three Business Days after the foregoing date as the Representatives shall designate, which date and time may be postponed by agreement between the Representatives and the Company or as provided in Section 9 hereof (such date and time of delivery and payment for the Securities being herein called the “Closing Date”). Delivery of the Securities shall be made to the Representatives for the respective accounts of the several Underwriters against payment by the several Underwriters through the Representatives of the purchase price thereof to or upon the order of the Company by wire transfer payable in same-day funds to an account specified by the Company. Delivery of the Underwritten Securities and the Option Securities shall be made through the facilities of The Depository Trust Company unless the Representatives shall otherwise instruct.

If the option provided for in Section 2(b) hereof is exercised after the third Business Day immediately preceding the Closing Date, the Company will deliver the Option Securities (at the expense of the Company) to the Representatives, at 255 California Street, 12th Floor, San Francisco, CA 94111, on the date specified by the Representatives (which shall be within three Business Days after exercise of said option) for the respective accounts of the several Underwriters, against payment by the several Underwriters through the Representatives of the purchase price thereof to or upon the order of the Company by wire transfer payable in same-day funds to an account specified by the Company. If settlement for the Option Securities occurs after the Closing Date, the Company will deliver to the Representatives on the settlement date for the Option Securities, and the obligation of the Underwriters to purchase the Option Securities shall be conditioned upon receipt of, supplemental opinions, certificates and letters confirming as of such date the opinions, certificates and letters delivered on the Closing Date pursuant to Section 6 hereof.

4. Offering by Underwriters. It is understood that the several Underwriters propose to offer the Securities for sale to the public as set forth in the Prospectus.

5. Agreements. The Company agrees with the several Underwriters that:

(a) Prior to the termination of the offering of the Securities, the Company will not file any amendment of the Registration Statement or supplement (including the Prospectus or any Preliminary Prospectus) to the Base Prospectus unless the Company has furnished you a copy for your review prior to filing and will not file any such proposed amendment or supplement to which you reasonably object. The Company will cause the Prospectus, properly completed, and any supplement thereto to be filed in a form approved by the Representatives with the Commission pursuant to the applicable paragraph of Rule 424(b) within the time period prescribed and will provide evidence satisfactory to the Representatives of such timely filing. The Company will promptly advise the Representatives (i) when the Prospectus, and any supplement thereto, shall have been filed (if required) with the Commission pursuant to Rule 424(b), (ii) when, prior to termination of the offering of the Securities, any amendment to the Registration Statement shall have been filed or become effective, (iii) of any request by the Commission or its staff for any amendment of the Registration Statement, or for any supplement to the Prospectus or for any additional information, (iv) of the issuance by the

Commission of any stop order suspending the effectiveness of the Registration Statement or of any notice objecting to its use or the institution or threatening of any proceeding for that purpose and (v) of the receipt by the Company of any notification with respect to the suspension of the qualification of the Securities for sale in any jurisdiction or the institution or threatening of any proceeding for such purpose. The Company will use its reasonable best efforts to prevent the issuance of any such stop order or the occurrence of any such suspension or objection to the use of the Registration Statement and, upon such issuance, occurrence or notice of objection, to obtain as soon as possible the withdrawal of such stop order or relief from such occurrence or objection, including, if necessary, by filing an amendment to the Registration Statement or a new registration statement and using its reasonable best efforts to have such amendment or new registration statement declared effective as soon as practicable.

(b) If, at any time prior to the filing of the Prospectus pursuant to Rule 424(b), any event occurs as a result of which the Disclosure Package would include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein in the light of the circumstances under which they were made at such time not misleading, the Company will (i) notify promptly the Representatives so that any use of the Disclosure Package may cease until it is amended or supplemented; (ii) amend or supplement the Disclosure Package to correct such statement or omission; and (iii) supply any amendment or supplement to you in such quantities as you may reasonably request.

(c) If, at any time when a prospectus relating to the Securities is required to be delivered under the Act (including in circumstances where such requirement may be satisfied pursuant to Rule 172), any event occurs as a result of which the Prospectus as then supplemented would include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein in the light of the circumstances under which they were made or the circumstances then prevailing not misleading, or if it shall be necessary to amend the Registration Statement or supplement the Prospectus to comply with the Act or the rules thereunder, the Company promptly will (i) notify the Representatives of any such event; (ii) prepare and file with the Commission, subject to the second sentence of paragraph (a) of this Section 5, an amendment or supplement which will correct such statement or omission or effect such compliance; and (iii) supply any supplemented Prospectus to you in such quantities as you may reasonably request.

