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): December 18, 2025

Athira Pharma, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**001-39503**	**45-3368487**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

18706 North Creek Parkway, Suite 104
Bothell, WA 98011
(Address of principal executive offices, including zip code)

(425) 620-8501
(Registrant's telephone number, including area code)

(Former name or former address, if changed since last report)

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

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

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

Title of each class	**Trading Symbol(s)**	**Name of each exchange on which registered**
Common Stock, $0.0001 par value per share	ATHA	The Nasdaq Stock Market LLC (The Nasdaq Capital 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. ☐

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Item 1.01 Entry into a Material Definitive Agreement.

Private Placement Financing

On December 18, 2025, Athira Pharma, Inc. (the "**Company**" or "**Athira**") entered into a securities purchase agreement (the "**PIPE Securities Purchase Agreement**") with a select group of investors, including Commodore Capital LP ("**Commodore**"), TCG Crossover Management LLC ("**TGCX**"), Perceptive Advisors ("**Perceptive**") and other accredited investors, one of which is affiliated with a member of the board of directors (the "**Board**") of the Company (collectively, the "**PIPE Purchasers**"), pursuant to which the PIPE Purchasers have agreed to purchase and the Company has agreed to issue and sell, by way of a private placement (the "**Private Placement**") an aggregate of (a) 5,356,547 shares (the "**PIPE Initial Shares**") of the Company's common stock, par value $0.0001 per share (the "**Common Stock**") and (b) pre-funded warrants (the "**PIPE Pre-Funded Warrants**") to purchase 8,816,684 shares of Common Stock (the "**PIPE Pre-Funded Warrant Shares**") and (c) accompanying warrants (the "**PIPE Series A Common Warrants**") to purchase 23,031,494 shares of Common Stock and/or shares underlying pre-funded warrants, representing 162.5% of the aggregate of PIPE Initial Shares and the shares of Common Stock underlying the PIPE Pre-Funded Warrants (the shares, or the shares issuable pursuant to such pre-funded warrants, the "**PIPE Series A Common Warrant Shares**") and (d) accompanying warrants (the "**PIPE Series B Common Warrants**" and, together with the PIPE Series A Common Warrants and the PIPE Pre-Funded Warrants, the "**PIPE Warrants**", and the PIPE Warrants, together with the PIPE Initial Shares, the "**PIPE Securities**") to purchase 21,259,842 shares of Common Stock and/or shares underlying pre-funded warrants, representing 150% of the aggregate of PIPE Initial Shares and the shares of Common Stock underlying the PIPE Pre-Funded Warrants (the shares, or the shares issuable pursuant to such pre-funded warrants, the "**PIPE Series B Common Warrant Shares**" and, together with the PIPE Initial Shares, the PIPE Pre-Funded Warrant Shares and the PIPE Series A Common Warrant Shares, the "**PIPE Shares**"). The purchase price for each PIPE Initial Share (including the accompanying PIPE Series A Common Warrants and PIPE Series B Common Warrants) is $6.35 and the purchase price for each PIPE Pre-Funded Warrant (including the accompanying PIPE Series A Common Warrants and PIPE Series B Common Warrants) is $6.349 per each underlying PIPE Pre-Funded Warrant Share. Gross proceeds from the Private Placement are expected to be approximately $90 million, excluding placement agent fees and offering expenses. The closing of the Private Placement (the "**Private Placement Closing**") is expected to occur on or about December 23, 2025, subject to customary closing conditions.

At the Private Placement Closing, the Company will enter into a registration rights agreement (the "**PIPE Registration Rights Agreement**") with the PIPE Purchasers pursuant to which the Company is required to prepare and file a registration statement with the Securities and Exchange Commission (the "**SEC**") to register the resale of the PIPE Shares within 30 calendar days after the date of the Private Placement Closing, and to use reasonable best efforts to have the registration statement declared effective at the earliest possible date but no later than the earlier of (a) 75 calendar days after the filing date if the SEC notifies the Company that it will review the registration statement and (b) the fifth business day after the Company is notified by the SEC that the registration statement will not be reviewed or will not be subject to further review. If the Company fails to meet certain of the requirements in the PIPE Registration Rights Agreement following the Private Placement Closing, the Company will pay liquidated damages to the PIPE Purchasers as provided in the PIPE Registration Rights Agreement.

The PIPE Pre-Funded Warrants will be exercisable at an exercise price of $0.001 per share, subject to customary adjustments under the terms thereof and will be exercisable at any time on or after issuance, subject to the restriction discussed below. The PIPE Series A Common Warrants will have an exercise price of $6.35 per share to be paid in cash (unless a resale registration statement is unavailable at the time of exercise, in which case the PIPE Series A Common Warrants will be exercisable on a cashless net exercise basis), subject to adjustments as provided therein, and will be exercisable, subject to the restrictions discussed below, after the earlier of (1) the latest of (a) June 30, 2026, (b) the date on which the Company publicly announces, by means of a widely disseminated press release or a Current Report on Form 8-K, the enrollment of the 500th subject or the last subject, whichever is earlier, in the ELAINE-3 Trial; provided that the total enrollment will be no less than 500 subjects unless the study's Data Safety Monitoring Board recommends stopping enrollment at an earlier time or unless the FDA permits a different number for subject enrollment in a protocol amendment; (the "**ELAINE-3 Enrollment Date**"); and (c) the date on which the FDA approves or issues a complete response letter to Eli Lilly & Co.'s marketing application, including a supplement to a new drug application, for imlunestrant in combination with abemaciclib in breast cancer, and (2) October 31, 2026 (the "**Series A Common Warrant Initial Exercise Date**"). The PIPE Series A Common Warrants will remain exercisable until the

30th day following the Series A Common Warrant Initial Exercise Date (the "**Series A Common Warrant Termination Date**"), except that if the Series A Common Warrant Initial Exercise Date has not occurred by December 23, 2030, then December 23, 2030 will be the Series A Common Warrant Termination Date. The PIPE Series B Common Warrants will have an exercise price of $7.62 per share payable on a cashless net exercise basis, subject to adjustments as provided therein, and will be exercisable, subject to the restrictions discussed below, after the later of (1) June 30, 2026 and (2) the date of the completion of the public readout of topline results of the ELAINE-3 Trial (the later of (1) and (2), the "**Series B Common Warrant Initial Exercise Date**"). The PIPE Series B Common Warrants will remain exercisable until the 30th day following the Series B Common Warrant Initial Exercise Date (the "**Series B Common Warrant Termination Date**"), except that if the Series B Common Warrant Initial Exercise Date has not occurred by December 23, 2030, then December 23, 2030 will be the Series B Common Warrant Termination Date.

None of the PIPE Pre-Funded Warrants, the PIPE Series A Common Warrants or the PIPE Series B Common Warrants can be exercised if, immediately prior to or following such exercise, the applicable PIPE Purchaser, together with its affiliates and any other persons whose beneficial ownership of shares of Common Stock would be aggregated with the PIPE Purchaser for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), would beneficially own more than 4.99%, 9.99% or 19.99%, at the election of the PIPE Purchaser (in each case, the "**PIPE Maximum Percentage**") of the total number of issued and outstanding shares of Common Stock of the Company following such exercise. If, upon exercise of the PIPE Series A Common Warrants or PIPE Series B Common Warrants, a PIPE Purchaser would exceed the PIPE Maximum Percentage, then the PIPE Series A Common Warrants and PIPE Series B Common Warrants may be exercised for pre-funded warrants to purchase shares of Common Stock, which pre-funded warrants will have terms substantially the same as the PIPE Pre-Funded Warrants. The PIPE Maximum Percentage may be increased or decreased by a PIPE Purchaser with 61 days' written notice to the Company; provided, however, that such percentage may in no event exceed (x) 19.99% prior to a vote of the Company's stockholders approving the removal of such exercise limitation or (y) with respect to certain PIPE Purchasers, 4.99%.

The offer and sale of the PIPE Securities, including the PIPE Shares, have not been registered under the Securities Act of 1933, as amended (the "**Securities Act**") or any state securities laws. The Company has relied on the exemption from the registration requirements of the Securities Act under Section 4(a)(2) thereof, for a transaction by an issuer not involving any public offering, and/or Regulation S thereunder for sales to non-U.S. investors outside of the United States. The Company relied on these exemptions from registration based in part on representations made by the PIPE Purchasers.

Cantor is acting as sole placement agent in connection with the Private Placement.

Perceptive Life Sciences Master Fund Ltd. ("**Perceptive**"), a current stockholder of the Company, together with an affiliated fund, have agreed to purchase an aggregate of $20.0 million of the PIPE Securities. Joseph Edelman, a member of the Company's Board, is the managing member of Perceptive Advisors LLC, the investment manager of Perceptive.

The Company will use the net proceeds from the Private Placement for working capital and will not use such proceeds for (1) the repayment of borrowed debt, (2) to redeem any Common Stock or any securities of the Company that would entitle the holder thereof to acquire at any time Common Stock, subject to certain exceptions, (3) for the settlement of any litigation that is outstanding as of the Private Placement Closing, and (4) to in-license or develop a drug candidate other than lasofoxifene or any drug or drug candidate in the Company's pipeline as of the Private Placement Closing until the earlier of such time as the topline results of ELAINE-3 become available and the second anniversary of the effective date of the PIPE Securities Purchase Agreement.

Pursuant to the terms of the PIPE Securities Purchase Agreement, for so long as funds affiliated with each of Commodore and TCGX, respectively, beneficially own 5% or more in the aggregate of the issued and outstanding common stock of the Company (including any shares of common stock issuable upon the exercise of any outstanding PIPE Warrants whose initial exercise date has occurred), each of Commodore and TCGX will be entitled to designate one member of the Board, and the Company will take all actions reasonably necessary to have such designee promptly appointed to the Board of Directors, including, but not limited to, increasing the size of the Board to accommodate the appointment of such designee, subject to

specified conditions. In addition, the Company has agreed to use its reasonable best efforts to cause the resignation of two (2) current members of the Board by the six (6) month anniversary of the PIPE Closing Date.

The above description of the Private Placement is qualified in its entirety by reference to the PIPE Securities Purchase Agreement attached hereto as Exhibit 10.1, the Form of PIPE Registration Rights Agreement attached hereto as Exhibit 4.1, the Form of PIPE Pre-Funded Warrant attached hereto as Exhibit 4.2, the Form of PIPE Series A Common Warrant attached hereto as Exhibit 4.3 and the Form of PIPE Series B Common Warrant attached hereto as Exhibit 4.4.

Sermonix Transaction

On December 18, 2025, the Company entered into agreements with Sermonix Pharmaceuticals, Inc. ("**Sermonix**") and Ligand Pharmaceuticals Incorporated ("**Ligand**") granting the Company exclusive licenses and rights to develop, manufacture and commercialize oral forms of the selective estrogen-receptor modulator known as lasofoxifene in all countries and territories of the world except for Asia and certain countries in the Middle East. Under the terms of the Company's license agreement with Sermonix (the "**Sermonix License**"), the Company is assuming responsibility, in such countries and territories, for the ongoing global phase 3 clinical trial of oral lasofoxifene entitled "Evaluation of Lasofoxifene in ESR1 Mutations (ELAINE-3)" (the "**ELAINE-3 Study**") and the Company is coordinating with Sermonix and Shanghai Henlius Biotech, Inc. ("**Henlius**"), Sermonix's exclusive licensee for oral lasofoxifene in Asia and certain countries in the Middle East (the "**Retained Territory**"), with respect to Henlius' conduct of the ELAINE-3 Study in the Retained Territory.

Sermonix License

Licenses and Exclusivity. Under the Sermonix License, the Company received from Sermonix an exclusive (even as to Sermonix), sublicensable license, under relevant patents and know-how owned or in-licensed by Sermonix, to develop, manufacture, commercialize and otherwise exploit products containing lasofoxifene (the "**Licensed Products**") in all countries outside the Retained Territory (the "**Licensed Territory**"). Such license does not include a sublicense under the patents and know-how that Sermonix previously in-licensed from Ligand because the Company and Ligand entered into a direct license agreement (the "**Ligand Agreement**") to replace Sermonix's license from Ligand with respect to Licensed Products in the Licensed Territory. During the term of the Sermonix License, Sermonix and its affiliates are prohibited from developing, manufacturing, commercializing or otherwise exploiting products that selectively modulate the estrogen receptor, although Sermonix retains the ability to fulfill its obligations under its license agreement with Henlius (the "**Sermonix-Henlius Agreement**") with respect to the Licensed Products in the Retained Territory.

Development, Manufacture and Commercialization Activities. Under the Sermonix License, the Company has the sole right to conduct all development (including regulatory activities), manufacturing and commercialization of Licensed Products in the Licensed Territory, at the Company's sole cost and expense. The Company is obligated to use commercially reasonable efforts to develop and obtain and maintain regulatory approval for at least one Licensed Product in the Licensed Territory and, following receipt of regulatory approval, to use commercially reasonable efforts to commercialize the applicable Licensed Product in the country of approval. The Company has assumed certain of Sermonix's agreements with third parties that are conducting or supporting the ELAINE-3 Study in the Licensed Territory and certain agreements with third-party contract manufacturers that have been supplying drug substance and drug product for the ELAINE-3 Study. All of Sermonix's existing inventory of Licensed Product drug substance and drug product will be transferred to the Company at no additional cost and the Company will provide a portion of such inventory to Henlius for use in the ELAINE-3 Study in the Retained Territory.

Financial Terms. As consideration for the rights granted to the Company under the Sermonix License, the Company will issue Sermonix approximately $34.9 million in equity pursuant to a securities purchase agreement (the "**Sermonix Purchase Agreement**"), as further described below, make payments to certain of Sermonix's third-party service providers that total approximately $16.8 million, and make payments to Sermonix of $75,000 per month, subject to adjustment from time to time upon mutual agreement of the parties. The Company may credit the amount of such monthly payments against all milestone, royalty, and net proceed payments that become due to Sermonix under the Sermonix License, and the Company's obligation to make such monthly payments will end upon Sermonix's receipt of the first such milestone, royalty or net proceeds payment. If the Company or its affiliates achieve certain commercialization or annual net sales milestones with respect to the Licensed

Products, the Company will make milestone payments to Sermonix up to a maximum aggregate total of $100.0 million, a portion of which may be payable in cash or shares of Common Stock at the Company's discretion, with final terms to be negotiated between the parties. In addition, the Company is obligated to make royalty payments to Sermonix based on the Company's and its affiliates' annual net sales of the Licensed Products in the Licensed Territory, with the applicable royalty rates ranging from sub-single digit to low-single digit percentages, subject to customary reductions. Such royalty obligation will expire on a Licensed Product-by-Licensed Product and country-by-country basis on the latest of (i) the expiration of the last valid claim of a patent licensed to the Company by Sermonix that covers such Licensed Product in such country, (ii) the expiration of regulatory exclusivity of such Licensed Product in such country; and (iii) 10 years after the first commercial sale of such Licensed Product in such country. If the Company sublicenses or divests its rights to the Licensed Products to a third party, then in lieu of the milestone and royalty payments described above, the Company will pay to Sermonix a percentage of the net proceeds from such sublicensing or divestiture transaction. The applicable percentage is based on the type of payment received by the Company from the third party as well as status of development of the Licensed Products at the time that the sublicense or divestiture transaction is entered into, with rates starting in the high-double digit and decreasing to low-double digit percentages. As consideration for the Company's payment and other obligations under the Sermonix License, the Company will be eligible to receive from Henlius all milestone and royalty payments that Henlius owes to Sermonix under the Sermonix-Henlius Agreement other than royalties that Sermonix owes to Ligand on account of Sermonix's license agreement with Ligand, and with the further exception that, if Henlius and Sermonix later agree to share the costs of developing the Licensed Products in Japan, then the Company will not be entitled to receive Sermonix's share of income arising from the sublicensing of Japanese rights to the Licensed Product.

Term and Termination. The Sermonix License will remain in effect until the Company, its affiliates and its sublicensees are no longer developing or commercializing any Licensed Product in the Licensed Territory. Each party may terminate the Sermonix License in its entirety for the uncured material breach by or insolvency of the other party. The Company may terminate the Sermonix License in its entirety for safety reasons or for convenience at any time after the topline data readout of the ELAINE 3 Study. Upon termination, all rights and licenses granted to Company will revert to Sermonix.

The Sermonix License includes certain other customary terms and conditions, including mutual representations and warranties, indemnification, and confidentiality provisions.

Cantor is acting as exclusive financial advisor in connection with the license transaction.

An affiliate of Perceptive currently holds approximately 29% of the outstanding capital stock of Sermonix (excluding securities convertible into shares of capital stock).

The foregoing description of the Sermonix License does not purport to be complete and is qualified in its entirety by reference to the full text of the Sermonix License, a copy of which will be filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2025.

Ligand Agreement

Licenses and Exclusivity. Under the Ligand Agreement, the Company received from Ligand an exclusive (even as to Ligand), sublicensable license, under relevant know-how and certain patents owned or in-licensed by Ligand, to develop, manufacture and sell Licensed Products for oral use in the Licensed Territory. Ligand does not have any restrictions on its ability to develop, manufacture or sell products (other than the Licensed Products) that selectively modulate the estrogen receptor. The Company granted to Ligand a non-exclusive, sublicensable, worldwide license, under the Company's improvements to Ligand's licensed technology, to develop, manufacture and sell products containing lasofoxifene for topical and other non-oral uses.

Development, Manufacture and Commercialization Activities. Under the Ligand Agreement, the Company has the sole right to conduct all development (including regulatory activities), manufacturing and commercialization of Licensed Products for oral use in the Licensed Territory, at the Company's sole cost and expense. The Company is obligated to diligently develop, manufacture and sell oral Licensed Products in the Licensed Territory, to use commercially reasonable efforts to develop oral Licensed Products for treatment of metastatic breast cancer and develop markets for oral Licensed Products in the Licensed

Territory, and to obtain all necessary regulatory approvals for its manufacture, use, importation and sale of oral Licensed Products in the Licensed Territory.

Financial Terms. The financial terms of the Ligand Agreement are the same, with respect to the Licensed Territory, as the financial terms of Sermonix's license agreement with Ligand that was in place immediately prior to the Sermonix transaction (the "**Prior Sermonix-Ligand Agreement**") As a result, the following payments, which are owed by the Company to Ligand, are identical to the amounts that Sermonix would have owed to Ligand if the Prior Sermonix-Ligand Agreement had not been replaced, with respect to the Licensed Territory, by the Ligand Agreement. If the Company or its affiliate or sublicensee achieves certain regulatory approval and commercialization milestones with respect to any oral Licensed Product in the Licensed Territory, the Company will make milestone payments to Ligand up to a maximum aggregate total of $10.5 million in regulatory milestones and $10.5 million in commercialization milestones per Licensed Product. In addition, the Company is obligated to make royalty payments to Ligand based on the Company's and its affiliates' and sublicensees' annual net sales of oral Licensed Products in the Licensed Territory, with the applicable royalty rates ranging from mid-single digit to low-double digit percentages, subject to reductions for generic product sales and amounts paid to third parties for certain intellectual property licenses. Such royalty obligation will expire on a Licensed Product-by-Licensed Product and country-by-country basis on the latest of (i) the expiration of the last valid claim of a patent licensed to the Company by Ligand in such country, (ii) the expiration of regulatory exclusivity of such Licensed Product in such country, and (iii) 15 years after the first commercial sale of such Licensed Product in such country. If the Company sublicenses its rights to the oral Licensed Products to a third party, then in addition to the milestone and royalty payments described above, the Company will pay to Ligand a mid-teen percentage of certain amounts received by the Company from such third-party sublicensee.

Term and Termination. The Ligand Agreement will remain in effect so long as the Company, its affiliates and its sublicensees are developing, manufacturing, using or commercializing any Licensed Product in the Licensed Territory. Each party may terminate the Ligand Agreement in its entirety for the uncured material breach by or insolvency of the other party. The Company may terminate the Ligand Agreement in its entirety or on a product-by-product or country-by-country basis, prior to regulatory approval, for safety reasons or failure to achieve the primary efficacy endpoint in any clinical trial of a Licensed Product for oral use. Ligand may terminate the Ligand Agreement if the Company or its affiliate or sublicensee challenges the validity or enforceability of any patent licensed to the Company by Ligand. Upon termination, all rights and licenses granted to Company will revert to Ligand and the Company is obligated to transfer to Ligand the Company's data, regulatory approvals, domain names and trademarks for the oral Licensed Products in the Licensed Territory.

The Ligand Agreement includes certain other customary terms and conditions, including mutual representations and warranties, indemnification, and confidentiality provisions.

The foregoing description of the Ligand Agreement does not purport to be complete and is qualified in its entirety by reference to the full text of the Ligand Agreement, a copy of which will be filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2025.

Sermonix Securities Issuance

In connection with entry into the Sermonix License Agreement, on December 18, 2025 the Company and Sermonix entered into a securities purchase agreement (the "**Sermonix Securities Purchase Agreement**") pursuant to which Sermonix will be issued a pre-funded warrant (the "**Sermonix Pre-Funded Warrant**" or the "**Sermonix Securities**") to purchase 5,502,402 shares of Common Stock (the "**Sermonix Pre-Funded Warrant Shares**"). The Sermonix Securities will be issued as partial consideration for Sermonix's entry into the Sermonix License Agreement. The closing of the purchase and sale of the Sermonix Securities (the "**Sermonix Closing**") is expected to occur on or about December 23, 2025, subject to customary closing conditions.

At the Sermonix Closing, the Company will enter into a registration rights agreement (the "**Sermonix Registration Rights Agreement**") with Sermonix pursuant to which the Company is required to prepare and file a registration statement with the SEC to register the resale of the Sermonix Pre-Funded Warrant Shares within 30 calendar days after the date of the Sermonix Closing, and to use reasonable best efforts to have the registration statement declared effective at the earliest possible date but

no later than the earlier of (a) 75 calendar days after the filing date if the SEC notifies the Company that it will review the registration statement and (b) the fifth business day after the Company is notified by the SEC that the registration statement will not be reviewed or will not be subject to further review.

The Sermonix Pre-Funded Warrant has an exercise price of $0.001 per share, subject to customary adjustments under the terms thereof. The Sermonix Pre-Funded Warrant will not be exercisable until the Sermonix Stockholder Approval (as defined below) is obtained. Following receipt of the Sermonix Stockholder Approval, the Sermonix Pre-Funded Warrant will be exercisable at any time, except that the Sermonix Pre-Funded Warrant cannot be exercised if, immediately prior to or following such exercise, Sermonix, together with its affiliates and any other persons whose beneficial ownership of shares of Common Stock would be aggregated with Sermonix for purposes of Section 13(d) of the Exchange Act, would beneficially own more than 4.99% (the "**Sermonix Maximum Percentage**") of the total number of issued and outstanding shares of Common Stock of the Company following such exercise. The Sermonix Maximum Percentage may be increased or decreased by Sermonix with 61 days' written notice to the Company; provided, however, that such percentage may in no event exceed 19.99% prior to receipt of the Sermonix Stockholder Approval.

The Company has agreed to, no later than in connection with its 2026 annual meeting of stockholders (the "**Annual Meeting**"), provide notice of, and solicit proxies from the Company's stockholders to obtain approval such that the Sermonix Pre-Funded Warrant can be exercised at any time without restriction or additional stockholder approval (the "**Sermonix Stockholder Approval**"). If the Sermonix Stockholder Approval is not obtained at or before the Annual Meeting, the Company has agreed to cause an additional meeting (special or general) of the Company's stockholders to be held every 90 days thereafter for the purpose of obtaining the Sermonix Stockholder Approval until the Sermonix Stockholder Approval is obtained. If the Sermonix Stockholder Approval has not been obtained by the first anniversary of the original issuance of the Sermonix Pre-Funded Warrant, Sermonix shall have the right (the "**Sermonix Redemption Right**") at any time and from time to time prior to such time that the Sermonix Stockholder Approval is obtained thereafter, to cause the Company to pay, at the option of Sermonix, an amount up to (a) $6.35 (the "**Sermonix Redemption Price**") multiplied by (b) the number of shares of Common Stock with respect to which Sermonix is exercising the Sermonix Redemption Right. The Sermonix Redemption Right shall terminate on the earlier of (1) such time as an aggregate of $7.5 million in aggregate Sermonix Redemption Price (the "**Sermonix Redemption Cap**") has been paid by the Company to Sermonix in connection with one or more exercises of the Sermonix Redemption Right; and (2) immediately upon receipt of the Sermonix Stockholder Approval.

The offer and sale of the Sermonix Securities has not been registered under the Securities Act or any state securities laws. The Company has relied on the exemption from the registration requirements of the Securities Act under Section 4(a)(2) thereof, for a transaction by an issuer not involving any public offering. The Company relied on this exemption from registration based in part on representations made by Sermonix.

The Sermonix Securities Purchase Agreement, Sermonix Pre-Funded Warrant and Sermonix Registration Rights Agreement and the transactions related thereto are referred to herein as the "**Sermonix Securities Issuance**." The Sermonix Securities Issuance, together with the Sermonix License and the Ligand Agreement, are referred to herein as the "**Sermonix Transaction**." The foregoing description of the material terms of the Sermonix Securities Issuance is qualified in its entirety by reference to the Sermonix Securities Purchase Agreement attached hereto as Exhibit 10.2, the Form of Sermonix Registration Rights Agreement attached hereto as Exhibit 4.5, and the Form of Sermonix Pre-Funded Warrant attached hereto as Exhibit 4.4.

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The PIPE Securities and the Sermonix Securities are collectively referred to herein as the "**Securities**." The sale and issuance of the Securities have not been registered under the Securities Act or any state securities laws. The Securities may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements. Neither this Current Report on Form 8-K, nor the exhibits attached hereto is an offer to sell or the solicitation of an offer to buy the Securities described herein.

Item 3.02 Unregistered Sales of Equity Securities.

The descriptions in Item 1.01 of the Private Placement and the Sermonix Securities Issuance are incorporated herein by reference.

Item 7.01 Regulation FD Disclosure.

As previously reported, as of September 30, 2025, the Company had cash, cash equivalents and investments of $25.2 million. The Company expects that its existing cash resources as of September 30, 2025, when combined with the anticipated net proceeds to be received at the closing of the Private Placement, will enable the Company to fund its planned operations, including the ongoing development of lasofoxifene and ATH-1105, into 2028 (excluding any cash received from the potential exercise of the PIPE Warrants).

On December 18, 2025, the Company issued a press release announcing the transactions described in this Current Report on Form 8-K. The press release also announced the Company's intent to change its name. A copy of this press release is furnished as Exhibit 99.1 to this Current Report on Form 8-K.

On December 18, 2025, the Company released an updated corporate presentation, including information regarding the transactions described in this Current Report on Form 8-K. A copy of the corporate presentation is furnished as Exhibit 99.2 to this Current Report on Form 8-K.

The information provided under this Item 7.01 (including Exhibit 99.1 and Exhibit 99.2 attached hereto) is being furnished and shall not be deemed "filed" for purposes of Section 18 of the Exchange Act, or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act, or the Exchange Act, except as expressly set forth by specific reference in such a filing.

Item 8.01. Other Events.

In connection with the entry into and anticipated consummation of the transactions described in this Current Report on Form 8-K, the Company has included in this Item 8.01 updated disclosures for the following sections of its Annual Report on Form 10-K filed on February 27, 2025 (Part I, Item 1—"Business") and its Quarterly Report on Form 10-Q filed on November 6, 2025 ("Research and Development Expense" and "Liquidity and Capital Resources" in Part I, Item 2—"Management's Discussion and Analysis of Financial Condition and Results of Operations", and Part II, Item 1A—"Risk Factors") The following disclosures assume the consummation of the transactions described in this Current Report on Form 8-K and such disclosures constitute forward-looking statements as discussed below.

Business

Overview

Athira is a clinical-stage biopharmaceutical company dedicated to the development of novel therapeutics for high unmet medical needs, including treatment-resistant metastatic breast cancer and amyotrophic lateral sclerosis ("ALS"), with the goal of improving patients' lives.

Following a review of potential therapeutic and business opportunities, the Company is acquiring rights to a promising late-stage asset, lasofoxifene, for the potential treatment of ESR1-mutated ("mESR1") metastatic breast cancer. This late-stage program has generated promising clinical data and the Company believes it represents a unique and exciting opportunity to diversify its pipeline. Athira believes this program will fit well with its later-stage clinical development experience, and complement the Company's in-house asset, ATH-1105, a Phase-2 ready program for the potential treatment of ALS.

The drug development landscape in both neuroscience and oncology is evolving rapidly, driven by breakthroughs in genetics, disease biology, and molecular pathway research. Athira is leveraging this scientific momentum to advance a pipeline of innovative, late-stage assets both internally developed and strategically in-licensed with the goal of accelerating their path to market and maximizing their clinical and commercial impact.

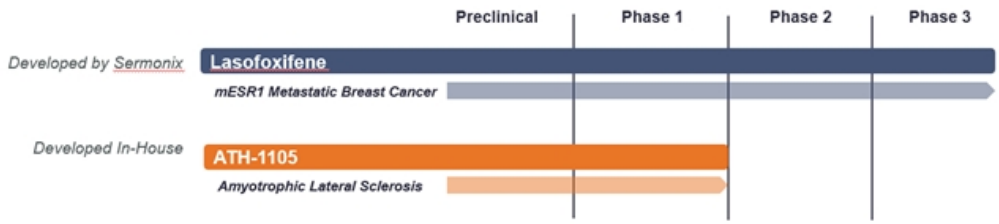
The Company's lead drug candidates, lasofoxifene and ATH-1105 , are novel, small molecule therapies with the potential to address devastating diseases where current treatment options are limited or ineffective. With a strong commitment to scientific excellence and patient-centered innovation, Athira aims to advance meaningful new therapies that are designed to treat patients with treatment-resistant metastatic breast cancer and ALS.

Athira's other product candidates include ATH-1020, fosgonimeton, and new early compounds to address neurodegenerative diseases. The disclosure included in this Item 8.01 is focused on lasofoxifene and ATH-1105. For additional information regarding Athira's other product candidates and early compounds, please refer to the Company's Annual Report on Form 10-K filed with the SEC on February 27, 2025 and the Company's Quarterly Reports on Form 10-Q filed with the SEC on May 9, 2025, August 7, 2025 and November 6, 2025.

Athira's Pipeline

Figure 1 below illustrates the current development stage of Athira's lead therapeutic drug programs, following this transaction. Each program targets unmet needs in either oncology or neurology, leveraging differentiated mechanisms of action supported by preclinical and clinical evidence. Lasofoxifene, a selective estrogen receptor modulator ("SERM"), is currently being evaluated in an ongoing registrational Phase 3 trial for metastatic breast cancer with ESR1 mutations. ATH-1105, a small-molecule positive modulator of the neurotrophic HGF system, has completed a first-in-human Phase 1 trial, and planning for a Phase 2 clinical trial for the treatment of ALS is underway. Athira aims to advance these programs with a focus on disciplined clinical strategy and execution, data-driven decision making, and potential commercialization following receipt of applicable regulatory approvals.

Figure 1. Summary of Athira's Lead Clinical Programs.



The above summary excludes Athira's other product candidates, including ATH-1020, fosgonimeton, and Athira's early compounds.

Lasofoxifene

Lasofoxifene is a highly potent, orally bioavailable, small molecule, selective estrogen receptor modulator that inhibits estrogen receptor signaling in both WT and mESR1 breast cancer.

Lasofoxifene was discovered through a research collaboration between Pfizer Inc. ("Pfizer") and Ligand Pharmaceuticals ("Ligand"). Pfizer continued development of the drug in osteoporosis, female sexual dysfunction, and vaginal atrophy. In 2009, lasofoxifene was approved by the EMA in Europe for the treatment of osteoporosis, under the drug name Fablyn. Multiple NDAs were submitted by Pfizer for the prevention of osteoporosis, and vulvar and vaginal atrophy, but no approvals were granted in the United States for these indications. Pfizer determined not to launch Fablyn in Europe and marketing authorization was withdrawn automatically under the Sunset Provision in 2012. Currently, lasofoxifene is not authorized for marketing anywhere in the world.

In 2011, Pfizer returned global rights of lasofoxifene to Ligand. In 2015, Sermonix subsequently in-licensed exclusive rights to oral lasofoxifene from Ligand, and in 2016, in-licensed intellectual property in ESR1 mutations from Duke University. In 2018, patents were issued for lasofoxifene in ER+ breast and ovarian cancers with an ESR1 mutation. Sermonix initiated a Phase 2/3 development program of lasofoxifene for the treatment of men or women with locally advanced or metastatic estrogen receptor-positive (ER+) breast cancer with an ESR1 mutation (ELAINE-1 and ELAINE-2 studies). In May 2019, the FDA granted lasofoxifene Fast Track Designation. A pivotal Phase 3 trial (ELAINE-3) is underway with topline data expected in 2027.

In December 2025, Athira in-licensed lasofoxifene globally, excluding Asia and certain countries in the Middle East. Athira plans to complete the ELAINE-3 trial to position lasofoxifene for potential approval in the United States and Europe, if successful.

Mechanism of Disease

Estrogen receptor–positive ("ER$^+$") breast cancer accounts for roughly 70% of all breast cancer cases and relies on estrogen-mediated signaling for tumor growth and survival. Endocrine therapy, through aromatase inhibitors ("AIs"), selective estrogen receptor modulators, or selective estrogen receptor degraders ("SERDs"), remains the standard of care, but a majority of patients with metastatic disease eventually develop resistance. A key mechanism underlying this acquired resistance is mutation of the ESR1 gene, which encodes the estrogen receptor alpha (ERα). ESR1 mutation arise primarily due to the selective pressure from endocrine therapies. While endocrine therapies are initially effective, over time, a portion of tumor cells enter a quiet state where they rewire survival pathways, often in the form of ESR1 mutations that are resistant to therapies. The result is persistent estrogen-mediated activation, uncontrolled cell proliferation, and metastatic potential despite ongoing endocrine therapy. Tumors harboring these mutations exhibit diminished sensitivity to standard agents such as fulvestrant, leading to relapse after CDK4/6 inhibitor–based combinations and limited progression-free survival ("PFS") in the post-CDK4/6 setting, highlighting a critical unmet need.

Mechanism of Action

Lasofoxifene is a next-generation selective estrogen receptor modulator that inhibits estrogen receptor signaling in both WT and mESR1 breast cancer. Unlike other endocrine agents that lose potency in the presence of ESR1 mutations such as Y537S and D538G, lasofoxifene maintains full inhibitory activity by stabilizing the receptor in an inactive conformation. Structural and preclinical data show that lasofoxifene disrupts the activation helix within the ER ligand-binding domain, preventing downstream estrogen signaling. This mechanism effectively shuts down the constitutive signaling that drives proliferation and metastasis in mESR1 tumors.

In preclinical models, lasofoxifene demonstrated superior antitumor activity compared with fulvestrant, both as a single agent and in combination with CDK4/6 inhibitors, achieving robust tumor responses. Clinically, lasofoxifene acts as a tissue-selective ER modulator – antagonistic in breast tissue while maintaining beneficial estrogenic activity in bone tissues, supporting an improved tolerability and quality-of-life profile compared to SERDs. Lasofoxifene has also demonstrated excellent combinability with targeted agents such as CDK4/6 or PI3K inhibitors.

Through this unique receptor-stabilizing mechanism, lasofoxifene represents a mechanistically distinct and potent strategy to overcome ESR1-driven endocrine resistance and re-establish durable ER pathway control in metastatic ER$^+$/HER2$^-$ breast cancer.

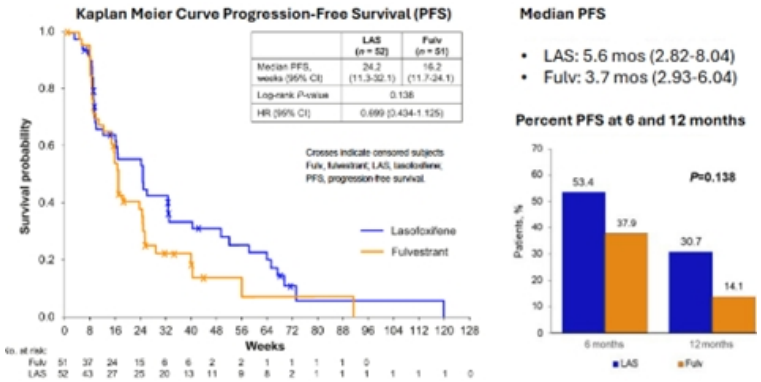
Clinical Evidence for Treatment of mESR1 Metastatic Breast Cancer

A robust clinical efficacy and safety database was generated by Pfizer during their development of lasofoxifene, including 23 Phase 1 trials, 11 Phase 2 trials, and 6 Phase 3 trials. These data position lasofoxifene as one of the more well-characterized and novel endocrine therapies under development for advanced mBC. Athira plans to leverage the existing data to advance the development of lasofoxifene. Of note, over 5,000 patients were treated with lasofoxifene in Pfizer's Phase 3 (PEARL; NCT00141323) osteoporosis trial for up to 5 years, which demonstrated reduction in bone fractures and a reduction in

new-onset breast cancer. After 5 years, women treated with 0.5 mg lasofoxifene had an 81% (p<0.001) decrease in risk of ER+ breast cancer.

ELAINE-1 (NCT03781063) was an open-label, randomized, multicenter, Phase 2 trial, designed as a proof-of-concept of lasofoxifene compared to fulvestrant for the treatment of pre- and postmenopausal women with locally advanced or metastatic ER+/HER2− breast cancer with an acquired ESR1 mutation and who have disease progression on an AI in combination with a cyclin dependent kinase (CDK) 4/6 inhibitor. The primary outcome measure was PFS and the median PFS was 5.6 and 3.7 months for lasofoxifene treated participants and fulvestrant treated participants, respectively (Figure 12). Lasofoxifene and fulvestrant were both safe and well tolerated, with no significant differences between groups. While the trial was not powered, it sufficiently demonstrated the potential benefit of monotherapy lasofoxifene.

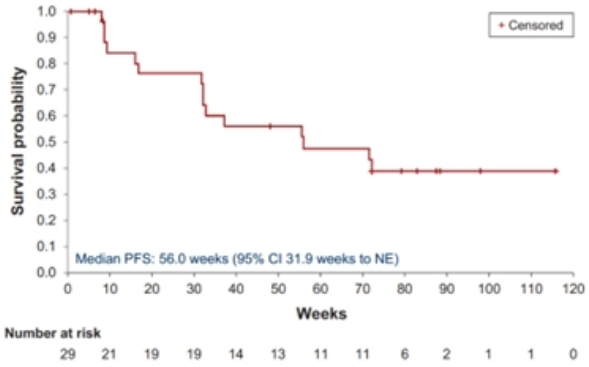
Figure 2. Kaplan-Meier estimates of PFS for lasofoxifene versus fulvestrant.



Crosses indicate censored patients. CI, confidence interval; Fulv, fulvestrant; HR, hazard ratio; LAS, lasofoxifene.

ELAINE-2 (NCT04432454) was an open-label, multicenter, single-arm Phase 2 trial, designed to evaluate the safety and tolerability of the lasofoxifene and abemaciclib (a subsequently approved treatment) combination for the treatment of pre- and postmenopausal women with locally advanced or metastatic ER+/HER2− breast cancer with an acquired ESR1 mutation who have disease progression while on first and/or second lines of hormonal treatment. The combination treatment of lasofoxifene with abemaciclib demonstrated a 13-month (56 weeks) median PFS, which the Company believes is the longest duration observed in 2L/3L post-CDK4/6i patients (Figure 13). The combined treatment delivered a high tumor response (56% ORR) and durable disease control (65.5% CBR). The deep ctDNA and ESR1 clearance correlated with PFS, which is suggestive of target engagement and clinical benefits for patients with co-mutations. Safety outcomes of participants treated with abemaciclib and lasofoxifene resembled the established safety profile of abemaciclib and lasofoxifene, separately, with no notable increases in adverse event frequency.

Figure 3: Kaplan-Meier analysis of PFS.



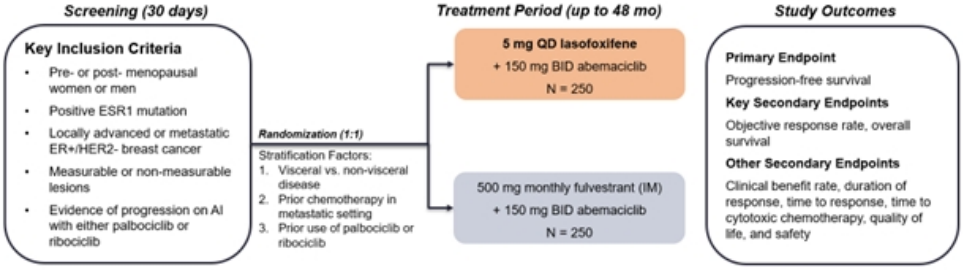
CI, confidence interval; NE, not estimable; PFS, progression-free survival.

Clinical Development Plan for Lasofoxifene in mESR1 Metastatic Breast Cancer

In September 2022, an End of Phase 2 (EOP2) meeting was held with the FDA. Following the completion of ELAINE-2, these data were discussed with FDA and a pivotal, global Phase 3 trial protocol (ELAINE-3; NCT05696626) to evaluate lasofoxifene with abemaciclib was agreed upon. ELAINE-3 aims to demonstrate the potential superiority of lasofoxifene with abemaciclib, as a new standard-of-care versus fulvestrant with abemaciclib for ESR1-driven post-CDK4/6i metastatic breast cancer (Figure 14). The primary endpoint is determined by a blinded independent review of centralized scans using industry standard RECIST criteria. The primary readout will be conducted when 285 participants have been determined to meet the RECIST criteria for progression.

ELAINE-3 was initiated in 2024; as of December 2025, over 50% of recruitment was completed and Athira anticipates completion of recruitment in the first half of 2026.

Figure 4: ELAINE-3 Trial Design



Market Opportunity

Current effective treatment options for ER+/HER2-, ESR1 mutated breast cancer remain limited, particularly after progression on AIs and CDK4/6 inhibitor therapy.

Athira believes that if lasofoxifene, in combination treatment with abemaciclib (Verzenio), demonstrates a competitive PFS, a substantial objective response rate, and a favorable tolerability and quality of life profile, it will represent a compelling profile

for approval and commercialization. In a quantitative survey of 50 physicians, Sermonix reported that 86% of physicians indicated that they definitely would or probably would prescribe a lasofoxifene combination regimen to treat patients with ER+/HER2- advanced breast cancer with an ESR1 mutation. The Company believes lasofoxifene, if approved, will represent a desirable commercial option for patients with ER+/HER2-, ESR1 mutated breast cancer. Based on the prevalence of ER+/HER2- mBC cases in 2L+ therapy and rate of ESR1 mutations, Athira's market research suggests that the U.S. market opportunity for lasofoxifene may exceed $1.0 billion in peak annual sales.

Potential Commercialization Plan

Lasofoxifene is currently in development for the potential treatment of ER+/HER2-, ESR1 mutated metastatic breast cancer, a genetically defined, high-value market segment with limited effective options following AI and CDK4/6 inhibitor therapy. The potential commercialization strategy is centered around lasofoxifene as a 2L/3L+ therapy in combination with abemaciclib (CDK4/6i) after progression on endocrine therapy + CDK4/6i. Athira aims to demonstrate that lasofoxifene provides compelling combination efficacy while offering quality-of-life advantages unmatched by current endocrine therapies. If successful, the Company may evaluate lasofoxifene in earlier-line use and in combinations with other targeted therapies such as mTOR or PI3K pathway inhibitors.

Manufacturing

Athira does not operate its own facilities for manufacturing, storing, or distributing drug candidates. It utilizes third-party CDMOs to manufacture and supply preclinical and clinical materials during the development of drug candidates.

Lasofoxifene is purified as a stable solid and then released to other CDMOs for formulation and packaging into the final tablet drug product for use in clinical testing and commercial supply. The drug chemistry is well established, the highly potent API has been well characterized, and the impurity profile is well controlled. Athira believes the synthesis of lasofoxifene tablets is reliable and reproducible and the synthetic routes can be further optimized to enable large-scale production, including the manufacturing of API in a high-potent suite. Current manufactured drug product follows the original Pfizer formulation. Clinical supply manufacturing is on track to meet the projected drug supply demand of the ongoing ELAINE-3 trial. Ongoing process optimization is being conducted to establish larger clinical and commercial supplies that meet quality and manufacturing standards for the potential commercial manufacturing of lasofoxifene, with an anticipated 4-year shelf life.

For the potential commercialization of any drug candidates that receive regulatory approval, Athira expects to rely on any potential partner's manufacturing capabilities or use similar third-party CDMO contract resources.

Competition

The biotechnology and biopharmaceuticals industries are characterized by rapid technological advancement, significant competition, and an emphasis on intellectual property. The mBC market is active, especially in the 2L+ treatment landscape. Athira expects increased competitive pressures from both large and small pharmaceutical companies and from established and emerging biotechnology companies, as well as academic, government, public, and private research institutions.

While lasofoxifene is a novel SERM, several pharmaceutical and biotechnology companies are developing or marketing 1L+ therapies for patients with ESR1 mBC. These include, but are not limited to, Stemline Therapeutics, Inc. (Orsedu ®), Eli Lilly (Inluriyo ®), AstraZeneca, Sanofi, Arvinas, Olema, Novartis Pharmaceuticals, and F. Hoffman-La Roche AG. Although SERDs and SERMs may have utility in the 1L setting, Athira believes that demonstrating a substantial and clinically meaningful improvement from the current standard of care remains challenging. Existing AI and CDK4/6i combinations have demonstrated efficacy, safety, tolerability, and cost effectiveness that are difficult to displace. SERDs have been found to be most effective in patients with low ESR1 mutation rates. Given common clinical practice to sequence therapies with different mechanisms of action upon disease progression, a SERM such as lasofoxifene may be positioned for use following prior exposure to SERDs, AIs, CDK4/6i, or other therapies utilized in earlier stages of the disease.

Athira believes that the key competitive factors affecting the success of lasofoxifene will include efficacy, quality of life improvement, safety profile, convenience, cost, and intellectual property protection compared to existing treatments. Compared to its competitors, the Company believes lasofoxifene has the potential to deliver durable efficacy (13 months PFS in CDK4/6i combo setting), superior tolerability (grade 1/2 AEs such as diarrhea), and combination potential (minimal DDIs). In addition, Athira believes that lasofoxifene is the only targeted novel endocrine treatment with potential QoL benefits (improved urogenital symptoms and potential bone density and lipid health benefits) in precision oncology medicine. Thus, Athira believes that these advantages may position lasofoxifene as a potential standard in endocrine therapy. Newly approved treatments for ESR1+ mBC will have to compete with existing therapies as well as therapies currently in development and that may be developed in the future. Many of the Company's current and potential competitors possess greater financial, technical, and human resources, along with deeper experience in drug discovery, clinical development, and obtaining regulatory approval for therapies in the U.S. and abroad. They also have extensive expertise in commercializing approved therapies and leveraging established market channels. Mergers and acquisitions in the pharmaceutical and biotechnology industries continue to concentrate these capabilities among a smaller number of companies. As a result, competitors may achieve regulatory approval more rapidly, secure broad market penetration, and gain stronger physician and payer adoption.

ATH-1105

ATH-1105 is a novel, orally available, brain-penetrant, next generation, small-molecule drug candidate designed to positively modulate the neurotrophic HGF system. Athira conducted a first-in-human Phase 1 double-blind, placebo-controlled trial that enrolled 80 healthy volunteers to evaluate single and multiple oral ascending doses of ATH-1105. The trial was completed in November 2024 and evaluated the safety and tolerability of ATH-1105 and included measurements of pharmacokinetic outcomes. The results of the Phase 1 trial showed that ATH-1105 demonstrated a favorable safety profile and was well-tolerated in healthy volunteers, supporting continued clinical development.

In preclinical models of ALS, treatment with ATH-1105 resulted in improvements in motor neuron survival and function. In vitro, ATH-1105 treatment protected primary spinal motor neurons from glutamate toxicity and prevented accumulation of toxic protein aggregates. Additionally, ATH-1105 induced target activation in cultures of ALS patient-derived motor neurons. In a preclinical mouse model of ALS, treatment with ATH-1105 significantly prevented loss of body weight, and improved motor function including balance, coordination and muscle strength. Athira additionally reported that treatment with ATH-1105 significantly improved electrophysiological measures of functional nerve signaling and protected against motor neuron axon degeneration and demyelination. ATH-1105 treatment also significantly reduced biomarkers of inflammation and neurodegeneration and prolonged survival. Study results were presented at the Motor Neurone Disease Association International Symposium in December 2022 and 2023, and published in *Frontiers in Neuroscience*, 2024. Weight loss, motor deficits, inflammation, loss of functional nerve signaling, and motor neurodegeneration and demyelination are all hallmarks of ALS disease; treatment with ATH-1105 significantly improved all of these aspects in the preclinical models tested.

Mechanism of Disease

Causes of neurodegenerative diseases are not fully understood as they are complex with several contributing factors including inflammation, oxidative stress, neurotoxicity, excitotoxicity, synaptic dysfunction, and protein pathologies that ultimately lead to neuronal damage, neuronal network degeneration and a decline in function. Intrinsic to these diseases is the disruption of a healthy neuronal network that can be overcome and repaired or maintained when the body's natural repair mechanisms are intact. However, a loss of or reduction in ability of the body to repair itself can lead to dysregulation that then manifests as symptoms and overall functional decline. One such naturally occurring repair mechanism is the neurotrophic HGF system.

Scientific evidence supporting the neurotrophic HGF system as a naturally occurring repair mechanism is backed by over 30 years of research. MET is one of the most stably expressed genes in the adult human brain and is essential to a healthy, functional nervous system. HGF/MET signaling plays a critical role in both the development and maintenance of nervous system tissue. In ALS, studies have highlighted the importance of HGF in key processes affected by the disease. HGF functions as a potent survival factor for motor neurons, and impaired HGF/MET signaling has detrimental effects on neuromuscular junction integrity. Preclinical studies in ALS animal models show that HGF delivery reduces motor neuron degeneration, improves motor function, and prolongs lifespan. Additionally, HGF signaling has been linked to muscle function, the loss of which is a key feature of ALS. And although evidence supports the neurotrophic HGF system as an attractive target for combating neurodegenerative diseases, such as ALS, with its multimodal mechanism of action, it has proven a difficult drug target. There are approved and in-development gene therapy approaches to increase HGF expression beyond normal physiological levels, but these are limited as potentially viable treatment options for neurological disorders due to limited distribution and more invasive delivery requirements, such as intrathecal or intravenous, or locally restricted to the periphery, such as via intramuscular routes of administration.

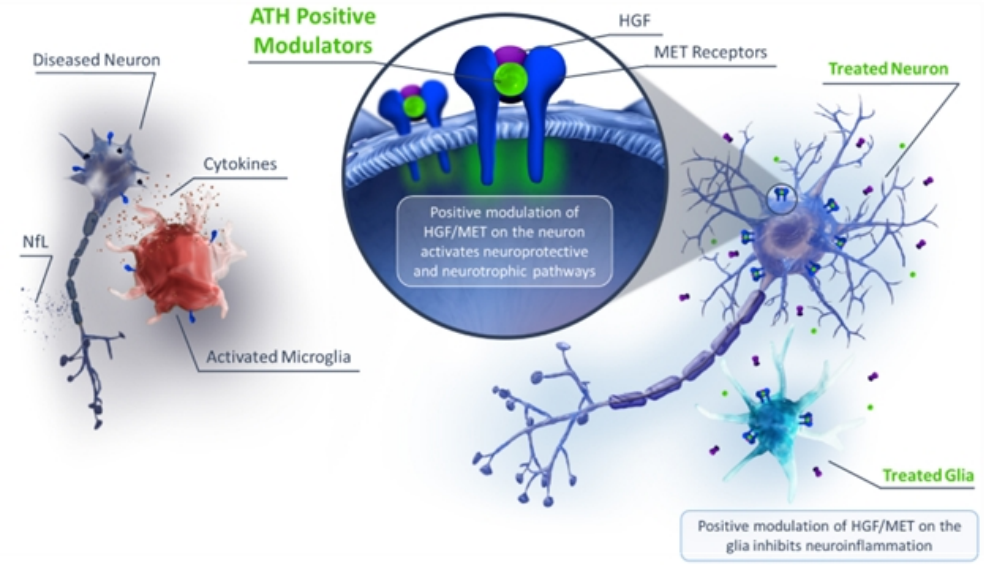
To date, drug developers have been deploying approaches that typically address only a single factor of the cascade of pathologies that lead to neurodegeneration, and translating early successful results to meaningful clinical benefit has been mixed. Athira believes that addressing such complex and multifactorial diseases requires a novel multimodal approach, such as targeting the neurotrophic HGF system through non-invasive small molecules that enhance levels of HGF system activation to protect and repair neuronal networks.

Mechanism of Action

Athira has developed a pipeline of proprietary small molecule compounds, or ATH positive modulators, designed to enhance the neurotrophic HGF system and promote its neuroprotective, neurotrophic and anti-inflammatory effects, including protection of neurons from a variety of insults. These novel small molecules are designed to cross the blood-brain barrier for CNS disorders or remain in the periphery for PNS and other indications, and mechanistically produce a series of multimodal effects that support their therapeutic promise to: reduce inflammation, promote regeneration, provide neuroprotection, and, ultimately, slow disease progression.

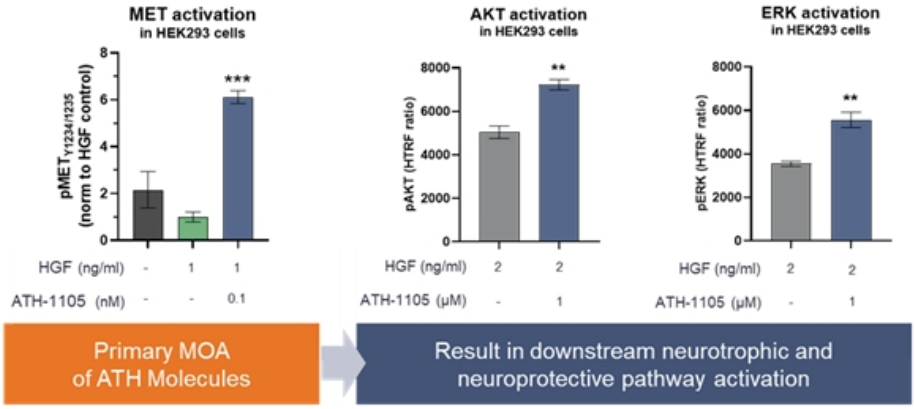
Figure 3 below illustrates the hypothesized mechanism of action of ATH positive modulators and the cellular disease state where diseased neurons generate a biomarker of neurodegeneration, NfL, as well as other signature markers of neuronal damage. Contributing to a diseased neuron are also proinflammatory cytokines produced by activated microglia. In the treated neuron state where ATH positive modulators are designed to enhance HGF/MET signaling to promote neuroprotective and neurotrophic pathways, reduced neuron degeneration and NfL production occur while the treated glia show reduced activation and production of proinflammatory cytokines, illustrating the potential reduction in neurodegeneration and inhibition of neuroinflammation through the enhancement of the neurotrophic HGF system.

Figure 5. Hypothesized Mechanism of Action of ATH Positive Modulators.



As ATH positive modulators interact with the HGF system, neurotrophic and neuroprotective pathways are activated downstream, including the activation of the extracellular-signal regulated kinase ("ERK") and protein kinase B, or AKT pathways, which play critical roles in protecting neurons from damage and death, including from oxidative stress, excitotoxicity, and apoptosis. Figure 4 below shows cell culture data demonstrating that one of the key mechanisms of action of ATH positive modulators is through activation of AKT and ERK via MET activation.

Figure 6. ATH-1105 enhances HGF signaling and promotes neurotrophic and neuroprotective pathways.

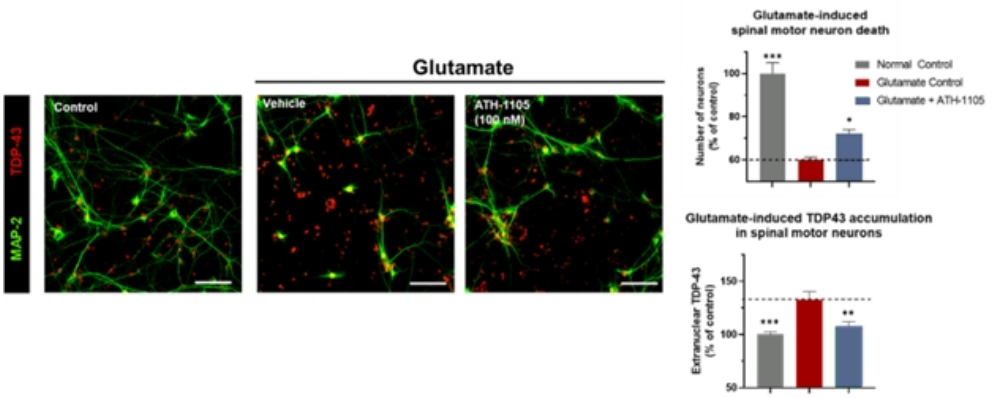


Positively modulating the neurotrophic HGF system promotes its multimodal effects, which Athira believes can potentially address the complex pathology in neurodegenerative diseases. These positive multimodal effects taken together may lead to improvement in function.

ATH-1105 Preclinical Evidence for ALS

ATH-1105 is a novel oral small molecule drug candidate being assessed as a potential treatment for ALS. In a spinal motor neuron model, ATH-1105 significantly protected against neuron death by glutamate-induced excitotoxicity, while reducing pathological aggregation of Transactive response ("**TAR**") DNA-binding protein 43 ("TDP-43"). Figure 5 summarizes the data with images of microtubule-associated protein-2 ("MAP-2")-labeled spinal motor neurons in green, and extranuclear TDP-43 in red. In the control image on the left with no excitotoxic insult (glutamate), there is minimal overlap of MAP-2 neurons with extranuclear TDP-43. When glutamate is applied to the motor neuron cultures, there is an overall reduction in the number of neurons and increased extranuclear TDP-43 as shown by overlapping red-green staining in the middle image. When cell cultures were treated with ATH-1105, the effect of glutamate-induced excitotoxicity on the overall number of motor neurons and extranuclear TDP-43 protein aggregation was significantly reduced, as seen in the rightmost image and as quantified in the bar graphs.

Figure 7. ATH-1105 is Neuroprotective Against Excitotoxic Insult and Reduces Extranuclear TDP-43 Levels in Spinal Motor Neurons.

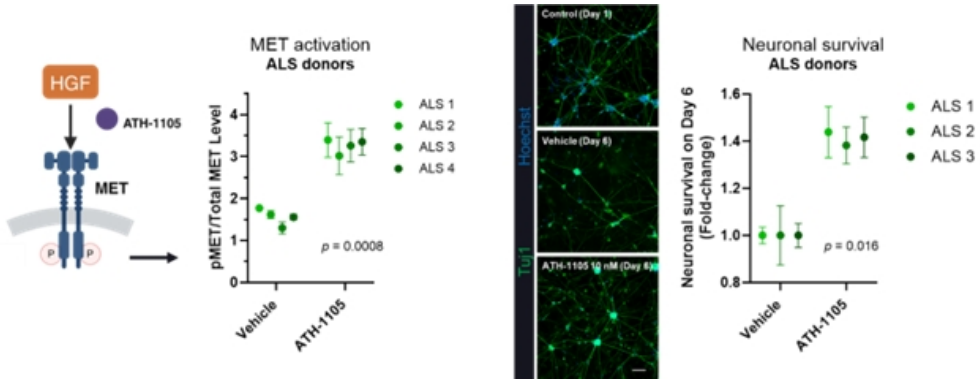


*Data presented as mean + SEM. Statistics applied: 1-way ANOVA with Fisher least significant difference test. *p<0.05; **p<0.01; ***p<0.001 versus Glutamate Control. Scale bar: 100 µm. n=5-6 per group.*

MAP-2, microtubule-associated protein-2; TDP-43, TAR DNA-binding protein 43.

ATH-1105 has also demonstrated target engagement in ALS patient-derived induced pluripotent stem cells (iPSCs) that were differentiated into motor neurons. In this model, as summarized in Figure 6, ALS patient-derived motor neurons treated with ATH-1105 10 nM exhibited a significant increase in MET activation (pMET) demonstrating engagement of HGF signaling, when compared to motor neurons treated with vehicle. Furthermore, treatment with ATH-1105 led to enhanced neuronal survival of ALS patient-derived motor neurons.

Figure 8. ATH-1105 enhances MET activation and survival in ALS patient-derived motor neurons.

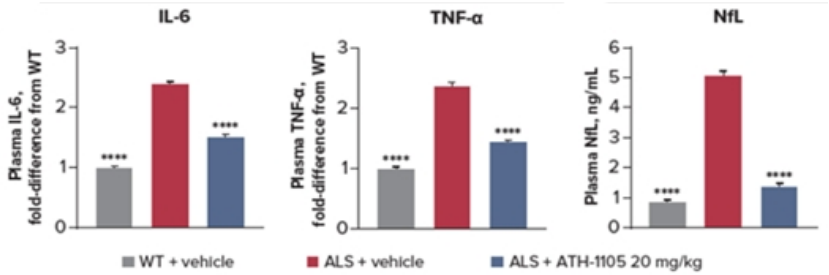


Human iPSC-derived motor neurons derived from four people with sporadic ALS were sourced from Cedar Sinai via AnswerALS consortium. Motor neurons were cultured in growth factor deprived media and treated with vehicle or ATH-1105 every 48h for six days. MET activation: Data presented as mean ± SEM. Statistical significance was determined via paired *t*-test comparing MET activation (pMET/Total MET) in motor neurons treated with vehicle or ATH-1105 [10] nM for 24 hours;

n = 2-3 technical replicates from each donor. Neuronal survival: Representative image highlighting effect of ATH-1105 on ALS patient-derived motor neurons (ALS 1) in culture. Neuronal survival (number of Tuji1+ neurons) was measured as surviving neurons on Day 6 divided by number of neurons on Day 1 (control expressed as 100%). Scale bar = 100 µm. Data expressed as fold-change between vehicle and ATH-1105 and presented as mean ± SEM. Statistical significance was determined via paired *t*-test comparing vehicle (containing HGF 0.05 ng/ml) with ATH-1105 [10] nM; n = 3-6 technical replicates from each donor. Select doses shown.

Plasma biomarkers of inflammation and neurodegeneration were significantly reduced following treatment with ATH-1105 in a transgenic TDP-43-driven mouse model of ALS (Figure 7). These results support the anti-inflammatory and neuroprotective effects of ATH-1105 through enhancement of neurotrophic HGF system signaling. In the TDP-43-driven ALS model, significant increases in the proinflammatory cytokines tumor necrosis factor alpha ("TNF-alpha"), and interleukin 6 ("IL-6"), were observed compared to healthy wild-type ("WT"), control animals. When ALS-model mice, or ALS mice, were treated with ATH-1105, significant reductions in both TNF-alpha and IL-6 were observed, demonstrating anti-inflammatory activity. Consistent with the neuroprotective effects demonstrated in cell-based models, a significant reduction in plasma levels of the neurodegeneration biomarker, NfL, was observed in ALS mice treated with ATH-1105, which is indicative of neuroprotection.

Figure 9. ATH-1105 Improves Biomarkers of Inflammation and Neurodegeneration in a Mouse Model of ALS.

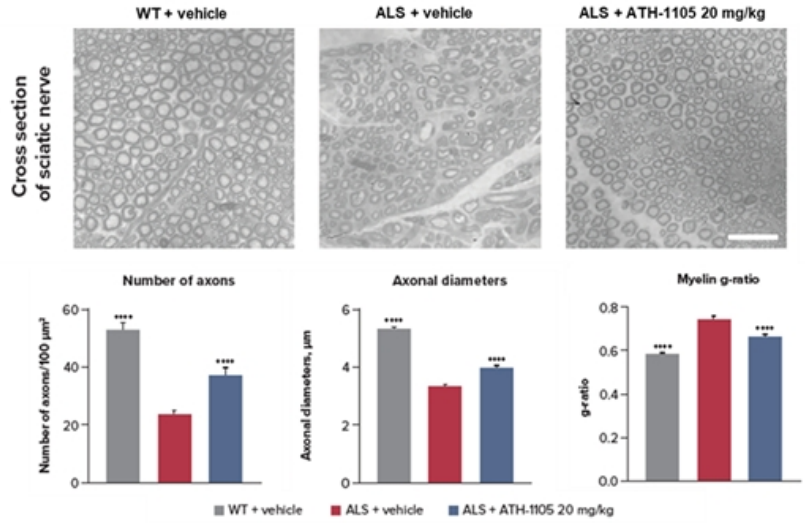


*Graphical representation of plasma IL-6, TNF-α in fold-difference over the WT + vehicle group, and NfL levels in ng/ml at two months of treatment. N=10 per group. Data presented as mean ± SEM. Statistical significance was determined by 1-way ANOVA with the Dunnett's test versus ALS + vehicle. ****p<0.0001.*

ALS, amyotrophic lateral sclerosis; IL-6, interleukin 6; NfL, neurofilament light chain; TNF-α, tumor necrosis factor alpha; WT, wild-type.

Treatment with ATH-1105 in a mouse model of ALS protected against axon degeneration and demyelination as observed from histological examination of cross-sections of the sciatic nerve. Figure 8 below includes an image of the sciatic nerve from a WT healthy control animal, on the left, featuring a large number of large diameter axons surrounded by a consistent and highly regular coating of myelin sheath. In the middle, a sciatic nerve image from an ALS disease control animal is shown, where a marked reduction in the number of axons, a decrease in average axon diameter, and irregular myelination is observed. On the right, when ALS animals are treated with ATH-1105, sciatic nerve integrity is preserved with a greater population of large diameter axons and preservation of regular myelination. Graphs below the images are quantified data showing these effects of ATH-1105 in a mouse model of ALS.

Figure 10. Treatment with ATH-1105 Protected Against Axon Degeneration and Demyelination in a Mouse Model of ALS.



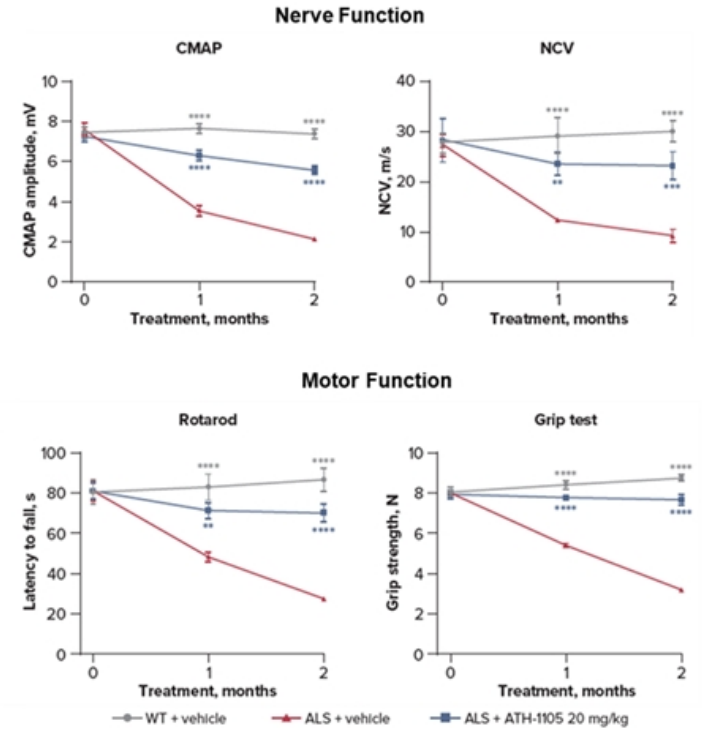
*Histology images of sciatic nerve cross-sections stained with toluidine blue to label myelin. Scale is 10 µm (all panels). Graphical representation of the number of axons (per 100 µm2), axonal diameter (in micrometers), and mean of myelin g-ratio, defined as the ratio of the inner axonal diameter to the total axonal diameter, following two months of treatment. Data presented as mean + SEM. Statistical significance was determined by 1-way ANOVA with the Dunnett's test versus ALS + vehicle. ****p<0.0001.*

ALS, amyotrophic lateral sclerosis; WT, wild-type.

Further analyses of electrophysiological and behavioral assessments indicated the protection of the motor neurons with ATH-1105 translated to improved nerve and motor function (Figure 9). Compound muscle action potential ("CMAP"), and nerve conduction velocity ("NCV"), are two electrophysiological measures of functional nerve signaling. Treatment with ATH-1105 in a mouse model of ALS demonstrated consistent and significant improvements of nerve function compared to ALS disease control animals.

Two examples of motor function improvements are shown by the rotarod, an assessment of balance and coordination, and the grip test, an assessment of strength. ALS disease control animals showed significant motor impairments compared to WT healthy control animals. ATH-1105 treatment in this mouse model of ALS led to significant improvements in both the rotarod and grip tests compared to the vehicle treated ALS disease control animals, demonstrating preservation of motor function. Other motor behavior tests assessing balance, coordination and muscle strength were the balance beam and Kondziela screen tests. Across all motor function measures, significant improvements were seen in ALS animals treated with ATH-1105 compared to ALS animals treated with vehicle.

Figure 11. Treatment with ATH-1105 Improves Nerve and Motor Function in a Mouse Model of ALS.



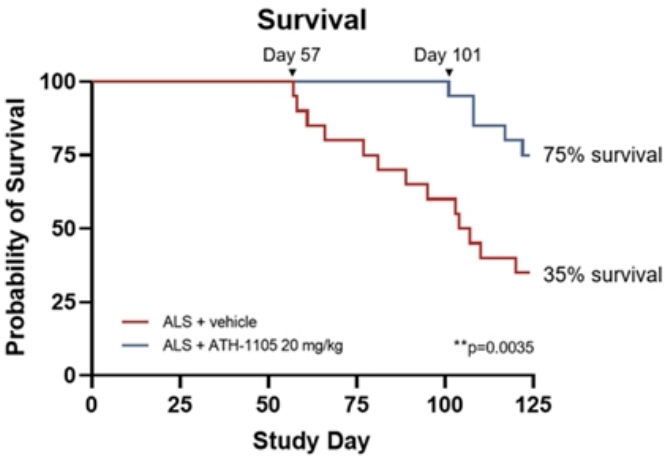
*Graphical representation of CMAP amplitude, NCV, rotarod latency, and grip strength at baseline and after one and two months of treatment. Data presented as mean ± SEM. Statistical significance was determined by 2-way ANOVA with the Dunnett's test versus ALS + vehicle. **p<0.01; ***p<0.001; ****p<0.0001. N=10 per group.*

ALS, amyotrophic lateral sclerosis; CMAP, compound muscle action potential; NCV, nerve conduction velocity; WT, wild-type.

The above study results, depicted in Figure 9, were presented at the American Academy of Neurology ("AAN"), in April 2023, and the ALS Drug Development Summit in May 2023.

Treatment with ATH-1105 in a mouse model of ALS extends survival and improves other disease-related measures. Figure 10 below compares ALS mice treated with oral ATH-1105 20 mg/kg once daily in blue with oral vehicle once daily treated ALS mice in red. Mice were treated from one month of age to a humane endpoint maximum of five months of age, for a total of up to four months of treatment. ATH-1105 increased time to first mortality and significantly prolonged survival compared to ALS disease control animals (p=0.0035). ATH-1105 also significantly protected against body weight reduction (p<0.01). These findings were reported at the AAN 2023 Annual Meeting in April 2023.

Figure 12. ATH-1105 Significantly Improved Survival in a Mouse Model of ALS.

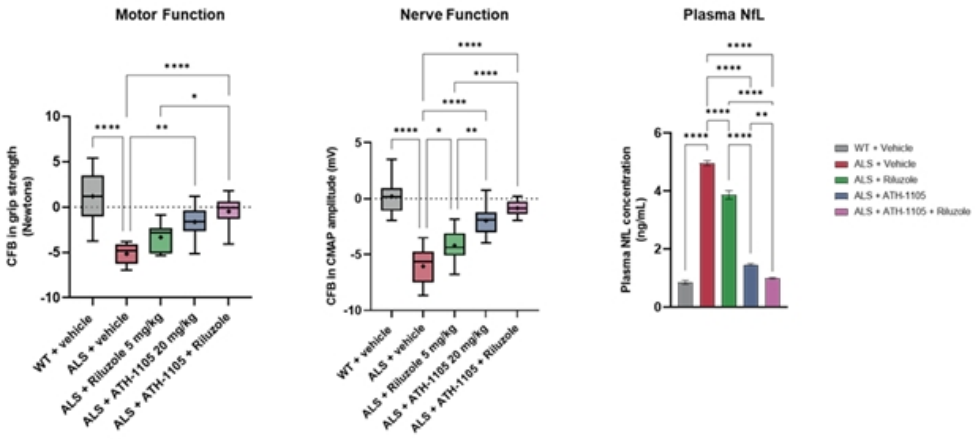


Data presented as Kaplan-Meier curve

*Statistics applied: Log-rank (Mantel-Cox) test for survival curve comparison, **p<0.01. n=20 mice per group at start*

Treatment with ATH-1105 in a mouse model of ALS outperforms treatment with riluzole under the conditions tested in assessments of motor function, nerve function, and in reducing disease-related plasma biomarkers. Figure 11 below compares performance in the grip test of WT mice (grey) and transgenic ALS mice treated daily with vehicle (red), intraperitoneal riluzole 5 mg/kg (green), oral ATH-1105 20 mg/kg (blue), or both ATH-1105 and riluzole (purple). Mice treated with ATH-1105 alone and co-administration of riluzole and ATH-1105 consistently outperformed the vehicle-treated ALS disease control group. In both the ATH-1105 and the co-administration of ATH-1105 and riluzole groups, performance on the test approached that of the WT healthy control group. ATH-1105 treatment outperformed riluzole treatment in tests of motor function including the grip, rotarod, Kondziela screen, and balance beam tests. ATH-1105 also outperformed riluzole in tests of nerve function preservation including CMAP amplitude and NCV. ATH-1105 treatment further reduced plasma levels of IL-6 and TNF-alpha compared to riluzole, which are biomarkers of inflammation. ATH-1105 treatment also more greatly reduced plasma levels of NfL compared to riluzole, which is a biomarker of neurodegeneration. Furthermore, ATH-1105 significantly reduced levels of pTDP-43 in the sciatic nerve, whereas riluzole did not. These findings were reported at the Northeast ALS Consortium meeting in October 2023, and the Motor Neurone Disease Association conference in December 2023.

Figure 13. ATH-1105 Preserves Motor and Nerve Function and Reduces Plasma NfL Compared with Riluzole in a Mouse Model of ALS.



Graphical representation of change from baseline following two months of treatment in grip test, CMAP amplitude, and Plasma Nfl. Data presented as mean ± SEM, or box-and-whisker plots

*Statistics applied: One-way ANOVA with Dunnett's test. *p<0.05; **p<0.01; *** p<0.001; **** p<0.0001. n=10 mice per group; Abbreviations: CFB, change from baseline, CMAP, compound muscle action potential, NfL, neurofilament light chain*

Clinical Evidence for ATH-1105 in ALS

Athira conducted a first-in-human Phase 1 double-blind, placebo-controlled trial that enrolled 80 healthy volunteers to evaluate single and multiple oral ascending doses of ATH-1105. The trial was completed in November 2024 and evaluated the safety and tolerability of ATH-1105 and included measurements of pharmacokinetic outcomes. The results of the Phase 1 trial showed that ATH-1105 exhibited a favorable safety and tolerability profile, dose-proportional PK, and CNS penetration. In an exploratory target engagement study, analysis of neuron-derived extracellular vesicles from human plasma showed a treatment-associated increase in phospho-GSK3β(Ser9), supporting its potential use as a biomarker for future clinical development.

Clinical Development Plan for ATH-1105 in ALS

Athira is proposing a Phase 2a, open-label, multicenter, single-arm trial designed to assess plasma NfL levels, safety, pharmacokinetics, and exploratory outcomes for a once daily single-dose treatment of ATH-1105 for a minimum of 6-months in people living with ALS. NfL is a well-established biomarker of axonal injury and is elevated in people living with ALS, reflecting rate of neurodegeneration. In the Company's proposed Phase 2 study, demonstrating a reduction or stabilization of NfL would deliver proof-of-concept for neuroprotection, indicating that ATH-1105 may slow the biological drivers of ALS progression. Exploratory outcome measures may include ALSFRS-R, Slow Vital Capacity, and other ALS related biomarkers. The trial population would include males or females between ≥18 and 80 years of age, inclusive with sporadic or familial ALS who are diagnosed with definite ALS, probable ALS, probable ALS laboratory results supported or possible ALS according to the El Escorial revised criteria for the diagnosis of ALS. Approximately 40 participants are expected to enroll in the trial. This trial is anticipated to provide clinical evidence to support the design and conduct of a larger pivotal clinical trial.

The Phase 2a trial in people living with ALS has an anticipated start in 2026, with topline results expected as early as 2027.

Market Opportunity

The potential target indications for Athira's ATH-1105 include ALS and other neurodegenerative diseases. ALS is a progressive and fatal neurodegenerative disease with a typical life expectancy of only 2-5 years after diagnosis. Given its severity, persistent unmet medical need, and lack of any effective therapies, any treatment that demonstrates meaningful clinical benefit has the potential for rapid adoption. A recent study estimated that approximately 33,000 persons in the United States are affected with ALS. This number was projected to increase to approximately 36,000 by 2030. Prevalence at the global level varies geographically. Cases worldwide have been projected to increase from approximately 223,000 in 2015 to approximately 377,000 in 2040.

Currently, there are only four approved drugs that are specifically indicated for the treatment of ALS, of which none targets neurotrophic factor systems with a multimodal mechanism of action with the potential to offer neuroprotective, anti-inflammatory and potentially disease modifying effects.

Potential Commercialization Plan

ATH-1105 is currently in development for the potential treatment of ALS. The potential commercialization strategy is expected to consider the following key elements:

1. potential first-line therapy;
2. an add-on therapy for patients on existing therapies; and
3. a therapy for patients who have stopped existing therapies.

Athira aims to demonstrate the therapeutic potential of ATH-1105 in ALS as an initial indication. Given the unique potential of ATH-1105 to provide broad protection against neurodegeneration, there may be therapeutic application in additional neurodegenerative indications including but not limited to frontal temporal dementia, Parkinson's disease, Alzheimer's disease, primary lateral sclerosis, progressive muscle atrophy, polyneuropathies, and others. Athira expects its commercialization strategies, including distribution plans, will evolve as clinical development progresses.

Athira is actively reviewing options for partnerships or other arrangements that will allow it to realize the commercial potential of its drug candidates.

Manufacturing

Athira's focus on small molecule therapeutics enables it to use well-established and widely available manufacturing processes and infrastructure, formulation compositions, and drug administration technologies or devices. Athira does not operate its own facilities for manufacturing, storing, or distributing drug candidates. It utilizes third-party CDMOs to manufacture and supply preclinical and clinical materials during the development of drug candidates. Athira and various regulatory bodies have audited the CDMOs it contracts with, and such CDMOs have a proven track record of GMP-compliant manufacturing.

ATH-1105 is purified as a stable solid and then released to other CDMOs for formulation and packaging into the final drug product for use in clinical testing. Athira believes the synthesis of ATH-1105 is reliable and reproducible and the synthetic routes can be further optimized to enable large-scale production that continues to avoid use of toxic materials or specialized equipment or handling during the manufacturing process.

For the potential commercialization of any drug candidates that receive regulatory approval, Athira expects to rely on partners' manufacturing capabilities or use similar third-party CDMO contract resources.

Competition

The biotechnology and biopharmaceuticals industries are characterized by rapid technological advancement, significant competition, and an emphasis on intellectual property. As a clinical-stage biopharmaceutical company developing small molecules to restore neuronal health and slow neurodegeneration, with its principal drug candidate focused on the treatment of ALS, Athira faces, and in the future may face, increased competitive pressures from both large and small pharmaceutical companies and from established and emerging biotechnology companies, as well as academic, government, and public and private research institutions. Any drug candidates that Athira successfully develops and commercializes will compete with current treatments and new treatments that may become available in the future. With the advancement of ATH-1105 as a novel small molecule therapeutic that positively modulates the neurotrophic HGF system, Athira must consider companies as competitors who are developing other novel approaches, including those that target other neurotrophic systems to address ALS and other neurological diseases. Additionally, because ATH-1105 is orally administered, Athira must also consider as competitors companies developing ALS therapies as oral therapeutics or with other routes of administration.

Because of the range of potential competitors, many of Athira's competitors, alone or with strategic partners, have greater access to financial resources, market presence, and resources and expertise in development, preclinical and clinical testing, manufacturing, commercialization, the regulatory approval process, or marketing and sales than Athira does. In addition, these same competitors, who may be in a clinical development stage, could also be competing with Athira for patient recruitment, clinical research organization, and operational resources. These entities also compete with Athira in the recruitment and retaining of qualified scientific and management personnel, as well as the acquisition of enabling or complementary technologies for advancing Athira's product candidates across all competitors. Merger and acquisition activity in the biotechnology and biopharmaceutical industries may result in even more resources being concentrated among a smaller number of Athira's competitors. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. Athira's commercial opportunity could be substantially limited if its competitors develop and commercialize products that are more effective, safer, more convenient or less expensive than Athira's comparable drug products. In geographies that are critical to Athira's commercial success, competitors may also obtain regulatory approvals first, resulting in these competitors building a strong market position in advance of the entry of Athira's drug candidates. In addition, Athira's ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of other treatments.

Specific to targeting HGF/MET, however, Athira is not aware of any direct competitors currently developing small molecules targeting the neurotrophic HGF system for ALS. Athira is aware of two companies developing HGF/MET-directed therapies for ALS, including VM202, a plasmid DNA encoding human HGF developed by Helixmith, and KP-100, a recombinant HGF protein developed by Kringle Pharma. Both assets have been investigated in Phase 2 clinical trials for ALS, where they were shown to be safe and well-tolerated but failed to reach statistical significance on efficacy endpoints.

ATH-1105 has the potential to offer neuroprotective and anti-inflammatory effects by targeting the HGF/MET system. Athira's preclinical data have demonstrated this multimodal approach may have positive benefits across several biological and clinical measures. While several potential direct competitors may exist, Athira has not yet identified any competitive asset that has demonstrated consistent and congruent positive effects offering neuroprotection, anti-inflammation, reduction in disease-specific protein pathologies, and neurotrophic and functional benefits.

Intellectual Property

Athira owns or has in-licensed numerous patents and patent applications and possesses substantial know-how and trade secrets relating to the development and commercialization of its drug candidates, including related manufacturing processes and technologies, as well as their use in the treatment of various diseases. For drug candidates, Athira generally pursues multilayered patent protection covering compositions of matter, methods of use, and methods of manufacture. Athira intends to strengthen the patent protection of drug candidates and technologies through additional patent application filings. Patent terms for our owned or in-licensed patents discussed herein may exclude any patent term extension or patent term adjustment that may be awarded. Further, data and/or market exclusivity based on new chemical entity or other categories may be available in various jurisdictions.

Athira is in-licensing a portfolio of patents and patent applications from Sermonix and Ligand, centered around lasofoxifene and its method of use in several settings including in (1) combination with abemaciclib for the treatment of ER+/HER2-, locally advanced or metastatic breast cancer with an ESR1 mutation after progression on an AI in combination with the CDK4/6 inhibitor palbociclib or ribociclib, (2) ER+ breast cancer with no ESR1 mutations after progression on an AI, (3) ER+ breast cancer in neoadjuvant setting, and (4) ER+ breast cancer in adjuvant setting. Athira's in-licensed patent portfolio would include issued patents and pending patent applications in the United States, issued patents and pending patent applications in jurisdictions outside of the United States, and pending international patent applications filed under the Patent Cooperation Treaty. Athira's in-licensed issued patents would be expected to expire on dates ranging from 2037 to 2039. If patents are issued on Athira's in-licensed pending patent applications, the resulting patents would be expected to expire on dates ranging from 2037 to 2045.

Athira owns patents and patent applications directed to ATH-1105 and its other small molecule drug candidates, including ATH-1020 and fosgonimeton, directed to compositions of matter and methods of use thereof. Athira's owned patent portfolio includes issued patents and pending patent applications in the United States, issued patents and pending patent applications in jurisdictions outside of the United States, and two pending international patent applications filed under the Patent Cooperation Treaty. Athira's owned and issued patents directed to ATH-1105 and its other small molecule drug candidates, including ATH-1020 and fosgonimeton, directed to compositions of matter and methods of use thereof, will expire on dates ranging from 2037 to 2042. If patents are issued on Athira's owned pending patent applications directed to ATH-1105 and its other small molecule drug candidates, including ATH-1020 and fosgonimeton, directed to compositions of matter and methods of use thereof, the resulting patents are projected to expire on dates ranging from 2037 to 2045, absent any patent term adjustment and/or extension.

Individual patents are in force for varying periods of time, depending upon the date of filing of the patent application, the date of patent issuance, and the legal term of patents in the countries in which they are obtained. Generally, patents issued for applications filed in the United States are in force for 20 years from the earliest nonprovisional filing date. In addition, in certain instances, a patent term can be adjusted or extended to recapture a portion of the term effectively lost as a result of the United States Patent and Trademark Office ("USPTO"), delay or the FDA regulatory review period (a patent term adjustment or patent term extension, respectively). The restoration period for FDA delay cannot be longer than five years and the total patent term, including the restoration period, must not exceed 14 years following FDA approval. The duration of patents outside of the United States varies in accordance with provisions of applicable local law, but typically is also 20 years from the earliest nonprovisional filing date. However, the actual protection afforded by a patent varies on a product-by-product basis, from country-to-country, and depends upon many factors, including the type of patent, the scope of its coverage, the availability of regulatory-related extensions, the availability of legal remedies in a particular country, and the validity and enforceability of the patent.

When appropriate, Athira seeks to protect aspects of its technology and business not amenable to, or that it does not consider appropriate for, patent protection as trade secrets. Athira seeks to protect this intellectual property, in part, as trade secrets, by entering into confidentiality agreements with those who have access to its confidential information, including employees, contractors, consultants, collaborators, and advisors. The company also seeks to preserve the integrity and confidentiality of its proprietary technology and processes by maintaining physical security of its premises and physical and electronic security of its information technology systems.

Athira seeks trademark protection in the United States and in certain other jurisdictions where available and when it deems appropriate. Athira's trademark portfolio includes issued trademark registrations for Athira Pharma and other pending trademark applications in the United States and internationally.

Government Regulation

Government authorities in the United States, at the federal, state, and local level, and other countries extensively regulate, among other things, the research, development, nonclinical and clinical testing, manufacture, quality control, approval, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, post-approval monitoring and reporting, marketing, and export and import of products such as those the Company is developing. Generally, before a new drug can be

marketed, considerable data must be generated, which demonstrate the drug's quality, safety, and efficacy. Such data must then be organized into a format specific for each regulatory authority, submitted for review and approved by the regulatory authority.

U.S. Drug Development Process

In the United States, the FDA regulates drugs under the federal Food, Drug, and Cosmetic Act ("FDCA") and its implementing regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources. Failure to comply with the applicable U.S. requirements at any time during the product development process, the approval process or after approval may subject an applicant to administrative or judicial sanctions. These sanctions could include the FDA's refusal to approve pending applications, withdrawal of an approval, a clinical hold, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, restitution, disgorgement, or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on the Company.

The process required by the FDA before a drug may be marketed in the United States generally involves the following:

- completion of nonclinical laboratory tests, animal studies, and formulation studies in accordance with FDA's good laboratory practice, requirements and other applicable regulations;
- submission to the FDA of an IND, which must become effective before human clinical trials may begin;
- approval by an independent institutional review board ("IRB"), ethics committee, either centralized or with respect to each clinical site, before each clinical trial may be initiated;
- performance of adequate and well-controlled human clinical trials in accordance with good clinical practice ("GCP"), requirements to establish the safety and efficacy of the proposed drug for its intended use;
- submission to the FDA of a New Drug Application ("NDA"), after completion of all pivotal trials;
- determination by the FDA within 60 days of its receipt of an NDA to accept the filing for substantive review;
- satisfactory completion of an FDA advisory committee review, if applicable;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the drug is produced to assess compliance with current good manufacturing practice ("cGMP"), requirements to ensure that the facilities, methods and controls are adequate to preserve the drug's identity, strength, quality, and purity, and of selected clinical investigation sites to assess compliance with GCPs; and
- FDA review and approval of the NDA to permit commercial marketing of the product for particular indications for use in the United States.

Prior to beginning the first clinical trial with a product candidate in the United States, the Company must submit an IND to the FDA. An IND is a request for authorization from the FDA to administer an investigational new drug product to humans. The central focus of an IND submission is on the general investigational plan and the protocol(s) for clinical studies. The IND also includes results of animal and *in vitro* studies assessing the toxicology, pharmacology, and PK/PD characteristics of the product; chemistry, manufacturing, and controls information; and any available human data or literature to support the use of the investigational product. An IND must become effective before human clinical trials may begin. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, raises safety concerns or questions about the proposed clinical trial. In such a case, the IND may be placed on clinical hold and the IND sponsor and the FDA must resolve any outstanding concerns or questions before the clinical trial can begin. Submission of an IND therefore may or may not result in FDA authorization to begin a clinical trial.

Clinical trials involve the administration of the investigational product to human subjects under the supervision of qualified investigators in accordance with GCPs, which include the requirement that all research subjects provide their informed consent for their participation in any clinical study. Clinical trials are conducted under protocols detailing, among other things, the

objectives of the study, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated. A separate submission to the existing IND must be made for each successive clinical trial conducted during product development and for any subsequent protocol amendments. Furthermore, an independent IRB for each site proposing to conduct the clinical trial must review and approve the plan for any clinical trial and its informed consent form before the clinical trial begins at that site and must monitor the study until completed. Regulatory authorities, the IRB or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the subjects are being exposed to an unacceptable health risk or that the clinical trial is unlikely to meet its stated objectives. Some studies also include oversight by an independent group of qualified experts organized by the clinical study sponsor, known as a data safety monitoring board, which may review data and endpoints at designated check points, make recommendations or halt the clinical trial if it determines that there is an unacceptable safety risk for subjects or other grounds, such as no demonstration of efficacy. There are also requirements governing the reporting of ongoing clinical studies and clinical study results to public registries.

Human clinical trials are typically conducted in three sequential phases that may overlap or be combined:

- *Phase 1*: The product candidate is initially introduced into healthy human subjects or patients with the target disease or condition. These studies are designed to test the safety, dosage tolerance, absorption, metabolism, and distribution of the investigational product in humans, the side effects associated with increasing doses, and, if possible, to gain early evidence on effectiveness. In the case of some products for severe or life-threatening diseases, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, the initial human testing is often conducted in patients.
- *Phase 2*: The product candidate is administered to a limited patient population with a specified disease or condition to evaluate the preliminary efficacy, optimal dosages, and dosing schedule and to identify possible adverse side effects and safety risks. Multiple Phase 2 clinical trials may be conducted to obtain information prior to beginning larger and more expensive Phase 3 clinical trials.
- *Phase 3*: The product candidate is administered to an expanded patient population to further evaluate dosage, to provide statistically significant evidence of clinical efficacy and to further test for safety, generally at multiple geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk/benefit ratio of the investigational product and to provide an adequate basis for product approval.

Post-approval clinical trials, sometimes referred to as Phase 4 studies, may be conducted after initial marketing approval. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication. In certain instances, the FDA may mandate the performance of Phase 4 clinical trials as a condition of approval of an NDA.

The FDA or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the research subjects or patients are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the drug has been associated with unexpected serious harm to patients. In addition, some clinical trials are overseen by an independent group of qualified experts organized by the sponsor, known as a data safety monitoring board or committee. Depending on its charter, this group may determine whether a clinical trial may move forward at designated check points based on access to certain data from the clinical trial.

During the development of a new drug, sponsors are given opportunities to meet with the FDA at certain points. These points may be prior to submission of an IND, at the end of Phase 2, and before an NDA is submitted. Meetings at other times may be requested. These meetings can provide an opportunity for the sponsor to share information about the data gathered to date, for the FDA to provide advice, and for the sponsor and the FDA to reach agreement on the next phase of development. Sponsors typically use the meetings at the end of the Phase 2 clinical trial to discuss Phase 2 clinical results and present plans for the pivotal Phase 3 clinical trials that they believe will support approval of the new drug.