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

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

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

(g) The Company will not, without the prior written consent of SVB Leerink LLC and Wells Fargo Securities, LLC, offer, sell, contract to sell, pledge, or otherwise dispose of, (or enter into any transaction which is designed to, or might reasonably be expected to, result in the disposition (whether by actual disposition or effective economic disposition due to cash settlement or otherwise) by the Company or any affiliate of the Company or any person in privity with the Company or any affiliate of the Company) directly or indirectly, including the filing (or participation in the filing) of a registration statement with the Commission in respect of, or establish or increase a put equivalent position or liquidate or decrease a call equivalent position within the meaning of Section 16 of the Exchange Act, any other shares of Common Stock or any securities convertible into, or exercisable, or exchangeable for, shares of Common Stock; or publicly announce an intention to effect any such transaction, for a period of 60 days after the date of the Underwriting Agreement; provided, however, that the Company may (i) issue and sell Common Stock (or any securities convertible into, or exercisable or exchangeable for shares of Common Stock) pursuant to any employee stock option plan, incentive plan, stock ownership plan or dividend reinvestment plan of the Company in effect at the Execution Time, (ii) issue Common Stock issuable upon the conversion of securities or the exercise of warrants outstanding at the Execution Time, (iii) file one or more registration statements on Form S-8, and (iv) offer, issue and sell shares of Common Stock or any securities convertible into, or exercisable, or exchangeable for, Common Stock in connection with any acquisition or strategic investment (including any joint venture, strategic alliance or partnership) as long as (x) the aggregate number of shares of Common Stock issued or issuable does not exceed 10% of the number of shares of Common Stock outstanding immediately after the issuance and sale of the Securities and (y) each recipient of any such Common Stock issued or issuable agrees to the restrictions on the resale of securities that are consistent with the lock up letters described in Section 6(k) hereof for the remainder of the 60-day restricted period.

(h) The Company will not take, directly or indirectly, any action designed to or that would constitute or that might reasonably be expected to cause or result in, under the Exchange Act or otherwise, stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Securities.

(i) The Company agrees to pay the costs and expenses relating to the following matters: (i) the preparation, printing or reproduction and filing with the Commission of the Registration Statement (including financial statements and exhibits thereto), each Preliminary Prospectus, the Prospectus and each Issuer Free Writing Prospectus, and each amendment or supplement to any of them; (ii) the printing (or reproduction) and delivery (including postage, air freight charges and charges for counting and packaging) of such copies of the Registration Statement, each Preliminary Prospectus, the Prospectus and each Issuer Free Writing Prospectus, and all amendments or supplements to any of them, as may, in each case, be reasonably requested for use in connection with the offering and sale of the Securities; (iii) the preparation, printing, authentication, issuance and delivery of certificates for the Securities, including any stamp or transfer taxes in connection with the original issuance and sale of the Securities; (iv) the printing (or reproduction) and delivery of this Agreement, any blue sky memorandum and all other agreements or documents printed (or reproduced) and delivered in connection with the offering of the Securities; (v) the registration of the Securities under the Exchange Act and the listing of the Securities on the Nasdaq Global Select Market; (vi) any registration or qualification of the Securities for offer and sale under the securities or blue sky laws of the several states (including filing fees and the reasonable fees and expenses of counsel for the Underwriters relating to such registration and qualification); (vii) any filings required to be made with FINRA (including filing fees and the reasonable fees and expenses of counsel for the Underwriters relating to such filings, with such fees and expenses of counsel not to exceed \$10,000); (viii) the transportation and other expenses incurred by or on behalf of Company representatives in connection with presentations to prospective purchasers of the Securities; provided, however, that the Company shall only be responsible for three-quarters of the cost and expenses of any aircraft chartered in connection with the "road show" for the Securities and the Underwriters shall be responsible for the remaining one-quarter; (ix) the fees and expenses of the Company's accountants and the fees and expenses of counsel (including local and special counsel) for the Company; and (x) all other costs and expenses incident to the performance by the Company of its obligations hereunder.

(j) The Company will not, without the prior written consent of SVB Leerink LLC and Wells Fargo Securities, LLC, agree to or grant any amendment, termination, release or waiver that would permit any third party that is party to any agreement with the Company that prohibits or restricts such third party or its affiliates from offering, selling, contracting to sell, pledging, or otherwise disposing of (or entering into any transaction which is designed to, or might reasonably be expected to, result in the disposition (whether by actual disposition or effective economic disposition due to cash settlement or otherwise) by such third party or its affiliates) any shares of Common Stock held by such third party or its affiliates that would permit such third party or its affiliates to consummate any of the foregoing sales or dispositions for a period of 60 days after the date of the Underwriting Agreement.

(k) The Company agrees that, unless it has or shall have obtained the prior written consent of the Representatives, and each Underwriter, severally and not jointly, agrees with the Company that, unless it has or shall have obtained, as the case may be, the prior written consent of the Company, it has not made and will not make any offer

relating to the Securities that would constitute an Issuer Free Writing Prospectus or that would otherwise constitute a “free writing prospectus” (as defined in Rule 405) required to be filed by the Company with the Commission or retained by the Company under Rule 433; provided that the prior written consent of the parties hereto shall be deemed to have been given in respect of the Free Writing Prospectuses included in Schedule II hereto and any electronic road show. Any such free writing prospectus consented to by the Representatives or the Company is hereinafter referred to as a “Permitted Free Writing Prospectus.” The Company agrees that (x) it has treated and will treat, as the case may be, each Permitted Free Writing Prospectus as an Issuer Free Writing Prospectus and (y) it has complied and will comply, as the case may be, with the requirements of Rules 164 and 433 applicable to any Permitted Free Writing Prospectus, including in respect of timely filing with the Commission, legending and record keeping.