Concurrent with clinical trials, companies usually complete additional animal studies and must also develop additional information about the chemistry and physical characteristics of the drug and finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. The manufacturing process must be capable of consistently

producing quality batches of the product candidate and, among other things, the manufacturer must develop methods for testing the identity, strength, quality, and purity of the final drug. In addition, appropriate packaging must be selected and tested, and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life.

While the IND is active and before approval, progress reports summarizing the results of the clinical trials and nonclinical studies performed since the last progress report must be submitted at least annually to the FDA, and written IND safety reports must be submitted to the FDA and investigators for serious and unexpected suspected adverse events, findings from other studies suggesting a significant risk to humans exposed to the same or similar drugs, findings from animal or *in vitro* testing suggesting a significant risk to humans, and any clinically important increased incidence of a serious suspected adverse reaction compared to that listed in the protocol or investigator brochure.

NDA Review and Approval Process

Assuming successful completion of all required testing in accordance with all applicable regulatory requirements, the results of product development nonclinical and clinical trials, along with descriptions of the manufacturing process, analytical tests conducted on the chemistry of the drug, proposed labeling and other relevant information are submitted to the FDA as part of an NDA requesting approval to market the product. The submission of an NDA is subject to the payment of substantial user fees; a waiver of such fees may be obtained under certain limited circumstances.

The results of drug development, preclinical studies and clinical trials are submitted to the FDA as part of an NDA. NDAs also must contain extensive chemistry, manufacturing and control information. An NDA must be accompanied by a significant user fee, which may be waived in certain circumstances. The FDA conducts a preliminary review of an NDA within the first 60 days after submission, before accepting the application for filing, to determine whether it is sufficiently complete to permit substantive review. The FDA may refuse to file any NDA that it deems incomplete or not properly reviewable at the time of submission and may request additional information. In this event, the NDA must be resubmitted with the additional information before FDA will review the application. Once the submission has been accepted for filing, the FDA's goal is to review applications within ten months of the filing date, or if the submission qualifies for priority review, six months from the filing. The review process may also be extended for a three-month period for FDA to review additional information deemed a "major amendment" to the application. The FDA may refer an application for a novel drug to an advisory committee. An advisory committee is a panel of independent experts, including clinicians and other scientific experts, that reviews, evaluates and provides a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

Before approving an NDA, the FDA will typically inspect the facility or facilities where the product is manufactured. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP and adequate to assure consistent production of the product within required specifications. Additionally, before approving an NDA, the FDA will typically inspect one or more clinical sites to assure compliance with GCPs. If the FDA determines that the application, manufacturing process, or manufacturing facilities are not acceptable, it will outline the deficiencies in the submission and often will request additional testing or information. Notwithstanding the submission of any requested additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

After the FDA evaluates an NDA, it will issue an approval letter or a Complete Response Letter. An approval letter authorizes commercial marketing of the drug with prescribing information for specific indications. A Complete Response Letter indicates that the review cycle of the application is complete, and the application will not be approved in its present form. A Complete Response Letter usually describes the specific deficiencies in the NDA identified by the FDA and may require additional clinical data, such as an additional pivotal Phase 3 clinical trial or other significant and time-consuming requirements related to clinical trials, nonclinical studies, or manufacturing. If a Complete Response Letter is issued, the sponsor must resubmit the NDA, addressing all of the deficiencies identified in the letter, or withdraw the application. Even if such data and information are submitted, the FDA may decide that the NDA does not satisfy the criteria for approval.

If regulatory approval of a product is granted, such approval will be granted for particular indications and may entail limitations on the indicated uses for which such product may be marketed. For example, the FDA may approve the NDA with a risk evaluation and mitigation strategy ("REMS"), to ensure the benefits of the product outweigh its risks. A REMS is a safety strategy to manage a known or potential serious risk associated with a medicine and to enable patients to have continued access to such medicines by managing their safe use. It could include medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries, and other risk minimization tools. The FDA also may offer conditional approval subject to, among other things, changes to proposed labeling or the development of adequate controls and specifications. Once approved, the FDA may withdraw the product approval if compliance with pre- and post-marketing requirements is not maintained or if problems occur after the product reaches the marketplace. The FDA may also require one or more Phase 4 post-market studies and surveillance to further assess and monitor the product's safety and effectiveness after commercialization, and may limit further marketing of the product based on the results of these post-marketing studies. In addition, new government requirements, including those resulting from new legislation, may be established, or the FDA's policies may change, which could impact the timeline for regulatory approval or otherwise impact ongoing development programs.

In addition, the FDA and other regulatory authorities may change their policies, issue additional regulations or revise existing regulations, any of which could delay Athira's ability to obtain approvals, increase the costs of compliance or restrict the company's ability to maintain any regulatory approvals it may have obtained. In June 2024, the U.S. Supreme Court overruled the Chevron doctrine, which gives deference to federal agencies' statutory interpretations in litigation against the agencies where the law is ambiguous. This Supreme Court decision may invite various stakeholders to bring lawsuits against the FDA or other federal agencies to challenge longstanding decisions and policies, including FDA's statutory interpretations of market exclusivities and the "substantial evidence" requirements for drug approvals, which could undermine the FDA's authority, lead to uncertainties in the industry, and disrupt the agency's normal operations. Athira cannot predict the full impact of this decision on the company or the pharmaceutical industry in general. Further, changes in the leadership of the FDA and other federal agencies under the new Trump administration can result in further changes in the funding, operations, and policies of the federal agencies, which may impact Athira's clinical development plans and timelines.

Expedited Development and Review Programs

The FDA has a fast track designation program that is intended to expedite or facilitate the process for reviewing new drug products that meet certain criteria. Specifically, new drugs are eligible for fast track designation if they are intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease or condition. With regard to a fast track product, the FDA may consider for review sections of the NDA on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the NDA, the FDA agrees to accept sections of the NDA and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the NDA.

Any product submitted to the FDA for approval, including a product with a fast track designation, may also be eligible for other types of FDA programs intended to expedite development and review, such as priority review and accelerated approval. A product is eligible for priority review if it has the potential to provide safe and effective therapy where no satisfactory alternative therapy exists or a significant improvement in the treatment, diagnosis, or prevention of a disease compared to marketed products. The FDA will attempt to direct additional resources to the evaluation of an application for a new drug designated for priority review in an effort to facilitate the review. The FDA endeavors to review applications with priority review designations within six months of the filing date as compared to ten months for review of new molecular entity NDAs under its current PDUFA review goals.

In addition, a product may be eligible for accelerated approval. Drug products intended to treat serious or life-threatening diseases or conditions may be eligible for accelerated approval upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. As a condition of approval, the FDA may require that a sponsor of a drug receiving accelerated approval perform

adequate and well-controlled post-marketing clinical trials. In addition, the FDA currently requires pre-approval of promotional materials as a condition for accelerated approval, which could adversely impact the timing of the commercial launch of the product.

The Food and Drug Administration Safety and Innovation Act established a category of drugs referred to as "breakthrough therapies" that may be eligible to receive breakthrough therapy designation. A sponsor may seek FDA designation of a product candidate as a "breakthrough therapy" if the product is intended, alone or in combination with one or more other products, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the product may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. The designation includes all of the fast track program features, as well as more intensive FDA interaction and guidance. The breakthrough therapy designation is a distinct status from both accelerated approval and priority review, which can also be granted to the same drug if relevant criteria are met. If a product is designated as breakthrough therapy, the FDA will work to expedite the development and review of such drug.

Fast track designation, priority review, accelerated approval, and breakthrough therapy designation do not change the standards for approval, but may expedite the development or approval process. Even if a product qualifies for one or more of these programs, the FDA may later decide that the product no longer meets the conditions for qualification or decide that the time period for FDA review or approval will not be shortened. The Company may explore some of these opportunities for the Company's drug product candidates as appropriate. On December 29, 2022, the Consolidated Appropriations Act, 2023, including the Food and Drug Omnibus Reform Act ("FDORA"), was signed into law. FDORA made several changes to the FDA's authorities and its regulatory framework, including, among other changes, reforms to the accelerated approval pathway, such as requiring the FDA to specify conditions for post-approval study requirements and setting forth procedures for the FDA to withdraw a product on an expedited basis for non-compliance with post-approval requirements.

Post-Approval Requirements

Any products manufactured or distributed by the Company pursuant to FDA approvals are subject to pervasive and continuing regulation by the FDA, including, among other things, requirements relating to record-keeping, reporting of adverse experiences, periodic reporting, product sampling and distribution, and advertising and promotion of the product. After approval, most changes to the approved product, such as adding new indications or other labeling claims, are subject to prior FDA review and approval. There are continuing, annual program fees for any marketed products. Drug manufacturers and their subcontractors are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP, which impose certain procedural and documentation requirements upon the Company and its third-party manufacturers. Changes to the manufacturing process are strictly regulated, and, depending on the significance of the change, may require prior FDA approval before being implemented. FDA regulations also require investigation and correction of any deviations from cGMP and impose reporting requirements upon the Company and any third-party manufacturers that it may decide to use. Accordingly, manufacturers must continue to expend time, money, and effort in the area of production and quality control to maintain compliance with cGMP and other aspects of regulatory compliance.

The FDA may withdraw approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies

or clinical studies to assess new safety risks; or imposition of distribution restrictions or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product, complete withdrawal of the product from the market or product recalls;
- fines, warning letters, or untitled letters;
- clinical holds on post-approval or Phase IV clinical studies, if applicable;
- refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of product license approvals;
- drug product seizure or detention, or refusal to permit the import or export of products;
- consent decrees, corporate integrity agreements, debarment, or exclusion from federal healthcare programs;
- mandated modification of promotional materials and labeling and the issuance of corrective information;
- the issuance of safety alerts, Dear Healthcare Provider letters, press releases, and other communications containing warnings or other safety information about the product; or
- injunctions or the imposition of civil or criminal penalties.

The FDA closely regulates the marketing, labeling, advertising, and promotion of drug products. A company can make only those claims relating to safety and efficacy that are approved by the FDA and in accordance with the provisions of the approved label. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses. Failure to comply with these requirements can result in, among other things, adverse publicity, warning letters, corrective advertising, and potential civil and criminal penalties. Physicians may prescribe, in their independent professional medical judgment, legally available products for uses that are not described in the product's labeling and that differ from those tested by the Company and approved by the FDA. Physicians may believe that such off-label uses are the best treatment for many patients in varied circumstances. The FDA does not regulate the behavior of physicians in their choice of treatments. The FDA does, however, restrict manufacturer's communications on the subject of off-label use of their products. The federal government has levied large civil and criminal fines against companies for alleged improper promotion of off-label use and has enjoined companies from engaging in off-label promotion. The FDA and other regulatory agencies have also required that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed. However, companies may share truthful and not misleading information that is otherwise consistent with a product's FDA-approved labelling.

Orange Book Listing

In seeking approval of an NDA or a supplement thereto, NDA applicants are required to list with the FDA each patent with claims that cover the applicant's product or an approved method of using the product. Upon FDA approval, each of the patents listed by the NDA applicant is published in the FDA's Approved Drug Products with Therapeutic Equivalence Evaluations, commonly known as the Orange Book. Upon submission of an ANDA or 505(b)(2) NDA, an applicant is required to certify to the FDA concerning any patents listed for the RLD in the Orange Book that:

- no patent information on the drug product that is the subject of the application has been submitted to the FDA;
- such patent has expired;
- the date on which such patent expires; or
- such patent is invalid, unenforceable or will not be infringed upon by the manufacture, use, or sale of the drug product for which the application is submitted.

Generally, the ANDA or 505(b)(2) NDA cannot be approved until all listed patents have expired, except where the ANDA or 505(b)(2) NDA applicant challenges a listed patent through the last type of certification, also known as a paragraph IV certification. If the applicant does not challenge the listed patents or indicates that it is not seeking approval of a patented

method of use, the ANDA or 505(b)(2) NDA application will not be approved until all of the listed patents claiming the referenced product have expired. If the ANDA or 505(b)(2) NDA applicant has provided a paragraph IV certification, the applicant must send notice of the paragraph IV certification to the NDA and patent holders once the application has been accepted for filing by the FDA. The NDA and patent holders may then initiate a patent infringement lawsuit in response to the notice of the paragraph IV certification. If the paragraph IV certification is challenged by an NDA holder, or the patent owner(s) asserts a patent challenge to the paragraph IV certification, the FDA may not approve that application until the earlier of 30 months from the receipt of the notice of the paragraph IV certification, the expiration of the patent, when the infringement case concerning each such patent was favorably decided in the applicant's favor or settled, or such shorter or longer period as may be ordered by a court. This prohibition is generally referred to as the 30-month stay. In instances where an ANDA or 505(b)(2) NDA applicant files a paragraph IV certification, the NDA holder or patent owner(s) regularly take action to trigger the 30-month stay, recognizing that the related patent litigation may take many months or years to resolve. Thus, approval of an ANDA or 505(b)(2) NDA could be delayed for a significant period of time, depending on the patent certification the applicant makes and the reference drug sponsor's decision to initiate patent litigation.

Marketing Exclusivity

Market exclusivity provisions authorized under the FDCA can delay the submission and approval of certain marketing applications for products containing the same active ingredient. The FDCA permits patent term restoration of up to five years as compensation for a patent term lost during product development and FDA regulatory review process to the first applicant to obtain approval of an NDA for a new chemical entity in the United States. Patent-term restoration, however, cannot extend the remaining term of a patent beyond a total of 14 years from the product's approval date. A drug is a new chemical entity if the FDA has not previously approved any other new drug containing the same active moiety, which is the molecule or ion responsible for the action of the drug substance. During the exclusivity period, the FDA may not approve or even accept for review an abbreviated new drug application ("ANDA"), or an NDA submitted under Section 505(b)(2) (505(b)(2) NDA), submitted by another company for another drug based on the same active moiety, regardless of whether the drug is intended for the same indication as the original innovative drug or for another indication, where the applicant does not own or have a legal right of reference to all the data required for approval. However, an application may be submitted after four years if it contains a certification of patent invalidity or non-infringement to one of the patents listed with the FDA by the innovator NDA holder.

The FDCA alternatively provides three years of marketing exclusivity for an NDA, or supplement to an existing NDA if new clinical investigations, other than bioavailability studies, that were conducted or sponsored by the applicant are deemed by the FDA to be essential to the approval of the application, for example new indications, dosages, or strengths of an existing drug. This three-year exclusivity covers only the modification for which the drug received approval on the basis of the new clinical investigations and does not prohibit the FDA from approving ANDAs or 505(b)(2) NDAs for drugs containing the active agent for the original indication or condition of use. Five-year and three-year exclusivity will not delay the submission or approval of a full NDA. However, an applicant submitting a full NDA would be required to conduct or obtain a right of reference to any nonclinical studies and adequate and well-controlled clinical trials necessary to demonstrate safety and effectiveness.

Pediatric exclusivity is another type of marketing exclusivity available in the United States. Pediatric exclusivity provides for an additional six months of marketing exclusivity attached to another period of exclusivity if a sponsor conducts clinical trials in children in response to a written request from the FDA. The issuance of a written request does not require the sponsor to undertake the described clinical trials.

Other Healthcare Laws

Pharmaceutical manufacturers are subject to additional healthcare laws, regulation, and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which they conduct their business. Such laws include, without limitation, U.S. federal anti-kickback, anti-self-referral, false claims, transparency, including the federal Physician Payments Sunshine Act, consumer fraud, pricing reporting, data privacy, data protection, and security laws and regulations as well as similar foreign laws in the jurisdictions outside the U.S. Similar state and local laws and regulations may also restrict business practices in the pharmaceutical industry, such as state anti-kickback and false claims laws, which may apply to business practices, including but not limited to, research, distribution, sales, and marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers, or by patients themselves; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports relating to pricing and marketing information; state and local laws which require the tracking of gifts and other remuneration and any transfer of value provided to physicians, other healthcare providers and entities; and

state and local laws that require the registration of pharmaceutical sales representatives; and state and local laws governing the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by the Health Insurance Portability and Accountability Act of 1996, thus complicating compliance efforts.

The risk of the Company being found in violation of these or other laws and regulations is increased by the fact that many have not been fully interpreted by the regulatory authorities or the courts and their provisions are open to various interpretations. These laws and regulations are subject to change, which can increase the resources needed for compliance and delay drug approval or commercialization. Any action brought against the Company for violations of these laws or regulations, even successfully defended, could cause it to incur significant legal expenses and divert the Company management's attention from the operation of its business. Also, the Company may be subject to private "qui tam" actions brought by individual whistleblowers on behalf of the federal or state governments. Actual or alleged violation of any such laws or regulations may lead to investigations and other claims and proceedings by regulatory authorities and in certain cases, private actors, and violation of any of such laws or any other governmental regulations that apply may result in penalties, including, without limitation, significant administrative, civil and criminal penalties, damages, fines, additional reporting obligations, and oversight if the Company become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws, the curtailment or restructuring of operations, exclusion from participation in government healthcare programs and imprisonment.

Coverage and Reimbursement

Sales of any pharmaceutical product depend, in part, on the extent to which such product will be covered by third-party payors, such as federal, state, and foreign government healthcare programs, commercial insurance, and managed healthcare organizations, and the level of reimbursement for such product by third-party payors. Significant uncertainty exists as to the coverage and reimbursement status of any newly approved product. Decisions regarding the extent of coverage and amount of reimbursement to be provided are made on a plan-by-plan basis. One third-party payor's decision to cover a particular product does not ensure that other payors will also provide coverage for the product. As a result, the coverage determination process can require manufacturers to provide scientific details, information on cost-effectiveness, and clinical support for the use of a product to each payor separately. This can be a time-consuming process, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance.

In addition, third-party payors are increasingly reducing reimbursements for pharmaceutical products and related services. The U.S. government and state legislatures have continued implementing cost-containment programs, including price controls, restrictions on coverage and reimbursement and requirements for substitution of generic products. Third-party payors are increasingly challenging the prices charged, examining the medical necessity and reviewing the cost effectiveness of pharmaceutical products, in addition to questioning their safety and efficacy. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit sales of any product. Decreases in third-party reimbursement for any product or a decision by a third-party payor not to cover a product could reduce physician usage and patient demand for the product.

In international markets, reimbursement and healthcare payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies. For example, the European Union provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. Pharmaceutical products may face competition from lower-priced products in foreign countries that have placed price controls on pharmaceutical products and may also compete with imported foreign products. Furthermore, there is no assurance that a product will be considered medically reasonable and necessary for a specific indication, that it will be considered cost-effective by third-party payors, that an adequate level of reimbursement will be established even if coverage is available, or that the third-party payors' reimbursement policies will not adversely affect the ability for manufacturers to sell products profitably.

U.S. Healthcare Reform

In the United States and certain foreign jurisdictions, there have been, and the Company expects there will continue to be, a number of legislative and regulatory changes to the healthcare system. In March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively, the ACA, was signed into law, which substantially changed the way healthcare is financed by both governmental and private insurers in the United States and was intended to broaden access to health insurance, reduce or constrain the growth of healthcare spending, enhance remedies against fraud and abuse, add new transparency requirements for the healthcare and health insurance industries, impose new taxes and fees on the health industry and impose additional health policy reforms.

Since its enactment, there have been executive, judicial and Congressional challenges to certain aspects of the ACA. For example, in June 2021 the U.S. Supreme Court held that Texas and other challengers had no legal standing to challenge the ACA, dismissing the case on procedural grounds without specifically ruling on the constitutionality of the ACA. Thus, the ACA will remain in effect in its current form. It is possible that the ACA will be subject to judicial or Congressional challenges in the future. It is unclear how any such challenges and healthcare measures promulgated by the new Trump administration will impact the ACA, Athira's business, financial condition and results of operations.

Other legislative changes have been proposed and adopted since the ACA was enacted. These changes include aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, effective April 1, 2013, which, due to subsequent legislative amendments, will stay in effect through 2032 with the exception of a temporary suspension implemented under various novel coronavirus disease, relief legislation. Moreover, there has recently been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted legislation designed, among other things, to bring more transparency to product pricing, to review the relationship between pricing and manufacturer patient programs, and to reform government program reimbursement methodologies for pharmaceutical products. For example, effective January 1, 2024, the American Rescue Plan Act of 2021 eliminated the statutory cap on Medicaid Drug Rebate Program rebates that manufacturers pay to state Medicaid programs. Elimination of this cap may require pharmaceutical manufacturers to pay more in rebates than it receives on the sale of products, which could have a material impact on Athira's business.

In August 2022, the Congress passed the Inflation Reduction Act of 2022, which includes prescription drug provisions that have significant implications for the pharmaceutical industry and Medicare beneficiaries, including allowing the federal government to negotiate a maximum fair price for certain high-priced single source Medicare drugs, imposing penalties and excise tax for manufacturers that fail to comply with the drug price negotiation requirements, requiring inflation rebates for all Medicare Part B and Part D drugs, with limited exceptions, if their drug prices increase faster than inflation, and redesigning Medicare Part D to reduce out-of-pocket prescription drug costs for beneficiaries, among other changes. Only high-expenditure single-source drugs that have been approved for at least 7 years (11 years for single-source biologics) can qualify for negotiation, with the negotiated price taking effect two years after the selection year. For 2026, CMS selected 10 high-cost Medicare Part D drugs in 2023 and the negotiated maximum fair price for each drug has been announced. CMS has selected 15 additional Medicare Part D drugs for negotiated maximum fair pricing in 2027. For 2028, up to an additional 15 drugs, which may be covered under either Medicare Part B or Part D, will be selected, and for 2029 and subsequent years, up to 20 additional Part B or Part D drugs will be selected. Various industry stakeholders, including pharmaceutical companies and the Pharmaceutical Research and Manufacturers of America, have initiated lawsuits against the federal government asserting that the price negotiation provisions of the Inflation Reduction Act are unconstitutional.

Additionally, the One Big Beautiful Bill Act (OBBBA), which was signed into law in July 2025, includes provisions that will impact the United States healthcare system in various ways, including by cuts to Medicaid and introducing new participant work and eligibility requirements for Medicaid coverage, which are expected to significantly change the administration and applicability of Medicaid coverage. In November 2025, CMS announced a voluntary initiative called the GENEROUS Model (GENErating cost Reductions fOr U.S. Medicaid Model) to introduce the option of most-favored-nation pricing to the Medicaid program, whereby a drug manufacturer may voluntarily offer supplemental rebates to participating state Medicaid programs for a manufacturer's covered outpatient drugs. The Company cannot predict the full impact of the OBBBA, executive orders, and new laws focused on reducing prescription drug prices or increasing domestic drug manufacturing

capacity, or other measures that may be implemented by the current administration related to drug pricing, drug supply chain and manufacturing in the United States.

Further, the current administration has issued executive orders focused on decreasing prescription drug prices, including directing the Secretary of Health and Human Services to establish a mechanism through which American patients can buy drugs directly from manufacturers who sell at a most-favored-nation price and directing the U.S. Trade Representative and Secretary of Commerce to take action to ensure foreign countries are not engaged in practices that purposefully and unfairly undercut market prices and drive price hikes in the United States. In 2025, the government announced agreements with major pharmaceutical companies to bring American drug prices in line with the lowest price paid by other developed nations. Such action and any other government measures that use most-favored-nation pricing targets for prescription drugs, including the use of international pricing reference to set drug prices in the United States, or increase generic drug and biosimilar entry sooner than expected, could materially harm the Company's business, including with respect to its ability to set adequate pricing for new drugs to recover its research and development costs.

In addition, individual states in the United States have also become increasingly active in implementing regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures and, in some cases, mechanisms to encourage importation from other countries and bulk purchasing. A number of states are considering or have recently enacted state drug price transparency and reporting laws that could substantially increase the Company's compliance burdens and expose it to greater liability under such state laws once the Company begins commercialization after obtaining regulatory approval for any of the Company's drug products. FDA has authorized the state of Florida to develop Section 804 Importation Programs to import certain prescription drugs from Canada for a limited period of time to help reduce drug costs, provided that Florida's Agency for Health Care Administration meets the requirements set forth by the FDA. Other states may follow Florida.

The Company expects that additional state and federal healthcare reform measures will be adopted in the future. The implementation of cost containment measures or other healthcare reforms may prevent the Company from being able to generate revenue, attain profitability or commercialize its drug candidates. Complying with any new legislation and regulatory changes could be time-intensive and expensive, resulting in a material adverse effect on the Company's business.

Employees and Human Capital Resources

As of November 30, 2025, we had 18 employees, all of whom were full-time and nine of whom were engaged in research and development activities. Six of our employees hold Ph.D. or M.D. degrees. None of our employees is represented by a labor union or covered under a collective bargaining agreement. We consider our relationship with our employees to be good.

Our human capital resources objectives include, as applicable, identifying, recruiting, retaining, incentivizing and integrating our existing and new employees, advisors and consultants. The principal purposes of our equity and cash incentive plans are to attract, retain and reward personnel through the granting of stock-based and cash-based compensation awards, in order to increase stockholder value and the success of our company by motivating such individuals to perform to the best of their abilities and achieve our objectives.

Corporate Information

We were incorporated in Washington as a corporation in March 2011 under the name M3 Biotechnology, Inc. In October 2015, we converted to a Delaware corporation and subsequently changed our name to "Athira Pharma, Inc." Our principal executive office is located at 18706 North Creek Parkway, Suite 104, Bothell Washington 98011. Our telephone number is (425) 620-8501. Our website is www.athira.com. Information contained in, or that can be accessed through, our website is not a part of, and is not incorporated into, this report, and the inclusion of our website address in this report is an inactive textual reference only.

We make available on or through our website certain reports and amendments to those reports that we file with or furnish to the Securities and Exchange Commission ("SEC"), in accordance with the Securities and Exchange Act of 1934. These include our

annual reports on Form 10-K, our quarterly reports on Form 10-Q, and our current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act. We make this information available on or through our website free of charge as soon as reasonably practicable after we electronically file the information with, or furnish it to, the SEC.

Management's Discussion and Analysis - Research and Development Expense

Research and development expenses consist primarily of direct and indirect costs incurred for the Company's research activities, including its drug discovery efforts and the development of its drug candidates, including lasofoxifene and ATH-1105. Direct costs include laboratory materials and supplies, contracted research and manufacturing, clinical trial costs, consulting fees, and other expenses incurred to sustain the Company's research and development program. Indirect costs include personnel-related expenses, consisting of employee salaries, related benefits, and stock-based compensation expense for employees engaged in research and development activities, and facilities and other expenses consisting of direct and allocated expenses for rent and depreciation, and lab consumables.

The Company expenses research and development costs as incurred. Non-refundable advance payments for goods and services that will be used over time for research and development are capitalized and recognized as goods are delivered or as the related services are performed. In-licensing fees and other costs to acquire technologies used in research and development that have not yet received regulatory approval and that are not expected to have an alternative future use are expensed when incurred. The Company tracks direct costs by stage of program, clinical or preclinical. However, the Company does not track indirect costs on a program specific basis because these costs are deployed across multiple programs and, as such, are not separately classified.

The Company cannot reasonably determine the nature, timing, and estimated costs of the efforts that will be necessary to complete the development of, and obtain regulatory approval for, any of its drug candidates, including lasofoxifene or ATH-1105. Drug candidates in later stages of development generally have higher development costs than those in earlier stages. The Company expects to incur increased research and development expenses for the foreseeable future as it engages in research and development activities related to developing its drug candidates, including lasofoxifene and ATH-1105, its drug candidates advance into later stages of development, it conducts larger clinical trials, it seeks regulatory approvals for any drug candidates that successfully complete clinical trials, the Company expands or advances its drug product pipeline, the Company maintains, expands, protects and enforces its intellectual property portfolio, and the Company incurs expenses associated with hiring or retaining personnel to support its research and development efforts.

The process of conducting the necessary clinical research to obtain regulatory approval is costly and time-consuming, and the successful development of the Company's drug candidates is highly uncertain. The Company's research and development expenses may vary significantly based on factors such as:

- research and development activities related to lasofoxifene and ATH-1105;
- the number and scope of preclinical and IND-enabling studies;
- the phases of development of the Company's drug candidates;
- the progress and results of the Company's research and development activities;
- per subject trial costs;
- the number of trials required for regulatory approval;
- the number of sites included in the trials;
- the countries in which the trials are conducted;
- the length of time required to enroll eligible subjects and initiate clinical trials;
- the number of subjects that participate in the trials;

- the drop-out and discontinuation rate of subjects;
- potential additional safety monitoring requested by regulatory agencies;
- the duration of subject participation in the trials and follow-up;
- the cost and timing of manufacturing of the Company's drug candidates;
- the receipt of regulatory approvals from applicable regulatory authorities;
- the timing, receipt and terms of any marketing approvals from applicable regulatory authorities;
- the hiring and retention of research and development personnel;
- the degree to which the Company obtains, maintains, defends and enforces its intellectual property rights;
- the impact of health epidemics on timelines and clinical operations, which may lead to increased costs; and
- the extent to which the Company establishes collaborations, licensing or similar arrangements and the performance of any related third parties.

A change in the outcome of any of these variables with respect to the development of any of the Company's drug candidates could significantly change the costs and timing associated with the development of that drug candidate.

Risk Factors

You should carefully consider the risk factors attached hereto as Exhibit 99.3, in addition to the other information contained in this Current Report on Form 8-K (the "**Form 8-K**"), the Company's Annual Report on Form 10-K filed on February 27, 2025 and the Company's Quarterly Report on Form 10-Q filed on November 6, 2025 (together with the Form 8-K, the "**SEC Reports**"). If any of the events described in the risk factors and the risks described in the SEC Reports occurs, the Company's business, operating results and financial condition could be seriously harmed. The Form 8-K also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of factors that are described below and elsewhere in the Form 8-K. Our Risk Factors are not guarantees that no such conditions exist as of the date of the Form 8-K and should not be interpreted as an affirmative statement that such risks or conditions have not materialized, in whole or in part.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception, we have funded our operations primarily with proceeds from the sale and issuance of common stock, convertible preferred stock, common stock warrants, and convertible notes, and to a lesser extent from grant income and stock option exercises. From our inception through September 30, 2025, we raised aggregate net cash proceeds of $407.4 million primarily from the issuance of our common stock (excluding option exercises), convertible preferred stock, common stock warrants, and convertible notes and as of September 30, 2025, we had $25.2 million in cash, cash equivalents and investments. On December 18, 2025 we announced a private placement of common stock and prefunded warrants to purchase common stock, which, upon closing, will provide us with approximately $90 million in gross proceeds (the "**PIPE Financing**").

Since our inception we have not generated positive cash flows from operations and we have devoted substantially all of our resources to our research and development efforts such as small molecule compound discovery, nonclinical studies and clinical trials, as well as manufacturing activities, establishing and maintaining our intellectual property portfolio, hiring personnel, raising capital, and providing general and administrative support for these operations.

Material Cash and Future Funding Requirements

Our material cash requirements include our operating leases for laboratory and office facilities. As of September 30, 2025, we had lease payment obligations of $1.0 million, with $0.5 million payable within 12 months. For additional information regarding our lease commitments, see Note 7 to our consolidated financial statements included in our Form 10-Q filed on November 6,

2025 for the quarter ended September 30, 2025. Additionally, we have purchase obligations and open purchase orders that support normal operations and are primarily due in the next 12 months. We also have payment obligations to certain of Sermonix's third-party service providers that total approximately $16.8 million, that are primarily due in the next month. These purchase obligations and open purchase orders are generally cancellable in full or in part through the contractual provisions. We anticipate that our research and development expenses and our general and administrative expenses will increase substantially for the foreseeable future in connection with our ongoing activities, particularly as we continue the research and development of, initiate clinical trials of, and seek marketing approval for, lasofoxifene and ATH-1105. Developing lasofoxifene ATH-1105 and conducting clinical trials for the potential treatment of ALS and breast cancer, respectively, and any other indications that we may pursue in the future will require substantial amounts of capital. In addition, if we or a future partner obtain marketing approval for our current or any future product candidates, we expect this would result in significant commercialization expenses related to sales, marketing, manufacturing, and distribution. Furthermore, we expect to continue to incur additional costs associated with operating as a public company.

Based upon our current operating plan, we estimate that our $25.2 million of cash, cash equivalents and investments at September 30, 2025 when combined with the proceeds from the closing of the PIPE Financing will be sufficient to fund our operating expenses and capital expenditure requirements through at least the next 12 months. However, we will need to raise substantial additional capital to fund the development of our drug candidates. Until such time as we can generate significant revenue from drug product sales, we expect to finance our operations through the sale of equity securities, debt financings, or other capital, which could include income from collaboration, licensing or similar arrangements with third parties, or receiving research contributions, or grants. For example, in January 2023, we entered into a sales agreement with Cantor Fitzgerald & Co. ("**Cantor**") and BTIG, LLC ("**BTIG**") to sell shares of our common stock having aggregate sales proceeds of up to $75.0 million, from time to time, subject to applicable limitations on sales pursuant to SEC rules and regulations, through an ATM equity offering program under which Cantor and BTIG are acting as sales agents. We have not sold any securities pursuant to this ATM offering. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our stockholders will be or could be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise funds through collaborations, licenses and other similar arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or drug candidates or grant licenses on terms that may not be favorable to us or may reduce the value of our common stock. Adequate funding may not be available when needed or on terms acceptable to us, or at all. Our ability to raise additional funds may be negatively impacted by potential adverse global economic conditions and disruptions to, and volatility in, the credit and financial markets in the United States and worldwide. If we fail to obtain necessary capital when needed on acceptable terms, or at all, it could force us to delay, limit, reduce or terminate our drug product development programs, commercialization efforts or other operations. Insufficient liquidity may also require us to relinquish rights to drug candidates at an earlier stage of development or on less favorable terms than we would otherwise choose. We cannot assure you that we will ever be profitable or generate positive cash flows from operating activities.

We have based our projections of operating capital requirements on assumptions that may prove to be incorrect and we may use all our available capital resources sooner than we expect. Because of the numerous risks and uncertainties associated with research, development and commercialization of biotechnology products, we are unable to estimate the exact amount of our operating capital requirements. Our future funding requirements will depend on many factors, including, but not limited to:

- the scope, timing, progress and results of our ongoing preclinical studies and clinical trials of our drug candidates;
- the number of trials required for regulatory approval;
- the willingness of the FDA, EMA and any other regulatory agencies to accept lasofoxifene or ATH-1105 clinical trial data, as well as data from any completed and planned clinical and nonclinical studies and other work, as the basis for review and approval of lasofoxifene for breast cancer and ATH-1105 for ALS, and the potential need for additional clinical trials;

- the scope, progress, results and costs of preclinical development, laboratory testing and clinical trials of other drug candidates that we may pursue;
- our ability to establish and maintain collaborations, licensing or other similar arrangements, and the financial terms of any such arrangements, including the timing and amount of any future milestone, royalty or other payments due thereunder;
- the costs, timing and outcome of regulatory review of our drug candidates;
- the costs and timing of future commercialization activities, including drug product manufacturing, marketing, sales and distribution, for any of our drug candidates for which we receive marketing approval;
- the revenue, if any, received from commercial sales of our drug candidates for which we receive marketing approval;
- the costs and timing of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending any intellectual property-related claims;
- the costs related to any legal proceedings;
- any expenses needed to attract, hire and retain skilled personnel;
- the costs of operating as a public company;
- the costs associated with any expansion of our laboratory and office facilities; and
- the extent to which we acquire or in-license other companies' product candidates and technologies or engage in other strategic transactions.

A change in the outcome of any of these or other factors with respect to the development of any of our drug candidates could significantly change the costs and timing associated with the development of that drug candidate. Furthermore, our operating plan may change in the future, and we may need additional funds to meet operational needs and capital requirements associated with such operating plan.

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Forward-Looking Statements

This Current Report on Form 8-K contains certain forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. Forward-looking statements are based on Company management's beliefs and assumptions and on information currently available to management. The statements in this Current Report on Form 8-K that are not purely historical forward-looking statements. In some cases, you can identify forward-looking statements by such words as "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "ongoing," "plan," "possible," "potential," "predict," "on track," "project," "should," "target", "will," "would" or the negative of these terms or words of similar import, although not all forward-looking statements contain these words. You should read these statements carefully because they discuss future expectations, contain projections of future results of operations or financial condition, or state other "forward-looking" information. These statements relate to the Company's future plans, objectives, expectations, intentions and financial performance and the assumptions that underlie these statements. and are based on current expectations that involve risks and uncertainties, such as the Company's plans, projections, objectives, expectations and intentions. These forward-looking statements include, but are not limited to, statements about:

- *the anticipated consummation of the transactions described herein, including without limitation the Private Placement, Sermonix Transaction, and Ligand Agreement;*
- *the Company's expectation that its existing cash, cash equivalents, and investments as of September 30, 2025 when combined with the proceeds it anticipates receiving in the Private Placement will be sufficient to fund its planned operations until 2028 (excluding any cash received from the potential exercise of the PIPE Warrants);*

- *the Company's financial performance;*
- *the Company's ability to obtain funding for its operations, including funding necessary to develop and commercialize its drug candidates and funding necessary for the payment of future milestone and other payments that may be earned by its collaboration partners;*
- *the ability of the Company's nonclinical studies and clinical trials to demonstrate safety and efficacy of its drug candidates;*
- *the success, cost and timing of the Company's development activities, nonclinical studies and clinical trials;*
- *the potential of the Company's Phase 2 ATH-1105 clinical trial and any subsequent clinical trials to show the beneficial characteristics, safety and efficacy of ATH-1105;*
- *the potential of the Company to complete the Phase 3 ELAINE-3 clinical trial for lasofoxifene and any subsequent clinical trials to show the clinical benefits of lasofoxifene;*
- *the rate and degree of market acceptance of the Company's drug candidates;*
- *the potential learnings from the Company's ongoing clinical trials and their ability to inform and improve future clinical development plans;*
- *the timing and focus of the Company's future clinical trials, and the reporting of data from those trials;*
- *anticipated milestone timelines, such as the timing of data releases, and the Company's ability to meet such timelines;*
- *the Company's plans relating to commercializing its drug candidates, if approved;*
- *the Company's plans and ability to establish sales, marketing and distribution infrastructure to commercialize any drug candidates for which it obtains approval;*
- *the Company's ability to attract and retain key managerial, scientific and clinical personnel and the expected contributions of such personnel to the Company;*
- *the Company's ability to contract with third-party suppliers and manufacturers and their ability to perform adequately;*
- *the potential for lasofoxifene to be a new standard of care in the genetically defined patient group;*
- *the accuracy of the Company's estimates regarding expenses, future revenue, capital requirements and needs for additional financing;*
- *the pricing and reimbursement of the Company's drug candidates, if approved;*
- *the Company's reliance on third parties to conduct clinical trials of its drug candidates, and for the manufacture of its drug candidates for nonclinical studies and clinical trials;*
- *the success of competing therapies that are or may become available;*
- *the beneficial characteristics, safety and efficacy of the Company's drug candidates;*
- *regulatory developments in the United States and other jurisdictions;*
- *the Company's ability to obtain and maintain regulatory approval of its drug candidates in the United States and other jurisdictions, and any related restrictions, limitations or warnings in the label of any approved drug candidate;*

- *future agreements with third parties in connection with the commercialization of the Company's drug candidates;*
- *the Company's plans, capacity and capability relating to the further development and manufacturing of its drug candidates, including additional indications for which it may pursue regulatory approval;*
- *the Company's plans and ability to obtain or protect intellectual property rights, including extensions of existing patent terms where available;*
- *the scope of protection the Company is able to establish and maintain for intellectual property rights covering its drug candidates and technology;*
- *the outcome of legal proceedings which may in the future be instituted against the Company and certain of its directors and officers;*
- *the actions by activist stockholders, which have in the past been, and may in the future be, disruptive and could cause uncertainty about the strategic direction of the Company's business;*
- *the size and growth potential of the markets for the Company's drug candidates, if approved for commercial use, and the Company's ability to serve those markets;*
- *the potential benefits of any strategic collaborations, partnerships, or other transactions the Company may enter into;*
- *the Company's expectations regarding the time during which it will be an emerging growth company under the JOBS Act; and*
- *the Company's expected rebranding efforts.*

These forward-looking statements are subject to certain risks and uncertainties that could cause actual results to differ materially from those anticipated in the forward-looking statements. Factors that might cause such a difference include, but are not limited to, those discussed in the Company's Risk Factors included as Exhibit 99.3 to this Current Report on Form 8-K (the "Risk Factors") and elsewhere in this Current Report on Form 8-K. These statements, like all statements in this report, speak only as of their date and the Company undertakes no obligation to update or revise these statements in light of future developments. The Company's ability to consummate the transactions described herein and advance the development of its product candidates thereafter are subject to risks and uncertainties, including: (i) the risk that the conditions to the closing of any or all of the transactions described herein are not satisfied; (ii) uncertainties as to the timing of the consummation of each of the proposed transactions and the ability of each of the parties thereto to consummate them; (iii) unexpected costs, charges or expenses resulting from the transactions; (iv) potential adverse reactions or changes to business relationships resulting from the announcement or completion of any or all of the proposed transactions; and (v) risks associated with the possible failure to realize certain anticipated benefits of any or all of the proposed transactions, including with respect to future financial and operating results. The Company's Risk Factors are not guarantees that no such conditions exist as of the date of this report and should not be interpreted as an affirmative statement that such risks or conditions have not materialized, in whole or in part.

In addition, statements that "we believe" or "the Company believes" and similar statements reflect the Company's beliefs and opinions on the relevant subject. These statements are based upon information available to the Company as of the date of this report, and although the Company believes such information forms a reasonable basis for such statements, such information may be limited or incomplete, and the Company's statements should not be read to indicate that the Company has conducted a thorough inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and you are cautioned not to unduly rely upon these statements.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit No.	Description
4.1	Form of PIPE Pre-Funded Warrant
4.2	Form of PIPE Series A Common Warrant
4.3	Form of PIPE Series B Common Warrant
4.4	Form of Sermonix Pre-Funded Warrant
4.5	Form of PIPE Registration Rights Agreement
4.6	Form of Sermonix Registration Rights Agreement
10.1	Securities Purchase Agreement dated December 18, 2025, by and among the Company and the PIPE Purchasers
10.2	Securities Purchase Agreement dated December 18, 2025, by and between the Company and Sermonix Pharmaceuticals, Inc.
99.1	Press release dated December 18, 2025.
99.2	Company corporate presentation
99.3	Risk factors of Athira Pharma, Inc.
104	Cover Page Interactive Data File (formatted as Inline XBRL)

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 thereunto duly authorized.

Athira Pharma, Inc.

Date: December 18, 2025

By: /s/ Mark Litton
Mark Litton
President and Chief Executive Officer

Exhibit 4.1

THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON THE EXERCISE OF THIS WARRANT (THE "SECURITIES") HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES. THE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE SOLD, TRANSFERRED OR ASSIGNED UNLESS (I) SUCH SECURITIES HAVE BEEN REGISTERED FOR SALE PURSUANT TO THE SECURITIES ACT, (II) SUCH SECURITIES MAY BE SOLD PURSUANT TO RULE 144 UNDER THE SECURITIES ACT (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION BY THE HOLDER), (III) THE COMPANY HAS RECEIVED AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO IT THAT SUCH TRANSFER MAY LAWFULLY BE MADE WITHOUT REGISTRATION UNDER THE SECURITIES ACT, OR (IV) THE SECURITIES ARE TRANSFERRED WITHOUT CONSIDERATION TO AN AFFILIATE OF SUCH HOLDER OR A CUSTODIAL NOMINEE (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION). [NO HEDGING TRANSACTIONS CAN BE CONDUCTED WITH REGARD TO THIS WARRANT EXCEPT AS PERMITTED BY THE SECURITIES ACT.] NOTWITHSTANDING THE FOREGOING, THE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN OR FINANCING ARRANGEMENT SECURED BY THE SECURITIES.

FORM OF PRE-FUNDED WARRANT TO PURCHASE COMMON STOCK

Number of Shares: [ ] (subject to adjustment)

Warrant No. [ ] Original Issue Date: December [ ], 2025

Athira Pharma, Inc., a Delaware corporation (the "**Company**"), hereby certifies that, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, [ ] or its registered assigns (the "**Holder**"), is entitled, subject to the terms set forth below, to purchase from the Company up to a total of [ ] shares of common stock, $0.0001 par value per share (the "**Common Stock**"), of the Company (each such share, a "**Warrant Share**" and all such shares, the "**Warrant Shares**") at an exercise price per share equal to $0.001 (the "**Exercise Price**"), in each case as adjusted from time to time as provided in Section 9, upon surrender of this Pre-Funded Warrant to Purchase Common Stock (including any Warrants to Purchase Common Stock issued in exchange, transfer or replacement hereof, the "**Warrant**") at any time and from time to time on or after the date hereof (the "**Initial Exercise Date**"), subject to the following terms and conditions:

This Warrant is one of a series of similar warrants issued pursuant to that certain Securities Purchase Agreement, dated December 18, 2025 (the "**Subscription Date**"), by and among the Company and the Investors identified therein (the "**Purchase Agreement**").

1. Definitions. For purposes of this Warrant, the following terms shall have the following meanings:

"**Affiliate**" means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediates, controls, is controlled by or is under common control with such Person.

"**Attribution Parties**" means, collectively, the following Persons and entities: (i) any direct or indirect Affiliates of the Holder, (ii) any investment vehicle, including, any funds, feeder funds or managed accounts, currently, or from time to time after the date hereof, directly or indirectly managed by the Holder's investment manager or any of its Affiliates or principals, (iii) any Person acting as a Group together with the Holder or any Attribution Parties and (iv) any other Persons whose beneficial ownership of the Company's Common Stock reasonably could be aggregated with the Holder's and/or any other Attribution Parties for purposes of Section 13(d) or Section 16 of the Exchange Act. For clarity, the purpose of the foregoing is to subject collectively the Holder and all other Attribution Parties to the Maximum Percentage.

"**Closing Sale Price**" means, for any security as of any date, the last trade price for such security on the Principal Trading Market for such security, as reported by Bloomberg Financial Markets, or, if such Principal Trading Market begins to operate on an extended hours basis and does not designate the last trade price, then the last trade price of such security prior to 4:00 P.M., New York City time, as reported by Bloomberg Financial Markets, or if the foregoing do not apply, the last trade price of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg Financial Markets. If the Closing Sale Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Sale Price of such security on such date shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then the Board of Directors of the Company shall use its good faith judgment to determine the fair market value. The Board of Directors' determination shall be binding upon all parties absent demonstrable error. All such determinations shall be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during the applicable calculation period.

"**Commission**" means the U.S. Securities and Exchange Commission.

"**Exchange Act**" means the U.S. Securities Exchange Act of 1934, as amended, and all of the rules and regulations promulgated thereunder.

"**Group**" shall have the meaning ascribed to it in Section 13(d) of the Exchange Act, and all related rules, regulations and jurisprudence.

"**Person**" means an individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, incorporated or unincorporated association, joint venture, government (or an agency or subdivision thereof) or any other entity or organization.

"**Principal Trading Market**" means the national securities exchange or other trading market on which the Common Stock is primarily listed on and quoted for trading, which, as of the Original Issue Date, shall be the Nasdaq Capital Market.

"**Securities Act**" means the U.S. Securities Act of 1933, as amended, and all of the rules and regulations promulgated thereunder.

"**Settlement Period**" means the standard settlement period, expressed in a number of Trading Days, for the Principal Trading Market with respect to the Common Stock that is in effect

on the date of delivery of an applicable Notice of Exercise, which as of the Original Issue Date was "T+1."

"**Trading Day**" means any weekday on which the Principal Trading Market is normally open for trading.

"**Transfer Agent**" means Computershare Inc., the Company's transfer agent and registrar for the Common Stock, and any successor appointed in such capacity.

"**Warrant Agent**" means the Company, and any successor appointed in such capacity.

2. Issuance of Securities; Registration of Warrants. The Company shall register ownership of this Warrant, upon records to be maintained by the Company for that purpose (the "**Warrant Register**"), in the name of the record Holder (which shall include the initial Holder or, as the case may be, any assignee to which this Warrant is permissibly assigned hereunder) from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. Registration of Transfers. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto in Schedule 2 duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Subject to compliance with all applicable securities laws, the Company shall, or will cause its Warrant Agent to, register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, and payment for all applicable transfer taxes (if any). Upon any such registration or transfer, a new warrant to purchase Common Stock in substantially the form of this Warrant (any such new warrant, a "**New Warrant**") evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder has in respect of this Warrant. The Company shall, or will cause its Warrant Agent to, prepare, issue and deliver at the Company's own expense any New Warrant under this Section 3. Until due presentment for registration of transfer, the Company may treat the registered Holder hereof as the owner and holder for all purposes, and the Company shall not be affected by any notice to the contrary.

4. Exercise of Warrants.

(a) All or any part of this Warrant shall be exercisable by the registered Holder in any manner permitted by this Warrant (including Section 11) at any time and from time to time on or after the Initial Exercise Date, and such rights shall not expire until exercised in full.

(b) The Holder may exercise this Warrant by delivering to the Warrant Agent (with a copy to the Company) (i) an exercise notice, in the form attached as Schedule 1 hereto (the

"**Exercise Notice**"), completed and duly signed, and (ii) payment of the Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a "cashless exercise" if so indicated in the Exercise Notice pursuant to Section 10 below), and the date on which the last of such items is delivered to the Company (as determined in accordance with the notice provisions hereof) is an **"Exercise Date**." The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. No ink original Exercise Notice shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Exercise Notice be required. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares, if any. The aggregate exercise price of this Warrant, except for the Exercise Price, was pre-funded to the Company on or before the Initial Exercise Date, and consequently no additional consideration (other than the Exercise Price) shall be required to be paid by the Holder to effect any exercise of this Warrant.

(c) The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this section, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.

5. Delivery of Warrant Shares.

(a) Upon exercise of this Warrant, the Company shall promptly (but in no event later than the number of Trading Days comprising the Settlement Period following the Exercise Date) (such date, the "**Warrant Share Delivery Date**"), upon the request of the Holder, cause the Transfer Agent to credit such aggregate number of shares of Common Stock specified by the Holder in the Exercise Notice and to which the Holder is entitled pursuant to such exercise (the "**Exercise Shares**") to (i) the Holder's or its designee's balance account with The Depository Trust Company ("**DTC**") through its Deposit Withdrawal At Custodian system or (ii) in book-entry form via a direct registration system ("**DRS**") maintained by or on behalf of the Transfer Agent, in each case, so long as either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or the resale of such Warrant Shares by the Holder or (B) the Exercise Shares are eligible for resale by the Holder without volume or manner-of-sale restrictions pursuant to Rule 144 promulgated under the Securities Act (assuming cashless exercise of this Warrant). If (A) and (B) above are not true, the Company shall cause the Transfer Agent to either (i) record the Exercise Shares in the name of the Holder or its designee on the certificates reflecting the Exercise Shares with an appropriate legend regarding restriction on transferability, which shall be issued and dispatched by overnight courier to the address as specified in the Exercise Notice, and on the Company's share register or (ii) issue such Exercise Shares in the name of the Holder or its designee in restricted book-entry form in the Company's share register. The Holder, or any Person so designated by the Holder to receive Warrant Shares, shall be deemed to have become the holder of record of such Warrant Shares as of the Exercise Date, irrespective of the date such Warrant Shares are credited to the Holder's DTC account, the date of the book entry positions or the date of delivery of the certificates evidencing such Exercise Shares, as the case may be.

(b) In addition to any other rights available to the Holder, if the Company fails to deliver to the Holder or its designee Exercise Shares in the manner required pursuant to Section 5(a) within the Settlement Period following the Exercise Date (other than a failure caused by

incorrect or incomplete information provided by the Holder to the Company) and the Holder or the Holder's broker on its behalf purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "**Buy-In**") but did not receive within the Settlement Period, then the Company shall, within two Trading Days after the Holder's request and in the Holder's sole discretion, promptly honor its obligation to deliver to the Holder or its designee the Exercise Shares pursuant to Section 5(a) and pay cash to the Holder in an amount equal to the excess (if any) of the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased in the Buy-In, less the product of (A) the number of shares of Common Stock purchased in the Buy-In, times (B) the Closing Sale Price of a share of Common Stock on the Exercise Date. The Holder shall provide the Company written notice promptly after the occurrence of a Buy-In, indicating the amounts payable to the Holder in respect of the Buy-In together with applicable confirmations and other evidence reasonably requested by the Company.

(c) To the extent permitted by law and subject to Section 5(b), the Company's obligations to issue and deliver Warrant Shares in accordance with and subject to the terms hereof (including the limitations set forth in Section 11 below) are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance that might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares. Subject to Section 5(b), nothing herein shall limit the Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver Exercise Shares; provided, however, that the Holder shall not be entitled to both (i) require the Company to reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not timely honored and (ii) receive the number of shares of Common Stock that would have been issued if the Company had timely complied with its delivery requirements under Section 5(a).

(d) If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 5(a) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise by delivering written notice to the Company at any time prior to the delivery of the applicable Warrant Shares.

(e) If this Warrant shall have been exercised in part, the Company shall, at the request of the Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

6. Charges, Taxes and Expenses. Issuance and delivery of Exercise Shares shall be made without charge to the Holder for any issue or transfer tax, transfer agent fee or other incidental tax or expense (excluding any applicable stamp duties) in respect of the issuance of such

shares, all of which taxes and expenses shall be paid by the Company; provided, however, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any Warrant Shares or the Warrants in a name other than that of the Holder or an Affiliate thereof. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

7. Replacement of Warrant. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a New Warrant, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction (in such case) and, in each case, a customary and reasonable contractual indemnity, if requested by the Company. Applicants for a New Warrant under such circumstances shall also comply with such other reasonable regulations and procedures as the Company may prescribe. If a New Warrant is requested as a result of a mutilation of this Warrant, then the Holder shall deliver such mutilated Warrant to the Company as a condition precedent to the Company's obligation to issue the New Warrant.

8. Reservation of Warrant Shares. The Company covenants that it will, at all times while this Warrant is outstanding, reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares that are initially issuable and deliverable upon the exercise of this entire Warrant, free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 9). The failure of the Company to reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock a sufficient number of shares of Common Stock to enable it to issue Warrant Shares upon exercise of this Warrant as herein provided is referred to herein as an "**Authorized Share Failure**." The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and non-assessable. The Company will take all such action as may be reasonably necessary to assure that such shares of Common Stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the Common Stock may be listed. The Company further covenants that it will not, without the prior written consent of the Holder, take any actions to increase the par value of the Common Stock at any time while this Warrant is outstanding. In furtherance of the Company's obligations set forth in this Section 8, as soon as practicable after the date of the occurrence of an Authorized Share Failure, but in no event later than ninety (90) days after the occurrence of such Authorized Share Failure, the Company shall hold a meeting of its stockholders for the approval of an increase in the number of authorized shares of Common Stock. In connection with such meeting, the Company shall provide each stockholder with a proxy statement and shall use its reasonable best efforts to solicit its stockholders' approval of such increase in authorized shares of Common Stock and to cause its board of directors to recommend to the stockholders that they approve such proposal. Notwithstanding the foregoing, if at any such time of an Authorized Share Failure, the Company is able to obtain the written consent of a majority of the shares of its issued and outstanding shares of Common Stock to approve the increase in the number of authorized shares of Common Stock,

the Company may satisfy this obligation by obtaining such consent and submitting for filing with the SEC an Information Statement on Schedule 14C.

9. Certain Adjustments. The Exercise Price and number of Warrant Shares issuable upon exercise of this Warrant (the "**Number of Warrant Shares**") are subject to adjustment from time to time as set forth in this Section 9.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock issued and outstanding on the Subscription Date and in accordance with the terms of such stock on the Subscription Date or as amended, that is payable in shares of Common Stock, (ii) subdivides its outstanding shares of Common Stock into a larger number of shares of Common Stock, (iii) combines its outstanding shares of Common Stock into a smaller number of shares of Common Stock or (iv) issues by reclassification of shares of capital stock any additional shares of Common Stock of the Company, then in each such case the Number of Warrant Shares shall be multiplied by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately after such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately before such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, provided, however, that if such record date shall have been fixed and such dividend is not fully paid on the date fixed therefor, the Number of Warrant Shares shall be recomputed accordingly as of the close of business on such record date and thereafter the Number of Warrant Shares shall be adjusted pursuant to this paragraph as of the time of actual payment of such dividends. Any adjustment pursuant to clause (ii), (iii) or (iv) of this paragraph shall become effective immediately after the effective date of such subdivision, combination or issuance.

(b) Pro Rata Distributions. If, on or after the Subscription Date, the Company shall declare or make any dividend or other pro rata distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property, options, evidence of indebtedness or any other assets by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction, but, for the avoidance of doubt, excluding any distribution of shares of Common Stock subject to Section 9(a), any distribution of Purchase Rights (as defined below) subject to Section 9(c) and any Fundamental Transaction (as defined below) subject to Section 9(d)) (a "**Distribution**") then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage (as defined below)) immediately before the date on which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution; *provided*, that to the extent that the Holder's right to participate in any such Distribution would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Distribution to such extent (and shall not be entitled to beneficial ownership of such shares of Common Stock as a result of such Distribution to such extent) and

the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such Distribution (and any Distributions declared or made on such initial Distribution or on any subsequent Distribution held similarly in abeyance) to the same extent as if there had been no such limitation.

(c) Purchase Rights. If at any time on or after the Subscription Date, the Company grants, issues or sells any Options, Convertible Securities or rights to purchase stock, warrants, securities or other property, in each case pro rata to the record holders of any class of Common Stock (the "**Purchase Rights**"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of Common Stock are to be determined for the grant, issuance or sale of such Purchase Rights; *provided*, that to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Purchase Right to such extent (and shall not be entitled to beneficial ownership of such Common Stock as a result of such Purchase Right (and beneficial ownership) to such extent) and at the Holder's election, in its sole discretion, either (1) such Purchase Right to such extent shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such right (and any Purchase Right granted, issued or sold on such initial Purchase Right or on any subsequent Purchase Right to be held similarly in abeyance) to the same extent as if there had been no such limitation or (2) the Company shall offer the Holder the right upon exercise of such Purchase Right to acquire a security (e.g. a pre-funded warrant) that would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage but will otherwise to the extent possible have economic and other rights, preferences and privileges substantially consistent and on par with the securities or other property issuable upon exercise of the originally offered Purchase Rights). As used in this Section 9(c), (i) "Options" means any rights, warrants or options to subscribe for or purchase shares of Common Stock or Convertible Securities and (ii) "Convertible Securities" mean any stock or securities (other than Options) directly or indirectly convertible into or exercisable or exchangeable for shares of Common Stock.

(d) Fundamental Transactions. If, at any time while this Warrant is outstanding (i) the Company effects any merger or consolidation of the Company with or into another Person, in which the Company is not the surviving entity or in which the stockholders of the Company immediately prior to such merger or consolidation do not own, directly or indirectly, at least 50% of the voting power of the surviving entity immediately after such merger or consolidation, (ii) the Company effects any sale to another Person of all or substantially all of its assets in one or a series of related transactions, (iii) pursuant to any tender offer or exchange offer (whether by the Company or another Person), holders of capital stock tender shares representing more than 50% of the voting power of the capital stock of the Company and the Company or such other Person,

as applicable, accepts such tender for payment, (iv) the Company consummates a stock purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person whereby such other Person acquires more than 50% of the voting power of the capital stock of the Company (except for any such transaction in which the stockholders of the Company immediately prior to such transaction maintain, in substantially the same proportions, the voting power of such Person immediately after the transaction) or (v) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than as a result of a subdivision or combination of shares of Common Stock covered by Section 9(a) above) (in any such case, a "**Fundamental Transaction**"), then following such Fundamental Transaction the Holder shall have the right to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant (including any Distributions or Purchase Rights then held in abeyance pursuant to Sections 9(b) or 9(c) above) without regard to any limitations on exercise contained herein (the "**Alternate Consideration**"). If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. The Company shall not effect any Fundamental Transaction in which the Company is not the surviving entity or the Alternate Consideration includes securities of another Person unless (i) the Alternate Consideration is solely cash and the Company provides for the simultaneous "cashless exercise" of this Warrant pursuant to Section 10 below or (ii) prior to or simultaneously with the consummation thereof, any successor to the Company, surviving entity or other Person (including any purchaser of assets of the Company) shall assume the obligation to deliver to the Holder such Alternate Consideration as, in accordance with the foregoing provisions, the Holder may be entitled to receive, and the other obligations under this Warrant. The provisions of this paragraph (d) shall similarly apply to subsequent transactions analogous to a Fundamental Transaction type.

(e) Number of Warrant Shares. Simultaneously with any adjustment to the Number of Warrant Shares pursuant to Section 9, the Exercise Price shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price payable hereunder for the increased or decreased Number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment. Notwithstanding the foregoing, in no event may the Exercise Price be adjusted below the par value of the Common Stock then in effect.

(f) Calculations. All calculations under this Section 9 shall be made to the nearest one-tenth of one cent or the nearest share, as applicable.

(g) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 9, the Company at its expense will promptly compute such adjustment, in good faith, in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment, including a statement of the adjusted Exercise Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable),

describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder and to the Company's transfer agent.

(h) Notice of Corporate Events. If, while this Warrant is outstanding, the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including, without limitation, any granting of rights or warrants to subscribe for or purchase any capital stock of the Company or any subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then the Company shall deliver to the Holder a notice of such transaction at least ten days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice. In addition, if while this Warrant is outstanding, the Company authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction contemplated by Section 9(d), the Company shall deliver to the Holder a notice of such Fundamental Transaction at least 15 days prior to the date such Fundamental Transaction is consummated and the Company shall contemporaneously with any such delivery (or on or prior to 9:00 a.m., New York city time on the business day following a notice to the Holder) publicly disclose such material, nonpublic information on a Current Report on Form 8-K or otherwise.

10. Payment of Exercise Price. Notwithstanding anything contained herein to the contrary, the Holder may, in its sole discretion, satisfy its obligation to pay the Exercise Price through a "cashless exercise", in which event the Company shall issue to the Holder the number of Warrant Shares in an exchange of securities effected pursuant to Section 3(a)(9) of the Securities Act, determined as follows:

$$X = Y [(A-B)/A]$$

where:

"X" equals the number of Warrant Shares to be issued to the Holder;

"Y" equals the total number of Warrant Shares with respect to which this Warrant is then being exercised if such exercise were by means of a cash exercise rather than a cashless exercise;

"A" equals the Closing Sale Price of the shares of Common Stock (as reported by Bloomberg Financial Market) as of the Trading Day on the date immediately preceding the Exercise Date); and

"B" equals the Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

For purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Warrant Shares issued in a "cashless exercise" transaction shall be deemed to have been acquired by the Holder, and the holding period for the Warrant Shares shall be deemed to have commenced, on the Original Issue Date (provided that the Commission continues to take the position that such treatment is proper at the time of such exercise). In the event that a registration statement registering the issuance of Warrant Shares is, for any reason, not effective at the time of exercise of this Warrant, then this Warrant may only be exercised through a cashless exercise, as set forth in this Section 10. If the Warrant Shares are issued in such a cashless exercise, the Company acknowledges and agrees that, in accordance with Section 3(a)(9) of the Securities Act, the Exercise Shares issued in such exercise shall take on the registered characteristics of the Warrants being exercised and may be tacked on to the holding period of the Warrants being exercised. Except as set forth in Sections 5(b) (Buy-In Remedy) and 12 (No Fractional Shares), in no event will the exercise of this Warrant be settled in cash.

11. Limitations on Exercise.

(a) Notwithstanding anything to the contrary contained herein, the Company shall not effect the exercise of any portion of this Warrant, and the Holder of this Warrant shall not have the right to exercise any portion of the Warrant, and any such exercise shall be null and void ab initio and treated as if the exercise had not been made, to the extent that immediately prior to or following such exercise, the Holder, together with the Attribution Parties, beneficially owns or would beneficially own as determined in accordance with Section 13(d) of the Exchange Act and the rules promulgated thereunder, in excess of [4.99][9.99]% (the "**Maximum Percentage**") of the Common Stock that would be issued and outstanding following such exercise. For purposes of calculating beneficial ownership for determining whether the Maximum Percentage is or will be exceeded, the aggregate number of shares of Common Stock held and/or beneficially owned by the Holder together with the Attribution Parties, shall include the number of shares of Common Stock held and/or beneficially owned by the Holder together with the Attribution Parties plus the number of shares of Common Stock issuable upon exercise of the relevant Warrant with respect to which the determination is being made but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, unexercised Warrant held and/or beneficially owned by the Holder or the Attribution Parties and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company held and/or beneficially owned by such Holder or any Attribution Party (including, without limitation, any convertible notes, convertible stock or warrants) that are subject to a limitation on conversion or exercise analogous to the limitation contained herein. For purposes of this Paragraph 11(a), beneficial ownership of the Holder or the Attribution Parties shall, except as set forth in the immediately preceding sentence, be calculated and determined in accordance with Section 13(d) of the Exchange Act and the rules promulgated thereunder. For purposes of this Warrant, in determining the number of outstanding shares of Common Stock, a Holder of this Warrant may rely on the number of outstanding shares of Common Stock as reflected in (1) the Company's most recent Form 10-K, Form 10-Q, Current Report on Form 8-K or other public filing with the Securities and Exchange Commission, as the case may be, (2) a more recent public announcement by the Company or (3) any other notice by the Company or the Company's transfer agent setting forth the number of shares of Common Stock outstanding (such issued and outstanding shares, the "**Reported Outstanding Share Number**"). For any reason at any time, upon the written or oral request of the Holder, the Company shall within one business day confirm orally and in writing or

by electronic mail to the Holder the number of shares of Common Stock then outstanding. The Holder shall disclose to the Company the number of shares of Common Stock that it, together with the Attribution Parties holds and/or beneficially owns and has the right to acquire through the exercise of derivative securities and any limitations on exercise or conversion analogous to the limitation contained herein contemporaneously or immediately prior to submitting an Exercise Notice for the relevant Warrant. If the Company receives an Exercise Notice from the Holder at a time when the actual number of outstanding shares of Common Stock is less than the Reported Outstanding Share Number, the Company shall (i) notify the Holder in writing of the number of shares of Common Stock then outstanding and, to the extent that such Exercise Notice would otherwise cause the Holder's, together with the Attribution Parties', beneficial ownership, as determined pursuant to this Section 11(a), to exceed the Maximum Percentage, the Holder must notify the Company of a reduced number of Warrant Shares to be purchased pursuant to such Exercise Notice (the number of shares by which such purchase is reduced, the "**Reduction Shares**") and (ii) as soon as reasonably practicable, the Company shall return to the Holder any exercise price paid by the Holder for the Reduction Shares. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder and the Attribution Parties since the date as of which the Reported Outstanding Share Number was reported. In the event that the issuance of Common Stock to the Holder upon exercise of this Warrant results in the Holder, together with the Attribution Parties, being deemed to beneficially own, in the aggregate, more than the Maximum Percentage of the number of outstanding shares of Common Stock (as determined under Section 13(d) of the Exchange Act), the number of shares so issued by which the Holder's, together with the Attribution Parties', aggregate beneficial ownership exceeds the Maximum Percentage (the "**Excess Shares**") shall be deemed null and void and shall be cancelled ab initio, and the Holder and/or the Attribution Parties shall not have the power to vote or to transfer the Excess Shares. As soon as reasonably practicable after the issuance of the Excess Shares has been deemed null and void, the Company shall return to the Holder the exercise price paid by the Holder for the Excess Shares. By written notice to the Company, a Holder of this Warrant may from time to time increase or decrease the Maximum Percentage to any other percentage specified in such notice; provided that such other percentage shall not be in excess of [4.99%][19.99% unless Stockholder Approval (as defined in the Purchase Agreement) has been obtained]; provided further that] any increase in the Maximum Percentage will not be effective until the 61st day after such notice is delivered to the Company and shall not negatively affect any partial exercise effected prior to such change.

(b) This Section 11 shall not restrict the number of shares of Common Stock which a Holder or the Attribution Parties may receive or beneficially own in order to determine the amount of securities or other consideration that such Holder or the Attribution Parties may receive in the event of (i) Distribution as contemplated in Section 9(b), (ii) Purchase Rights as contemplated in Section 9(c) or (iii) a Fundamental Transaction as contemplated in Section 9(d) of this Warrant. For purposes of clarity, the shares of Common Stock issuable pursuant to the terms of this Warrant in excess of the Maximum Percentage shall not be deemed to be beneficially owned by the Holder or the Attribution Parties for any purpose including for purposes of Section 13(d) of the Exchange Act and the rules promulgated thereunder or Section 16 of the Exchange Act and the rules promulgated thereunder, including Rule 16a-1(a)(1). No prior inability to exercise this Warrant pursuant to this paragraph shall have any effect on the applicability of the provisions of this paragraph with respect to any subsequent determination of exercisability. The provisions of

this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 11 to the extent necessary to correct this paragraph or any portion of this paragraph which may be defective or inconsistent with the intended beneficial ownership limitation contained in this Section 11 or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitation contained in this paragraph may not be waived and shall apply to a successor holder of this Warrant.

12.No Fractional Shares. No fractional Warrant Shares will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares that would otherwise be issuable, the number of Warrant Shares to be issued shall be rounded down to the next whole number and the Company shall pay the Holder in cash the fair market value (based on the Closing Sale Price) for any such fractional shares.

13.Notices. Any and all notices or other communications or deliveries hereunder (including, without limitation, any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered by confirmed e-mail at the e-mail address included in the signature block attached hereto for the Company or, for the Holder, as specified in the books and records of the Transfer Agent prior to 5:30 P.M., New York City time, on a Trading Day (as applicable), (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via confirmed e-mail at the e-mail address specified in the books and records of the Transfer Agent on a day that is not a Trading Day or later than 5:30 P.M., New York City time, on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service specifying next business day delivery, or (iv) upon actual receipt by the Person to whom such notice is required to be given, if by hand delivery.

14.Warrant Agent. The Company shall initially serve as warrant agent under this Warrant. Upon 30 days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

15.Miscellaneous.

(a) No Rights as a Stockholder. Except as otherwise set forth in this Warrant, the Holder, solely in such Person's capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person's capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, amalgamation, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which such Person is then

entitled to receive upon the due exercise of this Warrant. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities (upon exercise of this Warrant or otherwise) or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors of the Company.

(b) Further Assurances. Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate or articles of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (a) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (b) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and non-assessable Warrant Shares upon the exercise of this Warrant, and (c) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof as may be necessary to enable the Company to perform its obligations under this Warrant. Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

(c) Successors and Assigns. Subject to compliance with applicable securities laws, this Warrant may be assigned by the Holder. This Warrant may not be assigned by the Company without the written consent of the Holder, except to a successor in the event of a Fundamental Transaction that complies with Section 9(d). This Warrant shall be binding on and inure to the benefit of the Company and the Holder and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant.

(d) Amendment and Waiver. This Warrant may be amended only in writing signed by the Company and the Holder, or their successors and assigns. The Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company has obtained the written consent of the Holder.

(e) Acceptance. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

(f) Governing Law; Jurisdiction. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW THEREOF. EACH OF THE COMPANY

AND THE HOLDER HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HEREWITH OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PERSON AT THE ADDRESS IN EFFECT FOR NOTICES TO IT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. EACH OF THE COMPANY AND THE HOLDER HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

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

(h) Severability. If any part or provision of this Warrant is held unenforceable or in conflict with the applicable laws or regulations of any jurisdiction, the invalid or unenforceable part or provisions shall be replaced with a provision which accomplishes, to the extent possible, the original business purpose of such part or provision in a valid and enforceable manner, and the remainder of this Warrant shall remain binding upon the parties hereto.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

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

ATHIRA PHARMA, INC.

By: _____
Name: _____
Title: _____

SCHEDULE 1

FORM OF EXERCISE NOTICE

[To be executed by the Holder to purchase shares of Common Stock under the Warrant]

Ladies and Gentlemen:

(1) The undersigned is the Holder of Warrant No. __ (the "Warrant") issued by **Athira Pharma, Inc.**, a **Delaware** corporation (the "Company"). Capitalized terms used herein and not otherwise defined herein have the respective meanings set forth in the Warrant.

(2) The undersigned hereby exercises its right to purchase _____ Warrant Shares pursuant to the Warrant.

(3) The Holder intends that payment of the Exercise Price shall be made as (check one):

☐ Cash Exercise

☐ "Cashless Exercise" under Section 10 of the Warrant

(4) If the Holder has elected a Cash Exercise, the Holder shall pay the sum of $ _____ in immediately available funds to the Company in accordance with the terms of the Warrant.

(5) Pursuant to this Exercise Notice, the Company shall deliver to the Holder Warrant Shares determined in accordance with the terms of the Warrant. The Warrant Shares shall be delivered (check one):

☐ to the following DWAC Account Number: _____

☐ in book-entry form via a direct registration system

☐ by physical delivery of a certificate to: _____

_____

☐ in restricted book-entry form in the Company's share register

(6) By its delivery of this Exercise Notice, the undersigned represents and warrants to the Company that in giving effect to the exercise evidenced hereby (i) solely if this Warrant is being exercised pursuant to a Cash Exercise, the Holder is an "accredited investor" as defined in Regulation D promulgated under the Securities Act of 1933, as amended and (ii) the Holder will not beneficially own in excess of the number of shares of Common Stock (as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended) permitted to be owned under Section 11(a) of the Warrant to which this notice relates.

Dated:

Name of Holder:

By:

Name:

Title:

(Signature must conform in all respects to name of Holder as specified on the face of the Warrant)

SCHEDULE 2

ASSIGNMENT FORM

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name:

(Please Print)

Address:

(Please Print)

Phone Number: _____

Email Address: _____

Dated: _____ __, _____

Holder's Signature:

Holder's Address:

_____

Signature Guarantee

Exhibit 4.2

THIS WARRANT AND THE SHARES OF COMMON STOCK AND/OR PRE-FUNDED WARRANTS ISSUABLE UPON THE EXERCISE OF THIS WARRANT (THE "SECURITIES") HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES. THE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE SOLD, TRANSFERRED OR ASSIGNED UNLESS (I) SUCH SECURITIES HAVE BEEN REGISTERED FOR SALE PURSUANT TO THE SECURITIES ACT, (II) SUCH SECURITIES MAY BE SOLD PURSUANT TO RULE 144 UNDER THE SECURITIES ACT (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION BY THE HOLDER), (III) THE COMPANY HAS RECEIVED AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO IT THAT SUCH TRANSFER MAY LAWFULLY BE MADE WITHOUT REGISTRATION UNDER THE SECURITIES ACT, OR (IV) THE SECURITIES ARE TRANSFERRED WITHOUT CONSIDERATION TO AN AFFILIATE OF SUCH HOLDER OR A CUSTODIAL NOMINEE (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION). NOTWITHSTANDING THE FOREGOING, THE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN OR FINANCING ARRANGEMENT SECURED BY THE SECURITIES. [NO HEDGING TRANSACTIONS CAN BE CONDUCTED WITH REGARD TO THIS WARRANT EXCEPT AS PERMITTED BY THE SECURITIES ACT.]

FORM OF SERIES A WARRANT TO PURCHASE COMMON STOCK AND/OR PRE-FUNDED WARRANTS

Number of Warrant Shares or PFW Shares: [ ] (subject to adjustment)

Series A Warrant No. [ ] Original Issue Date: December [ ], 2025

Athira Pharma, Inc., a Delaware corporation (the "**Company**"), hereby certifies that, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, [ ] or its registered assigns (the "**Holder**"), is entitled, subject to the terms set forth below, to purchase from the Company either (x) at an exercise price equal to $6.35 per share (as adjusted from time to time as provided in Section 9 herein, the "**Share Exercise Price**"), up to a total of [ ] shares of common stock, $0.0001 par value per share (the "**Common Stock**"), of the Company (each such share, a "**Warrant Share**" and all such shares, the "**Warrant Shares**"), or (y) in lieu of all or a portion of such Warrant Shares, at (i) the Share Exercise Price, minus (ii) $0.001 (as adjusted from time to time as provided in the Pre-Funded Warrants (as defined below), the "**PFW Exercise Price**" and, together with the Share Exercise Price, each an "**Exercise Price**"), pre-funded warrants, in the form attached as Exhibit B to the Purchase Agreement, to purchase up to a total of [ ] shares of Common Stock (the "**PFW Shares**") for a future per share exercise price of $0.001, as adjusted from time to time as provided in the Pre-Funded Warrants (the "**Pre-Funded Warrants**" and together with the Warrant Shares, each "**Exercise Securities**"), with such choice between Warrant Shares and Pre-Funded Warrants determined by the Holder in its sole and absolute discretion upon surrender of this Warrant to Purchase Common Stock and/or Pre-Funded Warrants (including any Warrants to Purchase Common Stock and/or Pre-Funded Warrants issued in exchange, transfer or replacement hereof, the "**Warrant**") at any time and from time to time on or after the Initial Exercise Date (as defined below) and on or prior to 5:00 p.m. (New York City Time) on the Termination Date (as defined below). Any exercise of this Warrant shall be subject to the following terms and conditions:

This Warrant is one of a series of warrants issued pursuant to that certain Securities Purchase Agreement, dated December 18, 2025 (the "**Subscription Date**"), by and among the Company and the Investors identified therein (the "**Purchase Agreement**").

1. Definitions. For purposes of this Warrant, the following terms shall have the following meanings:

"**Affiliate**" means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediates, controls, is controlled by or is under common control with such Person.

"**Attribution Parties**" means, collectively, the following Persons and entities: (i) any direct or indirect Affiliates of the Holder, (ii) any investment vehicle, including, any funds, feeder funds or managed accounts, currently, or from time to time after the date hereof, directly or indirectly managed by the Holder's investment manager or any of its Affiliates or principals, (iii) any Person acting as a Group together with the Holder or any Attribution Parties and (iv) any other Persons whose beneficial ownership of the Company's Common Stock reasonably could be aggregated with the Holder's and/or any other Attribution Parties for purposes of Section 13(d) or Section 16 of the Exchange Act. For clarity, the purpose of the foregoing is to subject collectively the Holder and all other Attribution Parties to the Maximum Percentage.

"**Closing Sale Price**" means, for any security as of any date, the last trade price for such security on the Principal Trading Market for such security, as reported by Bloomberg Financial Markets, or, if such Principal Trading Market begins to operate on an extended hours basis and does not designate the last trade price, then the last trade price of such security prior to 4:00 P.M., New York City time, as reported by Bloomberg Financial Markets, or if the foregoing do not apply, the last trade price of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg Financial Markets. If the Closing Sale Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Sale Price of such security on such date shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then the Board of Directors of the Company shall use its good faith judgment to determine the fair market value. The Board of Directors' determination shall be binding upon all parties absent demonstrable error. All such determinations shall be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during the applicable calculation period.

"**Commission**" means the U.S. Securities and Exchange Commission.

"**ELAINE-3 Trial**" means the Company's ELAINE-3 Phase 3 Study of lasofoxifene.

"**Exchange Act**" means the U.S. Securities Exchange Act of 1934, as amended, and all of the rules and regulations promulgated thereunder.

"**FDA**" means the U.S. Food and Drug Administration.

"**Group**" shall have the meaning ascribed to it in Section 13(d) of the Exchange Act, and all related rules, regulations and jurisprudence.

"**Initial Exercise Date**" means the earlier of:

(i) the latest of:

(x) June 30, 2026;

(y) the date on which the Company publicly announces, by means of a widely disseminated press release or a Current Report on Form 8-K, the enrollment of the 500th subject or the last subject, whichever is earlier, in the ELAINE-3 Trial, provided that the total enrollment will be no less than 500 subjects unless the study's Data Safety Monitoring Board recommends stopping enrollment at an earlier time or unless the FDA permits a different number for subject enrollment in a protocol amendment; and

(z) the date on which the FDA approves or issues a complete response letter to Eli Lilly & Co.'s marketing application, including a supplement to a new drug application, for imlunestrant in combination with abemaciclib in breast cancer; and

(ii) October 31, 2026.

"**Person**" means an individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, incorporated or unincorporated association, joint venture, government (or an agency or subdivision thereof) or any other entity or organization.

"**Principal Trading Market**" means the national securities exchange or other trading market on which the Common Stock is primarily listed on and quoted for trading, which, as of the Original Issue Date, shall be the Nasdaq Capital Market.

"**Securities Act**" means the U.S. Securities Act of 1933, as amended, and all of the rules and regulations promulgated thereunder.

"**Settlement Period**" means the standard settlement period, expressed in a number of Trading Days, for the Principal Trading Market with respect to the Common Stock that is in effect on the date of delivery of an applicable Exercise Notice, which as of the Original Issue Date was "T+1."

"**Termination Date**" means the 30th day following the Initial Exercise Date , unless such date falls on a day other than a Trading Day or on a date on which trading does not take place on the Principal Trading Market (a "**Holiday**"), in which case the Termination Date shall be the next day that is not a Holiday. Notwithstanding the immediately preceding sentence, if the Initial Exercise Date has not occurred by December 23, 2030, then, December 23, 2030 shall be the Termination Date.

"**Trading Day**" means any weekday on which the Principal Trading Market is normally open for trading.

"**Transfer Agent**" means Computershare Inc., the Company's transfer agent and registrar for the Common Stock, and any successor appointed in such capacity.

"**Warrant Agent**" means the Company, and any successor appointed in such capacity.

2. Issuance of Securities; Registration of Warrants. The Company shall register ownership of this Warrant, upon records to be maintained by the Company for that purpose (the "**Warrant Register**"), in the name of the record Holder (which shall include the initial Holder or, as the case may be, any assignee to which this Warrant is permissibly assigned hereunder) from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. Registration of Transfers. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto in Schedule 2 duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Subject to compliance with all applicable securities laws, the Company shall, or will cause its Warrant Agent to, register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, and payment for all applicable transfer taxes (if any). Upon any such registration or transfer, a new warrant to purchase Common Stock in substantially the form of this Warrant (any such new warrant, a "**New Warrant**") evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder has in respect of this Warrant. The Company shall or will cause its Warrant Agent to prepare, issue and deliver at the Company's own expense any New Warrant under this Section 3. Until due presentment for registration of transfer, the Company may treat the registered Holder hereof as the owner and holder for all purposes, and the Company shall not be affected by any notice to the contrary.

4. Exercise of Warrants.

(a) All or any part of this Warrant shall be exercisable by the registered Holder in any manner permitted by this Warrant (including Section 11) at any time and from time to time on or after the Initial Exercise Date and on or before the Termination Date.

(b) The Holder may exercise this Warrant by delivering to the Warrant Agent (with a copy to the Company) (i) an exercise notice, in the form attached as Schedule 1 hereto (the "**Exercise Notice**"), completed and duly signed, and (ii) payment of the applicable Exercise Price for the number of Warrant Shares and/or Pre-Funded Warrants as to which this Warrant is being exercised in accordance with Section 10 herein (which may take the form of a "cashless exercise" if permitted pursuant to Section 10 below and so indicated in the Exercise Notice), and the date on which the last of such items is delivered to the Company (as determined in accordance with the notice provisions hereof) is an **"Exercise Date**." The Holder shall not be required to deliver the

original Warrant in order to effect an exercise hereunder. No ink original Exercise Notice shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Exercise Notice be required. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares, if any. The delivery by (or on behalf of) the Holder of the Exercise Notice and the applicable Exercise Price as provided above shall constitute the Holder's certification to the Company that, in the case of an exercise for cash, its representations contained in Sections 4.1 and 4.3 through 4.15 of the Purchase Agreement are true and correct as of the Exercise Date as if remade in their entirety (or, in the case of any transferee Holder that is not a party to the Purchase Agreement or, in the case of a cashless exercise, its representations contained in Sections 4.1, 4.3 and 4.15 of the Purchase Agreement, such transferee Holder's certification to the Company that such representations are true and correct as to such transferee Holder as of the Exercise Date). The Holder and the Company shall maintain records showing the number of Warrant Shares and/or Pre-Funded Warrants purchased and the date of such purchases. The Company shall deliver any objection to any Exercise Notice within two (2) Trading Days of receipt of such notice.

(c) The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this section, following the purchase of a portion of the Warrant Shares and/or Pre-Funded Warrants hereunder, the number of Warrant Shares and/or Pre-Funded Warrants available for purchase hereunder at any given time may be less than the amount stated on the face hereof.

5. Delivery of Exercise Securities.

(a) Upon exercise of this Warrant for Warrant Shares, the Company shall promptly (but in no event later than the number of Trading Days comprising the Settlement Period following the Exercise Date) (such date, the "**Warrant Share Delivery Date**"), upon the request of the Holder, cause the Transfer Agent to credit such aggregate number of shares of Common Stock specified by the Holder in the Exercise Notice and to which the Holder is entitled pursuant to such exercise (the "**Exercise Shares**") to (i) the Holder's or its designee's balance account with The Depository Trust Company ("**DTC**") through its Deposit Withdrawal At Custodian system or (ii) in book-entry form via a direct registration system ("**DRS**") maintained by or on behalf of the Transfer Agent, in each case, so long as either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or the resale of such Warrant Shares by the Holder or (B) the Exercise Shares are eligible for resale by the Holder without volume or manner-of-sale restrictions pursuant to Rule 144 promulgated under the Securities Act (assuming cashless exercise of this Warrant). If (A) and (B) above are not true, the Company shall cause the Transfer Agent to either (i) record the Exercise Shares in the name of the Holder or its designee on the certificates reflecting the Exercise Shares with an appropriate legend regarding restriction on transferability, which shall be issued and dispatched by overnight courier to the address as specified in the Exercise Notice, and on the Company's share register or (ii) issue such Exercise Shares in the name of the Holder or its designee in restricted book-entry form in the Company's share register. The Holder, or any Person so designated by the Holder to receive Warrant Shares, shall be deemed to have become the holder of record of such Warrant Shares as of the Exercise Date, irrespective of the date such Warrant Shares are credited to the Holder's DTC account, the date of the book

entry positions or the date of delivery of the certificates evidencing such Exercise Shares, as the case may be.

(b) In addition to any other rights available to the Holder, if the Company fails to deliver to the Holder or its designee Exercise Shares in the manner required pursuant to Section 5(a) within the Settlement Period following the Exercise Date (other than a failure caused by incorrect or incomplete information provided by the Holder to the Company) and the Holder or the Holder's broker on its behalf purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "**Buy-In**") but did not receive within the Settlement Period, then the Company shall, within two Trading Days after the Holder's request and in the Holder's sole discretion, promptly honor its obligation to deliver to the Holder or its designee the Exercise Shares pursuant to Section 5(a) and pay cash to the Holder in an amount equal to the excess (if any) of the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased in the Buy-In, less the product of (A) the number of shares of Common Stock purchased in the Buy-In, times (B) the Closing Sale Price of a share of Common Stock on the Exercise Date. The Holder shall provide the Company written notice promptly after the occurrence of a Buy-In, indicating the amounts payable to the Holder in respect of the Buy-In together with applicable confirmations and other evidence reasonably requested by the Company.

(c) Upon exercise of this Warrant for Pre-Funded Warrants, the Company shall promptly (but in no event later than the number of Trading Days comprising the Settlement Period following the Exercise Date) deliver to the Holder or its designee electronic copies of Pre-Funded Warrants to purchase up to a number of shares of Common Stock specified by the Holder in the Exercise Notice, with a physical copy of the Pre-Funded Warrants to be delivered to the Holder, if requested, within two (2) Trading Days after such Holder's request for such physical copy. The Company shall serve as the Warrant Agent for the Pre-Funded Warrants.

(d) To the extent permitted by law and subject to Section 5(b) and Section 5(c), the Company's obligations to issue and deliver Warrant Shares and/or Pre-Funded Warrants in accordance with and subject to the terms hereof (including the limitations set forth in Section 11 below) are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance that might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares and/or Pre-Funded Warrants. Subject to Section 5(b) and Section 5(c), nothing herein shall limit the Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver Exercise Securities; provided, however, that the Holder shall not be entitled to both (i) require the Company to reinstate the portion of the Warrant and equivalent number of Warrant Shares and/or Pre-Funded Warrants, as applicable, for which such exercise was not timely honored and (ii) receive the number of Warrant Shares and/or Pre-Funded

Warrants, as applicable, that would have been issued if the Company had timely complied with its delivery requirements under Section 5(a).

(e) If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 5(a) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise by delivering written notice to the Company at any time prior to the delivery of the applicable Warrant Shares.

(f) If this Warrant shall have been exercised in part, the Company shall, at the request of the Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

6. Charges, Taxes and Expenses. Issuance and delivery of Warrant Shares and/or Pre-Funded Warrants upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, transfer agent fee or other incidental tax or expense (excluding any applicable stamp duties) in respect of the issuance of such securities, all of which taxes and expenses shall be paid by the Company; provided, however, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any Warrant Shares or Pre-Funded Warrants or this Warrant in a name other than that of the Holder or an Affiliate thereof. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares or Pre-Funded Warrants upon exercise hereof.

7. Replacement of Warrant. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a New Warrant, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction (in such case) and, in each case, a customary and reasonable contractual indemnity, if requested by the Company. If a New Warrant is requested as a result of a mutilation of this Warrant, then the Holder shall deliver such mutilated Warrant to the Company as a condition precedent to the Company's obligation to issue the New Warrant.

8. Reservation of Warrant Shares. The Company covenants that it will, at all times while this Warrant is outstanding, reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares that are initially issuable and deliverable upon the exercise of this entire Warrant, free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 9). The failure of the Company to reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock a sufficient number of shares of Common Stock to enable it to issue Warrant Shares upon exercise of this Warrant as herein provided is referred to herein as an "**Authorized Share Failure**." The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and non-assessable. The Company

will take all such action as may be reasonably necessary to assure that such shares of Common Stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the Common Stock may be listed. The Company further covenants that it will not, without the prior written consent of the Holder, take any actions to increase the par value of the Common Stock at any time while this Warrant is outstanding. In furtherance of the Company's obligations set forth in this Section 8, as soon as practicable after the date of the occurrence of an Authorized Share Failure, but in no event later than ninety (90) days after the occurrence of such Authorized Share Failure, the Company shall hold a meeting of its stockholders for the approval of an increase in the number of authorized shares of Common Stock. In connection with such meeting, the Company shall provide each stockholder with a proxy statement and shall use its reasonable best efforts to solicit its stockholders' approval of such increase in authorized shares of Common Stock and to cause its board of directors to recommend to the stockholders that they approve such proposal. Notwithstanding the foregoing, if at any such time of an Authorized Share Failure, the Company is able to obtain the written consent of a majority of the shares of its issued and outstanding shares of Common Stock to approve the increase in the number of authorized shares of Common Stock, the Company may satisfy this obligation by obtaining such consent and submitting for filing with the SEC an Information Statement on Schedule 14C.

9. Certain Adjustments. The Share Exercise Price, number of Warrant Shares issuable upon exercise of this Warrant (the "**Number of Warrant Shares**") and number of Pre-Funded Warrants issuable upon exercise of this Warrant (the "**Number of Pre-Funded Warrants**") are subject to adjustment from time to time as set forth in this Section 9.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock issued and outstanding on the Subscription Date and in accordance with the terms of such stock on the Subscription Date or as amended, that is payable in shares of Common Stock, (ii) subdivides its outstanding shares of Common Stock into a larger number of shares of Common Stock, (iii) combines its outstanding shares of Common Stock into a smaller number of shares of Common Stock or (iv) issues by reclassification of shares of capital stock any additional shares of Common Stock of the Company, then in each such case the Number of Warrant Shares and Number of PFW Shares shall be multiplied by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately after such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately before such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, provided, however, that if such record date shall have been fixed and such dividend is not fully paid on the date fixed therefor, the Number of Warrant Shares and Number of PFW Shares shall be recomputed accordingly as of the close of business on such record date and thereafter the Number of Warrant Shares and Number of PFW Shares shall be adjusted pursuant to this paragraph as of the time of actual payment of such dividends. Any adjustment pursuant to clause (ii), (iii) or (iv) of this paragraph shall become effective immediately after the effective date of such subdivision, combination or issuance.

(b) Pro Rata Distributions. If, on or after the Subscription Date, the Company shall declare or make any dividend or other pro rata distribution of its assets (or rights to acquire

its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property, options, evidence of indebtedness or any other assets by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction, but, for the avoidance of doubt, excluding any distribution of shares of Common Stock subject to Section 9(a), any distribution of Purchase Rights (as defined below) subject to Section 9(c) and any Fundamental Transaction (as defined below) subject to Section 9(d)) (a "**Distribution**") then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage (as defined below) or the fact that the Initial Exercise Date had not occurred) immediately before the date on which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution; *provided*, that to the extent that the Holder's right to participate in any such Distribution would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Distribution to such extent (and shall not be entitled to beneficial ownership of such shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such Distribution (and any Distributions declared or made on such initial Distribution or on any subsequent Distribution held similarly in abeyance) to the same extent as if there had been no such limitation.