(l) The Company will notify promptly the Representatives if the Company ceases to be an Emerging Growth Company at any time prior to the later of (a) completion of the distribution of the Securities within the meaning of the Act and (b) completion of the 60-day restricted period referred to in Section 5(g) hereof.

(m) If at any time following the distribution of any Written Testing-the-Waters Communication, any event occurs as a result of which such Written Testing-the-Waters Communication would include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein in the light of the circumstances under which they were made at such time not misleading, the Company will (i) notify promptly the Representatives so that use of the Written Testing-the-Waters Communication may cease until it is amended or supplemented; (ii) amend or supplement the Written Testing-the-Waters Communication to correct such statement or omission; and (iii) supply any amendment or supplement to the Representatives in such quantities as may be reasonably requested.

6. Conditions to the Obligations of the Underwriters. The obligations of the Underwriters to purchase the Underwritten Securities and the Option Securities, as the case may be, shall be subject to the accuracy of the representations and warranties on the part of the Company contained herein as of the Execution Time, the Closing Date and any settlement date pursuant to Section 3 hereof, to the accuracy of the statements of the Company made in any certificates pursuant to the provisions hereof, to the performance by the Company of its obligations hereunder and to the following additional conditions:

(a) The Prospectus, and any supplement thereto, have been filed in the manner and within the time period required by Rule 424(b); any material required to be filed by the Company pursuant to Rule 433(d) under the Act shall have been filed with the Commission within the applicable time periods prescribed for such filings by Rule 433; and no stop order suspending the effectiveness of the Registration Statement or any notice objecting to its use shall have been issued and no proceedings for that purpose shall have been instituted or threatened.

(b) The Company shall have requested and caused Cooley LLP, counsel for the Company, to have furnished to the Representatives their opinion and negative assurance letter, each dated the Closing Date and addressed to the Representatives in form and substance reasonably satisfactory to the Representatives.

(c) The Company shall have requested and caused each of Foley Hoag LLP and Dechert LLP, each intellectual property counsel for the Company, to have furnished to the Representatives their respective opinion, dated the Closing Date and addressed to the Representatives in form and substance reasonably satisfactory to the Representatives.

(d) The Representatives shall have received from Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel for the Underwriters, such opinion or opinions, dated the Closing Date and addressed to the Representatives, with respect to the issuance and sale of the Securities, the Registration Statement, the Disclosure Package, the Prospectus (together with any supplement thereto) and other related matters as the Representatives may reasonably require, and the Company shall have furnished to such counsel such documents as they request for the purpose of enabling them to pass upon such matters.

(e) The Company shall have furnished to the Representatives a certificate of the Company, signed by the principal executive officer and the principal financial or accounting officer of the Company, dated the Closing Date, to the effect that the signers of such certificate have carefully examined the Registration Statement, the Disclosure Package, the Prospectus and any amendment or supplement thereto, as well as each electronic road show used in connection with the offering of the Securities, and this Agreement and that:

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

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

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

(f) The Representatives shall have received from Ernst & Young LLP, at the Execution Time and at the Closing Date, comfort letters, dated respectively as of the Execution Time and as of the Closing Date, in form and substance reasonably satisfactory to the Representatives.

(g) Subsequent to the Execution Time or, if earlier, the dates as of which information is given in the Registration Statement (exclusive of any amendment thereof) and the Prospectus (exclusive of any amendment or supplement thereto), there shall not have been (i) any change or decrease specified in the letter or letters referred to in paragraph (g) of this Section 6 or (ii) any change, or any development involving a prospective change, in or affecting the condition (financial or otherwise), earnings, business or properties of the Company taken as a whole, whether or not arising from transactions in the ordinary course of business, except as set forth in or contemplated in the Disclosure Package and the Prospectus (exclusive of any supplement thereto) the effect of which, in any case referred to in clause (i) or (ii) above, is, in the sole judgment of the Representatives, so material and adverse as to make it impractical or inadvisable to proceed with the offering or delivery of the Securities as contemplated by the Registration Statement (exclusive of any amendment thereof), the Disclosure Package and the Prospectus (exclusive of any amendment or supplement thereto).

(h) Prior to the Closing Date, the Company shall have furnished to the Representatives such further information, certificates and documents as the Representatives may reasonably request.

(i) To the extent that there are outstanding any debt securities of the Company rated by any “nationally recognized statistical rating organization” (as defined for purposes of Rule 3(a)(62) under the Exchange Act), then subsequent to the Execution Time, there shall not have been any decrease in the rating of such debt securities by any “nationally recognized statistical rating organization” or any notice given of any intended or potential decrease in any such rating or of a possible change in any such rating that does not indicate the direction of the possible change.

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

(k) At the Execution Time, the Company shall have furnished to the Representatives a letter substantially in the form of Exhibit A hereto from each officer and director of the Company and the holders of equity securities of the Company set forth on Schedule III hereto addressed to the Representatives.

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

The documents required to be delivered by this Section 6 shall be delivered at the office of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel for the Underwriters, at One Financial Center, Boston, Massachusetts 02111, on the Closing Date.

7. Reimbursement of Underwriters' Expenses. If the sale of the Securities provided for herein is not consummated because any condition to the obligations of the Underwriters set forth in Section 6 hereof is not satisfied, because of any termination pursuant to Section 10 hereof or because of any refusal, inability or failure on the part of the Company to perform any agreement herein or comply with any provision hereof other than by reason of a default by any of the Underwriters, the Company will reimburse the Underwriters severally through the Representatives on demand for all out-of-pocket expenses (including reasonable fees and disbursements of counsel) that shall have been reasonably incurred by them in connection with the proposed purchase and sale of the Securities.

8. Indemnification and Contribution.

(a) The Company agrees to indemnify and hold harmless each Underwriter, the directors, officers, employees, affiliates within the meaning of Rule 405 under the Act and agents of each Underwriter and each person who controls any Underwriter within the meaning of either the Act or the Exchange Act against any and all losses, claims, damages or liabilities, joint or several, to which they or any of them may become subject under the Act, the Exchange Act or other Federal or state statutory law or regulation, at common law or otherwise, insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon any untrue statement or alleged untrue statement of a material fact contained in the registration statement for the registration of the Securities as originally filed or in any amendment thereof, or in the Base Prospectus, any Preliminary Prospectus, the Prospectus, or any other preliminary prospectus supplement relating to the Securities, or any Issuer Free Writing Prospectus, or any Written Testing-the-Waters Communication, or in any amendment thereof or supplement thereto or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary in order to make the statements therein not misleading, and agrees to reimburse each such indemnified party, as incurred, for any legal or other expenses reasonably incurred by them in connection with investigating or defending any such loss, claim, damage, liability or action; provided, however, that the Company will not be liable in any such case to the extent that any such loss, claim, damage or liability arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made therein in reliance upon and in conformity with written information furnished to the Company by or on behalf of any Underwriter through the Representatives specifically for inclusion therein. This indemnity agreement will be in addition to any liability which the Company may otherwise have.

(b) Each Underwriter severally and not jointly agrees to indemnify and hold harmless the Company, each of its directors, each of its officers who signs the Registration Statement, and each person who controls the Company within the meaning of either the Act or the Exchange Act, to the same extent as the foregoing indemnity from the Company to each Underwriter, but only with reference to written information relating to such Underwriter furnished to the Company by or on behalf of such Underwriter through the Representatives specifically for inclusion in the documents referred to in the foregoing indemnity. This indemnity agreement will be in addition to any liability which any Underwriter may otherwise have. The Company acknowledges that the statements

set forth (i) in the last paragraph of the cover page regarding delivery of the Securities and, under the heading “Underwriting,” (ii) the list of Underwriters and their respective participation in the sale of the Securities, (iii) the sentences related to concessions and allowances and (iv) the twelfth through seventeenth paragraphs related to stabilization, syndicate covering transactions and penalty bids in the Preliminary Prospectus and the Prospectus constitute the only information furnished in writing by or on behalf of the several Underwriters for inclusion in any Preliminary Prospectus, the Prospectus or any Issuer Free Writing Prospectus.

(c) Promptly after receipt by an indemnified party under this Section 8 of notice of the commencement of any action, such indemnified party will, if a claim in respect thereof is to be made against the indemnifying party under this Section 8, notify the indemnifying party in writing of the commencement thereof; but the failure so to notify the indemnifying party (i) will not relieve it from liability under paragraph (a) or (b) above unless and to the extent it did not otherwise learn of such action and such failure results in the forfeiture by the indemnifying party of substantial rights and defenses and (ii) will not, in any event, relieve the indemnifying party from any obligations to any indemnified party other than the indemnification obligation provided in paragraph (a) or (b) above. The indemnifying party shall be entitled to appoint counsel of the indemnifying party’s choice at the indemnifying party’s expense to represent the indemnified party in any action for which indemnification is sought (in which case the indemnifying party shall not thereafter be responsible for the fees and expenses of any separate counsel retained by the indemnified party or parties except as set forth below); provided, however, that such counsel shall be satisfactory to the indemnified party. Notwithstanding the indemnifying party’s election to appoint counsel to represent the indemnified party in an action, the indemnified party shall have the right to employ separate counsel (including local counsel), and the indemnifying party shall bear the reasonable fees, costs and expenses of such separate counsel (which, if the Company is the indemnifying party, shall be limited to one such separate counsel and one local counsel for any Underwriter together with all persons who control such Underwriter within the meaning of the Exchange Act or the Act, and no more than two such separate counsel and two local counsel for all of the Underwriters) if (i) the use of counsel chosen by the indemnifying party to represent the indemnified party would present such counsel with a conflict of interest, (ii) the actual or potential defendants in, or targets of, any such action include both the indemnified party and the indemnifying party and the indemnified party shall have reasonably concluded that there may be legal defenses available to it and/or other indemnified parties which are different from or additional to those available to the indemnifying party, (iii) the indemnifying party shall not have employed counsel satisfactory to the indemnified party to represent the indemnified party within a reasonable time after notice of the institution of such action or (iv) the indemnifying party shall authorize the indemnified party to employ separate counsel at the expense of the indemnifying party. An indemnifying party will not, without the prior written consent of the indemnified parties, settle or compromise or consent to the entry of any judgment with respect to any pending or threatened claim, action, suit or proceeding in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified parties are actual or potential parties to such claim or action) unless such settlement, compromise or consent (i) includes an unconditional release of each indemnified party from all liability arising out of such claim, action, suit or proceeding and (ii) does not include an admission of fault.