(c) Purchase Rights. If at any time on or after the Subscription Date, the Company grants, issues or sells any Options, Convertible Securities or rights to purchase stock, warrants, securities or other property, in each case pro rata to the record holders of any class of Common Stock (the "**Purchase Rights**"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage or the fact that the Initial Exercise Date had not occurred) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of Common Stock are to be determined for the grant, issuance or sale of such Purchase Rights; *provided*, that to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Purchase Right to such extent (and shall not be entitled to beneficial ownership of such Common Stock as a result of such Purchase Right (and beneficial ownership) to such extent) and at the Holder's election, in its sole discretion, either (1) such Purchase Right to such extent shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such right (and any Purchase Right granted, issued or sold on such initial Purchase Right or on any subsequent Purchase Right to be held similarly in abeyance) to the same extent as if there had been no such limitation or (2) the Company shall offer the Holder the right

upon exercise of such Purchase Right to acquire a security (e.g. a pre-funded warrant) that would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage but will otherwise to the extent possible have economic and other rights, preferences and privileges substantially consistent and on par with the securities or other property issuable upon exercise of the originally offered Purchase Rights). As used in this Section 9(c), (i) "Options" means any rights, warrants or options to subscribe for or purchase shares of Common Stock or Convertible Securities and (ii) "Convertible Securities" mean any stock or securities (other than Options) directly or indirectly convertible into or exercisable or exchangeable for shares of Common Stock.

(d) Fundamental Transactions. If, at any time while this Warrant is outstanding (i) the Company effects any merger or consolidation of the Company with or into another Person, in which the Company is not the surviving entity or in which the stockholders of the Company immediately prior to such merger or consolidation do not own, directly or indirectly, at least 50% of the voting power of the surviving entity immediately after such merger or consolidation, (ii) the Company effects any sale to another Person of all or substantially all of its assets in one or a series of related transactions, (iii) pursuant to any tender offer or exchange offer (whether by the Company or another Person), holders of capital stock tender shares representing more than 50% of the voting power of the capital stock of the Company and the Company or such other Person, as applicable, accepts such tender for payment, (iv) the Company consummates a stock purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person whereby such other Person acquires more than 50% of the voting power of the capital stock of the Company (except for any such transaction in which the stockholders of the Company immediately prior to such transaction maintain, in substantially the same proportions, the voting power of such Person immediately after the transaction) or (v) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than as a result of a subdivision or combination of shares of Common Stock covered by Section 9(a) above) (in any such case, a "**Fundamental Transaction**"), then following such Fundamental Transaction the Holder shall have the right to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant (including any Distributions or Purchase Rights then held in abeyance pursuant to Sections 9(b) or 9(c) above) without regard to any limitations on exercise contained herein and assuming the date of such Fundamental Transaction was the Initial Exercise Date, if the Initial Exercise Date had not previously occurred (the "**Alternate Consideration**"). If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. The Company shall not effect any Fundamental Transaction in which the Company is not the surviving entity or the Alternate Consideration includes securities of another Person unless (i) the Alternate Consideration is solely cash and the Company provides for the simultaneous "cashless exercise" of this Warrant pursuant to Section 10 below or (ii) if the Alternate Consideration includes any securities of another Person, such Person is a publicly traded corporation whose stock is quoted or listed for trading on a Trading Market and prior to or simultaneously with the consummation thereof, any successor to the Company, surviving entity or other Person (including any purchaser

of assets of the Company) shall assume the obligation to deliver to the Holder such Alternate Consideration as, in accordance with the foregoing provisions, the Holder may be entitled to receive, and the other obligations under this Warrant. The provisions of this paragraph (d) shall similarly apply to subsequent transactions analogous to a Fundamental Transaction type. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "**Successor Entity**") to assume in writing all of the obligations of the Company under this Warrant in accordance with the provisions of this Section 9(d) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the Holder, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such adjustments to the number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for the Company (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant referring to the "Company" shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Warrant with the same effect as if such Successor Entity had been named as the Company herein. Notwithstanding the foregoing, and without limiting Section 11 hereof, the Holder may elect, at its sole option, by delivery of written notice to the Company to waive this Section 9(d) to permit a Fundamental Transaction without the assumption of this Warrant.

(e) Number of Warrant Shares and Number of PFW Shares. Simultaneously with any adjustment to the Number of Warrant Shares and Number of PFW Shares pursuant to Section 9, the Share Exercise Price shall be increased or decreased proportionately, so that after such adjustment the aggregate Share Exercise Price payable hereunder for the increased or decreased Number of Warrant Shares, shall be the same as the aggregate Share Exercise Price in effect immediately prior to such adjustment. The PFW Exercise Price shall remain equal to the Share Exercise Price in effect at the time of exercise minus $0.001. Notwithstanding the foregoing, in no event may the Share Exercise Price be adjusted below the par value of the Common Stock then in effect.

(f) Calculations. All calculations under this Section 9 shall be made to the nearest one-tenth of one cent or the nearest share, as applicable.

(g) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 9, the Company at its expense will promptly compute such adjustment, in good faith, in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment, including a statement of the adjusted Share Exercise Price, PFW Exercise Price and

adjusted number or type of Warrant Shares, Pre-Funded Warrants or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder and to the Company's transfer agent.

(h) Notice of Corporate Events. If, while this Warrant is outstanding, the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including, without limitation, any granting of rights or warrants to subscribe for or purchase any capital stock of the Company or any subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then the Company shall deliver to the Holder a notice of such transaction at least ten days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice. In addition, if while this Warrant is outstanding, the Company authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction contemplated by Section 9(d), the Company shall deliver to the Holder a notice of such Fundamental Transaction at least 15 days prior to the date such Fundamental Transaction is consummated and the Company shall contemporaneously with any such delivery (or on or prior to 9:00 a.m., New York city time on the business day following a notice to the Holder) publicly disclose such material, nonpublic information on a Current Report on Form 8-K or otherwise.

(i) Voluntary Adjustment By Company. Without limiting the generality of the foregoing, if, at the time of exercise of this Warrant, the Share Exercise Price is higher than the Closing Sale Price of the Common Stock, the Company may, at its discretion and subject to applicable law, stock exchange rules, and approval from the Company's Board of Directors, offer inducement incentives to the Holder to facilitate exercise of this Warrant. Such incentives may include (a) temporary reduction of the Share Exercise Price to an amount not less than the "Minimum Price," as defined in Nasdaq Rule 5635(d)(1)(A), on the date of entry into the Purchase Agreement, (b) issuance of additional warrants, or (c) other mutually agreed economic incentives. Any such inducement shall be negotiated in good faith at the time of exercise based on prevailing market conditions.

10. Payment of Exercise Price. This Warrant may only be exercised for cash; *provided that* if a registration statement registering the resale of the Warrant Shares issued to the Holder, or the prospectus contained therein, is not effective at the time of the exercise of this Warrant, then the Holder may, in its sole discretion, elect to satisfy its obligation to pay the Share Exercise Price through a "cashless exercise", in which event the Company shall issue to the Holder the number of Warrant Shares in an exchange of securities effected pursuant to Section 3(a)(9) of the Securities Act, determined as follows:

$$X = Y [(A-B)/A]$$

where:

"X" equals the number of Warrant Shares to be issued to the Holder;

"Y" equals the total number of Warrant Shares with respect to which this Warrant is then being exercised if such exercise were by means of a cash exercise rather than a cashless exercise;

"A" equals the Closing Sale Price of the shares of Common Stock (as reported by Bloomberg Financial Market) as of the Trading Day on the date immediately preceding the Exercise Date); and

"B" equals the Share Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

If, at the time the Holder elects to exercise this Warrant for Pre-Funded Warrants, the registration statement registering the resale of the PFW Warrant Shares that may be issued pursuant to exercise of the Pre-Funded Warrants, or the prospectus contained therein, is not effective, then the Holder may, in its sole discretion, elect to satisfy its obligation to pay the PFW Exercise Price through a "cashless exercise", in which case the Company shall issue to the Holder the number of Pre-Funded Warrants in an exchange of securities effected pursuant to Section 3(a)(9) of the Securities Act, determined as follows:

$X = Y [(A-B)/A]$

where:

"X" equals the number of Pre-Funded Warrants to be issued to the Holder;

"Y" equals the total number of Warrant Shares with respect to which this Warrant is then being exercised if such exercise were by means of a cash exercise rather than a cashless exercise;

"A" equals the Closing Sale Price of the shares of Common Stock (as reported by Bloomberg Financial Market) as of the Trading Day on the date immediately preceding the Exercise Date); and

"B" equals the PFW Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

For purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Exercise Securities issued in a "cashless exercise" transaction shall be deemed to have been acquired by the Holder, and the holding period for the Exercise Securities shall be deemed to have commenced, on the Original Issue Date (provided that the Commission continues to take the position that such treatment is proper at the time of such exercise). If the Exercise Securities are issued in such a cashless exercise, the Company acknowledges and agrees that, in accordance with Section 3(a)(9) of the Securities Act, the Exercise Securities issued in such exercise shall take on the registered characteristics of the Warrants being exercised and may be tacked on to the holding period of the Warrants being exercised. Except as set forth in Sections

5(b) (Buy-In Remedy) and 12 (No Fractional Shares), in no event will the exercise of this Warrant be settled in cash.

11. Limitations on Exercise.

(a) Notwithstanding anything to the contrary contained herein, the Company shall not effect the exercise of any portion of this Warrant, and the Holder of this Warrant shall not have the right to exercise any portion of the Warrant, and any such exercise shall be null and void ab initio and treated as if the exercise had not been made, to the extent that immediately prior to or following such exercise, the Holder, together with the Attribution Parties, beneficially owns or would beneficially own as determined in accordance with Section 13(d) of the Exchange Act and the rules promulgated thereunder, in excess of [4.99][9.99][19.99]% (the "**Maximum Percentage**") of the Common Stock that would be issued and outstanding following such exercise. For purposes of calculating beneficial ownership for determining whether the Maximum Percentage is or will be exceeded, the aggregate number of shares of Common Stock held and/or beneficially owned by the Holder together with the Attribution Parties, shall include the number of shares of Common Stock held and/or beneficially owned by the Holder together with the Attribution Parties plus the number of shares of Common Stock issuable upon exercise of the relevant Warrant with respect to which the determination is being made but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, unexercised Warrant held and/or beneficially owned by the Holder or the Attribution Parties and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company held and/or beneficially owned by such Holder or any Attribution Party (including, without limitation, any convertible notes, convertible stock or warrants) that are subject to a limitation on conversion or exercise analogous to the limitation contained herein. For purposes of this Paragraph 11(a), beneficial ownership of the Holder or the Attribution Parties shall, except as set forth in the immediately preceding sentence, be calculated and determined in accordance with Section 13(d) of the Exchange Act and the rules promulgated thereunder. For purposes of this Warrant, in determining the number of outstanding shares of Common Stock, a Holder of this Warrant may rely on the number of outstanding shares of Common Stock as reflected in (1) the Company's most recent Form 10-K, Form 10-Q, Current Report on Form 8-K or other public filing with the Securities and Exchange Commission, as the case may be, (2) a more recent public announcement by the Company or (3) any other notice by the Company or the Company's transfer agent setting forth the number of shares of Common Stock outstanding (such issued and outstanding shares, the "**Reported Outstanding Share Number**"). For any reason at any time, upon the written or oral request of the Holder, the Company shall within one business day confirm orally and in writing or by electronic mail to the Holder the number of shares of Common Stock then outstanding. The Holder shall disclose to the Company the number of shares of Common Stock that it, together with the Attribution Parties holds and/or beneficially owns and has the right to acquire through the exercise of derivative securities and any limitations on exercise or conversion analogous to the limitation contained herein contemporaneously or immediately prior to submitting an Exercise Notice for the relevant Warrant. If the Company receives an Exercise Notice from the Holder at a time when the actual number of outstanding shares of Common Stock is less than the Reported Outstanding Share Number, the Company shall (i) notify the Holder in writing of the number of shares of Common Stock then outstanding and, to the extent that such Exercise Notice would otherwise cause the Holder's, together with the Attribution Parties', beneficial ownership, as determined pursuant to this Section 11(a), to exceed the Maximum

Percentage, the Holder must notify the Company of a reduced number of Warrant Shares to be purchased pursuant to such Exercise Notice (the number of shares by which such purchase is reduced, the "**Reduction Shares**") and (ii) as soon as reasonably practicable, the Company shall return to the Holder any Share Exercise Price paid by the Holder for the Reduction Shares. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder and the Attribution Parties since the date as of which the Reported Outstanding Share Number was reported. In the event that the issuance of Common Stock to the Holder upon exercise of this Warrant results in the Holder, together with the Attribution Parties, being deemed to beneficially own, in the aggregate, more than the Maximum Percentage of the number of outstanding shares of Common Stock (as determined under Section 13(d) of the Exchange Act), the number of shares so issued by which the Holder's, together with the Attribution Parties', aggregate beneficial ownership exceeds the Maximum Percentage (the "**Excess Shares**") shall be deemed null and void and shall be cancelled ab initio, and the Holder and/or the Attribution Parties shall not have the power to vote or to transfer the Excess Shares. As soon as reasonably practicable after the issuance of the Excess Shares has been deemed null and void, the Company shall return to the Holder the Share Exercise Price paid by the Holder for the Excess Shares. By written notice to the Company, a Holder of this Warrant may from time to time increase or decrease the Maximum Percentage to any other percentage specified in such notice; provided that such percentage shall not be in excess of [4.99%][19.99% unless Stockholder Approval (as defined in the Purchase Agreement) has been obtained]; provided further that any increase in the Maximum Percentage will not be effective until the 61st day after such notice is delivered to the Company and shall not negatively affect any partial exercise effected prior to such change.

(b) This Section 11 shall not restrict the number of shares of Common Stock which a Holder or the Attribution Parties may receive or beneficially own in order to determine the amount of securities or other consideration that such Holder or the Attribution Parties may receive in the event of (i) a Distribution as contemplated by Section 9(b), (ii) Purchase Rights as contemplated in Section 9(c) or (iii) a Fundamental Transaction as contemplated in Section 9(d) of this Warrant. For purposes of clarity, the shares of Common Stock issuable pursuant to the terms of this Warrant in excess of the Maximum Percentage shall not be deemed to be beneficially owned by the Holder or the Attribution Parties for any purpose including for purposes of Section 13(d) of the Exchange Act and the rules promulgated thereunder or Section 16 of the Exchange Act and the rules promulgated thereunder, including Rule 16a-1(a)(1). No prior inability to exercise this Warrant pursuant to this paragraph shall have any effect on the applicability of the provisions of this paragraph with respect to any subsequent determination of exercisability. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 11 to the extent necessary to correct this paragraph or any portion of this paragraph which may be defective or inconsistent with the intended beneficial ownership limitation contained in this Section 11 or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitation contained in this paragraph may not be waived and shall apply to a successor holder of this Warrant.

12.No Fractional Shares. No fractional Warrant Shares will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares that would otherwise be issuable, the number of Warrant Shares to be issued shall be rounded down to the next whole number and

the Company shall pay the Holder in cash the fair market value (based on the Closing Sale Price) for any such fractional shares.

13.Notices. Any and all notices or other communications or deliveries hereunder (including, without limitation, any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered by confirmed e-mail at the e-mail address included in the signature block attached hereto for the Company or, for the Holder, as specified in the books and records of the Warrant Agent prior to 5:30 P.M., New York City time, on a Trading Day (as applicable), (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via confirmed e-mail at the e-mail address specified in the books and records of the Warrant Agent on a day that is not a Trading Day or later than 5:30 P.M., New York City time, on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service specifying next business day delivery, or (iv) upon actual receipt by the Person to whom such notice is required to be given, if by hand delivery.

14.Warrant Agent. The Company shall initially serve as warrant agent under this Warrant. Upon 30 days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

15.Miscellaneous.

(a) No Rights as a Stockholder. Except as otherwise set forth in this Warrant or the Pre-Funded Warrants, the Holder, solely in such Person's capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person's capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, amalgamation, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares or PFW Shares which such Person is then entitled to receive upon the due exercise of this Warrant and, if applicable, the Pre-Funded Warrants. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities (upon exercise of this Warrant or otherwise) or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors of the Company.

(b) Further Assurances. Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate or articles of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid

or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (a) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (b) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and non-assessable Warrant Shares upon the exercise of this Warrant, and (c) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof as may be necessary to enable the Company to perform its obligations under this Warrant. Before taking any action which would result in an adjustment in the number of Warrant Shares or Pre-Funded Warrants for which this Warrant is exercisable or in the Share Exercise Price or PFW Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

(c) Successors and Assigns. Subject to compliance with applicable securities laws, this Warrant may be assigned by the Holder. This Warrant may not be assigned by the Company without the written consent of the Holder, except to a successor in the event of a Fundamental Transaction that complies with Section 9(d). This Warrant shall be binding on and inure to the benefit of the Company and the Holder and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant.

(d) Amendment and Waiver. This Warrant may be amended only in writing signed by the Company and the Holder, or their successors and assigns. The Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company has obtained the written consent of the Holder. No amendment or modification of any Warrant shall be made unless the same is also offered to all holders of Warrants. In addition, no consideration shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of any of this Warrant unless the same consideration (other than the reimbursement of legal fees) also is offered to all holders of the Warrants issued by the Company on the Original Issue Date.

(e) Acceptance. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

(f) Governing Law; Jurisdiction. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW THEREOF. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HEREWITH OR WITH ANY

TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PERSON AT THE ADDRESS IN EFFECT FOR NOTICES TO IT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. EACH OF THE COMPANY AND THE HOLDER HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

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

(h) Severability. If any part or provision of this Warrant is held unenforceable or in conflict with the applicable laws or regulations of any jurisdiction, the invalid or unenforceable part or provisions shall be replaced with a provision which accomplishes, to the extent possible, the original business purpose of such part or provision in a valid and enforceable manner, and the remainder of this Warrant shall remain binding upon the parties hereto.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

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

ATHIRA PHARMA, INC.

By: _____
Name: _____
Title: _____
Email:

Address:

SCHEDULE 1

FORM OF EXERCISE NOTICE

[To be executed by the Holder to purchase shares of Common Stock and/or Pre-Funded Warrants under the Warrant]

Ladies and Gentlemen:

(1) The undersigned is the Holder of Warrant No. __ (the "Warrant") issued by **Athira Pharma, Inc.**, a **Delaware** corporation (the "Company"). Capitalized terms used herein and not otherwise defined herein have the respective meanings set forth in the Warrant.

(2) The undersigned hereby exercises its right to purchase _____ Warrant Shares and/or _____ Pre-Funded Warrants pursuant to the Warrant.

(3) The Holder intends that payment of the Share Exercise Price shall be made as (check one):

☐ Cash Exercise

☐ "Cashless Exercise" under Section 10 of the Warrant, if permitted

The Holder intends that payment of the PFW Exercise Price shall be made as (check one):

☐ Cash Exercise

☐ "Cashless Exercise" under Section 10 of the Warrant, if permitted

(4) Unless the Holder has elected a permitted "Cashless Exercise", the Holder shall pay (i) the aggregate Share Exercise Price in the sum of $ _____ and (y) the aggregate PFW Exercise Price in the sum of $ _____ , in each case, in immediately available funds to the Company in accordance with the terms of the Warrant.

(5) Pursuant to this Exercise Notice, the Company shall deliver to the Holder _____ Warrant Shares and/or_____ Pre-Funded Warrants determined in accordance with the terms of the Warrant. The Warrant Shares shall be delivered (check one):

☐ to the following DWAC Account Number: _____

☐ in book-entry form via a direct registration system

☐ by physical delivery of a certificate to: _____

_____

☐ in restricted book-entry form in the Company's share register

The Pre-Funded Warrants shall be delivered in the name of the undersigned or in such other name to the address, all as is specified below:

_____

_____

_____

(6) By its delivery of this Exercise Notice, the undersigned represents and warrants to the Company that in giving effect to the exercise evidenced hereby (i) solely if this Warrant is being exercised pursuant to a Cash Exercise, the Holder is an "accredited investor" as defined in Regulation D promulgated under the Securities Act of 1933, as amended and (ii) solely if this Warrant is being exercised for Warrant Shares, the Holder will not beneficially own in excess of the number of shares of Common Stock (as determined in accordance with Section 13(d) of the

Securities Exchange Act of 1934, as amended) permitted to be owned under Section 11(a) of the Warrant to which this notice relates.

Dated:

Name of Holder:

By:

Name:

Title:

(Signature must conform in all respects to name of Holder as specified on the face of the Warrant)

SCHEDULE 2

ASSIGNMENT FORM

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name:

(Please Print)

Address:

(Please Print)

Phone Number: _____

Email Address: _____

Dated: _____ __, _____

Holder's Signature:

Holder's Address:

_____

Signature Guarantee

Exhibit 4.3

THIS WARRANT AND THE SHARES OF COMMON STOCK AND/OR PRE-FUNDED WARRANTS ISSUABLE UPON THE EXERCISE OF THIS WARRANT (THE "SECURITIES") HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES. THE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE SOLD, TRANSFERRED OR ASSIGNED UNLESS (I) SUCH SECURITIES HAVE BEEN REGISTERED FOR SALE PURSUANT TO THE SECURITIES ACT, (II) SUCH SECURITIES MAY BE SOLD PURSUANT TO RULE 144 UNDER THE SECURITIES ACT (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION BY THE HOLDER), (III) THE COMPANY HAS RECEIVED AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO IT THAT SUCH TRANSFER MAY LAWFULLY BE MADE WITHOUT REGISTRATION UNDER THE SECURITIES ACT, OR (IV) THE SECURITIES ARE TRANSFERRED WITHOUT CONSIDERATION TO AN AFFILIATE OF SUCH HOLDER OR A CUSTODIAL NOMINEE (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION). NOTWITHSTANDING THE FOREGOING, THE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN OR FINANCING ARRANGEMENT SECURED BY THE SECURITIES. [NO HEDGING TRANSACTIONS CAN BE CONDUCTED WITH REGARD TO THIS WARRANT EXCEPT AS PERMITTED BY THE SECURITIES ACT.]

FORM OF SERIES B WARRANT TO PURCHASE COMMON STOCK AND/OR PRE-FUNDED WARRANTS

Number of Warrant Shares or PFW Shares: [ ] (subject to adjustment)

Series B Warrant No. [ ] Original Issue Date: December [ ], 2025

Athira Pharma, Inc., a Delaware corporation (the "**Company**"), hereby certifies that, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, [ ] or its registered assigns (the "**Holder**"), is entitled, subject to the terms set forth below, to purchase from the Company either (x) at an exercise price equal to $7.62 per share (as adjusted from time to time as provided in Section 9 herein, the "**Share Exercise Price**"), up to a total of [ ] shares of common stock, $0.0001 par value per share (the "**Common Stock**"), of the Company (each such share, a "**Warrant Share**" and all such shares, the "**Warrant Shares**"), or (y) in lieu of all or a portion of such Warrant Shares, at (i) the Share Exercise Price, minus (ii) $0.001 (as adjusted from time to time as provided in the Pre-Funded Warrants (as defined below), the "**PFW Exercise Price**" and, together with the Share Exercise Price, each an "**Exercise Price**"), pre-funded warrants, in the form attached as Exhibit B to the Purchase Agreement, to purchase up to a total of [ ] shares of Common Stock (the "**PFW Shares**") for a future per share exercise price of $0.001, as adjusted from time to time as provided in the Pre-Funded Warrants (the "**Pre-Funded Warrants**" and together with the Warrant Shares, each "**Exercise Securities**"), with such choice between Warrant Shares and Pre-Funded Warrants determined by the Holder in its sole and absolute discretion upon surrender of this Warrant to Purchase Common Stock and/or Pre-Funded Warrants (including any Warrants to Purchase Common Stock and/or Pre-Funded Warrants issued in exchange, transfer or replacement hereof, the "**Warrant**") at any time and from time to time on or after the Initial Exercise Date (as defined below) and on or prior to 5:00 p.m. (New York City Time) on the Termination Date (as defined below). Any exercise of this Warrant shall be subject to the following terms and conditions:

This Warrant is one of a series of warrants issued pursuant to that certain Securities Purchase Agreement, dated December 18, 2025 (the "**Subscription Date**"), by and among the Company and the Investors identified therein (the "**Purchase Agreement**").

1. Definitions. For purposes of this Warrant, the following terms shall have the following meanings:

"**Affiliate**" means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediates, controls, is controlled by or is under common control with such Person.

"**Attribution Parties**" means, collectively, the following Persons and entities: (i) any direct or indirect Affiliates of the Holder, (ii) any investment vehicle, including, any funds, feeder funds or managed accounts, currently, or from time to time after the date hereof, directly or indirectly managed by the Holder's investment manager or any of its Affiliates or principals, (iii) any Person acting as a Group together with the Holder or any Attribution Parties and (iv) any other Persons whose beneficial ownership of the Company's Common Stock reasonably could be aggregated with the Holder's and/or any other Attribution Parties for purposes of Section 13(d) or Section 16 of the Exchange Act. For clarity, the purpose of the foregoing is to subject collectively the Holder and all other Attribution Parties to the Maximum Percentage.

"**Closing Sale Price**" means, for any security as of any date, the last trade price for such security on the Principal Trading Market for such security, as reported by Bloomberg Financial Markets, or, if such Principal Trading Market begins to operate on an extended hours basis and does not designate the last trade price, then the last trade price of such security prior to 4:00 P.M., New York City time, as reported by Bloomberg Financial Markets, or if the foregoing do not apply, the last trade price of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg Financial Markets. If the Closing Sale Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Sale Price of such security on such date shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then the Board of Directors of the Company shall use its good faith judgment to determine the fair market value. The Board of Directors' determination shall be binding upon all parties absent demonstrable error. All such determinations shall be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during the applicable calculation period.

"**Commission**" means the U.S. Securities and Exchange Commission.

"**ELAINE-3 Trial**" means the Company's ELAINE-3 Phase 3 Study of lasofoxifene.

"**Exchange Act**" means the U.S. Securities Exchange Act of 1934, as amended, and all of the rules and regulations promulgated thereunder.

"**FDA**" means the U.S. Food and Drug Administration.

"**Group**" shall have the meaning ascribed to it in Section 13(d) of the Exchange Act, and all related rules, regulations and jurisprudence.

"**Initial Exercise Date**" means the later of (i) June 30, 2026 and (ii) the date of the completion of the public readout of topline results of the ELAINE-3 Trial.

"**Person**" means an individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, incorporated or unincorporated association, joint venture, government (or an agency or subdivision thereof) or any other entity or organization.

"**Principal Trading Market**" means the national securities exchange or other trading market on which the Common Stock is primarily listed on and quoted for trading, which, as of the Original Issue Date, shall be the Nasdaq Capital Market.

"**Securities Act**" means the U.S. Securities Act of 1933, as amended, and all of the rules and regulations promulgated thereunder.

"**Settlement Period**" means the standard settlement period, expressed in a number of Trading Days, for the Principal Trading Market with respect to the Common Stock that is in effect on the date of delivery of an applicable Exercise Notice, which as of the Original Issue Date was "T+1."

"**Termination Date**" means the 30th day following the Initial Exercise Date , unless such date falls on a day other than a Trading Day or on a date on which trading does not take place on the Principal Trading Market (a "**Holiday**"), in which case the Termination Date shall be the next day that is not a Holiday. Notwithstanding the immediately preceding sentence, if the Initial Exercise Date has not occurred by December 23, 2030, then, December 23, 2030 shall be the Termination Date.

"**Trading Day**" means any weekday on which the Principal Trading Market is normally open for trading.

"**Transfer Agent**" means Computershare Inc., the Company's transfer agent and registrar for the Common Stock, and any successor appointed in such capacity.

"**Warrant Agent**" means the Company, and any successor appointed in such capacity.

2. **Issuance of Securities; Registration of Warrants**. The Company shall register ownership of this Warrant, upon records to be maintained by the Company for that purpose (the "**Warrant Register**"), in the name of the record Holder (which shall include the initial Holder or, as the case may be, any assignee to which this Warrant is permissibly assigned hereunder) from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. **Registration of Transfers**. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written

assignment of this Warrant substantially in the form attached hereto in Schedule 2 duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Subject to compliance with all applicable securities laws, the Company shall, or will cause its Warrant Agent to, register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, and payment for all applicable transfer taxes (if any). Upon any such registration or transfer, a new warrant to purchase Common Stock in substantially the form of this Warrant (any such new warrant, a "**New Warrant**") evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder has in respect of this Warrant. The Company shall or will cause its Warrant Agent to prepare, issue and deliver at the Company's own expense any New Warrant under this Section 3. Until due presentment for registration of transfer, the Company may treat the registered Holder hereof as the owner and holder for all purposes, and the Company shall not be affected by any notice to the contrary.

4. Exercise of Warrants.

(a) All or any part of this Warrant shall be exercisable by the registered Holder in any manner permitted by this Warrant (including Section 11) at any time and from time to time on or after the Initial Exercise Date and on or before the Termination Date.

(b) The Holder may exercise this Warrant by delivering to the Warrant Agent (with a copy to the Company) (i) an exercise notice, in the form attached as Schedule 1 hereto (the "**Exercise Notice**"), completed and duly signed, and (ii) payment of the applicable Exercise Price for the number of Warrant Shares and/or Pre-Funded Warrants as to which this Warrant is being exercised in accordance with Section 10 herein, and the date on which the last of such items is delivered to the Company (as determined in accordance with the notice provisions hereof) is an **"Exercise Date**." The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. No ink original Exercise Notice shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Exercise Notice be required. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares, if any. The delivery by (or on behalf of) the Holder of the Exercise Notice and the applicable Exercise Price as provided above shall constitute the Holder's certification to the Company that, in the case of an exercise for cash, its representations contained in Sections 4.1 and 4.3 through 4.15 of the Purchase Agreement are true and correct as of the Exercise Date as if remade in their entirety (or, in the case of any transferee Holder that is not a party to the Purchase Agreement or, in the case of a cashless exercise, its representations contained in Sections 4.1, 4.3 and 4.15 of the Purchase Agreement, such transferee Holder's certification to the Company that such representations are true and correct as to such transferee Holder as of the Exercise Date). The Holder and the Company shall maintain records showing the number of Warrant Shares and/or Pre-Funded Warrants purchased and the date of such purchases. The Company shall deliver any objection to any Exercise Notice within two (2) Trading Days of receipt of such notice.

(c) The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this section, following the purchase of a portion of the Warrant Shares and/or Pre-Funded Warrants hereunder, the number of Warrant Shares and/or Pre-Funded Warrants available for purchase hereunder at any given time may be less than the amount stated on the face hereof.

5. Delivery of Exercise Securities.

(a) Upon exercise of this Warrant for Warrant Shares, the Company shall promptly (but in no event later than the number of Trading Days comprising the Settlement Period following the Exercise Date) (such date, the "**Warrant Share Delivery Date**"), upon the request of the Holder, cause the Transfer Agent to credit such aggregate number of shares of Common Stock specified by the Holder in the Exercise Notice and to which the Holder is entitled pursuant to such exercise (the "**Exercise Shares**") to (i) the Holder's or its designee's balance account with The Depository Trust Company ("**DTC**") through its Deposit Withdrawal At Custodian system or (ii) in book-entry form via a direct registration system ("**DRS**") maintained by or on behalf of the Transfer Agent, in each case, so long as either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or the resale of such Warrant Shares by the Holder or (B) the Exercise Shares are eligible for resale by the Holder without volume or manner-of-sale restrictions pursuant to Rule 144 promulgated under the Securities Act (assuming cashless exercise of this Warrant). If (A) and (B) above are not true, the Company shall cause the Transfer Agent to either (i) record the Exercise Shares in the name of the Holder or its designee on the certificates reflecting the Exercise Shares with an appropriate legend regarding restriction on transferability, which shall be issued and dispatched by overnight courier to the address as specified in the Exercise Notice, and on the Company's share register or (ii) issue such Exercise Shares in the name of the Holder or its designee in restricted book-entry form in the Company's share register. The Holder, or any Person so designated by the Holder to receive Warrant Shares, shall be deemed to have become the holder of record of such Warrant Shares as of the Exercise Date, irrespective of the date such Warrant Shares are credited to the Holder's DTC account, the date of the book entry positions or the date of delivery of the certificates evidencing such Exercise Shares, as the case may be.

(b) In addition to any other rights available to the Holder, if the Company fails to deliver to the Holder or its designee Exercise Shares in the manner required pursuant to Section 5(a) within the Settlement Period following the Exercise Date (other than a failure caused by incorrect or incomplete information provided by the Holder to the Company) and the Holder or the Holder's broker on its behalf purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "**Buy-In**") but did not receive within the Settlement Period, then the Company shall, within two Trading Days after the Holder's request and in the Holder's sole discretion, promptly honor its obligation to deliver to the Holder or its designee the Exercise Shares pursuant to Section 5(a) and pay cash to the Holder in an amount equal to the excess (if any) of the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased in the Buy-In, less the product of (A) the number of shares of Common Stock purchased in the Buy-In, times (B) the Closing Sale Price of a share of Common Stock on the Exercise Date. The Holder shall provide the Company written

notice promptly after the occurrence of a Buy-In, indicating the amounts payable to the Holder in respect of the Buy-In together with applicable confirmations and other evidence reasonably requested by the Company.

(c) Upon exercise of this Warrant for Pre-Funded Warrants, the Company shall promptly (but in no event later than the number of Trading Days comprising the Settlement Period following the Exercise Date) deliver to the Holder or its designee electronic copies of Pre-Funded Warrants to purchase up to a number of shares of Common Stock specified by the Holder in the Exercise Notice, with a physical copy of the Pre-Funded Warrants to be delivered to the Holder, if requested, within two (2) Trading Days after such Holder's request for such physical copy. The Company shall serve as the Warrant Agent for the Pre-Funded Warrants.

(d) To the extent permitted by law and subject to Section 5(b) and Section 5(c), the Company's obligations to issue and deliver Warrant Shares and/or Pre-Funded Warrants in accordance with and subject to the terms hereof (including the limitations set forth in Section 11 below) are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance that might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares and/or Pre-Funded Warrants. Subject to Section 5(b) and Section 5(c), nothing herein shall limit the Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver Exercise Securities; provided, however, that the Holder shall not be entitled to both (i) require the Company to reinstate the portion of the Warrant and equivalent number of Warrant Shares and/or Pre-Funded Warrants, as applicable, for which such exercise was not timely honored and (ii) receive the number of Warrant Shares and/or Pre-Funded Warrants, as applicable, that would have been issued if the Company had timely complied with its delivery requirements under Section 5(a).

(e) If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 5(a) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise by delivering written notice to the Company at any time prior to the delivery of the applicable Warrant Shares.

(f) If this Warrant shall have been exercised in part, the Company shall, at the request of the Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

6. Charges, Taxes and Expenses. Issuance and delivery of Warrant Shares and/or Pre-Funded Warrants upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, transfer agent fee or other incidental tax or expense (excluding any applicable stamp duties) in respect of the issuance of such securities, all of which taxes and

expenses shall be paid by the Company; provided, however, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any Warrant Shares or Pre-Funded Warrants or this Warrant in a name other than that of the Holder or an Affiliate thereof. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares or Pre-Funded Warrants upon exercise hereof.

7. **Replacement of Warrant**. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a New Warrant, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction (in such case) and, in each case, a customary and reasonable contractual indemnity, if requested by the Company. If a New Warrant is requested as a result of a mutilation of this Warrant, then the Holder shall deliver such mutilated Warrant to the Company as a condition precedent to the Company's obligation to issue the New Warrant.

8. **Reservation of Warrant Shares**. The Company covenants that it will, at all times while this Warrant is outstanding, reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares that are initially issuable and deliverable upon the exercise of this entire Warrant, free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 9). The failure of the Company to reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock a sufficient number of shares of Common Stock to enable it to issue Warrant Shares upon exercise of this Warrant as herein provided is referred to herein as an "**Authorized Share Failure**." The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and non-assessable. The Company will take all such action as may be reasonably necessary to assure that such shares of Common Stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the Common Stock may be listed. The Company further covenants that it will not, without the prior written consent of the Holder, take any actions to increase the par value of the Common Stock at any time while this Warrant is outstanding. In furtherance of the Company's obligations set forth in this Section 8, as soon as practicable after the date of the occurrence of an Authorized Share Failure, but in no event later than ninety (90) days after the occurrence of such Authorized Share Failure, the Company shall hold a meeting of its stockholders for the approval of an increase in the number of authorized shares of Common Stock. In connection with such meeting, the Company shall provide each stockholder with a proxy statement and shall use its reasonable best efforts to solicit its stockholders' approval of such increase in authorized shares of Common Stock and to cause its board of directors to recommend to the stockholders that they approve such proposal. Notwithstanding the foregoing, if at any such time of an Authorized Share Failure, the Company is able to obtain the written consent of a majority of the shares of its issued and outstanding shares of Common Stock to approve the increase in the number of authorized shares of Common Stock, the Company may satisfy this obligation by obtaining such consent and submitting for filing with the SEC an Information Statement on Schedule 14C.

9. Certain Adjustments. The Share Exercise Price, number of Warrant Shares issuable upon exercise of this Warrant (the "**Number of Warrant Shares**") and number of Pre-Funded Warrants issuable upon exercise of this Warrant (the "**Number of Pre-Funded Warrants**") are subject to adjustment from time to time as set forth in this Section 9.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock issued and outstanding on the Subscription Date and in accordance with the terms of such stock on the Subscription Date or as amended, that is payable in shares of Common Stock, (ii) subdivides its outstanding shares of Common Stock into a larger number of shares of Common Stock, (iii) combines its outstanding shares of Common Stock into a smaller number of shares of Common Stock or (iv) issues by reclassification of shares of capital stock any additional shares of Common Stock of the Company, then in each such case the Number of Warrant Shares and Number of PFW Shares shall be multiplied by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately after such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately before such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, provided, however, that if such record date shall have been fixed and such dividend is not fully paid on the date fixed therefor, the Number of Warrant Shares and Number of PFW Shares shall be recomputed accordingly as of the close of business on such record date and thereafter the Number of Warrant Shares and Number of PFW Shares shall be adjusted pursuant to this paragraph as of the time of actual payment of such dividends. Any adjustment pursuant to clause (ii), (iii) or (iv) of this paragraph shall become effective immediately after the effective date of such subdivision, combination or issuance.

(b) Pro Rata Distributions. If, on or after the Subscription Date, the Company shall declare or make any dividend or other pro rata distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property, options, evidence of indebtedness or any other assets by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction, but, for the avoidance of doubt, excluding any distribution of shares of Common Stock subject to Section 9(a), any distribution of Purchase Rights (as defined below) subject to Section 9(c) and any Fundamental Transaction (as defined below) subject to Section 9(d)) (a "**Distribution**") then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage (as defined below) or the fact that the Initial Exercise Date had not occurred) immediately before the date on which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution; *provided*, that to the extent that the Holder's right to participate in any such Distribution would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Distribution to such extent (and shall not be entitled to beneficial ownership of such shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution

shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such Distribution (and any Distributions declared or made on such initial Distribution or on any subsequent Distribution held similarly in abeyance) to the same extent as if there had been no such limitation.

(c) Purchase Rights. If at any time on or after the Subscription Date, the Company grants, issues or sells any Options, Convertible Securities or rights to purchase stock, warrants, securities or other property, in each case pro rata to the record holders of any class of Common Stock (the "**Purchase Rights**"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage or the fact that the Initial Exercise Date had not occurred) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of Common Stock are to be determined for the grant, issuance or sale of such Purchase Rights; *provided*, that to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Purchase Right to such extent (and shall not be entitled to beneficial ownership of such Common Stock as a result of such Purchase Right (and beneficial ownership) to such extent) and at the Holder's election, in its sole discretion, either (1) such Purchase Right to such extent shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such right (and any Purchase Right granted, issued or sold on such initial Purchase Right or on any subsequent Purchase Right to be held similarly in abeyance) to the same extent as if there had been no such limitation or (2) the Company shall offer the Holder the right upon exercise of such Purchase Right to acquire a security (e.g. a pre-funded warrant) that would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage but will otherwise to the extent possible have economic and other rights, preferences and privileges substantially consistent and on par with the securities or other property issuable upon exercise of the originally offered Purchase Rights). As used in this Section 9(c), (i) "Options" means any rights, warrants or options to subscribe for or purchase shares of Common Stock or Convertible Securities and (ii) "Convertible Securities" mean any stock or securities (other than Options) directly or indirectly convertible into or exercisable or exchangeable for shares of Common Stock.

(d) Fundamental Transactions. If, at any time while this Warrant is outstanding (i) the Company effects any merger or consolidation of the Company with or into another Person, in which the Company is not the surviving entity or in which the stockholders of the Company immediately prior to such merger or consolidation do not own, directly or indirectly, at least 50% of the voting power of the surviving entity immediately after such merger or consolidation, (ii) the Company effects any sale to another Person of all or substantially all of its assets in one or a series of related transactions, (iii) pursuant to any tender offer or exchange offer (whether by the Company or another Person), holders of capital stock tender shares representing more than 50% of the voting power of the capital stock of the Company and the Company or such other Person, as applicable, accepts such tender for payment, (iv) the Company consummates a stock purchase

agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person whereby such other Person acquires more than 50% of the voting power of the capital stock of the Company (except for any such transaction in which the stockholders of the Company immediately prior to such transaction maintain, in substantially the same proportions, the voting power of such Person immediately after the transaction) or (v) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than as a result of a subdivision or combination of shares of Common Stock covered by Section 9(a) above) (in any such case, a "**Fundamental Transaction**"), then following such Fundamental Transaction the Holder shall have the right to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant (including any Distributions or Purchase Rights then held in abeyance pursuant to Sections 9(b) or 9(c) above) without regard to any limitations on exercise contained herein and assuming the date of such Fundamental Transaction was the Initial Exercise Date, if the Initial Exercise Date had not previously occurred (the "**Alternate Consideration**"). If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. The Company shall not effect any Fundamental Transaction in which the Company is not the surviving entity or the Alternate Consideration includes securities of another Person unless (i) the Alternate Consideration is solely cash and the Company provides for the simultaneous "cashless exercise" of this Warrant pursuant to Section 10 below or (ii) if the Alternate Consideration includes any securities of another Person, such Person is a publicly traded corporation whose stock is quoted or listed for trading on a Trading Market and prior to or simultaneously with the consummation thereof, any successor to the Company, surviving entity or other Person (including any purchaser of assets of the Company) shall assume the obligation to deliver to the Holder such Alternate Consideration as, in accordance with the foregoing provisions, the Holder may be entitled to receive, and the other obligations under this Warrant. The provisions of this paragraph (d) shall similarly apply to subsequent transactions analogous to a Fundamental Transaction type. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "**Successor Entity**") to assume in writing all of the obligations of the Company under this Warrant in accordance with the provisions of this Section 9(d) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the Holder, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such adjustments to the number of shares of capital stock and such exercise

price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for the Company (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant referring to the "Company" shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Warrant with the same effect as if such Successor Entity had been named as the Company herein. Notwithstanding the foregoing, and without limiting Section 11 hereof, the Holder may elect, at its sole option, by delivery of written notice to the Company to waive this Section 9(d) to permit a Fundamental Transaction without the assumption of this Warrant.

(e) Number of Warrant Shares and Number of PFW Shares. Simultaneously with any adjustment to the Number of Warrant Shares and Number of PFW Shares pursuant to Section 9, the Share Exercise Price shall be increased or decreased proportionately, so that after such adjustment the aggregate Share Exercise Price payable hereunder for the increased or decreased Number of Warrant Shares, shall be the same as the aggregate Share Exercise Price in effect immediately prior to such adjustment. The PFW Exercise Price shall remain equal to the Share Exercise Price in effect at the time of exercise minus $0.001. Notwithstanding the foregoing, in no event may the Share Exercise Price be adjusted below the par value of the Common Stock then in effect.

(f) Calculations. All calculations under this Section 9 shall be made to the nearest one-tenth of one cent or the nearest share, as applicable.

(g) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 9, the Company at its expense will promptly compute such adjustment, in good faith, in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment, including a statement of the adjusted Share Exercise Price, PFW Exercise Price and adjusted number or type of Warrant Shares, Pre-Funded Warrants or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder and to the Company's transfer agent.

(h) Notice of Corporate Events. If, while this Warrant is outstanding, the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including, without limitation, any granting of rights or warrants to subscribe for or purchase any capital stock of the Company or any subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then the Company shall deliver to the Holder a notice of such transaction at least ten days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice. In addition, if while this Warrant is outstanding, the Company authorizes or approves, enters into any

agreement contemplating or solicits stockholder approval for any Fundamental Transaction contemplated by Section 9(d), the Company shall deliver to the Holder a notice of such Fundamental Transaction at least 15 days prior to the date such Fundamental Transaction is consummated and the Company shall contemporaneously with any such delivery (or on or prior to 9:00 a.m., New York city time on the business day following a notice to the Holder) publicly disclose such material, nonpublic information on a Current Report on Form 8-K or otherwise.

(i) Reserved.