(d) In the event that the indemnity provided in paragraph (a), (b) or (c) of this Section 8 is unavailable to or insufficient to hold harmless an indemnified party for any reason, the Company and the Underwriters severally agree to contribute to the aggregate losses, claims, damages and liabilities (including legal or other expenses reasonably incurred in connection with investigating or defending the same) (collectively "Losses") to which the Company and one or more of the Underwriters may be subject in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and by the Underwriters on the other from the offering of the Securities. If the allocation provided by the immediately preceding sentence is unavailable for any reason, the Company and the Underwriters severally shall contribute in such proportion as is appropriate to reflect not only such relative benefits but also the relative fault of the Company on the one hand and of the Underwriters on the other in connection with the statements or omissions which resulted in such Losses as well as any other relevant equitable considerations. Benefits received by the Company shall be deemed to be equal to the total net proceeds from the offering (before deducting expenses) received by it, and benefits received by the Underwriters shall be deemed to be equal to the total underwriting discounts and commissions, in each case as set forth on the cover page of the Prospectus. Relative fault shall be determined by reference to, among other things, whether any untrue or any alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information provided by the Company on the one hand or the Underwriters on the other, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contribution were determined by pro rata allocation or any other method of allocation which does not take account of the equitable considerations referred to above. Notwithstanding the provisions of this paragraph (d), in no event shall any Underwriter be required to contribute any amount in excess of the amount by which the total underwriting discounts and commissions received by such Underwriter with respect to the offering of the Securities exceeds the amount of any damages that such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. For purposes of this Section 8, each person who controls an Underwriter within the meaning of either the Act or the Exchange Act and each director, officer, employee, affiliate within the meaning of Rule 405 under the Act and agent of an Underwriter shall have the same rights to contribution as such Underwriter, and each person who controls the Company within the meaning of either the Act or the Exchange Act, each officer of the Company who shall have signed the Registration Statement and each director of the Company shall have the same rights to contribution as the Company, subject in each case to the applicable terms and conditions of this paragraph (d).

9. Default by an Underwriter. If any one or more Underwriters shall fail to purchase and pay for any of the Securities agreed to be purchased by such Underwriter or Underwriters hereunder and such failure to purchase shall constitute a default in the performance of its or their obligations under this Agreement, the remaining Underwriters shall be obligated severally to take up and pay for (in the respective proportions which the amount of Securities set forth opposite their names in Schedule I hereto bears to the aggregate amount of Securities set forth opposite the names of all the remaining Underwriters) the Securities which the defaulting Underwriter or Underwriters agreed but failed to purchase; provided, however, that in the event that the aggregate amount of Securities which the defaulting Underwriter or Underwriters agreed but failed to purchase shall exceed 10% of the aggregate amount of Securities set forth in Schedule I hereto, the remaining Underwriters shall have the right to purchase all, but shall not be under any obligation to purchase any, of the Securities, and if such nondefaulting Underwriters do not purchase all the Securities, this Agreement will terminate without liability to any nondefaulting Underwriter or the Company. In the event of a default by any Underwriter as set forth in this Section 9, the Closing Date shall be postponed for such period, not exceeding five Business Days, as the Representatives shall determine in order that the required changes in the Registration Statement and the Prospectus or in any other documents or arrangements may be effected. Nothing contained in this Agreement shall relieve any defaulting Underwriter of its liability, if any, to the Company and any nondefaulting Underwriter for damages occasioned by its default hereunder.

10. Termination. This Agreement shall be subject to termination in the absolute discretion of the Representatives, by notice given to the Company prior to delivery of and payment for the Securities, if at any time prior to such delivery and payment (i) trading in the Company's Common Stock shall have been suspended by the Commission or the Nasdaq Global Select Market, (ii) trading in securities generally on the Nasdaq Global Select Market or the New York Stock Exchange shall have been suspended or limited or minimum prices shall have been established on either of such exchanges, (iii) a banking moratorium shall have been declared either by Federal or New York State authorities, (iv) there shall have occurred a material disruption in commercial banking or securities settlement or clearance services, or (v) there shall have occurred any outbreak or escalation of hostilities, declaration by the United States of a national emergency or war, or other calamity or crisis the effect of which on financial markets is such as to make it, in the sole judgment of the Representatives, impractical or inadvisable to proceed with the offering or delivery of the Securities as contemplated by the Preliminary Prospectus or the Prospectus (exclusive of any supplement thereto).