10. Payment of Exercise Price. This Warrant may only be exercised through a "cashless exercise", in which event the Company shall issue to the Holder the number of Warrant Shares in an exchange of securities effected pursuant to Section 3(a)(9) of the Securities Act, determined as follows:

X = Y [(A-B)/A]
where:

"X" equals the number of Warrant Shares to be issued to the Holder;

"Y" equals the total number of Warrant Shares with respect to which this Warrant is then being exercised if such exercise were by means of a cash exercise rather than a cashless exercise;

"A" equals the Closing Sale Price of the shares of Common Stock (as reported by Bloomberg Financial Market) as of the Trading Day on the date immediately preceding the Exercise Date); and

"B" equals the Share Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

If this Warrant is exercised for Pre-Funded Warrants, the Company shall issue to the Holder the number of Pre-Funded Warrants in an exchange of securities effected pursuant to Section 3(a)(9) of the Securities Act, determined as follows:

X = Y [(A-B)/A]
where:

"X" equals the number of Pre-Funded Warrants to be issued to the Holder;

"Y" equals the total number of Warrant Shares with respect to which this Warrant is then being exercised if such exercise were by means of a cash exercise rather than a cashless exercise;

"A" equals the Closing Sale Price of the shares of Common Stock (as reported by Bloomberg Financial Market) as of the Trading Day on the date immediately preceding the Exercise Date); and

"B" equals the PFW Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

For purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Exercise Securities issued in a "cashless exercise" transaction shall be deemed to have been acquired by the Holder, and the holding period for the Exercise Securities shall be deemed to have commenced, on the Original Issue Date (provided that the Commission continues to take the position that such treatment is proper at the time of such exercise). If the Exercise Securities are issued in such a cashless exercise, the Company acknowledges and agrees that, in accordance with Section 3(a)(9) of the Securities Act, the Exercise Securities issued in such exercise shall take on the registered characteristics of the Warrants being exercised and may be tacked on to the holding period of the Warrants being exercised. Except as set forth in Sections 5(b) (Buy-In Remedy) and 12 (No Fractional Shares), in no event will the exercise of this Warrant be settled in cash.

11. Limitations on Exercise.

(a) Notwithstanding anything to the contrary contained herein, the Company shall not effect the exercise of any portion of this Warrant, and the Holder of this Warrant shall not have the right to exercise any portion of the Warrant, and any such exercise shall be null and void ab initio and treated as if the exercise had not been made, to the extent that immediately prior to or following such exercise, the Holder, together with the Attribution Parties, beneficially owns or would beneficially own as determined in accordance with Section 13(d) of the Exchange Act and the rules promulgated thereunder, in excess of [4.99][9.99][19.99]% (the "**Maximum Percentage**") of the Common Stock that would be issued and outstanding following such exercise. For purposes of calculating beneficial ownership for determining whether the Maximum Percentage is or will be exceeded, the aggregate number of shares of Common Stock held and/or beneficially owned by the Holder together with the Attribution Parties, shall include the number of shares of Common Stock held and/or beneficially owned by the Holder together with the Attribution Parties plus the number of shares of Common Stock issuable upon exercise of the relevant Warrant with respect to which the determination is being made but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, unexercised Warrant held and/or beneficially owned by the Holder or the Attribution Parties and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company held and/or beneficially owned by such Holder or any Attribution Party (including, without limitation, any convertible notes, convertible stock or warrants) that are subject to a limitation on conversion or exercise analogous to the limitation contained herein. For purposes of this Paragraph 11(a), beneficial ownership of the Holder or the Attribution Parties shall, except as set forth in the immediately preceding sentence, be calculated and determined in accordance with Section 13(d) of the Exchange Act and the rules promulgated thereunder. For purposes of this Warrant, in determining the number of outstanding shares of Common Stock, a Holder of this Warrant may rely on the number of outstanding shares of Common Stock as reflected in (1) the Company's most recent Form 10-K, Form 10-Q, Current Report on Form 8-K or other public filing with the Securities and Exchange Commission, as the case may be, (2) a more recent public announcement by the Company or (3) any other notice by the Company or the Company's transfer agent setting forth the number of shares of Common Stock outstanding (such issued and outstanding shares, the "**Reported Outstanding Share Number**"). For any reason at any time,

upon the written or oral request of the Holder, the Company shall within one business day confirm orally and in writing or by electronic mail to the Holder the number of shares of Common Stock then outstanding. The Holder shall disclose to the Company the number of shares of Common Stock that it, together with the Attribution Parties holds and/or beneficially owns and has the right to acquire through the exercise of derivative securities and any limitations on exercise or conversion analogous to the limitation contained herein contemporaneously or immediately prior to submitting an Exercise Notice for the relevant Warrant. If the Company receives an Exercise Notice from the Holder at a time when the actual number of outstanding shares of Common Stock is less than the Reported Outstanding Share Number, the Company shall (i) notify the Holder in writing of the number of shares of Common Stock then outstanding and, to the extent that such Exercise Notice would otherwise cause the Holder's, together with the Attribution Parties', beneficial ownership, as determined pursuant to this Section 11(a), to exceed the Maximum Percentage, the Holder must notify the Company of a reduced number of Warrant Shares to be purchased pursuant to such Exercise Notice (the number of shares by which such purchase is reduced, the "**Reduction Shares**") and (ii) as soon as reasonably practicable, the Company shall return to the Holder any Share Exercise Price paid by the Holder for the Reduction Shares. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder and the Attribution Parties since the date as of which the Reported Outstanding Share Number was reported. In the event that the issuance of Common Stock to the Holder upon exercise of this Warrant results in the Holder, together with the Attribution Parties, being deemed to beneficially own, in the aggregate, more than the Maximum Percentage of the number of outstanding shares of Common Stock (as determined under Section 13(d) of the Exchange Act), the number of shares so issued by which the Holder's, together with the Attribution Parties', aggregate beneficial ownership exceeds the Maximum Percentage (the "**Excess Shares**") shall be deemed null and void and shall be cancelled ab initio, and the Holder and/or the Attribution Parties shall not have the power to vote or to transfer the Excess Shares. As soon as reasonably practicable after the issuance of the Excess Shares has been deemed null and void, the Company shall return to the Holder the Share Exercise Price paid by the Holder for the Excess Shares. By written notice to the Company, a Holder of this Warrant may from time to time increase or decrease the Maximum Percentage to any other percentage specified in such notice; provided that such percentage shall not be in excess of [4.99%][19.99% unless Stockholder Approval (as defined in the Purchase Agreement) has been obtained]; provided further that any increase in the Maximum Percentage will not be effective until the 61st day after such notice is delivered to the Company and shall not negatively affect any partial exercise effected prior to such change.

(b) This Section 11 shall not restrict the number of shares of Common Stock which a Holder or the Attribution Parties may receive or beneficially own in order to determine the amount of securities or other consideration that such Holder or the Attribution Parties may receive in the event of (i) a Distribution as contemplated by Section 9(b), (ii) Purchase Rights as contemplated in Section 9(c) or (iii) a Fundamental Transaction as contemplated in Section 9(d) of this Warrant. For purposes of clarity, the shares of Common Stock issuable pursuant to the terms of this Warrant in excess of the Maximum Percentage shall not be deemed to be beneficially owned by the Holder or the Attribution Parties for any purpose including for purposes of Section 13(d) of the Exchange Act and the rules promulgated thereunder or Section 16 of the Exchange Act and the rules promulgated thereunder, including Rule 16a-1(a)(1). No prior inability to exercise this Warrant pursuant to this paragraph shall have any effect on the applicability of the provisions of

this paragraph with respect to any subsequent determination of exercisability. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 11 to the extent necessary to correct this paragraph or any portion of this paragraph which may be defective or inconsistent with the intended beneficial ownership limitation contained in this Section 11 or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitation contained in this paragraph may not be waived and shall apply to a successor holder of this Warrant.

12.No Fractional Shares. No fractional Warrant Shares will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares that would otherwise be issuable, the number of Warrant Shares to be issued shall be rounded down to the next whole number and the Company shall pay the Holder in cash the fair market value (based on the Closing Sale Price) for any such fractional shares.

13.Notices. Any and all notices or other communications or deliveries hereunder (including, without limitation, any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered by confirmed e-mail at the e-mail address included in the signature block attached hereto for the Company or, for the Holder, as specified in the books and records of the Warrant Agent prior to 5:30 P.M., New York City time, on a Trading Day (as applicable), (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via confirmed e-mail at the e-mail address specified in the books and records of the Warrant Agent on a day that is not a Trading Day or later than 5:30 P.M., New York City time, on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service specifying next business day delivery, or (iv) upon actual receipt by the Person to whom such notice is required to be given, if by hand delivery.

14.Warrant Agent. The Company shall initially serve as warrant agent under this Warrant. Upon 30 days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

15.Miscellaneous.

(a) No Rights as a Stockholder. Except as otherwise set forth in this Warrant or the Pre-Funded Warrants, the Holder, solely in such Person's capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person's capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, amalgamation, conveyance or otherwise), receive notice of meetings, receive dividends or

subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares or PFW Shares which such Person is then entitled to receive upon the due exercise of this Warrant and, if applicable, the Pre-Funded Warrants. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities (upon exercise of this Warrant or otherwise) or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors of the Company.

(b) Further Assurances. Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate or articles of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (a) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (b) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and non-assessable Warrant Shares upon the exercise of this Warrant, and (c) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof as may be necessary to enable the Company to perform its obligations under this Warrant. Before taking any action which would result in an adjustment in the number of Warrant Shares or Pre-Funded Warrants for which this Warrant is exercisable or in the Share Exercise Price or PFW Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

(c) Successors and Assigns. Subject to compliance with applicable securities laws, this Warrant may be assigned by the Holder. This Warrant may not be assigned by the Company without the written consent of the Holder, except to a successor in the event of a Fundamental Transaction that complies with Section 9(d). This Warrant shall be binding on and inure to the benefit of the Company and the Holder and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant.

(d) Amendment and Waiver. This Warrant may be amended only in writing signed by the Company and the Holder, or their successors and assigns. The Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company has obtained the written consent of the Holder. No amendment or modification of any Warrant shall be made unless the same is also offered to all holders of Warrants. In addition, no consideration shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of any of this Warrant unless the same consideration (other than the reimbursement of legal fees) also is offered to all holders of the Warrants issued by the Company on the Original Issue Date.

(e) Acceptance. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

(f) Governing Law; Jurisdiction. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW THEREOF. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HEREWITH OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PERSON AT THE ADDRESS IN EFFECT FOR NOTICES TO IT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. EACH OF THE COMPANY AND THE HOLDER HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

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

(h) Severability. If any part or provision of this Warrant is held unenforceable or in conflict with the applicable laws or regulations of any jurisdiction, the invalid or unenforceable part or provisions shall be replaced with a provision which accomplishes, to the extent possible, the original business purpose of such part or provision in a valid and enforceable manner, and the remainder of this Warrant shall remain binding upon the parties hereto.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

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

ATHIRA PHARMA, INC.

By: _____
Name: _____
Title: _____

Email:

Address:

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SCHEDULE 1

FORM OF EXERCISE NOTICE

[To be executed by the Holder to purchase shares of Common Stock and/or Pre-Funded Warrants under the Warrant]

Ladies and Gentlemen:

(1) The undersigned is the Holder of Warrant No. __ (the "Warrant") issued by **Athira Pharma, Inc.**, a **Delaware** corporation (the "Company"). Capitalized terms used herein and not otherwise defined herein have the respective meanings set forth in the Warrant.

(2) The undersigned hereby exercises its right to purchase _____ Warrant Shares and/or _____ Pre-Funded Warrants pursuant to the Warrant.

(3) Pursuant to this Exercise Notice, the Company shall deliver to the Holder _____ Warrant Shares and/or_____ Pre-Funded Warrants determined in accordance with the terms of the Warrant. The Warrant Shares shall be delivered (check one):

☐ to the following DWAC Account Number: _____

☐ in book-entry form via a direct registration system

☐ by physical delivery of a certificate to: _____

_____

☐ in restricted book-entry form in the Company's share register

The Pre-Funded Warrants shall be delivered in the name of the undersigned or in such other name to the address, all as is specified below:

_____

_____

_____

(4) By its delivery of this Exercise Notice, the undersigned represents and warrants to the Company that in giving effect to the exercise evidenced hereby (i) solely if this Warrant is being exercised pursuant to a Cash Exercise, the Holder is an "accredited investor" as defined in Regulation D promulgated under the Securities Act of 1933, as amended and (ii) solely if this Warrant is being exercised for Warrant Shares, the Holder will not beneficially own in excess of the number of shares of Common Stock (as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended) permitted to be owned under Section 11(a) of the Warrant to which this notice relates.

Dated:

Name of Holder:

By:

Name:

Title:

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(Signature must conform in all respects to name of Holder as specified on the face of the Warrant)

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SCHEDULE 2

ASSIGNMENT FORM

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name:

(Please Print)

Address:

(Please Print)

Phone Number: _____

Email Address: _____

Dated: _____ __, _____

Holder's Signature:

Holder's Address:

_____

Signature Guarantee

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Exhibit 4.4

THIS WARRANT AND THE SHARES OF COMMON STOCK ISSUABLE UPON THE EXERCISE OF THIS WARRANT (THE "SECURITIES") HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES. THE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE SOLD, TRANSFERRED OR ASSIGNED UNLESS (I) SUCH SECURITIES HAVE BEEN REGISTERED FOR SALE PURSUANT TO THE SECURITIES ACT, (II) SUCH SECURITIES MAY BE SOLD PURSUANT TO RULE 144 UNDER THE SECURITIES ACT (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION BY THE HOLDER), (III) THE COMPANY HAS RECEIVED AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO IT THAT SUCH TRANSFER MAY LAWFULLY BE MADE WITHOUT REGISTRATION UNDER THE SECURITIES ACT, OR (IV) THE SECURITIES ARE TRANSFERRED WITHOUT CONSIDERATION TO AN AFFILIATE OF SUCH HOLDER OR A CUSTODIAL NOMINEE (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION). NOTWITHSTANDING THE FOREGOING, THE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN OR FINANCING ARRANGEMENT SECURED BY THE SECURITIES.

FORM OF PRE-FUNDED WARRANT TO PURCHASE COMMON STOCK

Number of Shares: 5,502,402 (subject to adjustment)

Warrant No. [ ] Original Issue Date: December 23, 2025

Athira Pharma, Inc., a Delaware corporation (the "**Company**"), hereby certifies that, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Sermonix Pharmaceuticals, Inc. or its registered assigns (the "**Holder**"), is entitled, subject to the terms set forth below, to purchase from the Company up to a total of 5,502,402 shares of common stock, $0.0001 par value per share (the "**Common Stock**"), of the Company (each such share, a "**Warrant Share**" and all such shares, the "**Warrant Shares**") at an exercise price per share equal to $0.001 (the "**Exercise Price**"), in each case as adjusted from time to time as provided in Section 10, upon surrender of this Pre-Funded Warrant to Purchase Common Stock (including any Warrants to Purchase Common Stock issued in exchange, transfer or replacement hereof, the "**Warrant**") at any time and from time to time on or after the Exercisability Date (as defined below), subject to the following terms and conditions:

This Warrant is issued pursuant to that certain Securities Purchase Agreement, dated December 18, 2025, by and among the Company and the Holder (the "**Purchase Agreement**").

1. Definitions. For purposes of this Warrant, the following terms shall have the following meanings:

"**Affiliate**" means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediates, controls, is controlled by or is under common control with such Person.

"**Attribution Parties**" means, collectively, the following Persons and entities: (i) any direct or indirect Affiliates of the Holder, (ii) any investment vehicle, including, any funds, feeder funds or managed accounts, currently, or from time to time after the date hereof, directly or

indirectly managed by the Holder's investment manager or any of its Affiliates or principals, (iii) any Person acting as a Group together with the Holder or any Attribution Parties and (iv) any other Persons whose beneficial ownership of the Company's Common Stock reasonably could be aggregated with the Holder's and/or any other Attribution Parties for purposes of Section 13(d) or Section 16 of the Exchange Act. For clarity, the purpose of the foregoing is to subject collectively the Holder and all other Attribution Parties to the Maximum Percentage.

"**Closing Sale Price**" means, for any security as of any date, the last trade price for such security on the Principal Trading Market for such security, as reported by Bloomberg Financial Markets, or, if such Principal Trading Market begins to operate on an extended hours basis and does not designate the last trade price, then the last trade price of such security prior to 4:00 P.M., New York City time, as reported by Bloomberg Financial Markets, or if the foregoing do not apply, the last trade price of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg Financial Markets. If the Closing Sale Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Sale Price of such security on such date shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then the Board of Directors of the Company shall use its good faith judgment to determine the fair market value. The Board of Directors' determination shall be binding upon all parties absent demonstrable error. All such determinations shall be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during the applicable calculation period.

"**Commission**" means the U.S. Securities and Exchange Commission.

"**Exchange Act**" means the U.S. Securities Exchange Act of 1934, as amended, and all of the rules and regulations promulgated thereunder.

"**Exercisability Date**" means the first Trading Day on or after Stockholder Approval has been obtained.

"**Group**" shall have the meaning ascribed to it in Section 13(d) of the Exchange Act, and all related rules, regulations and jurisprudence.

"**Nasdaq**" means The Nasdaq Stock Market LLC.

"**Original Issue Date**" means the date hereof.

"**Person**" means an individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, incorporated or unincorporated association, joint venture, government (or an agency or subdivision thereof) or any other entity or organization.

"**Principal Trading Market**" means the national securities exchange or other trading market on which the Common Stock is primarily listed on and quoted for trading, which, as of the Original Issue Date, shall be the Nasdaq Capital Market.

"**Securities Act**" means the U.S. Securities Act of 1933, as amended, and all of the rules and regulations promulgated thereunder.

"**Settlement Period**" means the standard settlement period, expressed in a number of Trading Days, for the Principal Trading Market with respect to the Common Stock that is in effect on the date of delivery of an applicable Notice of Exercise, which as of the Original Issue Date was "T+1."

"**Stockholder Approval**" means approval from the Company's stockholders as required by Nasdaq, including for purposes of Nasdaq Rule 5635(a), such that this Warrant may be exercised at any time without restriction or additional stockholder approval.

"**Trading Day**" means any weekday on which the Principal Trading Market is normally open for trading.

"**Transfer Agent**" means Computershare Inc., the Company's transfer agent and registrar for the Common Stock, and any successor appointed in such capacity.

"**Warrant Agent**" means the Company, and any successor appointed in such capacity.

2. Issuance of Securities; Registration of Warrants. The Company shall register ownership of this Warrant, upon records to be maintained by the Company for that purpose (the "Warrant Register"), in the name of the record Holder (which shall include the initial Holder or, as the case may be, any assignee to which this Warrant is permissibly assigned hereunder) from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. Registration of Transfers. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto in Schedule 3 duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Subject to compliance with all applicable securities laws, the Company shall, or will cause its Warrant Agent to, register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, and payment for all applicable transfer taxes (if any). Upon any such registration or transfer, a new warrant to purchase Common Stock in substantially the form of this Warrant (any such new warrant, a "**New Warrant**") evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder has in respect of this Warrant. The Company shall, or will cause its Warrant Agent to, prepare, issue and deliver at the Company's own expense any New Warrant under this Section 3. Until due presentment for registration of transfer, the Company may treat the registered Holder hereof as the owner and holder for all purposes, and the Company shall not be affected by any notice to the contrary.

4. Exercise of Warrants.

(a) All or any part of this Warrant shall be exercisable by the registered Holder in any manner permitted by this Warrant (including Section 12) at any time and from time to time on or after the Exercisability Date, and such rights shall not expire until exercised in full.

(b) The Holder may exercise this Warrant by delivering to the Warrant Agent (with a copy to the Company) (i) an exercise notice, in the form attached as Schedule 1 hereto (the "**Exercise Notice**"), completed and duly signed and (ii) payment of the Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a "cashless exercise" if so indicated in the Exercise Notice pursuant to Section 11 below), and the date on which the last of such items is delivered to the Company (as determined in accordance with the notice provisions hereof) is an **"Exercise Date**." The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. No ink original Exercise Notice shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Exercise Notice be required. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares, if any. The aggregate exercise price of this Warrant, except for the Exercise Price, was pre-funded to the Company on or before the Original Issue Date, and consequently no additional consideration (other than the Exercise Price) shall be required to be paid by the Holder to effect any exercise of this Warrant.

(c) The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this section, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.

5. Redemption Right.

(a) Subject to Section 5(d) below, if Stockholder Approval has not been obtained by the one-year anniversary of the Original Issue Date, the Holder shall have the right (the "**Redemption Right**") at any time and from time to time commencing on such one-year anniversary and ending on such date that the Stockholder Approval is obtained thereafter, to cause the Company to pay, at the option of the Holder, an amount equal to (a) $6.35 (subject to adjustment in accordance with Section 10 hereof) (the "**Redemption Price**") multiplied by (b) the number of shares of Common Stock with respect to which the Holder is exercising the Redemption Right.

(b) In connection with the exercise of its Redemption Right, the Holder shall provide the Company written notice in the form of Schedule 2 attached hereto (the "**Redemption Notice**") indicating (i) the number of shares with respect to which it is exercising the Redemption Right, (ii) the Number of Warrant Shares (as defined in Section 10) following such exercise and (iii) the applicable aggregate Redemption Price.

(c) Subject to Section 5(d) below, the Company shall, within two Trading Days after receipt of the Redemption Notice, pay the applicable aggregate Redemption Price in cash to the Holder and cancel this Warrant and promptly issue a New Warrant to the Holder representing the Number of Warrant Shares with respect to which the Redemption Right was not exercised.

(d) The Redemption Right in this Section 5 shall terminate on the earlier of: (i) such time as an aggregate of $7.5 million in aggregate Redemption Price (the "**Redemption Cap**") has been paid by the Company to Holder in connection with one or more exercises of the Redemption Right and (ii) immediately upon receipt of the Stockholder Approval. For the avoidance of doubt, if any exercise of the Redemption Right would result in the Company paying to Holder, in the aggregate with prior Redemption Right exercises, an amount in excess of the Redemption Cap, then the Company shall not be required to carry out the exercise of Redemption Right with respect to the amount that exceeds the Redemption Cap.

6. Delivery of Warrant Shares.

(a) Upon exercise of this Warrant, the Company shall promptly (but in no event later than the number of Trading Days comprising the Settlement Period following the Exercise Date) (such date, the "**Warrant Share Delivery Date**"), upon the request of the Holder, cause the Transfer Agent to credit such aggregate number of shares of Common Stock specified by the Holder in the Exercise Notice and to which the Holder is entitled pursuant to such exercise (the "**Exercise Shares**") to (i) the Holder's or its designee's balance account with The Depository Trust Company ("**DTC**") through its Deposit Withdrawal At Custodian system or (ii) in book-entry form via a direct registration system ("**DRS**") maintained by or on behalf of the Transfer Agent, in each case, so long as either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or the resale of such Warrant Shares by the Holder or (B) the Exercise Shares are eligible for resale by the Holder without volume or manner-of-sale restrictions pursuant to Rule 144 promulgated under the Securities Act (assuming cashless exercise of this Warrant). If (A) and (B) above are not true, the Company shall cause the Transfer Agent to either (i) record the Exercise Shares in the name of the Holder or its designee on the certificates reflecting the Exercise Shares with an appropriate legend regarding restriction on transferability, which shall be issued and dispatched by overnight courier to the address as specified in the Exercise Notice, and on the Company's share register or (ii) issue such Exercise Shares in the name of the Holder or its designee in restricted book-entry form in the Company's share register. The Holder, or any Person so designated by the Holder to receive Warrant Shares, shall be deemed to have become the holder of record of such Warrant Shares as of the Exercise Date, irrespective of the date such Warrant Shares are credited to the Holder's DTC account, the date of the book entry positions or the date of delivery of the certificates evidencing such Exercise Shares, as the case may be.

(b) In addition to any other rights available to the Holder, if the Company fails to deliver to the Holder or its designee Exercise Shares in the manner required pursuant to Section 6(a) within the Settlement Period following the Exercise Date (other than a failure caused by incorrect or incomplete information provided by the Holder to the Company) and the Holder or the Holder's broker on its behalf purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "**Buy-In**") but did not receive within the Settlement Period, then the Company shall, within two Trading Days after the Holder's request and in the Holder's sole discretion, promptly honor its obligation to deliver to the Holder or its designee the Exercise Shares pursuant to Section 6(a) and pay cash to the Holder in an amount equal to the excess (if any) of the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased in the Buy-In, less the product of (A) the number of shares of Common Stock purchased in the Buy-In, times (B) the Closing Sale Price of

a share of Common Stock on the Exercise Date. The Holder shall provide the Company written notice promptly after the occurrence of a Buy-In, indicating the amounts payable to the Holder in respect of the Buy-In together with applicable confirmations and other evidence reasonably requested by the Company.

(c) To the extent permitted by law and subject to Sections 5 and 6(b), the Company's obligations to issue and deliver Warrant Shares in accordance with and subject to the terms hereof (including the limitations set forth in Section 12 below) are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance that might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares. Subject to Section 6(b), nothing herein shall limit the Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver Exercise Shares; provided, however, that the Holder shall not be entitled to both (i) require the Company to reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not timely honored and (ii) receive the number of shares of Common Stock that would have been issued if the Company had timely complied with its delivery requirements under Section 6(a).

(d) If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 5(a) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise by delivering written notice to the Company at any time prior to the delivery of the applicable Warrant Shares.

(e) If this Warrant shall have been exercised in part, the Company shall, at the request of the Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

7. Charges, Taxes and Expenses. Issuance and delivery of Exercise Shares shall be made without charge to the Holder for any issue or transfer tax, transfer agent fee or other incidental tax or expense (excluding any applicable stamp duties) in respect of the issuance of such shares, all of which taxes and expenses shall be paid by the Company; provided, however, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any Warrant Shares or the Warrants in a name other than that of the Holder or an Affiliate thereof. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant, receiving Warrant Shares upon exercise hereof or exercising the Redemption Right.

8. Replacement of Warrant. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a New Warrant, but only upon

receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction (in such case) and, in each case, a customary and reasonable contractual indemnity, if requested by the Company. Applicants for a New Warrant under such circumstances shall also comply with such other reasonable regulations and procedures as the Company may prescribe. If a New Warrant is requested as a result of a mutilation of this Warrant, then the Holder shall deliver such mutilated Warrant to the Company as a condition precedent to the Company's obligation to issue the New Warrant.

9. Reservation of Warrant Shares. The Company covenants that it will, at all times while this Warrant is outstanding, reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares that are initially issuable and deliverable upon the exercise of this entire Warrant, free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 10). The failure of the Company to reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock a sufficient number of shares of Common Stock to enable it to issue Warrant Shares upon exercise of this Warrant as herein provided is referred to herein as an "**Authorized Share Failure**." The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and non-assessable. The Company will take all such action as may be reasonably necessary to assure that such shares of Common Stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the Common Stock may be listed. The Company further covenants that it will not, without the prior written consent of the Holder, take any actions to increase the par value of the Common Stock at any time while this Warrant is outstanding. In furtherance of the Company's obligations set forth in this Section 9, as soon as practicable after the date of the occurrence of an Authorized Share Failure, but in no event later than ninety (90) days after the occurrence of such Authorized Share Failure, the Company shall hold a meeting of its stockholders for the approval of an increase in the number of authorized shares of Common Stock. In connection with such meeting, the Company shall provide each stockholder with a proxy statement and shall use its reasonable best efforts to solicit its stockholders' approval of such increase in authorized shares of Common Stock and to cause its board of directors to recommend to the stockholders that they approve such proposal. Notwithstanding the foregoing, if at any such time of an Authorized Share Failure, the Company is able to obtain the written consent of a majority of the shares of its issued and outstanding shares of Common Stock to approve the increase in the number of authorized shares of Common Stock, the Company may satisfy this obligation by obtaining such consent and submitting for filing with the SEC an Information Statement on Schedule 14C.

10. Certain Adjustments. The Exercise Price, number of Warrant Shares issuable upon exercise of this Warrant (the "**Number of Warrant Shares**") and the Redemption Price are subject to adjustment from time to time as set forth in this Section 10.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock issued and outstanding on the Original Issue Date and in accordance

with the terms of such stock on the Original Issue Date or as amended, that is payable in shares of Common Stock, (ii) subdivides its outstanding shares of Common Stock into a larger number of shares of Common Stock, (iii) combines its outstanding shares of Common Stock into a smaller number of shares of Common Stock or (iv) issues by reclassification of shares of capital stock any additional shares of Common Stock of the Company, then in each such case the Number of Warrant Shares shall be multiplied by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately after such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately before such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, provided, however, that if such record date shall have been fixed and such dividend is not fully paid on the date fixed therefor, the Number of Warrant Shares shall be recomputed accordingly as of the close of business on such record date and thereafter the Number of Warrant Shares shall be adjusted pursuant to this paragraph as of the time of actual payment of such dividends. Any adjustment pursuant to clause (ii), (iii) or (iv) of this paragraph shall become effective immediately after the effective date of such subdivision, combination or issuance.

(b) Pro Rata Distributions. If, on or after the Original Issue Date, the Company shall declare or make any dividend or other pro rata distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property, options, evidence of indebtedness or any other assets by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction, but, for the avoidance of doubt, excluding any distribution of shares of Common Stock subject to Section 10(a), any distribution of Purchase Rights (as defined below) subject to Section 10(c) and any Fundamental Transaction (as defined below) subject to Section 10(d)) (a "**Distribution**") then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage (as defined below)) immediately before the date on which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution; *provided*, that to the extent that the Holder's right to participate in any such Distribution would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Distribution to such extent (and shall not be entitled to beneficial ownership of such shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such Distribution (and any Distributions declared or made on such initial Distribution or on any subsequent Distribution held similarly in abeyance) to the same extent as if there had been no such limitation.

(c) Purchase Rights. If at any time on or after the Original Issue Date, the Company grants, issues or sells any Options, Convertible Securities or rights to purchase stock, warrants, securities or other property, in each case pro rata to the record holders of any class of

Common Stock (the "**Purchase Rights**"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of Common Stock are to be determined for the grant, issuance or sale of such Purchase Rights; *provided*, that to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Purchase Right to such extent (and shall not be entitled to beneficial ownership of such Common Stock as a result of such Purchase Right (and beneficial ownership) to such extent) and at the Holder's election, in its sole discretion, either (1) such Purchase Right to such extent shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such right (and any Purchase Right granted, issued or sold on such initial Purchase Right or on any subsequent Purchase Right to be held similarly in abeyance) to the same extent as if there had been no such limitation or (2) the Company shall offer the Holder the right upon exercise of such Purchase Right to acquire a security (e.g. a pre-funded warrant) that would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage but will otherwise to the extent possible have economic and other rights, preferences and privileges substantially consistent and on par with the securities or other property issuable upon exercise of the originally offered Purchase Rights). As used in this Section 10(c), (i) "Options" means any rights, warrants or options to subscribe for or purchase shares of Common Stock or Convertible Securities and (ii) "Convertible Securities" mean any stock or securities (other than Options) directly or indirectly convertible into or exercisable or exchangeable for shares of Common Stock.

(d) Fundamental Transactions. If, at any time while this Warrant is outstanding (i) the Company effects any merger or consolidation of the Company with or into another Person, in which the Company is not the surviving entity or in which the stockholders of the Company immediately prior to such merger or consolidation do not own, directly or indirectly, at least 50% of the voting power of the surviving entity immediately after such merger or consolidation, (ii) the Company effects any sale to another Person of all or substantially all of its assets in one or a series of related transactions, (iii) pursuant to any tender offer or exchange offer (whether by the Company or another Person), holders of capital stock tender shares representing more than 50% of the voting power of the capital stock of the Company and the Company or such other Person, as applicable, accepts such tender for payment, (iv) the Company consummates a stock purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person whereby such other Person acquires more than 50% of the voting power of the capital stock of the Company (except for any such transaction in which the stockholders of the Company immediately prior to such transaction maintain, in substantially the same proportions, the voting power of such Person immediately after the transaction) or (v) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than as a result of a subdivision or combination of shares of Common Stock covered by Section 10(a) above) (in any

such case, a "**Fundamental Transaction**"), then following such Fundamental Transaction the Holder shall have the right to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant (including any Distributions or Purchase Rights then held in abeyance pursuant to Sections 10(b) or 10(c) above) without regard to any limitations on exercise contained herein (the "**Alternate Consideration**"). If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. The Company shall not effect any Fundamental Transaction in which the Company is not the surviving entity or the Alternate Consideration includes securities of another Person unless (i) the Alternate Consideration is solely cash and the Company provides for the simultaneous "cashless exercise" of this Warrant pursuant to Section 11 below or (ii) prior to or simultaneously with the consummation thereof, any successor to the Company, surviving entity or other Person (including any purchaser of assets of the Company) shall assume the obligation to deliver to the Holder such Alternate Consideration as, in accordance with the foregoing provisions, the Holder may be entitled to receive, and the other obligations under this Warrant. The provisions of this paragraph (d) shall similarly apply to subsequent transactions analogous to a Fundamental Transaction type.

(e) Number of Warrant Shares. Simultaneously with any adjustment to the Number of Warrant Shares pursuant to Section 10, the Exercise Price and Redemption Price shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price or Redemption Price, as the case may be, payable hereunder for the increased or decreased Number of Warrant Shares shall be the same as the aggregate Exercise Price or Redemption Price, as the case may be, in effect immediately prior to such adjustment. Notwithstanding the foregoing, in no event may the Exercise Price be adjusted below the par value of the Common Stock then in effect.

(f) Calculations. All calculations under this Section 10 shall be made to the nearest one-tenth of one cent or the nearest share, as applicable.

(g) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 10, the Company at its expense will promptly compute such adjustment, in good faith, in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment, including a statement of the adjusted Exercise Price and Redemption Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder and to the Company's transfer agent.

(h) Notice of Corporate Events. If, while this Warrant is outstanding, the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including, without limitation, any granting of rights or warrants to subscribe for or purchase any capital stock of the Company or any subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any

Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then the Company shall deliver to the Holder a notice of such transaction at least ten days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice. In addition, if while this Warrant is outstanding, the Company authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction contemplated by Section 10(d), the Company shall deliver to the Holder a notice of such Fundamental Transaction at least 15 days prior to the date such Fundamental Transaction is consummated and the Company shall contemporaneously with any such delivery (or on or prior to 9:00 a.m., New York city time on the business day following a notice to the Holder) publicly disclose such material, nonpublic information on a Current Report on Form 8-K or otherwise.

11. Payment of Exercise Price. Notwithstanding anything contained herein to the contrary, the Holder may, in its sole discretion, satisfy its obligation to pay the Exercise Price through a "cashless exercise", in which event the Company shall issue to the Holder the number of Warrant Shares in an exchange of securities effected pursuant to Section 3(a)(9) of the Securities Act, determined as follows:

$X = Y [(A-B)/A]$

where:

"X" equals the number of Warrant Shares to be issued to the Holder;

"Y" equals the total number of Warrant Shares with respect to which this Warrant is then being exercised if such exercise were by means of a cash exercise rather than a cashless exercise;

"A" equals the Closing Sale Price of the shares of Common Stock (as reported by Bloomberg Financial Market) as of the Trading Day on the date immediately preceding the Exercise Date); and

"B" equals the Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

For purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Warrant Shares issued in a "cashless exercise" transaction shall be deemed to have been acquired by the Holder, and the holding period for the Warrant Shares shall be deemed to have commenced, on the Original Issue Date (provided that the Commission continues to take the position that such treatment is proper at the time of such exercise). In the event that a registration statement registering the issuance of Warrant Shares is, for any reason, not effective at the time of exercise of this Warrant, then this Warrant may only be exercised through a cashless exercise, as set forth in this Section 11. If the Warrant Shares are issued in such a cashless exercise, the Company acknowledges and agrees that, in accordance with Section 3(a)(9) of the Securities Act, the Exercise Shares issued in such exercise shall take on the registered characteristics of the

Warrants being exercised and may be tacked on to the holding period of the Warrants being exercised. Except as set forth in Section 6(b) (Buy-In Remedy) and Section 13 (No Fractional Shares), in no event will the exercise of this Warrant be settled in cash.

12. Limitations on Exercise.

(a) Notwithstanding anything to the contrary contained herein, the Company shall not effect the exercise of any portion of this Warrant, and the Holder of this Warrant shall not have the right to exercise any portion of the Warrant, and any such exercise shall be null and void ab initio and treated as if the exercise had not been made, to the extent that immediately prior to or following such exercise, the Holder, together with the Attribution Parties, beneficially owns or would beneficially own as determined in accordance with Section 13(d) of the Exchange Act and the rules promulgated thereunder, in excess of (a) prior to obtaining Stockholder Approval, 0.00% and (b) upon obtaining Stockholder Approval, 4.99% (the "**Maximum Percentage**") of the Common Stock that would be issued and outstanding following such exercise. For purposes of calculating beneficial ownership for determining whether the Maximum Percentage is or will be exceeded, the aggregate number of shares of Common Stock held and/or beneficially owned by the Holder together with the Attribution Parties, shall include the number of shares of Common Stock held and/or beneficially owned by the Holder together with the Attribution Parties plus the number of shares of Common Stock issuable upon exercise of the relevant Warrant with respect to which the determination is being made but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, unexercised Warrant held and/or beneficially owned by the Holder or the Attribution Parties and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company held and/or beneficially owned by such Holder or any Attribution Party (including, without limitation, any convertible notes, convertible stock or warrants) that are subject to a limitation on conversion or exercise analogous to the limitation contained herein. For purposes of this Paragraph 11(a), beneficial ownership of the Holder or the Attribution Parties shall, except as set forth in the immediately preceding sentence, be calculated and determined in accordance with Section 13(d) of the Exchange Act and the rules promulgated thereunder. For purposes of this Warrant, in determining the number of outstanding shares of Common Stock, a Holder of this Warrant may rely on the number of outstanding shares of Common Stock as reflected in (1) the Company's most recent Form 10-K, Form 10-Q, Current Report on Form 8-K or other public filing with the Securities and Exchange Commission, as the case may be, (2) a more recent public announcement by the Company or (3) any other notice by the Company or the Company's transfer agent setting forth the number of shares of Common Stock outstanding (such issued and outstanding shares, the "**Reported Outstanding Share Number**"). For any reason at any time, upon the written or oral request of the Holder, the Company shall within one business day confirm orally and in writing or by electronic mail to the Holder the number of shares of Common Stock then outstanding. The Holder shall disclose to the Company the number of shares of Common Stock that it, together with the Attribution Parties holds and/or beneficially owns and has the right to acquire through the exercise of derivative securities and any limitations on exercise or conversion analogous to the limitation contained herein contemporaneously or immediately prior to submitting an Exercise Notice for the relevant Warrant. If the Company receives an Exercise Notice from the Holder at a time when the actual number of outstanding shares of Common Stock is less than the Reported Outstanding Share Number, the Company shall (i) notify the Holder in writing of the number of shares of Common Stock then outstanding and, to the extent that such Exercise Notice would

otherwise cause the Holder's, together with the Attribution Parties', beneficial ownership, as determined pursuant to this Section 12(a), to exceed the Maximum Percentage, the Holder must notify the Company of a reduced number of Warrant Shares to be purchased pursuant to such Exercise Notice (the number of shares by which such purchase is reduced, the "**Reduction Shares**") and (ii) as soon as reasonably practicable, the Company shall return to the Holder any exercise price paid by the Holder for the Reduction Shares. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder and the Attribution Parties since the date as of which the Reported Outstanding Share Number was reported. In the event that the issuance of Common Stock to the Holder upon exercise of this Warrant results in the Holder, together with the Attribution Parties, being deemed to beneficially own, in the aggregate, more than the Maximum Percentage of the number of outstanding shares of Common Stock (as determined under Section 13(d) of the Exchange Act), the number of shares so issued by which the Holder's, together with the Attribution Parties', aggregate beneficial ownership exceeds the Maximum Percentage (the "**Excess Shares**") shall be deemed null and void and shall be cancelled ab initio, and the Holder and/or the Attribution Parties shall not have the power to vote or to transfer the Excess Shares. As soon as reasonably practicable after the issuance of the Excess Shares has been deemed null and void, the Company shall return to the Holder the exercise price paid by the Holder for the Excess Shares. By written notice to the Company, a Holder of this Warrant may from time to time increase or decrease the Maximum Percentage to any other percentage specified in such notice; *provided*, that such percentage shall not be in excess of 19.99% unless Stockholder Approval has been obtained; and *provided further*, that any increase in the Maximum Percentage will not be effective until the 61st day after such notice is delivered to the Company and shall not negatively affect any partial exercise effected prior to such change.

(b) This Section 12 shall not restrict the number of shares of Common Stock which a Holder or the Attribution Parties may receive or beneficially own in order to determine the amount of securities or other consideration that such Holder or the Attribution Parties may receive in the event of (i) Distribution as contemplated in Section 10(b), (ii) Purchase Rights as contemplated in Section 10(c) or (iii) a Fundamental Transaction as contemplated in Section 10(d) of this Warrant. For purposes of clarity, the shares of Common Stock issuable pursuant to the terms of this Warrant in excess of the Maximum Percentage shall not be deemed to be beneficially owned by the Holder or the Attribution Parties for any purpose including for purposes of Section 13(d) of the Exchange Act and the rules promulgated thereunder or Section 16 of the Exchange Act and the rules promulgated thereunder, including Rule 16a-1(a)(1). No prior inability to exercise this Warrant pursuant to this paragraph shall have any effect on the applicability of the provisions of this paragraph with respect to any subsequent determination of exercisability. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 12 to the extent necessary to correct this paragraph or any portion of this paragraph which may be defective or inconsistent with the intended beneficial ownership limitation contained in this Section 12 or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitation contained in this paragraph may not be waived and shall apply to a successor holder of this Warrant.

13. No Fractional Shares. No fractional Warrant Shares will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares that would otherwise be issuable, the number of Warrant Shares to be issued shall be rounded down to the next whole number and

the Company shall pay the Holder in cash the fair market value (based on the Closing Sale Price) for any such fractional shares.

14. Notices. Any and all notices or other communications or deliveries hereunder (including, without limitation, any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered by confirmed e-mail at the e-mail address included in the signature block attached hereto for the Company or, for the Holder, as specified in the books and records of the Transfer Agent prior to 5:30 P.M., New York City time, on a Trading Day (as applicable), (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via confirmed e-mail at the e-mail address specified in the books and records of the Transfer Agent on a day that is not a Trading Day or later than 5:30 P.M., New York City time, on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service specifying next business day delivery, or (iv) upon actual receipt by the Person to whom such notice is required to be given, if by hand delivery.

15. Warrant Agent. The Company shall initially serve as warrant agent under this Warrant. Upon 30 days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

16. Miscellaneous.

(a) No Rights as a Stockholder. Except as otherwise set forth in this Warrant, the Holder, solely in such Person's capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person's capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, amalgamation, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which such Person is then entitled to receive upon the due exercise of this Warrant. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities (upon exercise of this Warrant or otherwise) or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors of the Company.

(b) Further Assurances. Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate or articles of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at

all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (a) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (b) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and non-assessable Warrant Shares upon the exercise of this Warrant and (c) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof as may be necessary to enable the Company to perform its obligations under this Warrant. Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

(c) Successors and Assigns. Subject to compliance with applicable securities laws, this Warrant may be assigned by the Holder. This Warrant may not be assigned by the Company without the written consent of the Holder, except to a successor in the event of a Fundamental Transaction that complies with Section 9(d). This Warrant shall be binding on and inure to the benefit of the Company and the Holder and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant.

(d) Amendment and Waiver. This Warrant may be amended only in writing signed by the Company and the Holder, or their successors and assigns. Except as otherwise provided herein, the Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company has obtained the written consent of the Holder.

(e) Acceptance. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

(f) Governing Law; Jurisdiction. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW THEREOF. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HEREWITH OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT. EACH OF THE

COMPANY AND THE HOLDER HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PERSON AT THE ADDRESS IN EFFECT FOR NOTICES TO IT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. EACH OF THE COMPANY AND THE HOLDER HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

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

(h) Severability. If any part or provision of this Warrant is held unenforceable or in conflict with the applicable laws or regulations of any jurisdiction, the invalid or unenforceable part or provisions shall be replaced with a provision which accomplishes, to the extent possible, the original business purpose of such part or provision in a valid and enforceable manner, and the remainder of this Warrant shall remain binding upon the parties hereto.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

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

ATHIRA PHARMA, INC.

By: _____
Name: _____
Title: _____

SCHEDULE 1

FORM OF EXERCISE NOTICE

[To be executed by the Holder to purchase shares of Common Stock under the Warrant]

Ladies and Gentlemen:

(1) The undersigned is the Holder of Warrant No. __ (the "Warrant") issued by **Athira Pharma, Inc.**, a **Delaware** corporation (the "Company"). Capitalized terms used herein and not otherwise defined herein have the respective meanings set forth in the Warrant.

(2) The undersigned hereby exercises its right to purchase _____ Warrant Shares pursuant to the Warrant.

(3) The Holder intends that payment of the Exercise Price shall be made as (check one):

☐ Cash Exercise

☐ "Cashless Exercise" under Section 11 of the Warrant

(4) If the Holder has elected a Cash Exercise, the Holder shall pay the sum of $ _____ in immediately available funds to the Company in accordance with the terms of the Warrant.

(5) Pursuant to this Exercise Notice, the Company shall deliver to the Holder Warrant Shares determined in accordance with the terms of the Warrant. The Warrant Shares shall be delivered (check one):

☐ to the following DWAC Account Number: _____

☐ in book-entry form via a direct registration system

☐ by physical delivery of a certificate to: _____

_____

☐ in restricted book-entry form in the Company's share register

(6) By its delivery of this Exercise Notice, the undersigned represents and warrants to the Company that in giving effect to the exercise evidenced hereby (i) solely if this Warrant is being exercised pursuant to a Cash Exercise, the Holder is an "accredited investor" as defined in Regulation D promulgated under the Securities Act of 1933, as amended and (ii) the Holder will not beneficially own in excess of the number of shares of Common Stock (as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended) permitted to be owned under Section 12(a) of the Warrant to which this notice relates.

Dated:

Name of Holder:

By:

Name:

Title:

(Signature must conform in all respects to name of Holder as specified on the face of the Warrant)

SCHEDULE 2

FORM OF REDEMPTION NOTICE

[To be executed by the Holder to exercise the Redemption Right]

Ladies and Gentlemen:

(1) The undersigned is the Holder of Warrant No. __ (the "Warrant") issued by **Athira Pharma, Inc.**, a Delaware corporation (the "Company"). Capitalized terms used herein and not otherwise defined herein have the respective meanings set forth in the Warrant.

(2) The undersigned hereby exercises its Redemption Right with respect to _____ Warrant Shares pursuant to the Warrant.

(3) Following exercise of the Redemption Right, the Number of Warrant Shares issuable upon exercise of the Warrant will be _____.

(4) Pursuant to this Redemption Notice, the Company shall deliver to the Holder the aggregate Redemption Price with respect to the Warrant Shares being redeemed determined in accordance with the terms of the Warrant. Such aggregate Redemption Price shall be delivered pursuant to the wire instructions attached as Exhibit A hereto.