11. Representations and Indemnities to Survive. The respective agreements, representations, warranties, indemnities and other statements of the Company or its officers and of the Underwriters set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation made by or on behalf of any Underwriter or the Company or any of the officers, directors, employees, agents, affiliates within the meaning of Rule 405 under the Act or controlling persons referred to in Section 8 hereof, and will survive delivery of and payment for the Securities. The provisions of Sections 7 and 8 hereof shall survive the termination or cancellation of this Agreement.

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

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

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

As used in this Section 16(g):

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

“Covered Entity” means any of the following:

- (i) a “covered entity” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 252.82(b);
- (ii) a “covered bank” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 47.3(b); or
- (iii) a “covered FSI” as that term is defined in, and interpreted in accordance with, 12 C.F.R. § 382.2(b).

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

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

13. Notices. All communications hereunder will be in writing and effective only on receipt, and, if sent to the Representatives, will be mailed, delivered or telefaxed to SVB Leerink LLC at One Federal Street, Floor 37, Boston, MA 02110, attention of John I. Fitzgerald, Esq. (facsimile: (617) 918-4664); Wells Fargo Securities, LLC at 375 Park Avenue, New York, NY 10152, attention of Equity Syndicate Department (fax no: (212) 214-5918); William Blair & Company, L.L.C., 150 North Riverside Plaza, Chicago, Illinois 60606, attention of Associate General Counsel; or, if sent to the Company, will be mailed, delivered or telefaxed to (650) 588-5272 and confirmed to it at 343 Oyster Point Blvd. Suite 200, South San Francisco, California 94080, attention of the Finance Department.

14. Successors. This Agreement will inure to the benefit of and be binding upon the parties hereto and their respective successors and the officers, directors, employees, agents and controlling persons referred to in Section 8 hereof, and no other person will have any right or obligation hereunder.

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

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

17. Applicable Law. This Agreement will be governed by and construed in accordance with the laws of the State of New York applicable to contracts made and to be performed within the State of New York.

18. Waiver of Jury Trial. The Company and the Underwriters hereby irrevocably waive, 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.

19. Counterparts. This Agreement may be signed in one or more counterparts, each of which shall constitute an original and all of which together shall constitute one and the same agreement.

20. Headings. The section headings used herein are for convenience only and shall not affect the construction hereof.

21. Definitions. The terms that follow, when used in this Agreement, shall have the meanings indicated.

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

"Base Prospectus" shall mean the base prospectus referred to in paragraph 1(a) above contained in the Registration Statement at the Execution Time.

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

“Commission” shall mean the Securities and Exchange Commission.

“Disclosure Package” shall mean, as of 7:00 p.m., New York time on June 18, 2019 (i) the Base Prospectus, (ii) the most recent Preliminary Prospectus that is generally distributed to investors and used to offer the Securities, including any documents that is incorporated by reference therein, (iii) the Issuer Free Writing Prospectuses, if any, identified in Schedule II hereto, and (iv) any other Free Writing Prospectus that the parties hereto shall hereafter expressly agree in writing to treat as part of the Disclosure Package.

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

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

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

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

“Governmental Entity” shall mean any national, federal, state, county, municipal, local or foreign government, or any political subdivision, court, body, agency or regulatory authority thereof, and any Person exercising executive, legislative, judicial, regulatory, taxing or administrative functions of or pertaining to any of the foregoing.

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

“Material Adverse Effect” shall mean (i) a material adverse effect on the performance of this Agreement or the consummation of any of the transactions contemplated hereby or (ii) a material adverse effect on the condition (financial or otherwise), prospects, earnings, business or properties of the Company, taken as a whole, whether or not arising from transactions in the ordinary course of business.

“Preliminary Prospectus” shall mean any preliminary prospectus supplement to the Base Prospectus referred to in paragraph 1(a) above which is used prior to the filing of the Prospectus, together with the Base Prospectus.

“Prospectus” shall mean the final prospectus supplement relating to the Securities that is first filed pursuant to Rule 424(b) after the Execution Time, together with the Base Prospectus.

“Registration Statement” shall mean the registration statement referred to in paragraph 1(a) above, including exhibits and financial statements and any prospectus supplement relating to the Securities that is filed with the Commission pursuant to Rule 424(b) and deemed part of such registration statement pursuant to Rule 430B, as amended on each Effective Date and, in the event any post-effective amendment thereto becomes effective prior to the Closing Date, shall also mean such registration statement as so amended.

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

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

Very truly yours,

Calithera Biosciences, Inc.

By: /s/ Susan M. Molineaux

Name: Susan M. Molineaux

Title: President and Chief Executive Officer

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

SVB Leerink LLC

By: /s/ Peter Calveley

Name: Peter Calveley
Title: Managing Director

Wells Fargo Securities, LLC

By: /s/ Marc C. Ogborn

Name: Marc C. Ogborn
Title: Director

William Blair & Company, L.L.C.

By: /s/ Steve Maletzky

Name: Steve Maletzky
Title: Partner, Equity Capital Markets

For themselves and the other several Underwriters named in Schedule I to the foregoing Agreement.

SCHEDULE I

<u>Underwriters</u>	<u>Number of Underwritten Securities to be Purchased</u>
SVB Leerink LLC	6,250,000
Wells Fargo Securities, LLC	3,750,000
William Blair & Company, L.L.C.	2,500,000
Total	12,500,000

SCHEDULE II

Schedule of Free Writing Prospectuses included in the Disclosure Package

None

SCHEDULE III

Security holders party to a lock-up:

Entities Affiliated with Delphi Ventures VIII, L.P.
Advanced Technology Ventures VIII, L.P.

Form of Lock-up Agreement
Calithera Biosciences, Inc.
Public Offering of Common Stock

June , 2019

SVB Leerink LLC
Wells Fargo Securities LLC
William Blair & Company, L.L.C.

As Representatives of the several Underwriters,

c/o SVB Leerink LLC
255 California Street, 12th Floor
San Francisco, CA 94111

c/o Wells Fargo Securities, LLC
375 Park Avenue, 4th Floor
New York, NY 10152

c/o William Blair & Company, L.L.C.
150 North Riverside Plaza,
Chicago, Illinois 60606

Ladies and Gentlemen:

This letter is being delivered to you in connection with the proposed Underwriting Agreement (the "Underwriting Agreement"), between Calithera Biosciences, Inc., a Delaware corporation (the "Company"), and you as the representatives (the "Representatives") of a group of Underwriters named therein, relating to an underwritten public offering of Common Stock, \$0.0001 par value (the "Common Stock"), of the Company (the "Offering").

In order to induce you and the other Underwriters to enter into the Underwriting Agreement, the undersigned will not, without the prior written consent of the SVB Leerink LLC and Wells Fargo Securities, LLC, offer, sell, contract to sell, pledge or otherwise dispose of, (or enter into any transaction which is designed to, or might reasonably be expected to, result in the disposition (whether by actual disposition or effective economic disposition due to cash settlement or otherwise) by the undersigned or any affiliate of the undersigned or any person in privity with the undersigned or any affiliate of the undersigned), directly or indirectly, including the filing (or participation in the filing) of a registration statement with the Securities and Exchange Commission (the "SEC") in respect of, or establish or increase a put equivalent position or liquidate or decrease a call equivalent position within the meaning of Section 16 of

the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the rules and regulations of the SEC promulgated thereunder with respect to, any shares of capital stock of the Company or any securities convertible into, or exercisable or exchangeable for such capital stock with respect to which the undersigned has beneficial ownership within the rules and regulations of the SEC, or publicly announce an intention to effect any such transaction, for a period from the date hereof until 60 days after the date of the Underwriting Agreement (the "Lock-Up Period"), other than:

- (i) shares of Common Stock or securities convertible into or exchangeable for Common Stock disposed of as bona fide gifts;
- (ii) exercise of stock options or warrants to purchase shares of Common Stock or the vesting of stock awards of Common Stock and any related transfer of shares of Common Stock to the Company in connection therewith (x) deemed to occur upon the "cashless" or "net" exercise of such options or warrants or (y) for the purpose of paying the exercise price of such options or warrants or for paying taxes due as a result of the exercise of such options or warrants, the vesting of such options, warrants or stock awards, or as a result of the vesting of such shares of Common Stock, it being understood that all shares of Common Stock received upon such exercise, vesting or transfer will remain subject to the restrictions of this agreement during the Lock-Up Period;
- (iii) transfers to the spouse, domestic partner, parent, child or grandchild or first cousin of the undersigned (each, an "Immediate Family Member") or to a trust formed for the direct or indirect benefit of the undersigned or an Immediate Family Member;
- (iv) transfers by will, other testamentary document or intestate succession to the legal representative, heir, beneficiary, trustee or Immediate Family Member of the undersigned;
- (v) transfers pursuant to a divorce settlement agreement or decree or a qualified domestic relations order as defined in the United States Employee Retirement Income Security Act of 1974, as amended;
- (vi) transfers of Common Stock or securities convertible into or exchangeable for Common Stock to (a) any affiliate (as such term is defined in Rule 405 of the Securities Act of 1933, as amended), limited partner, general partner, limited liability company member or stockholder of the undersigned, or (b) if the undersigned is a corporation, to any wholly-owned subsidiary of such corporation, or (c) if the undersigned is an investment company registered under the Investment Company Act of 1940, as amended (a "Mutual Fund"), pursuant to a merger or reorganization with or into another Mutual Fund that shares the same investment adviser registered pursuant to the requirements of the Investment Advisers Act of 1940, as amended, or (d) if the undersigned is a fund, a fund who shares a common investment advisor with the undersigned or who is managed by the same manager or managing member or general partner or management company or by an entity controlling, controlled by or under common control with such manager or managing member or general partner or management company as the undersigned;

(vii) the establishment of a trading plan pursuant to Rule 10b-5-1 under the Exchange Act for the transfer of shares of Common Stock or securities convertible into or exchangeable for Common Stock, *provided* that such plan does not provide for the transfer of shares of Common Stock during the Lock-Up Period and no filing or other public announcement shall be made during the Lock-Up Period; and