Dated:

Name of Holder:

By:

Name:

Title:

(Signature must conform in all respects to name of Holder as specified on the face of the Warrant)

Exhibit A

SCHEDULE 3

ASSIGNMENT FORM

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name:

(Please Print)

Address:

(Please Print)

Phone Number:

Email Address:

Dated: _____ __, _____

Holder's Signature:

Holder's Address:

Signature Guarantee

Exhibit 4.5

REGISTRATION RIGHTS AGREEMENT

THIS REGISTRATION RIGHTS AGREEMENT (this "**Agreement**"), dated as of December [●], 2025, is entered into by and among Athira Pharma, Inc., a Delaware corporation (the "**Company**"), and the several investors signatory hereto (individually as an "**Investor**" and collectively together with their respective permitted assigns, the "**Investors**"). Capitalized terms used herein and not otherwise defined herein shall have the respective meanings set forth in the Securities Purchase Agreement by and among the parties hereto, dated as of the date hereof (as amended, restated, supplemented or otherwise modified from time to time, the "**Purchase Agreement**").

WHEREAS:

A. Upon the terms and subject to the conditions of the Purchase Agreement, the Company has agreed to issue to the Investors, and the Investors have agreed to purchase, severally and not jointly, an aggregate of up to $90,000,000 of (w) shares (the "**Initial Shares**") of the Company's common stock, par value $0.0001 per share (the "**Common Stock**"), (x) pre-funded warrants to purchase shares of Common Stock (the "**Pre-Funded Warrants**"), (y) accompanying warrants to purchase up to that number of additional shares of Common Stock equal to 162.5% of the sum of the number of Initial Shares and the number of shares underlying the Pre-Funded Warrants (rounded down to the nearest whole share) (the "**Series A Common Warrants**") and (z) accompanying warrants to purchase up to that number of additional shares of Common Stock equal to 150% of the sum of the number of Initial Shares and the number of shares underlying the Pre-Funded Warrants (rounded down to the nearest whole share) (the "**Series B Common Warrants**" and together with the Series A Common Warrants, the "**Common Warrants**", and the Common Warrants together with the Pre-Funded Warrants, the "**Warrants**"), in each case, pursuant to the Purchase Agreement. The Initial Shares and the shares of Common Stock issuable upon exercise of the Warrants, without giving effect to any limitations on exercise of the Warrants, and assuming all of the Warrants are exercised for cash, are collectively referred to herein as the "**Shares**."

B. To induce the Investors to enter into the Purchase Agreement, the Company has agreed to provide certain registration rights under the U.S. Securities Act of 1933, as amended, and the rules and regulations thereunder, or any similar successor statute (collectively, the "**Securities Act**"), and applicable state securities laws.

NOW, THEREFORE, in consideration of the promises and the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Company and the Investors hereby agree as follows:

1. DEFINITIONS.

For purposes of this Agreement, the following terms shall have the following meanings:

(a) "**Person**" means an individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture or any other entity or organization.

(b) "**Prospectus**" means (i) the prospectus included in any Registration Statement, as amended or supplemented by any prospectus supplement, with respect to the terms of the offering of any portion of the Registrable Securities covered by such Registration Statement and by all other amendments and supplements to the prospectus, including post-effective amendments and all material incorporated by reference in such prospectus, and (ii) any "free writing prospectus" as defined in Rule 405 under the 1933 Act, relating to the terms of the offering of any portion of the Registrable Securities.

(c) "**Register**," "**Registered**," and "**Registration**" refer to a registration effected by preparing and filing one or more registration statements of the Company in compliance with the Securities Act and providing for offering securities on a continuous basis, and the declaration or ordering of effectiveness of such registration statement(s) by the U.S. Securities and Exchange Commission (the "**SEC**").

(d) "**Registrable Securities**" means the Shares and any Common Stock issued or issuable with respect to the Shares as a result of any stock split or subdivision, stock dividend, recapitalization, exchange or similar event; provided, that a security shall cease to be a Registrable Security upon (A) sale pursuant to a Registration Statement or Prospectus, as applicable, or Rule 144 under the Securities Act, or (B) such security becoming eligible for sale without the requirement for the Company to be in compliance with the current public information required under Rule 144 as to such Registrable Securities and without volume or manner-of-sale restrictions.

(e) "**Registration Expenses**" means all registration and filing fee expenses incurred by the Company in effecting any registration pursuant to this Agreement, including (i) all registration, qualification, and filing fees, printing expenses, and any other fees and expenses associated with filings required to be made with the SEC, FINRA or any other regulatory authority, (ii) all fees and expenses in connection with compliance with or clearing the Registrable Securities for sale under any securities or "Blue Sky" laws, (iii) all printing, duplicating, word processing, messenger, telephone, facsimile and delivery expenses, and (iv) all fees and disbursements of counsel for the Company and of all independent certified public accountants of the Company (including the expenses of any special audit and cold comfort letters required by or incident to such performance).

(f) "**Registration Statement**" means any registration statement of the Company filed with, or to be filed with, the SEC under the Securities Act, that Registers Registrable Securities, including the related Prospectus, amendments and supplements to such registration statement, including pre- and post-effective amendments, and all exhibits and all material incorporated by reference in such registration statement as may be necessary to comply with applicable securities laws. "Registration Statement" shall also include a New Registration Statement, as amended when each became effective, including all documents filed as part thereof or incorporated by reference therein, and including any information contained in a Prospectus subsequently filed with the SEC. If at any time the Company is ineligible to register for resale all of the Registrable Securities on Form S-3, such registration shall be on such other form available to register for resale the Registrable Securities.

(g) "**Required Investors**" means the Investors holding a majority of the Registrable Securities outstanding from time to time (determined as if Warrants then outstanding have been exercised without regard to any limitations on the exercise of such Warrants).

(h) "**Selling Expenses**" means all underwriting discounts and selling commissions applicable to the sale of Registrable Securities and all similar fees and commissions relating to the Investors' disposition of the Registrable Securities.

2. REGISTRATION.

(a) Mandatory Registration. The Company shall, as promptly as reasonably practicable and in any event no later than 30 days after the Closing Date on Form S-3, subject to Section 2(g), (the "**Filing Deadline**"), prepare and file with the SEC an initial Registration Statement (the "**Initial Registration Statement**") covering the resale of all Registrable Securities. Before filing the Registration Statement, the Company shall furnish to the Investors a copy of the Registration Statement. The Investors and their counsel shall have at least three (3) Business Days prior to the anticipated filing date of a

Registration Statement to review and comment upon such Registration Statement and any amendment or supplement to such Registration Statement and any related Prospectus, prior to its filing with the SEC. Subject to any SEC comments, such Registration Statement shall include the plan of distribution substantially in the form attached hereto as Exhibit A. Such Registration Statement also shall cover, to the extent allowable under the 1933 Act and the rules promulgated thereunder (including Rule 416), such indeterminate number of additional shares of Common Stock resulting from stock splits, stock dividends or similar transactions with respect to the Registrable Securities. Such Registration Statement shall not include any shares of Common Stock or other securities for the account of any other holder of securities of the Company without the prior written consent of the Required Investors. The Company shall (a) use commercially reasonable efforts to address in each such document prior to being so filed with the SEC such comments as the Investor or its counsel reasonably proposed by the Investor, and (b) not file any Registration Statement or Prospectus or any amendment or supplement thereto containing information regarding the Investor to which Investor reasonably objects, unless such information is required to comply with any applicable law or regulation. The Investors shall furnish all information reasonably requested by the Company and as shall be reasonably required in connection with any registration referred to in this Agreement.

(b) Effectiveness. The Company shall use its reasonable best efforts to have the Initial Registration Statement and any amendment declared effective by the SEC at the earliest possible date but no later than the earlier of the 75th calendar day following the initial filing date of the Initial Registration Statement if the SEC notifies the Company that it will "review" the Initial Registration Statement and (b) the fifth Business Day after the date the Company is notified (orally or in writing, whichever is earlier) by the SEC that the Initial Registration Statement will not be "reviewed" or will not be subject to further review (the "**Effectiveness Deadline**"); provided that if the SEC is not available to review or declare effective registration statements as of the Effectiveness Deadline, including because of a "lapse in appropriations" (as described in the SEC's *Operations Plan Under a Lapse in Appropriations and Government Shutdown*, August 7, 2025, or any similar guidance subsequently published by the SEC), then, after the SEC resumes reviewing and declaring effective registration statements, the Effectiveness Deadline shall be the fifth (5th) Business Day following the date the Company is notified (orally or in writing, whichever is earlier) by the SEC that the Initial Registration Statement will not be "reviewed" or will not be subject to further review (or, in the event the SEC reviews and has written comments to the Initial Registration Statement, the 75th calendar day following the date the SEC resumes reviewing and declaring effective registration statements). The Company shall notify the Investors by e-mail as promptly as practicable, and in any event, within 24 hours, after the Initial Registration Statement is declared effective or is supplemented and shall provide the Investors with copies of any Prospectus to be used in connection with the sale or other disposition of the securities covered thereby. The Company shall use reasonable best efforts to keep the Initial Registration Statement continuously effective pursuant to Rule 415 promulgated under the Securities Act and available for the resale by the Investors of all of the Registrable Securities covered thereby at all times until the earliest to occur of the following events: (i) the date on which the Investors shall have resold all the Registrable Securities covered thereby pursuant to any applicable securities exemption where the recipient thereof receives unrestricted securities, including Rule 144 (or any successor provision) or pursuant to a Registration Statement; and (ii) the date on which the Registrable Securities may be resold by the Investors without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for the Company to be in compliance with the current public information requirement under Rule 144 under the Securities Act or any other rule of similar effect (the "**Registration Period**"). The Initial Registration Statement (including any amendments or supplements thereto and prospectuses contained therein) shall not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein, or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading.

(c) Sufficient Number of Shares Registered. In the event the number of shares available under the Initial Registration Statement at any time is insufficient to cover the Registrable Securities, the Company shall, to the extent necessary and permissible, amend the Initial Registration Statement or file a new registration statement (together with any prospectuses or prospectus supplements thereunder, a "**New Registration Statement**"), so as to cover all of such Registrable Securities as soon as reasonably practicable, but in any event not later than ten Business Days after the necessity therefor arises (the "**New Registration Filing Deadline**"). The Company shall use its reasonable best efforts to have such amendment and/or New Registration Statement become effective as soon as reasonably practicable following the filing thereof but no later than the earlier of the 75th calendar day following the initial filing date of the New Registration Statement if the SEC notifies the Company that it will "review" the New Registration Statement and (b) the fifth Business Day after the date the Company is notified (orally or in writing, whichever is earlier) by the SEC that the New Registration Statement will not be "reviewed" or will not be subject to further review (the earlier of such dates, the "**New Registration Effectiveness Deadline**") provided that if the SEC is not available to review or declare effective registration statements as of the New Registration Effectiveness Deadline, including because of a "lapse in appropriations" (as described in the SEC's *Operations Plan Under a Lapse in Appropriations and Government Shutdown*, August 7, 2025, or any similar guidance subsequently published by the SEC), then, after the SEC resumes reviewing and declaring effective registration statements, the New Registration Effectiveness Deadline shall be the fifth (5th) Business Day following the date the Company is notified (orally or in writing, whichever is earlier) by the SEC that the Initial Registration Statement will not be "reviewed" or will not be subject to further review (or, in the event the SEC reviews and has written comments to the New Registration Statement, the 75th calendar day following the date the SEC resumes reviewing and declaring effective registration statements). The provisions of Section 2(a) and (b) shall apply to the New Registration Statement, except as modified hereby. The provisions of Section 2(a) and (b) shall apply to the New Registration Statement, except as modified hereby.

(d) Liquidated Damages. If (i) the Initial Registration Statement has not been filed by the Filing Deadline, (ii) the Initial Registration Statement has not been declared effective by the Effectiveness Deadline, (iii) the New Registration Statement has not been filed by the New Registration Filing Deadline, (iv) the New Registration Statement has not been declared effective by the New Registration Effectiveness Deadline or (v) after any Registration Statement has been declared effective by the SEC, sales cannot be made pursuant to such Registration Statement for any reason (including without limitation by reason of a stop order, or the Company's failure to update such Registration Statement), but excluding any Allowed Delay (as defined below), then the Company will make pro rata payments to each Investor then holding Registrable Securities, as liquidated damages and not as a penalty, in an amount equal to 1.0% of the sum of (x) the aggregate amount paid pursuant to the Purchase Agreement and (y) in the case of pre-funded warrants, the aggregate amount paid or payable pursuant to such pre-funded warrants, by such Investor for such Registrable Securities then held by such Investor on the date of the applicable failure and for each 30-day period, or pro rata for any portion thereof during which the failure continues (the "**Blackout Period**"). Such payments shall constitute the Investors' exclusive monetary remedy for such events, but shall not affect the right of the Investors to seek injunctive relief. The amounts payable as liquidated damages pursuant to this paragraph shall be paid in cash no later than five (5) Business Days after each such failure and each such 30-day period (pro-rated for periods totaling less than 30 days) following the commencement of the Blackout Period until the termination of the Blackout Period (the "**Blackout Period Payment Date**"). Interest shall accrue at the rate of 1.0% per month on any such liquidated damages payments that shall not be paid by the Blackout Period Payment Date until such amount is paid in full. Notwithstanding anything in this Section 2(d) to the contrary, during any periods that the Company is unable to meet its obligations hereunder with respect to the registration of the Registrable Securities solely because any Investor fails to furnish information required to be provided pursuant to Section 2(a) or Section 4(a) within three (3) Business Days of the Company's request, any liquidated

damages that would otherwise accrue as to such Investor only shall be tolled until such information is delivered to the Company.

(e) Allowable Delays. On no more than two occasions and for not more than 30 consecutive days (or forty-five (45) consecutive calendar days if the Company receives comments on its Annual Report on Form 10-K or if the Company has filed or amended a Registration Statement or Final Prospectus, as applicable, relating to resales of the Registrable Securities and such filing or amendment is not automatically effective) or for a total of not more than 60 days in any 12 month period, the Company may delay the effectiveness of the Initial Registration Statement or any other Registration Statement, or suspend the use of any Prospectus, in the event that the Company or Board of Directors determines, in good faith and upon advice of outside legal counsel, that such delay or suspension is necessary to (A) delay the disclosure of material non-public information concerning the Company, the disclosure of which at the time is not, in the good faith opinion of the Company, in the best interests of the Company, (B) amend or supplement the affected Registration Statement or the related Prospectus so that such Registration Statement or Prospectus shall not include an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the case of the Prospectus in light of the circumstances under which they were made, not misleading or (C) a Suspension Event (as defined in Section 3(e)) occurs (an "**Allowed Delay**"); provided, that the Company shall promptly (a) notify each Investor by email of the commencement of an Allowed Delay, but shall not (without the prior written consent of an Investor) disclose to such Investor any material non-public information giving rise to an Allowed Delay, (b) advise the Investors in writing to cease all sales under the applicable Registration Statement until the end of the Allowed Delay and (c) use commercially reasonable efforts to terminate an Allowed Delay as promptly as practicable. Each Investor may deliver written notice (an "**Opt-Out Notice**") to the Company requesting that such Investor not receive notices from the Company otherwise required by this Section 2; provided, however, that such Investor may later revoke any such Opt-Out Notice in writing. Following receipt of an Opt-Out Notice from an Investor (unless subsequently revoked), (a) the Company shall not deliver any notices pursuant to this Section 2(e) to such Investor and such Investor shall no longer be entitled to the rights associated with any such notice and (b) each time prior to such Investor's intended use of an effective Registration Statement, such Investor will notify the Company in writing at least two (2) Business Days in advance of such intended use, and if a notice of an Allowed Delay was previously delivered (or would have been delivered but for the provisions of this Section 2(e)) and the related suspension period remains in effect, the Company will so notify such Investor, within one (1) Business Day of such Investor's notification to the Company, by delivering to such Investor a copy of such previous notice of an Allowed Delay, and thereafter will provide such Investor with the related notice of the conclusion of such Allowed Delay immediately upon the conclusion thereof (which notices shall not contain any material nonpublic information or subject such Investor to any duty of confidentiality).

(f) Rule 415; Cutback. If at any time the SEC takes the position that the offering of some or all of the Registrable Securities in any Registration Statement is not eligible to be made on a delayed or continuous basis under the provisions of Rule 415 under the Securities Act (provided, however, the Company shall be obligated to use reasonable best efforts to advocate with the SEC for the registration of all of the Registrable Securities) or requires any Investor to be named as an "underwriter," the Company shall (i) promptly notify each holder of Registrable Securities thereof and (ii) make commercially reasonable efforts to persuade the SEC that the offering contemplated by such Registration Statement is a valid secondary offering and not an offering "by or on behalf of the issuer" as defined in Rule 415 and that none of the Investors is an "underwriter." The Investors shall have the right to select one legal counsel, which counsel shall be selected by the Required Investors, to review and oversee any registration or matters pursuant to this Section 2(f), including participation in any meetings or discussions with the SEC regarding the SEC's position and to comment on any written submission made to the SEC with respect thereto. No such written submission with respect to this matter shall be made to the SEC to which any Investor's counsel reasonably objects. In the event that, despite the Company's reasonable best efforts and compliance with

the terms of this Section 2(f), the SEC refuses to alter its position, the Company shall (i) remove from such Registration Statement such portion of the Registrable Securities (the "**Cut Back Shares**") and/or (ii) agree to such restrictions and limitations on the registration and resale of the Registrable Securities as the SEC may require to assure the Company's compliance with the requirements of Rule 415 (collectively, the "**SEC Restrictions**"); provided, however, that the Company shall not name any Investor as an "underwriter" in such Registration Statement without the prior written consent of such Investor (provided that, in the event an Investor withholds such consent, the Company shall have no obligation hereunder to include any Registrable Securities of such Investor in any Registration Statement covering the resale thereof until such time as the SEC no longer requires such Investor to be named as an "underwriter" in such Registration Statement or such Investor otherwise consents in writing to being so named). Any cut-back imposed on the Investors pursuant to this Section 2(f) shall be allocated among the Investors on a pro rata basis and shall be applied first to any of the Registrable Securities of such Investor as such Investor shall designate, unless the SEC Restrictions otherwise require or provide or the Investors otherwise agree. From and after such date as the Company is able to effect the registration of such Cut Back Shares in accordance with any SEC Restrictions (the "**Restriction Termination Date**"), all of the provisions of this Section 2 (including the Company's obligations with respect to the filing of a Registration Statement and its obligations to use reasonable efforts to have such Registration Statement declared effective within the time periods set forth herein and the liquidated damages provisions relating thereto) shall again be applicable to such Cut Back Shares and any registration statement so filed shall be deemed a "Registration Statement" under this Agreement; *provided*, *however*, that the date by which the Company is required to file the Registration Statement with respect to such Cut Back Shares shall be the tenth (10th) day following the Restriction Termination Date and the date by which the Company is required to have the Registration Statement effective with respect to such Cut Back Shares shall be the 50th day immediately after the Restriction Termination Date.

(g) Form S-3. In the event that Form S-3 is not available for the registration of the resale of Registrable Securities hereunder, the Company shall (i) register the resale of the Registrable Securities on another appropriate form reasonably acceptable to the Holders and (ii) undertake to register the Registrable Securities on Form S-3 promptly after such form is available; provided that the Company shall maintain the effectiveness of the Registration Statement then in effect until such time as a Registration Statement on Form S-3 covering the Registrable Securities has been declared effective by the SEC.

3. RELATED COMPANY OBLIGATIONS.

With respect to the Registration Statement and whenever any Registrable Securities are to be Registered pursuant to Section 2, including on the Initial Registration Statement or on any New Registration Statement, the Company shall use its reasonable best efforts to effect the registration of the Registrable Securities in accordance with the intended method of disposition thereof and, pursuant thereto, the Company shall have the following obligations:

(a) Notifications. The Company will promptly notify the Investors of the time when any subsequent amendment to the Initial Registration Statement or any New Registration Statement, other than documents incorporated by reference, has been filed with the SEC and/or has become effective or where a receipt has been issued therefor or any subsequent supplement to a Prospectus has been filed and of any request by the SEC for any amendment or supplement to the Registration Statement, any New Registration Statement or any Prospectus or for additional information.

(b) Amendments. The Company will prepare and file with the SEC any amendments, post-effective amendments or supplements to the Initial Registration Statement, any New Registration Statement or any Prospectus, as applicable, that, (a) as may be necessary to keep such Registration Statement effective for the Effectiveness Period and to comply with the provisions of the Securities Act

and the Securities Exchange Act of 1934, as amended (the "**Exchange Act**") with respect to the distribution of the Registrable Securities covered thereby, or (b) in the reasonable opinion of the Investors and the Company, as may be necessary or advisable in connection with any acquisition or sale of Registrable Securities by the Investors.

(c) Investor Review. The Company will not file any amendment or supplement to the Registration Statement, any New Registration Statement or any Prospectus, other than documents incorporated by reference, relating to the Investors, the Registrable Securities or the transactions contemplated hereby unless (A) the Investors and their counsel shall have been advised and afforded the opportunity to review and comment thereon at least three (3) Business Days prior to filing with the SEC and (B) the Company shall have given reasonable due consideration to any comments thereon received from the Investors or their counsel.

(d) Copies Available. The Company will furnish to any Investor whose Registrable Securities are included in any Registration Statement and its counsel copies of the Initial Registration Statement, any Prospectus thereunder (including all documents incorporated by reference therein), any Prospectus supplement thereunder, any New Registration Statement and all amendments to the Initial Registration Statement or any New Registration Statement that are filed with the SEC during the Registration Period (including all documents filed with or furnished to the SEC during such period that are deemed to be incorporated by reference therein), each letter written by or on behalf of the Company to the SEC or the staff of the SEC, and each item of correspondence from the SEC or the staff of the SEC, in each case relating to such Registration Statement (other than any portion thereof which contains information for which the Company has sought confidential treatment) and such other documents as the Investor may reasonably request in order to facilitate the disposition of the Registrable Securities owned by such Investor that are covered by such Registration Statement, in each case as soon as reasonably practicable upon such Investor's request and in such quantities as such Investor may from time to time reasonably request; provided, however, that the Company shall not be required to furnish any document to such Investor to the extent such document is available on EDGAR.

(e) Notification of Stop Orders; Material Changes. The Company shall use commercially reasonable efforts to (i) prevent the issuance of any stop order or other suspension of effectiveness and, (ii) if such order is issued, obtain the withdrawal of any such order as soon as practicable. The Company shall advise the Investors promptly (but in no event later than 24 hours) and shall confirm such advice in writing, in each case: (i) of the Company's receipt of notice of any request by the SEC or any other federal or state governmental authority for amendment of or a supplement to the Registration Statement or any Prospectus or for any additional information; (ii) of the Company's receipt of notice of the issuance by the SEC or any other federal or state governmental authority of any stop order suspending the effectiveness of the Initial Registration Statement or prohibiting or suspending the use of any Prospectus or Prospectus supplement, or any New Registration Statement, or of the Company's receipt of any notification of the suspension of qualification of the Registrable Securities for offering or sale in any jurisdiction or the initiation or contemplated initiation of any proceeding for such purpose; and (iii) of the Company becoming aware of the happening of any event, which makes any statement of a material fact made in any Registration Statement or any Prospectus untrue or which requires the making of any additions to or changes to the statements then made in any Registration Statement or any Prospectus in order to state a material fact required by the Securities Act to be stated therein or necessary in order to make the statements then made therein (in the case of any Prospectus, in light of the circumstances under which they were made) not misleading, or of the necessity to amend any Registration Statement or any Prospectus to comply with the Securities Act or any other law. The Company shall not be required to disclose to the Investors (and shall not so disclose to any Investor without such Investor's prior written consent) the substance of specific reasons of any of the events set forth in clause (i) to (iii) of the immediately preceding sentence (each, a "**Suspension Event**"), but rather, shall only be required to disclose that the event has occurred; provided

that the Company should not provide any material non-public information to the Investors in such notice (it being understood that notice solely of the existence of the Suspension Event as required by this Section 3(e) shall not constitute a breach hereof). If at any time the SEC, or any other federal or state governmental authority shall issue any stop order suspending the effectiveness of any Registration Statement or prohibiting or suspending the use of any Prospectus or Prospectus supplement, the Company shall use its reasonable best efforts to obtain the withdrawal of such order at the earliest practicable time. The Company shall furnish to the Investors, without charge, a copy of any correspondence from the SEC or the staff of the SEC, or any other federal or state governmental authority to the Company or its representatives relating to the Initial Registration Statement, any New Registration Statement or any Prospectus, or Prospectus supplement as the case may be. In the event of a Suspension Event set forth in clause (iii) of the first sentence of this Section 3(e), the Company will use its commercially reasonable efforts to publicly disclose such event as soon as reasonably practicable, or otherwise resolve the matter such that sales under Registration Statements may resume.

(f) Confirmation of Effectiveness. If reasonably requested by an Investor at any time in respect of any Registration Statement, the Company shall deliver to such Investor a written confirmation (email being sufficient) from Company's counsel of whether or not the effectiveness of such Registration Statement has lapsed at any time for any reason (including, without limitation, the issuance of a stop order) and whether or not such Registration Statement is currently effective and available to the Company for sale of Registrable Securities.

(g) Listing. The Company shall have filed with Nasdaq a Notification Form: Listing of Additional Shares for the listing of the Shares and Nasdaq shall have raised no objection to such notice.

(h) Compliance. The Company shall otherwise use reasonable best efforts to comply with all applicable rules and regulations of the SEC under the Securities Act and the Exchange Act, including, without limitation, Rule 172 under the Securities Act, file any final prospectus, including any supplement or amendment thereof, with the SEC pursuant to Rule 424 under the Securities Act by 9:30 a.m. New York time on the Business Day following the date the applicable Registration Statement is declared effective, promptly inform the Investor in writing if, at any time during the Effectiveness Period, the Company does not satisfy the conditions specified in Rule 172 and, as a result thereof, the Investor is required to deliver a prospectus in connection with any disposition of Registrable Securities and take such other actions as may be reasonably necessary to facilitate the registration of the Registrable Securities hereunder, and make available to its security holders, as soon as reasonably practicable, but not later than the Availability Date (as defined below), an earnings statement covering a period of at least 12 months, beginning after the effective date of each Registration Statement, which earnings statement shall satisfy the provisions of Section 11(a) of the Securities Act, including Rule 158 promulgated thereunder (for the purpose of this subsection 3(h), "**Availability Date**" means the 45th day following the end of the fourth fiscal quarter that includes the effective date of such Registration Statement, except that, if such fourth fiscal quarter is the last quarter of the Company's fiscal year, "**Availability Date**" means the 90th day after the end of such fourth fiscal quarter).

(i) Blue-Sky. The Company shall register or qualify or cooperate with the Investor and their counsel in connection with the registration or qualification of such Registrable Securities for the offer and sale under the securities or blue sky laws of such jurisdictions reasonably requested by the Investor; provided, however, that the Company shall not be required in connection therewith or as a condition thereto to (i) qualify to do business in any jurisdiction where it would not otherwise be required to qualify but for this Section 3(i), (ii) subject itself to general taxation in any jurisdiction where it would not otherwise be so subject but for this Section 3(i), or (iii) file a general consent to service of process in any such jurisdiction.

(j) Rule 144. With a view to making available to the Investors the benefits of Rule 144 (or its successor rule) and any other rule or regulation of the SEC that may at any time permit the Investors to sell shares of Common Stock to the public without registration, the Company covenants and agrees to: (i) make and keep adequate current public information available, as those terms are understood and defined in Rule 144, until the earlier of (A) six months after such date as all of the Registrable Securities may be sold without restriction by the holders thereof pursuant to Rule 144 or any other rule of similar effect or (B) such date as there are no longer Registrable Securities; and (ii) file with the SEC in a timely manner all reports and other documents required of the Company under the Exchange Act; (iii) furnish electronically to each Investor upon request, as long as such Investor owns any Registrable Securities, (A) a written statement by the Company that it has complied with the reporting requirements of the Exchange Act, (B) a copy of or electronic access to the Company's most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q, and (C) such other information as may be reasonably requested in order to avail such Investor of any rule or regulation of the SEC that permits the selling of any such Registrable Securities without registration.

(k) Cooperation. The Company shall cooperate with the holders of the Registrable Securities to facilitate the timely preparation and delivery of certificates or uncertificated shares representing the Registrable Securities to be sold pursuant to such Registration Statement or Rule 144 free of any restrictive legends and representing such number of shares of Common Stock and registered in such names as the holders of the Registrable Securities may reasonably request to the extent permitted by such Registration Statement or Rule 144 to effect sales of Registrable Securities; for the avoidance of doubt, the Company may satisfy its obligations hereunder without issuing physical stock certificates through the use of The Depository Trust Company's Direct Registration System.

4. OBLIGATIONS OF THE INVESTORS.

(a) Investor Information. Each Investor shall provide a completed Investor Questionnaire in the form attached hereto as Exhibit B in connection with the registration of the Registrable Securities. If the Company has not received such completed Questionnaire from an Investor within three (3) Business Days of the Company's request, the Company may file the Registration Statement without including such Investor's Registrable Securities.

(b) Suspension of Sales. Each Investor, severally and not jointly with any other Investor, agrees that, upon receipt of any notice from the Company of the existence of an Allowed Delay or a Suspension Event as set forth in Section 3(e), the Investor will promptly discontinue disposition of Registrable Securities pursuant to any Registration Statement covering such Registrable Securities until the Investor's receipt of a notice from the Company confirming the resolution of such Allowed Delay or Suspension Event and that such dispositions may again be made; provided, for the avoidance of doubt, that the foregoing shall not limit the right of the Investor to sell or otherwise dispose of the Registrable Securities pursuant to Rule 144 or any other exemption from the registration requirements of the Securities Act or to settle a transaction pursuant to a Registration Statement as to which a contract for such sale was entered into prior to such Investor's receipt of the notice from the Company of the existence of the Allowed Delay or Suspension Event. The Company shall cause its transfer agent to deliver unlegended shares of Common Stock to a transferee of an Investor in accordance with any sale of Registrable Securities pursuant to a Registration Statement with respect to which such Investor has entered into a contract for sale prior to such Investor's receipt of the notice from the Company of the existence of the Allowed Delay or Suspension Event.

(c) Investor Cooperation. Each Investor, severally and not jointly with any other Investor, agrees to cooperate with the Company as reasonably requested by the Company in connection with the preparation and filing of any amendments and supplements to any Registration Statement or New

Registration Statement hereunder, unless such Investor has notified the Company in writing of its election to exclude all of its Registrable Securities from such Registration Statement.

5. EXPENSES OF REGISTRATION.

All Registration Expenses incurred in connection with registrations pursuant to this Agreement shall be borne by the Company. All Selling Expenses relating to securities registered on behalf of an Investor shall be borne by the investor incurring the relevant Selling Expenses.

6. INDEMNIFICATION.

(a) To the fullest extent permitted by law, the Company will, and hereby does, indemnify, hold harmless and defend the Investors, each Person, if any, who controls the Investors, the shareholders, the members, the directors, officers, partners, employees, members, managers, agents, representatives and advisors of the Investors and each Person, if any, who controls any of the Investors within the meaning of the Securities Act or the Exchange Act (each, an "**Indemnified Person**"), against any losses, obligation, claims, damages, liabilities, contingencies, judgments, fines, penalties, charges, costs (including, without limitation, court costs and costs of preparation), reasonable and documented attorneys' fees, amounts paid in settlement or reasonable and documented expenses, (collectively, "**Claims**") reasonably incurred in investigating, preparing or defending any action, claim, suit, inquiry, proceeding, investigation or appeal taken from the foregoing by or before any court or governmental, administrative or other regulatory agency or body or the SEC, whether pending or threatened, whether or not an indemnified party is or may be a party thereto ("**Indemnified Damages**"), to which any of them may become subject insofar as such Claims (or actions or proceedings, whether commenced or threatened, in respect thereof) arise out of or are based upon: (i) any untrue statement or alleged untrue statement or omission or alleged omission of any material fact contained in any Registration Statement, any preliminary prospectus or final prospectus, or any amendment or supplement thereof, or (ii) any violation or alleged violation by the Company or any of its Subsidiaries of the Securities Act, Exchange Act or any other state securities or other "blue sky" laws of any jurisdiction in which Registrable Securities are offered or any rule or regulation promulgated thereunder applicable to the Company or its agents and relating to action or inaction required of the Company in connection with such registration of the Registrable Securities (the matters in the foregoing clauses (i) and (ii) being, collectively, "**Violations**"). The Company shall reimburse each Indemnified Person promptly as such expenses are incurred and are due and payable, for any reasonable out-of-pocket legal fees or other reasonable and documented expenses incurred by them in connection with investigating or defending any such Claim. Notwithstanding anything to the contrary contained herein, the indemnification agreement contained in this Section 6(a): (A) shall not apply to a Claim by an Indemnified Person arising out of or based upon a Violation which occurs in reliance upon and in conformity with information furnished in writing to the Company by the relevant Investor or such relevant Indemnified Person specifically for use in such Registration Statement or prospectus and was reviewed and approved in writing by such Investor or such Indemnified Person expressly for use in connection with the preparation of any Registration Statement, any prospectus or any such amendment thereof or supplement thereto; (B) with respect to any superseded prospectus, shall not inure to the benefit of any such Person from whom the Person asserting any such Claim purchased the Registrable Securities that are the subject thereof (or to the benefit of any other Indemnified Person) if the untrue statement or omission of material fact contained in the superseded prospectus was corrected in the revised prospectus, as then amended or supplemented, and the Indemnified Person was promptly advised in writing not to use the outdated, defective or incorrect prospectus prior to the use giving rise to a Violation; (C) shall not apply to amounts paid in settlement of any Claim if such settlement is effected without the prior written consent of the Company, which consent shall not be unreasonably withheld, conditioned or delayed. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of the Indemnified Person and shall survive the transfer of the Registrable Securities by the Investor pursuant to Section 8.

(b) In connection with the Initial Registration Statement, any New Registration Statement or any prospectus, the Investors, severally and not jointly, agree to indemnify, hold harmless and defend, the Company, each of its directors, each of its officers who signed the Initial Registration Statement or signs any New Registration Statement, each Person, if any, who controls the Company within the meaning of the Securities Act or the Exchange Act (each, an "**Indemnified Party**"), against any losses, claims, damages, liabilities and expense (including reasonable attorney fees) resulting from any Violation, in each case to the extent, and only to the extent, that such Violation occurs in reliance upon and in conformity with information about the relevant Investor furnished in writing by such Investor to the Company and reviewed and approved in writing by such Investor or such Indemnified Person expressly for use in connection with the preparation of the Registration Statement, any New Registration Statement, any prospectus or any such amendment thereof or supplement thereto. In no event shall the liability of an Investor be greater in amount than the dollar amount of the proceeds (net of all expense paid by such Investor in connection with any claim relating to this Section 6 and the amount of any damages such Investor has otherwise been required to pay by reason of such untrue statement or omission) received by such Investor upon the sale of the Registrable Securities included in such Registration Statement giving rise to such indemnification obligation. Notwithstanding anything to the contrary contained herein, the indemnification agreement contained in this Section 6(b) shall not apply to amounts paid in settlement of any Claim if such settlement is effected without the prior written consent of such Investor, which consent shall not be unreasonably withheld, conditioned or delayed. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of such Indemnified Party and shall survive the transfer of the Registrable Securities by any Investor pursuant to Section 8.

(c) Promptly after receipt by an Indemnified Person or Indemnified Party under this Section 6 of notice of the commencement of any action or proceeding (including any governmental action or proceeding) involving a Claim, such Indemnified Person or Indemnified Party shall, if a Claim in respect thereof is to be made against any indemnifying party under this Section 6, deliver to the indemnifying party a written notice of the commencement thereof, and the indemnifying party shall have the right to participate in, and, to the extent the indemnifying party so desires, jointly with any other indemnifying party similarly noticed, to assume control of the defense thereof with counsel mutually satisfactory to the indemnifying party and the Indemnified Person or the Indemnified Party, as the case may be, and upon such notice, the indemnifying party shall not be liable to the Indemnified Person or the Indemnified Party for any legal or other expenses subsequently incurred by the Indemnified Person or the Indemnified Party in connection with the defense thereof; provided, however, that an Indemnified Person or Indemnified Party (together with all other Indemnified Persons and Indemnified Parties that may be represented without conflict by one counsel) shall have the right to retain its own counsel with the reasonable fees and expenses to be paid by the indemnifying party, if, in the reasonable opinion of counsel retained by the indemnifying party, the representation by such counsel of the Indemnified Person or Indemnified Party and the indemnifying party would be inappropriate due to actual or potential differing interests between such Indemnified Person or Indemnified Party and any other party represented by such counsel in such proceeding. The Indemnified Party or Indemnified Person shall cooperate with the indemnifying party in connection with any negotiation or defense of any such action or claim by the indemnifying party and shall furnish to the indemnifying party all information reasonably available to the Indemnified Party or Indemnified Person which relates to such action or claim. The indemnifying party shall keep the Indemnified Party or Indemnified Person fully apprised as to the status of the defense or any settlement negotiations with respect thereto. No indemnifying party shall be liable for any settlement of any action, claim or proceeding effected without its written consent, provided, however, that the indemnifying party shall not unreasonably withhold, delay or condition its consent. No indemnifying party shall, without the consent of the Indemnified Party or Indemnified Person, consent to entry of any judgment or enter into any settlement or other compromise unless such judgment or settlement (i) imposes no liability or obligation on, (ii) includes as an unconditional term thereof the giving of a complete, explicit and unconditional release from the party bringing such

indemnified claims of all liability of the Indemnified Party or Indemnified Person in respect to or arising out of such claim or litigation in favor of, and (iii) does not include any admission of fault, culpability, wrongdoing, or wrongdoing or malfeasance by or on behalf of, the Indemnified Party or Indemnified Person. Following indemnification as provided for hereunder, the indemnifying party shall be subrogated to all rights of the Indemnified Party or Indemnified Person with respect to all third parties, firms or corporations relating to the matter for which indemnification has been made. The failure to deliver written notice to the indemnifying party within a reasonable time of the commencement of any such action shall not relieve such indemnifying party of any liability to the Indemnified Person or Indemnified Party under this Section 6, except to the extent that the indemnifying party is prejudiced in its ability to defend such action.

(d) The indemnification required by this Section 6 shall be made by periodic payments during the course of the investigation or defense, as and when bills are received or Indemnified Damages are incurred. Any Person receiving a payment pursuant to this Section 6 which person is later determined to not be entitled to such payment shall return such payment (including reimbursement of expenses) to the person making it.

(e) The indemnity agreements contained herein shall be in addition to (i) any cause of action or similar right of the Indemnified Party or Indemnified Person against the indemnifying party or others, and (ii) any liabilities the indemnifying party may be subject to pursuant to the law.

7. CONTRIBUTION.

To the extent any indemnification by an indemnifying party is prohibited or limited by law, the indemnifying party agrees to make the maximum contribution with respect to any amounts for which it would otherwise be liable under Section 6 to the fullest extent permitted by law; provided, however, that: (i) no seller of Registrable Securities guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any seller of Registrable Securities who was not guilty of fraudulent misrepresentation; and (ii) contribution by any seller of Registrable Securities shall be limited in amount to the amount of proceeds (net of all expenses paid by such holder in connection with any claim relating to this Section 7 and the amount of any damages such holder has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission) received by such seller from the sale of such Registrable Securities giving rise to such contribution obligation.

8. ASSIGNMENT OF REGISTRATION RIGHTS.

The Company shall not assign this Agreement or any rights or obligations hereunder (whether by operation of law or otherwise) without the prior written consent of the Required Investors; provided, however, that in any transaction, whether by merger, reorganization, restructuring, consolidation, financing or otherwise, whereby the Company is a party and in which the Registrable Securities are converted into the equity securities of another Person, from and after the effective time of such transaction, such Person shall, by virtue of such transaction, be deemed to have assumed the obligations of the Company hereunder, the term "Company" shall be deemed to refer to such Person and the term "Registrable Securities" shall be deemed to include the securities received by the Investor in connection with such transaction unless such securities are otherwise freely tradable by the Investor after giving effect to such transaction, and the prior written consent of the Required Investors shall not be required for such transaction.

An Investor may transfer or assign its rights hereunder, in whole or from time to time in part, to one or more Persons in connection with the transfer (i) of not fewer than 100,000 (subject to

appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization) Registrable Securities (including Registrable Securities issuable upon exercise of Warrants) by such Investor to such Person or (ii) to an Affiliate of such Investor regardless of the number of Registrable Securities being transferred to such Affiliate, provided that such Investor complies with all laws applicable thereto, and the provisions of the Purchase Agreement, and provides written notice of assignment to the Company promptly after such assignment is effected, and such Person agrees in writing to be bound by all of the provisions contained herein.

The provisions of this Agreement shall be binding upon and inure to the benefit of the Investor and its successors and permitted assigns.

9. AMENDMENTS AND WAIVERS.

The provisions of this Agreement, including the provisions of this sentence, may be amended, modified or supplemented, or waived only by a written instrument executed by (i) the Company and (ii) the Required Investors, provided that (1) any party may give a waiver as to itself, (2) any amendment, modification, supplement or waiver that disproportionately and adversely affects the rights and obligations of any Investor relative to the comparable rights and obligations of the other Investors shall require the prior written consent of such adversely affected Investor, and (3) any amendments to Section 6 or to the definitions of "Filing Deadline," "Effectiveness Deadline," or "Registration Period" shall require the written consent of each Investor. Notwithstanding the foregoing, a waiver or consent to depart from the provisions hereof with respect to a matter that relates exclusively to the rights of one or more Investors and that does not adversely directly or indirectly affect the rights of other Investors may be given by Investors holding all of the Registrable Securities to which such waiver or consent relates.

10. MISCELLANEOUS.

(a) Notices. Any notices or other communications required or permitted to be given hereunder shall be in writing and shall be deemed to be given (a) when delivered if personally delivered to the party for whom it is intended, (b) when delivered, if sent by electronic mail during normal business hours of the recipient, and if not sent during normal business hours, then on the recipient's next business day, (c) three days after having been sent by certified or registered mail, return-receipt requested and postage prepaid, or (d) one business day after deposit with a nationally recognized overnight courier, freight prepaid, specifying next business day delivery, with written verification of receipt:

i. If to the Company, addressed as follows:

Athira Pharma, Inc.
18706 North Creek Parkway, Suite 104,
Bothell, Washington 98011
Attention: Legal
Email:

with a copy (which shall not constitute notice):

Wilson Sonsini Goodrich & Rosati, P.C.
701 5th Ave #5100,
Seattle, WA 98104
Attention: Michael Nordtvedt & Bryan D. King
Email:

ii. If to any Investor, at its e-mail address or address set forth on its signature page to the Purchase Agreement or to such e-mail address, or address as subsequently modified by written notice given in accordance with this Section 10.

Any Person may change the address to which notices and communications to it are to be addressed by notification as provided for herein.

(b) Consent to Electronic Notice. Each Investor consents to the delivery of any stockholder notice pursuant to the Delaware General Corporation Law (the "**DGCL**"), as amended or superseded from time to time, by electronic mail pursuant to Section 232 of the DGCL (or any successor thereto) at the e-mail address set forth below the Investor's name on the signature page or Exhibit A, as updated from time to time by notice to the Company. To the extent that any notice given by means of electronic mail is returned or undeliverable for any reason, the foregoing consent shall be deemed to have been revoked until a new or corrected e-mail address has been provided, and such attempted electronic notice shall be ineffective and deemed to not have been given. Each party agrees to promptly notify the other parties of any change in its e-mail address, and that failure to do so shall not affect the foregoing.

(c) Waiver. No waiver of any term, provision or condition of this Agreement, whether by conduct or otherwise, in any one or more instances, shall be deemed to be, or be construed as, a further or continuing waiver of any such term, provision or condition or as a waiver of any other term, provision or condition of this Agreement.

(d) Governing Law. The provisions of Section 8.6 of the Purchase Agreement are incorporated by reference herein *mutatis mutandis*.

(e) Headings. The titles, subtitles and headings in this Agreement are for convenience of reference and shall not form part of, or affect the interpretation of, this Agreement.

(f) Counterparts. This Agreement may be executed in two or more identical counterparts, all of which shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party; provided that a facsimile or pdf signature including any electronic signatures complying with the U.S. federal ESIGN Act of 2000, e.g., www.docusign.com shall be considered due execution and shall be binding upon the signatory thereto with the same force and effect as if the signature were an original, not a facsimile or pdf (or other electronic reproduction of a) signature.

(g) Further Assurances. Each party shall do and perform, or cause to be done and performed, all such further acts and things, and shall execute and deliver all such other agreements, certificates, instruments and documents as the other party may reasonably request in order to carry out the intent and accomplish the purposes of this Agreement and the consummation of the transactions contemplated hereby.

(h) Contract Interpretation. This Agreement is the joint product of each Investor and the Company and each provision hereof has been subject to the mutual consultation, negotiation and agreement of such parties and shall not be construed for or against any party hereto.

(i) No Third Party Beneficiaries. Except as set forth in Sections 6 and 7, nothing in this Agreement, express or implied, is intended to confer on any Person other than the parties to this Agreement, and their respective permitted successors and assigns, any rights, remedies, claims, benefits, obligations or liabilities under or by reason of this Agreement, and no Person that is not a party to this Agreement (including, without limitation, any partner, member, shareholder, director, officer, employee or

other beneficial owner of any party to this Agreement, in its own capacity as such or in bringing a derivative action on behalf of a party to this Agreement) shall have any standing as a third party beneficiary with respect to this Agreement or the transactions contemplated hereby.

(j) Severability. If any part or provision of this Agreement is held unenforceable or in conflict with the applicable laws or regulations of any jurisdiction, the invalid or unenforceable part or provisions shall be replaced with a provision which accomplishes, to the extent possible, the original business purpose of such part or provision in a valid and enforceable manner, and the remainder of this Agreement shall remain binding upon the parties hereto.

(k) Non-Recourse. Notwithstanding anything that may be expressed or implied in this Agreement, the Company covenants, agrees and acknowledges that no recourse under this Agreement or any documents or instruments delivered in connection with this Agreement shall be had against any current or future director, officer, employee, stockholder, general or limited partner or member of the Investors or of any affiliates or assignees thereof, whether by the enforcement of any assessment or by any legal or equitable proceeding, or by virtue of any statute, regulation or other applicable law, it being expressly agreed and acknowledged that no personal liability whatsoever shall attach to, be imposed on or otherwise be incurred by any current or future director, officer, employee, stockholder, general or limited partner or member of the Investors or of any affiliates or assignees thereof, as such for any obligation of the Investors under this Agreement or any documents or instruments delivered in connection with this Agreement for any claim based on, in respect of or by reason of such obligations or their creation.