(viii) transfers pursuant to a bona fide third-party tender offer, merger, consolidation or other similar transaction made to all holders of the Company's capital stock involving a change of control of the Company (it being understood that this agreement shall not restrict the undersigned from entering into any agreement or arrangement in connection therewith, including an agreement to vote in favor of, or tender the undersigned's shares of Common Stock or other securities of the Company in, any such transaction or otherwise taking any other action in connection with any such transaction), provided that in the event that such tender offer, merger, consolidation or other such transaction is not completed, the undersigned's shares of Common Stock or other securities of the Company shall remain subject to the provisions of this agreement;

provided that in the case of any transfer or distribution pursuant to clauses (i), (iii), (iv), (v) and (vi) (a) the recipient agrees to be bound in writing by the same restrictions set forth herein for the duration of the Lock-Up Period, (b) no filing under Section 13 or Section 16(a) of the Exchange Act reporting a reduction in beneficial ownership of shares of Common Stock shall be required during the Lock-Up Period, and (c) no filing under Section 13 or Section 16(a) of the Exchange Act or other public announcement shall be voluntarily made by the undersigned or the transferee during the Lock-Up Period, and (d) any such transfer shall not involve a disposition for value.

The foregoing restrictions shall not apply to transactions relating to shares of Common Stock acquired by the undersigned in the Offering or in open market transactions subsequent to the Offering date, *provided* that (i) no filing under Section 13 or Section 16(a) of the Exchange Act reporting a reduction in beneficial ownership of shares of Common Stock shall be required and (ii) no filing under Section 13 or Section 16(a) of the Exchange Act or other public announcement shall be voluntarily made by the undersigned, in the case of both clauses (i) and (ii), during the Lock-Up Period. If the undersigned is an officer or director of the Company, the undersigned further agrees that the foregoing restrictions shall be equally applicable to any issuer-directed shares of Common Stock the undersigned may purchase in the Offering.

This agreement shall automatically terminate upon the earliest to occur, if any, of (i) the date that the Company advises the Representatives, in writing, prior to the execution of the Underwriting Agreement, that it has determined not to proceed with the Offering, (ii) the date of termination of the Underwriting Agreement if prior to the closing of the Offering, or (iii) July 31, 2019 if the Offering has not been completed by such date.

[Remainder of page intentionally left blank]

Yours very truly,

If an individual, please sign here:

Signature: _____

Print Name: _____

Print Address: _____

If a corporation, a limited partnership or other legal entity, please sign here:

Legal Name: _____

By: _____

Name:

Title:

Print Address: _____



John T. McKenna
+1 650 843 5059
jmckenna@cooley.com

June 19, 2019

Calithera Biosciences, Inc.
343 Oyster Point Boulevard, Suite 200
South San Francisco, CA 94080

Ladies and Gentlemen:

We have acted as counsel to Calithera Biosciences, Inc., a Delaware corporation (the "*Company*"), in connection with the offering of up to 14,375,000 shares of its common stock, par value \$0.0001 per share (the "*Shares*"), including up to 1,875,000 shares that may be sold pursuant to the exercise of an option to purchase additional shares, pursuant to the Registration Statement on Form S-3 (File No. 333-219791) (the "*Registration Statement*") filed with the Securities and Exchange Commission (the "*Commission*") under the Securities Act of 1933, as amended (the "*Act*"), the prospectus included within the Registration Statement (the "*Base Prospectus*") and the prospectus supplement relating to the Shares, and filed with the Commission pursuant to Rule 424(b) under the Act (together with the Base Prospectus, the "*Prospectus*").

In connection with this opinion, we have examined and relied upon the Registration Statement, the Prospectus, the Company's Certificate of Incorporation and Bylaws, each as currently in effect, and originals, or copies certified to our satisfaction, of such records, documents, certificates, opinions, 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 of all signatures on original documents; the 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 by all persons other than the Company where due authorization, execution and delivery are a prerequisite to the effectiveness thereto. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not sought independently to verify such matters.

Our opinion herein is expressed solely with respect to the General Corporation Law of the State of Delaware. We express no opinion to the extent that any other laws are applicable to the subject matter hereof and express no opinion and provide no assurance as to compliance with any federal or state securities law, rule or regulation.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold and issued in accordance with the Registration Statement and the Prospectus, will be validly issued, fully paid and nonassessable.

Cooley LLP 3175 Hanover Street Palo Alto, CA 94304-1130
t: (650) 843-5000 f: (650) 849-7400 cooley.com



Calithera Biosciences, Inc.
June 19, 2019
Page Two

We consent to the reference to our firm under the caption “Legal Matters” in the Prospectus and to the filing of this opinion as an exhibit to a Current Report on Form 8-K to be filed with the Commission for incorporation by reference into the Registration Statement.

Sincerely,

COOLEY LLP

By: /s/ John T. McKenna
John T. McKenna

Cooley LLP 3175 Hanover Street Palo Alto, CA 94304-1130
t: (650) 843-5000 f: (650) 849-7400 cooley.com