(l) Specific Performance. In addition to any and all other remedies that may be available at law in the event of any breach of this Agreement, each Investor shall be entitled to specific performance of the agreements and obligations of the Company hereunder and to such other injunction or other equitable relief as may be granted by a court of competent jurisdiction.

(m) Cumulative Remedies. The remedies provided herein are cumulative and not exclusive of any remedies provided by law.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties have caused this Registration Rights Agreement to be duly executed as of date first written above.

COMPANY:

ATHIRA PHARMA, INC.

By: _____

Name: _____

Title: _____

[Signature Page to Registration Rights Agreement]

IN WITNESS WHEREOF, the parties have caused this Registration Rights Agreement to be duly executed as of date first written above.

INVESTOR:

By: _____

Name: _____

Title: _____

[Signature Page to Registration Rights Agreement]

Exhibit A

PLAN OF DISTRIBUTION

The selling stockholders, which as used herein includes donees, pledgees, transferees or other successors-in-interest selling shares of common stock or interests in shares of common stock received after the date of this prospectus from a selling stockholder as a gift, pledge, partnership distribution or other transfer, may, from time to time, sell, transfer or otherwise dispose of any or all of their shares of common stock or interests in shares of common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

These sales may be effected in transactions, which may involve crosses or block transactions. The selling stockholders may use any one or more of the following methods when disposing of shares or interests therein:

- distributions to members, partners, stockholders or other equityholders of the selling stockholders;
- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales and settlement of short sales entered into after the effective date of the registration statement of which this prospectus is a part;
- through the writing or settlement of options or other hedging transactions, whether such options are listed on an options exchange or otherwise;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The selling stockholders may, from time to time, pledge or grant a security interest in some or all of the shares of common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock, from time to time, under this prospectus, or under an amendment to this prospectus under Rule 424(b)(3) or other

applicable provision of the Securities Act, amending, if necessary, the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus. The selling stockholders also may transfer or donate the shares of common stock in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling stockholders for purposes of this prospectus.

In connection with the sale of our common stock or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our common stock short and deliver these securities to close out their short positions, or loan or pledge the common stock to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the selling stockholders from the sale of the common stock offered by them will be the purchase price of the common stock less discounts or commissions, if any. Each of the selling stockholders reserves the right to accept and, together with their agents from time to time, to reject, in whole or in part, any proposed purchase of common stock to be made directly or through agents. We will not receive any of the proceeds from this offering. Upon any exercise of the pre-funded warrants or common warrants by payment of cash, however, we will receive the exercise price of the pre-funded warrants or common warrants.

The selling stockholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144 under the Securities Act, provided that they meet the criteria and conform to the requirements of that rule, or another available exemption from the registration requirements under the Securities Act. Broker-dealers engaged by the selling stockholders may arrange for other broker-dealers to participate in sales. If the selling stockholders effect such transactions by selling shares of common stock to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from the selling stockholders or commissions from purchasers of the shares of common stock for whom they may act as agent or to whom they may sell as principal. Such commissions will be in amounts to be negotiated, but, except as set forth in a supplement to this Prospectus, in the case of an agency transaction will not be in excess of a customary brokerage commission in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440.

The selling stockholders and any underwriters, broker-dealers or agents that participate in the sale of the common stock or interests therein may be “underwriters” within the meaning of Section 2(a)(11) of the Securities Act (it being understood that the selling stockholders shall not be deemed to be underwriters solely as a result of their participation in this offering). Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. Selling stockholders who are “underwriters” within the meaning of Section 2(a)(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act.

To the extent required, the shares of our common stock to be sold, the names of the selling stockholders, the respective purchase prices and public offering prices, the names of any agent, dealer or underwriter, and any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to the registration statement that includes this prospectus.

Each selling stockholder has informed the Company that it is not a registered broker-dealer and does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the common stock. Upon the Company being notified in writing by a selling stockholder that any material arrangement has been entered into with a broker-dealer for the sale of common stock through a block trade, special offering, exchange distribution or secondary distribution or a purchase by a broker or dealer, a supplement to this prospectus will be filed, if required, pursuant to Rule 424(b) under the Securities Act, disclosing (i) the name of each such selling stockholder and of the participating broker-dealer(s), (ii) the number of shares involved, (iii) the price at which such the shares of common stock were sold, (iv) the commissions paid or discounts or concessions allowed to such broker-dealer(s), where applicable, (v) that such broker-dealer(s) did not conduct any investigation to verify the information set out or incorporated by reference in this prospectus, and (vi) other facts material to the transaction. In no event shall any broker-dealer receive fees, commissions and markups, which, in the aggregate, would exceed eight percent (8.0%). In order to comply with the securities laws of some states, if applicable, the common stock may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the common stock may not be sold unless it has been registered or qualified for sale or an exemption from registration or qualification requirements is available and is complied with.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares in the market and to the activities of the selling stockholders and their affiliates. In addition, to the extent applicable, we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act. There can be no assurance that any selling stockholder will sell any or all of the shares of common stock registered pursuant to the registration statement, of which this prospectus forms a part.

We have agreed to indemnify the selling stockholders against liabilities, including liabilities under the Securities Act and state securities laws, relating to the registration of the shares offered by this prospectus.

We have agreed with the selling stockholders to use commercially reasonable efforts to cause the registration statement of which this prospectus constitutes a part to become effective and to remain continuously effective until the earlier of: (i) the date on which the selling stockholders shall have resold or otherwise disposed of all the shares covered by this prospectus pursuant to any applicable securities exemption where the recipient thereof receives unrestricted securities including Rule 144 (or any successor provision) or pursuant to this prospectus, and (ii) the date on which the shares covered by this prospectus no longer constitute "Registrable Securities" as such term is defined in the Registration Rights Agreement, such that they may be resold by the selling stockholders without registration and without

regard to any volume or manner-of-sale limitations and without current public information pursuant to Rule 144 under the Securities Act or any other rule of similar effect.

We will pay all expenses of the registration of the shares of common stock pursuant to the registration rights agreement, including, without limitation, SEC filing fees and expenses of compliance with state securities or "blue sky" laws; provided, however, that each selling stockholder will pay all underwriting discounts and selling commissions, if any and any related legal expenses incurred by it. We will indemnify the selling stockholders against certain liabilities, including some liabilities under the Securities Act, in accordance with the registration rights agreement, or the selling stockholders will be entitled to contribution. We may be indemnified by the selling stockholders against civil liabilities, including liabilities under the Securities Act, that may arise from any written information furnished to us by the selling stockholders specifically for use in this prospectus, in accordance with the related registration rights agreements, or we may be entitled to contribution.

Exhibit B

Investor Questionnaire

The undersigned hereby provides the following information to the Company and represents and warrants that such information is accurate:

QUESTIONNAIRE

1. Name.

(a) Full Legal Name of Investor

_____

(b) Full Legal Name of Registered Holder (if not the same as (a) above) through which Registrable Securities are held:

_____

(c) Full Legal Name of Natural Control Person (which means a natural person who directly or indirectly alone or with others has power to vote or dispose of the securities covered by this Questionnaire):

_____

2. Address for Notices to Investor:

_____

_____

_____

Telephone:

E-Mail: _____

Contact Person:

3. Broker-Dealer Status:

(a) Are you a broker-dealer?

Yes No

(b) If "yes" to Section 3(a), did you receive your Registrable Securities as compensation for investment banking services to the Company?

Yes No

Note: If "no" to Section 3(b), the Commission's staff has indicated that you should be identified as an underwriter in the Registration Statement.

(c) Are you an affiliate of a broker-dealer?

Yes No

(d) If you are an affiliate of a broker-dealer, do you certify that you purchased the Registrable Securities in the ordinary course of business, and at the time of the purchase of the Registrable Securities to be resold, you had no agreements or understandings, directly or indirectly, with any person to distribute the Registrable Securities?

Yes No

Note: If "no" to Section 3(d), the Commission's staff has indicated that you should be identified as an underwriter in the Registration Statement.

4. Beneficial Ownership of Securities of the Company Owned by the Investor.

Except as set forth below in this Item 4, the undersigned is not the beneficial or registered owner of any securities of the Company other than the securities issuable pursuant to the Purchase Agreement.

(a) Type and Amount of other securities beneficially owned by the Investor:

_____

_____

5. Relationships with the Company:

Except as set forth below, neither the undersigned nor any of its affiliates, officers, directors or principal equity holders (owners of 5% of more of the equity securities of the undersigned) has held

any position or office or has had any other material relationship with the Company (or its predecessors or affiliates) during the past three years.

State any exceptions here:

_____

_____

The undersigned agrees to promptly notify the Company of any material inaccuracies or changes in the information provided herein that may occur subsequent to the date hereof at any time while the Registration Statement remains effective; provided, that the undersigned shall not be required to notify the Company of any changes to the number of securities held or owned by the undersigned or its affiliates.

By signing below, the undersigned consents to the disclosure of the information contained herein in its answers to Items 1 through 5 and the inclusion of such information in the Registration Statement and the related prospectus and any amendments or supplements thereto. The undersigned understands that such information will be relied upon by the Company in connection with the preparation or amendment of the Registration Statement and the related prospectus and any amendments or supplements thereto.

IN WITNESS WHEREOF the undersigned, by authority duly given, has caused this Notice and Questionnaire to be executed and delivered either in person or by its duly authorized agent.

Date: ___ Investor: _

By: ____
Name:
Title:

PLEASE EMAIL A .PDF COPY OF THE COMPLETED AND EXECUTED QUESTIONNAIRE TO:

Exhibit 4.6

REGISTRATION RIGHTS AGREEMENT

THIS REGISTRATION RIGHTS AGREEMENT (this "**Agreement**"), dated as of December [●], 2025, is entered into by and between Athira Pharma, Inc., a Delaware corporation (the "**Company**"), and Sermonix Pharmaceuticals, Inc., a Delaware corporation (the "**Purchaser**"). Capitalized terms used herein and not otherwise defined herein shall have the respective meanings set forth in the Securities Purchase Agreement by and between the parties hereto, dated as of the date hereof (as amended, restated, supplemented or otherwise modified from time to time, the "**Purchase Agreement**").

WHEREAS:

A. Upon the terms and subject to the conditions of the Purchase Agreement, the Company has agreed to issue to the Purchaser, and the Purchaser has agreed to purchase, a pre-funded warrant to purchase shares of the Company's common stock, par value $0.0001 per share (the "**Common Stock**") (the "**Pre-Funded Warrant**") pursuant to the Purchase Agreement. The shares of Common Stock issuable upon exercise of the Pre-Funded Warrant, without giving effect to any limitations on exercise of the Pre-Funded Warrant, and assuming the Pre-Funded Warrant is exercised for cash, are referred to herein as the "**Shares**."

B. To induce the Purchaser to enter into the Purchase Agreement, the Company has agreed to provide certain registration rights under the U.S. Securities Act of 1933, as amended, and the rules and regulations thereunder, or any similar successor statute (collectively, the "**Securities Act**"), and applicable state securities laws.

NOW, THEREFORE, in consideration of the promises and the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Company and the Purchaser hereby agree as follows:

1. DEFINITIONS.

For purposes of this Agreement, the following terms shall have the following meanings:

(a) "**Person**" means an individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture or any other entity or organization.

(b) "**Prospectus**" means (i) the prospectus included in any Registration Statement, as amended or supplemented by any prospectus supplement, with respect to the terms of the offering of any portion of the Registrable Securities covered by such Registration Statement and by all other amendments and supplements to the prospectus, including post-effective amendments and all material incorporated by reference in such prospectus and (ii) any "free writing prospectus" as defined in Rule 405 under the 1933 Act, relating to the terms of the offering of any portion of the Registrable Securities.

(c) "**Register**," "**Registered**" and "**Registration**" refer to a registration effected by preparing and filing one or more registration statements of the Company in compliance with the Securities Act and providing for offering securities on a continuous basis, and the declaration or ordering of effectiveness of such registration statement(s) by the U.S. Securities and Exchange Commission (the "**SEC**").

(d) "**Registrable Securities**" means the Shares and any Common Stock issued or issuable with respect to the Shares as a result of any stock split or subdivision, stock dividend, recapitalization, exchange or similar event; provided, that a security shall cease to be a Registrable Security upon (A) sale pursuant to a Registration Statement or Prospectus, as applicable, or Rule 144 under the

Securities Act, or (B) such security becoming eligible for sale without the requirement for the Company to be in compliance with the current public information required under Rule 144 as to such Registrable Securities and without volume or manner-of-sale restrictions.

(e) "**Registration Expenses**" means all registration and filing fee expenses incurred by the Company in effecting any registration pursuant to this Agreement, including (i) all registration, qualification, and filing fees, printing expenses, and any other fees and expenses associated with filings required to be made with the SEC, FINRA or any other regulatory authority, (ii) all fees and expenses in connection with compliance with or clearing the Registrable Securities for sale under any securities or "Blue Sky" laws, (iii) all printing, duplicating, word processing, messenger, telephone, facsimile and delivery expenses and (iv) all fees and disbursements of counsel for the Company and of all independent certified public accountants of the Company (including the expenses of any special audit and cold comfort letters required by or incident to such performance).

(f) "**Registration Statement**" means any registration statement of the Company filed with, or to be filed with, the SEC under the Securities Act, that Registers Registrable Securities, including the related Prospectus, amendments and supplements to such registration statement, including pre- and post-effective amendments, and all exhibits and all material incorporated by reference in such registration statement as may be necessary to comply with applicable securities laws. "Registration Statement" shall also include a New Registration Statement, as amended when each became effective, including all documents filed as part thereof or incorporated by reference therein, and including any information contained in a Prospectus subsequently filed with the SEC. If at any time the Company is ineligible to register for resale all of the Registrable Securities on Form S-3, such registration shall be on such other form available to register for resale the Registrable Securities.

(g) "**Selling Expenses**" means all underwriting discounts and selling commissions applicable to the sale of Registrable Securities and all similar fees and commissions relating to the Purchaser's disposition of the Registrable Securities.

2. REGISTRATION.

(a) Mandatory Registration. The Company shall, as promptly as reasonably practicable and in any event no later than 30 days after the Closing Date on Form S-3, subject to Section 2(g), (the "**Filing Deadline**"), prepare and file with the SEC an initial Registration Statement (the "**Initial Registration Statement**") covering the resale of all Registrable Securities. Before filing the Registration Statement, the Company shall furnish to the Purchaser a copy of the Registration Statement. The Purchaser and its counsel shall have at least three (3) Business Days prior to the anticipated filing date of a Registration Statement to review and comment upon such Registration Statement and any amendment or supplement to such Registration Statement and any related Prospectus, prior to its filing with the SEC. Subject to any SEC comments, such Registration Statement shall include the plan of distribution substantially in the form attached hereto as Exhibit A. Such Registration Statement also shall cover, to the extent allowable under the 1933 Act and the rules promulgated thereunder (including Rule 416), such indeterminate number of additional shares of Common Stock resulting from stock splits, stock dividends or similar transactions with respect to the Registrable Securities. Such Registration Statement shall not include any shares of Common Stock or other securities for the account of any other holder of securities of the Company without the prior written consent of the Purchaser. The Company shall (a) use commercially reasonable efforts to address in each such document prior to being so filed with the SEC such comments as the Purchaser or its counsel reasonably proposed by the Purchaser and (b) not file any Registration Statement or Prospectus or any amendment or supplement thereto containing information regarding the Purchaser to which the Purchaser reasonably objects, unless such information is required to comply with any applicable law or regulation.

The Purchaser shall furnish all information reasonably requested by the Company and as shall be reasonably required in connection with any registration referred to in this Agreement.

(b) Effectiveness. The Company shall use its reasonable best efforts to have the Initial Registration Statement and any amendment declared effective by the SEC at the earliest possible date but no later than the earlier of the 75th calendar day following the initial filing date of the Initial Registration Statement if the SEC notifies the Company that it will "review" the Initial Registration Statement and (b) the fifth Business Day after the date the Company is notified (orally or in writing, whichever is earlier) by the SEC that the Initial Registration Statement will not be "reviewed" or will not be subject to further review (the "**Effectiveness Deadline**"); provided that if the SEC is not available to review or declare effective registration statements as of the Effectiveness Deadline, including because of a "lapse in appropriations" (as described in the SEC's *Operations Plan Under a Lapse in Appropriations and Government Shutdown*, August 7, 2025, or any similar guidance subsequently published by the SEC), then, after the SEC resumes reviewing and declaring effective registration statements, the Effectiveness Deadline shall be the fifth (5th) Business Day following the date the Company is notified (orally or in writing, whichever is earlier) by the SEC that the Initial Registration Statement will not be "reviewed" or will not be subject to further review (or, in the event the SEC reviews and has written comments to the Initial Registration Statement, the 75th calendar day following the date the SEC resumes reviewing and declaring effective registration statements). The Company shall notify the Purchaser by e-mail as promptly as practicable, and in any event, within 24 hours, after the Registration Statement is declared effective or is supplemented and shall provide the Purchaser with copies of any Prospectus to be used in connection with the sale or other disposition of the securities covered thereby. The Company shall use reasonable best efforts to keep the Initial Registration Statement continuously effective pursuant to Rule 415 promulgated under the Securities Act and available for the resale by the Purchaser of all of the Registrable Securities covered thereby at all times until the earliest to occur of the following events: (i) the date on which the Purchaser shall have resold all the Registrable Securities covered thereby pursuant to any applicable securities exemption, including Rule 144 (or any successor provision) or pursuant to a Registration Statement; and (ii) the date on which the Registrable Securities may be resold by the Purchaser without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for the Company to be in compliance with the current public information requirement under Rule 144 under the Securities Act or any other rule of similar effect (the "**Registration Period**"). The Initial Registration Statement (including any amendments or supplements thereto and prospectuses contained therein) shall not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein, or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading.

(c) Sufficient Number of Shares Registered. In the event the number of shares available under the Initial Registration Statement at any time is insufficient to cover the Registrable Securities, the Company shall, to the extent necessary and permissible, amend the Initial Registration Statement or file a new registration statement (together with any prospectuses or prospectus supplements thereunder, a "**New Registration Statement**"), so as to cover all of such Registrable Securities as soon as reasonably practicable, but in any event not later than ten Business Days after the necessity therefor arises (the "**New Registration Filing Deadline**"). The Company shall use its reasonable best efforts to have such amendment and/or New Registration Statement become effective as soon as reasonably practicable following the filing thereof but no later than the earlier of the 75th calendar day following the initial filing date of the New Registration Statement if the SEC notifies the Company that it will "review" the New Registration Statement and (b) the fifth Business Day after the date the Company is notified (orally or in writing, whichever is earlier) by the SEC that the New Registration Statement will not be "reviewed" or will not be subject to further review (the earlier of such dates, the "**New Registration Effectiveness Deadline**"); provided that if the SEC is not available to review or declare effective registration statements as of the New Registration Effectiveness Deadline, including because of a "lapse in appropriations" (as described in the SEC's *Operations Plan Under a Lapse in Appropriations and Government Shutdown*,

August 7, 2025, or any similar guidance subsequently published by the SEC), then, after the SEC resumes reviewing and declaring effective registration statements, the New Registration Effectiveness Deadline shall be the fifth (5th) Business Day following the date the Company is notified (orally or in writing, whichever is earlier) by the SEC that the Initial Registration Statement will not be "reviewed" or will not be subject to further review (or, in the event the SEC reviews and has written comments to the New Registration Statement, the 75th calendar day following the date the SEC resumes reviewing and declaring effective registration statements). The provisions of Section 2(a) and (b) shall apply to the New Registration Statement, except as modified hereby. The provisions of Section 2(a) and (b) shall apply to the New Registration Statement, except as modified hereby

(d) Liquidated Damages. If (i) the Initial Registration Statement has not been filed by the Filing Deadline, (ii) the Initial Registration Statement has not been declared effective by the Effectiveness Deadline, (iii) the New Registration Statement has not been filed by the New Registration Filing Deadline, (iv) the New Registration Statement has not been declared effective by the New Registration Effectiveness Deadline or (v) after any Registration Statement has been declared effective by the SEC, sales cannot be made pursuant to such Registration Statement for any reason (including without limitation by reason of a stop order, or the Company's failure to update such Registration Statement), but excluding any Allowed Delay (as defined below), then the Company will make pro rata payments to each Purchaser then holding Registrable Securities, as liquidated damages and not as a penalty, in an amount equal to 1.0% of the sum of (x) the aggregate amount paid pursuant to the Purchase Agreement and (y) in the case of pre-funded warrants, the aggregate amount paid or payable pursuant to such pre-funded warrants, by such Purchaser for such Registrable Securities then held by such Purchaser on the date of the applicable failure and for each 30-day period, or pro rata for any portion thereof during which the failure continues (the "**Blackout Period**"). Such payments shall constitute the Purchasers' exclusive monetary remedy for such events, but shall not affect the right of the Purchasers to seek injunctive relief. The amounts payable as liquidated damages pursuant to this paragraph shall be paid in cash no later than five (5) Business Days after each such failure and each such 30-day period (pro-rated for periods totaling less than 30 days) following the commencement of the Blackout Period until the termination of the Blackout Period (the "**Blackout Period Payment Date**"). Interest shall accrue at the rate of 1.0% per month on any such liquidated damages payments that shall not be paid by the Blackout Period Payment Date until such amount is paid in full. Notwithstanding anything in this Section 2(d) to the contrary, during any periods that the Company is unable to meet its obligations hereunder with respect to the registration of the Registrable Securities solely because any Purchaser fails to furnish information required to be provided pursuant to Section 2(a) or Section 4(a) within three (3) Business Days of the Company's request, any liquidated damages that would otherwise accrue as to such Purchaser only shall be tolled until such information is delivered to the Company.

(e) Allowable Delays. On no more than two occasions and for not more than 30 consecutive days (or forty-five (45) consecutive calendar days if the Company receives comments on its Annual Report on Form 10-K or if the Company has filed or amended a Registration Statement or Final Prospectus, as applicable, relating to resales of the Registrable Securities and such filing or amendment is not automatically effective) or for a total of not more than 60 days in any 12 month period, the Company may delay the effectiveness of the Initial Registration Statement or any other Registration Statement, or suspend the use of any Prospectus, in the event that the Company or Board of Directors determines, in good faith and upon advice of outside legal counsel, that such delay or suspension is necessary to (A) delay the disclosure of material non-public information concerning the Company, the disclosure of which at the time is not, in the good faith opinion of the Company, in the best interests of the Company, (B) amend or supplement the affected Registration Statement or the related Prospectus so that such Registration Statement or Prospectus shall not include an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the case of the Prospectus in light of the circumstances under which they were made, not misleading or (C) a Suspension Event (as

defined in Section 3(e)) occurs (an "**Allowed Delay**"); provided, that the Company shall promptly (a) notify the Purchaser by email of the commencement of an Allowed Delay, but shall not (without the prior written consent of the Purchaser) disclose to the Purchaser any material non-public information giving rise to an Allowed Delay, (b) advise the Purchaser in writing to cease all sales under the applicable Registration Statement until the end of the Allowed Delay and (c) use commercially reasonable efforts to terminate an Allowed Delay as promptly as practicable. The Purchaser may deliver written notice (an "**Opt-Out Notice**") to the Company requesting that the Purchaser not receive notices from the Company otherwise required by this Section 2; provided, however, that the Purchaser may later revoke any such Opt-Out Notice in writing. Following receipt of an Opt-Out Notice from the Purchaser (unless subsequently revoked), (a) the Company shall not deliver any notices pursuant to this Section 2(d) to the Purchaser and the Purchaser shall no longer be entitled to the rights associated with any such notice and (b) each time prior to the Purchaser's intended use of an effective Registration Statement, the Purchaser will notify the Company in writing at least two (2) Business Days in advance of such intended use, and if a notice of an Allowed Delay was previously delivered (or would have been delivered but for the provisions of this Section 2(d)) and the related suspension period remains in effect, the Company will so notify the Purchaser, within one (1) Business Day of the Purchaser's notification to the Company, by delivering to the Purchaser a copy of such previous notice of an Allowed Delay, and thereafter will provide the Purchaser with the related notice of the conclusion of such Allowed Delay immediately upon the conclusion thereof (which notices shall not contain any material nonpublic information or subject the Purchaser to any duty of confidentiality).

(f) Rule 415; Cutback. If at any time the SEC takes the position that the offering of some or all of the Registrable Securities in any Registration Statement is not eligible to be made on a delayed or continuous basis under the provisions of Rule 415 under the Securities Act (provided, however, the Company shall be obligated to use reasonable best efforts to advocate with the SEC for the registration of all of the Registrable Securities) or requires the Purchaser to be named as an "underwriter," the Company shall (i) promptly notify each holder of Registrable Securities thereof and (ii) make commercially reasonable efforts to persuade the SEC that the offering contemplated by such Registration Statement is a valid secondary offering and not an offering "by or on behalf of the issuer" as defined in Rule 415 and that the Purchaser is not an "underwriter." The Purchaser shall have the right to select one legal counsel, which counsel shall be selected by the Purchaser, to review and oversee any registration or matters pursuant to this Section 2(e), including participation in any meetings or discussions with the SEC regarding the SEC's position and to comment on any written submission made to the SEC with respect thereto. No such written submission with respect to this matter shall be made to the SEC to which the Purchaser's counsel reasonably objects. In the event that, despite the Company's reasonable best efforts and compliance with the terms of this Section 2(e), the SEC refuses to alter its position, the Company shall (i) remove from such Registration Statement such portion of the Registrable Securities (the "**Cut Back Shares**") and/or (ii) agree to such restrictions and limitations on the registration and resale of the Registrable Securities as the SEC may require to assure the Company's compliance with the requirements of Rule 415 (collectively, the "**SEC Restrictions**"); provided, however, that the Company shall not name the Purchaser as an "underwriter" in such Registration Statement without the prior written consent of the Purchaser (provided that, in the event the Purchaser withholds such consent, the Company shall have no obligation hereunder to include any Registrable Securities of the Purchaser in any Registration Statement covering the resale thereof until such time as the SEC no longer requires the Purchaser to be named as an "underwriter" in such Registration Statement or the Purchaser otherwise consents in writing to being so named). Any cut-back imposed on the Purchaser pursuant to this Section 2(e) shall be allocated among the Purchaser and any other holders of Registrable Securities on a pro rata basis and shall be applied first to any of the Registrable Securities of the Purchaser as the Purchaser shall designate, unless the SEC Restrictions otherwise require or provide or the Purchaser otherwise agree. From and after such date as the Company is able to effect the registration of such Cut Back Shares in accordance with any SEC Restrictions (the "**Restriction Termination Date**"), all of the provisions of this Section 2 (including the Company's obligations with respect to the filing of a Registration Statement and its obligations to use reasonable efforts to have such Registration Statement

declared effective within the time periods set forth herein and the liquidated damages provisions relating thereto) shall again be applicable to such Cut Back Shares and any registration statement so filed shall be deemed a "Registration Statement" under this Agreement; provided, however, that the date by which the Company is required to file the Registration Statement with respect to such Cut Back Shares shall be the tenth (10th) day following the Restriction Termination Date and the date by which the Company is required to have the Registration Statement effective with respect to such Cut Back Shares shall be the 50th day immediately after the Restriction Termination Date.

(g) Form S-3. In the event that Form S-3 is not available for the registration of the resale of Registrable Securities hereunder, the Company shall (i) register the resale of the Registrable Securities on another appropriate form reasonably acceptable to the Holders and (ii) undertake to register the Registrable Securities on Form S-3 promptly after such form is available; provided that the Company shall maintain the effectiveness of the Registration Statement then in effect until such time as a Registration Statement on Form S-3 covering the Registrable Securities has been declared effective by the SEC.

3. RELATED COMPANY OBLIGATIONS.

With respect to the Registration Statement and whenever any Registrable Securities are to be Registered pursuant to Section 2, including on the Initial Registration Statement or on any New Registration Statement, the Company shall use its reasonable best efforts to effect the registration of the Registrable Securities in accordance with the intended method of disposition thereof and, pursuant thereto, the Company shall have the following obligations:

(a) Notifications. The Company will promptly notify the Purchaser of the time when any subsequent amendment to the Initial Registration Statement or any New Registration Statement, other than documents incorporated by reference, has been filed with the SEC and/or has become effective or where a receipt has been issued therefor or any subsequent supplement to a Prospectus has been filed and of any request by the SEC for any amendment or supplement to the Registration Statement, any New Registration Statement or any Prospectus or for additional information.

(b) Amendments. The Company will prepare and file with the SEC any amendments, post-effective amendments or supplements to the Initial Registration Statement, any New Registration Statement or any Prospectus, as applicable, that, (a) as may be necessary to keep such Registration Statement effective for the Effectiveness Period and to comply with the provisions of the Securities Act and the Securities Exchange Act of 1934, as amended (the "**Exchange Act**") with respect to the distribution of the Registrable Securities covered thereby or (b) in the reasonable opinion of the Purchaser and the Company, as may be necessary or advisable in connection with any acquisition or sale of Registrable Securities by the Purchaser.

(c) Purchaser Review. The Company will not file any amendment or supplement to the Registration Statement, any New Registration Statement or any Prospectus, other than documents incorporated by reference, relating to the Purchaser, the Registrable Securities or the transactions contemplated hereby unless (A) the Purchaser and its counsel shall have been advised and afforded the opportunity to review and comment thereon at least three (3) Business Days prior to filing with the SEC and (B) the Company shall have given reasonable due consideration to any comments thereon received from the Purchaser or its counsel.

(d) Copies Available. The Company will furnish to the Purchaser whose Registrable Securities are included in any Registration Statement and its counsel copies of the Initial Registration Statement, any Prospectus thereunder (including all documents incorporated by reference therein), any Prospectus supplement thereunder, any New Registration Statement and all amendments to the Initial

Registration Statement or any New Registration Statement that are filed with the SEC during the Registration Period (including all documents filed with or furnished to the SEC during such period that are deemed to be incorporated by reference therein), each letter written by or on behalf of the Company to the SEC or the staff of the SEC, and each item of correspondence from the SEC or the staff of the SEC, in each case relating to such Registration Statement (other than any portion thereof which contains information for which the Company has sought confidential treatment) and such other documents as the Purchaser may reasonably request in order to facilitate the disposition of the Registrable Securities owned by the Purchaser that are covered by such Registration Statement, in each case as soon as reasonably practicable upon the Purchaser's request and in such quantities as the Purchaser may from time to time reasonably request; provided, however, that the Company shall not be required to furnish any document to the Purchaser to the extent such document is available on EDGAR.

(e) Notification of Stop Orders; Material Changes. The Company shall use commercially reasonable efforts to (i) prevent the issuance of any stop order or other suspension of effectiveness and (ii) if such order is issued, obtain the withdrawal of any such order as soon as practicable. The Company shall advise the Purchaser promptly (but in no event later than 24 hours) and shall confirm such advice in writing, in each case: (i) of the Company's receipt of notice of any request by the SEC or any other federal or state governmental authority for amendment of or a supplement to the Registration Statement or any Prospectus or for any additional information, (ii) of the Company's receipt of notice of the issuance by the SEC or any other federal or state governmental authority of any stop order suspending the effectiveness of the Initial Registration Statement or prohibiting or suspending the use of any Prospectus or Prospectus supplement, or any New Registration Statement, or of the Company's receipt of any notification of the suspension of qualification of the Registrable Securities for offering or sale in any jurisdiction or the initiation or contemplated initiation of any proceeding for such purpose, and (iii) of the Company becoming aware of the happening of any event which makes any statement of a material fact made in any Registration Statement or any Prospectus untrue or which requires the making of any additions to or changes to the statements then made in any Registration Statement or any Prospectus in order to state a material fact required by the Securities Act to be stated therein or necessary in order to make the statements then made therein (in the case of any Prospectus, in light of the circumstances under which they were made) not misleading, or of the necessity to amend any Registration Statement or any Prospectus to comply with the Securities Act or any other law. The Company shall not be required to disclose to the Purchaser (and shall not so disclose to any Purchaser without such Purchaser's prior written consent) the substance of specific reasons of any of the events set forth in clause (i) to (iii) of the immediately preceding sentence (each, a "**Suspension Event**"), but rather, shall only be required to disclose that the event has occurred; provided that the Company should not provide any material non-public information to the Purchasers in such notice (it being understood that notice solely of the existence of the Suspension Event as required by this Section 3(e) shall not constitute a breach hereof). If at any time the SEC, or any other federal or state governmental authority shall issue any stop order suspending the effectiveness of any Registration Statement or prohibiting or suspending the use of any Prospectus or Prospectus supplement, the Company shall use its reasonable best efforts to obtain the withdrawal of such order at the earliest practicable time. The Company shall furnish to the Purchaser, without charge, a copy of any correspondence from the SEC or the staff of the SEC, or any other federal or state governmental authority to the Company or its representatives relating to the Initial Registration Statement, any New Registration Statement or any Prospectus, or Prospectus supplement as the case may be. In the event of a Suspension Event set forth in clause (iii) of the first sentence of this Section 3(e), the Company will use its commercially reasonable efforts to publicly disclose such event as soon as reasonably practicable, or otherwise resolve the matter such that sales under Registration Statements may resume.

(f) Confirmation of Effectiveness. If reasonably requested by the Purchaser at any time in respect of any Registration Statement, the Company shall deliver to the Purchaser a written confirmation (email being sufficient) from Company's counsel of whether or not the effectiveness of such

Registration Statement has lapsed at any time for any reason (including, without limitation, the issuance of a stop order) and whether or not such Registration Statement is currently effective and available to the Company for sale of Registrable Securities.

(g) Listing. The Company shall have filed with Nasdaq a Notification Form: Listing of Additional Shares for the listing of the Shares and Nasdaq shall have raised no objection to such notice.

(h) Compliance. The Company shall otherwise use reasonable best efforts to comply with all applicable rules and regulations of the SEC under the Securities Act and the Exchange Act, including, without limitation, Rule 172 under the Securities Act, file any final prospectus, including any supplement or amendment thereof, with the SEC pursuant to Rule 424 under the Securities Act by 9:30 a.m. New York time on the Business Day following the date the applicable Registration Statement is declared effective, promptly inform the Purchaser in writing if, at any time during the Effectiveness Period, the Company does not satisfy the conditions specified in Rule 172 and, as a result thereof, the Purchaser is required to deliver a prospectus in connection with any disposition of Registrable Securities and take such other actions as may be reasonably necessary to facilitate the registration of the Registrable Securities hereunder, and make available to its security holders, as soon as reasonably practicable, but not later than the Availability Date (as defined below), an earnings statement covering a period of at least 12 months, beginning after the effective date of each Registration Statement, which earnings statement shall satisfy the provisions of Section 11(a) of the Securities Act, including Rule 158 promulgated thereunder (for the purpose of this subsection 3(h), "**Availability Date**" means the 45th day following the end of the fourth fiscal quarter that includes the effective date of such Registration Statement, except that, if such fourth fiscal quarter is the last quarter of the Company's fiscal year, "**Availability Date**" means the 90th day after the end of such fourth fiscal quarter).

(i) Blue-Sky. The Company shall register or qualify or cooperate with the Purchaser and its counsel in connection with the registration or qualification of such Registrable Securities for the offer and sale under the securities or blue sky laws of such jurisdictions reasonably requested by the Purchaser; provided, however, that the Company shall not be required in connection therewith or as a condition thereto to (i) qualify to do business in any jurisdiction where it would not otherwise be required to qualify but for this Section 3(i), (ii) subject itself to general taxation in any jurisdiction where it would not otherwise be so subject but for this Section 3(i) or (iii) file a general consent to service of process in any such jurisdiction.

(j) Rule 144. With a view to making available to the Purchaser the benefits of Rule 144 (or its successor rule) and any other rule or regulation of the SEC that may at any time permit the Purchaser to sell shares of Common Stock to the public without registration, the Company covenants and agrees to: (i) make and keep adequate current public information available, as those terms are understood and defined in Rule 144, until the earlier of (A) six months after such date as all of the Registrable Securities may be sold without restriction by the holders thereof pursuant to Rule 144 or any other rule of similar effect or (B) such date as there are no longer Registrable Securities (ii) file with the SEC in a timely manner all reports and other documents required of the Company under the Exchange Act, and (iii) furnish electronically to the Purchaser upon request, as long as the Purchaser owns any Registrable Securities, (A) a written statement by the Company that it has complied with the reporting requirements of the Exchange Act, (B) a copy of or electronic access to the Company's most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q and (C) such other information as may be reasonably requested in order to avail the Purchaser of any rule or regulation of the SEC that permits the selling of any such Registrable Securities without registration.

(k) Cooperation. The Company shall cooperate with the holders of the Registrable Securities to facilitate the timely preparation and delivery of certificates or uncertificated shares

representing the Registrable Securities to be sold pursuant to such Registration Statement or Rule 144 free of any restrictive legends and representing such number of shares of Common Stock and registered in such names as the holders of the Registrable Securities may reasonably request to the extent permitted by such Registration Statement or Rule 144 to effect sales of Registrable Securities; for the avoidance of doubt, the Company may satisfy its obligations hereunder without issuing physical stock certificates through the use of The Depository Trust Company's Direct Registration System.

4. OBLIGATIONS OF THE PURCHASER.

(a) Purchaser Information. The Purchaser shall provide a completed Purchaser Questionnaire in the form attached hereto as Exhibit B in connection with the registration of the Registrable Securities. If the Company has not received such completed Questionnaire from the Purchaser within three (3) Business Days of the Company's request, the Company may file the Registration Statement without including the Purchaser's Registrable Securities.

(b) Suspension of Sales. The Purchaser agrees that, upon receipt of any notice from the Company of the existence of an Allowed Delay or a Suspension Event as set forth in Section 3(e), the Purchaser will promptly discontinue disposition of Registrable Securities pursuant to any Registration Statement covering such Registrable Securities until the Purchaser's receipt of a notice from the Company confirming the resolution of such Allowed Delay or Suspension Event and that such dispositions may again be made; provided, for the avoidance of doubt, that the foregoing shall not limit the right of the Purchaser to sell or otherwise dispose of the Registrable Securities pursuant to Rule 144 or any other exemption from the registration requirements of the Securities Act or to settle a transaction pursuant to a Registration Statement as to which a contract for such sale was entered into prior to the Purchaser's receipt of the notice from the Company of the existence of the Allowed Delay or Suspension Event. The Company shall cause its transfer agent to deliver unlegended shares of Common Stock to a transferee of the Purchaser in accordance with any sale of Registrable Securities pursuant to a Registration Statement with respect to which the Purchaser has entered into a contract for sale prior to the Purchaser's receipt of the notice from the Company of the existence of the Allowed Delay or Suspension Event.

(c) Purchaser Cooperation. The Purchaser agrees to cooperate with the Company as reasonably requested by the Company in connection with the preparation and filing of any amendments and supplements to any Registration Statement or New Registration Statement hereunder, unless the Purchaser has notified the Company in writing of its election to exclude all of its Registrable Securities from such Registration Statement.

5. EXPENSES OF REGISTRATION.

All Registration Expenses incurred in connection with registrations pursuant to this Agreement shall be borne by the Company. All Selling Expenses relating to securities registered on behalf of the Purchaser shall be borne by the Purchaser.

6. INDEMNIFICATION.

(a) To the fullest extent permitted by law, the Company will, and hereby does, indemnify, hold harmless and defend the Purchaser, each Person, if any, who controls the Purchaser, the shareholders, the members, the directors, officers, partners, employees, members, managers, agents, representatives and advisors of the Purchaser and each Person, if any, who controls the Purchaser within the meaning of the Securities Act or the Exchange Act (each, an "**Indemnified Person**"), against any losses, obligation, claims, damages, liabilities, contingencies, judgments, fines, penalties, charges, costs (including, without limitation, court costs and costs of preparation), reasonable and documented attorneys'

fees, amounts paid in settlement or reasonable and documented expenses, (collectively, "**Claims**") reasonably incurred in investigating, preparing or defending any action, claim, suit, inquiry, proceeding, investigation or appeal taken from the foregoing by or before any court or governmental, administrative or other regulatory agency or body or the SEC, whether pending or threatened, whether or not an indemnified party is or may be a party thereto ("**Indemnified Damages**"), to which any of them may become subject insofar as such Claims (or actions or proceedings, whether commenced or threatened, in respect thereof) arise out of or are based upon: (i) any untrue statement or alleged untrue statement or omission or alleged omission of any material fact contained in any Registration Statement, any preliminary prospectus or final prospectus or any amendment or supplement thereof or (ii) any violation or alleged violation by the Company or any of its Subsidiaries of the Securities Act, Exchange Act or any other state securities or other "blue sky" laws of any jurisdiction in which Registrable Securities are offered or any rule or regulation promulgated thereunder applicable to the Company or its agents and relating to action or inaction required of the Company in connection with such registration of the Registrable Securities (the matters in the foregoing clauses (i) and (ii) being, collectively, "**Violations**"). The Company shall reimburse each Indemnified Person promptly as such expenses are incurred and are due and payable, for any reasonable out-of-pocket legal fees or other reasonable and documented expenses incurred by them in connection with investigating or defending any such Claim. Notwithstanding anything to the contrary contained herein, the indemnification agreement contained in this Section 6(a): (A) shall not apply to a Claim by an Indemnified Person arising out of or based upon a Violation which occurs in reliance upon and in conformity with information furnished in writing to the Company by the Purchaser or such relevant Indemnified Person specifically for use in such Registration Statement or prospectus and was reviewed and approved in writing by the Purchaser or such Indemnified Person expressly for use in connection with the preparation of any Registration Statement, any prospectus or any such amendment thereof or supplement thereto, (B) with respect to any superseded prospectus, shall not inure to the benefit of any such Person from whom the Person asserting any such Claim purchased the Registrable Securities that are the subject thereof (or to the benefit of any other Indemnified Person) if the untrue statement or omission of material fact contained in the superseded prospectus was corrected in the revised prospectus, as then amended or supplemented, and the Indemnified Person was promptly advised in writing not to use the outdated, defective or incorrect prospectus prior to the use giving rise to a Violation and (C) shall not apply to amounts paid in settlement of any Claim if such settlement is effected without the prior written consent of the Company, which consent shall not be unreasonably withheld, conditioned or delayed. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of the Indemnified Person and shall survive the transfer of the Registration Securities by the Purchaser pursuant to Section 8.

(b) In connection with the Initial Registration Statement, any New Registration Statement or any prospectus, the Purchaser agrees to indemnify, hold harmless and defend, the Company, each of its directors, each of its officers who signed the Initial Registration Statement or signs any New Registration Statement, each Person, if any, who controls the Company within the meaning of the Securities Act or the Exchange Act (each, an "**Indemnified Party**"), against any losses, claims, damages, liabilities and expense (including reasonable attorney fees) resulting from any Violation, in each case to the extent, and only to the extent, that such Violation occurs in reliance upon and in conformity with information about the Purchaser furnished in writing by the Purchaser to the Company and reviewed and approved in writing by the Purchaser or such Indemnified Person expressly for use in connection with the preparation of the Registration Statement, any New Registration Statement, any prospectus or any such amendment thereof or supplement thereto. In no event shall the liability of the Purchaser be greater in amount than the dollar amount of the proceeds (net of all expense paid by the Purchaser in connection with any claim relating to this Section 6 and the amount of any damages the Purchaser has otherwise been required to pay by reason of such untrue statement or omission) received by the Purchaser upon the sale of the Registrable Securities included in such Registration Statement giving rise to such indemnification obligation. Notwithstanding anything to the contrary contained herein, the indemnification agreement contained in this Section 6(b) shall not apply to amounts paid in settlement of any Claim if such settlement is effected without the prior

written consent of the Purchaser, which consent shall not be unreasonably withheld, conditioned or delayed. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of such Indemnified Party and shall survive the transfer of the Registrable Securities by Purchaser pursuant to Section 8.

(c) Promptly after receipt by an Indemnified Person or Indemnified Party under this Section 6 of notice of the commencement of any action or proceeding (including any governmental action or proceeding) involving a Claim, such Indemnified Person or Indemnified Party shall, if a Claim in respect thereof is to be made against any indemnifying party under this Section 6, deliver to the indemnifying party a written notice of the commencement thereof, and the indemnifying party shall have the right to participate in, and, to the extent the indemnifying party so desires, jointly with any other indemnifying party similarly noticed, to assume control of the defense thereof with counsel mutually satisfactory to the indemnifying party and the Indemnified Person or the Indemnified Party, as the case may be, and upon such notice, the indemnifying party shall not be liable to the Indemnified Person or the Indemnified Party for any legal or other expenses subsequently incurred by the Indemnified Person or the Indemnified Party in connection with the defense thereof; provided, however, that an Indemnified Person or Indemnified Party (together with all other Indemnified Persons and Indemnified Parties that may be represented without conflict by one counsel) shall have the right to retain its own counsel with the reasonable fees and expenses to be paid by the indemnifying party, if, in the reasonable opinion of counsel retained by the indemnifying party, the representation by such counsel of the Indemnified Person or Indemnified Party and the indemnifying party would be inappropriate due to actual or potential differing interests between such Indemnified Person or Indemnified Party and any other party represented by such counsel in such proceeding. The Indemnified Party or Indemnified Person shall cooperate with the indemnifying party in connection with any negotiation or defense of any such action or claim by the indemnifying party and shall furnish to the indemnifying party all information reasonably available to the Indemnified Party or Indemnified Person which relates to such action or claim. The indemnifying party shall keep the Indemnified Party or Indemnified Person fully apprised as to the status of the defense or any settlement negotiations with respect thereto. No indemnifying party shall be liable for any settlement of any action, claim or proceeding effected without its written consent, provided, however, that the indemnifying party shall not unreasonably withhold, delay or condition its consent. No indemnifying party shall, without the consent of the Indemnified Party or Indemnified Person, consent to entry of any judgment or enter into any settlement or other compromise unless such judgment or settlement (i) imposes no liability or obligation on, (ii) includes as an unconditional term thereof the giving of a complete, explicit and unconditional release from the party bringing such indemnified claims of all liability of the Indemnified Party or Indemnified Person in respect to or arising out of such claim or litigation in favor of, and (iii) does not include any admission of fault, culpability, wrongdoing or wrongdoing or malfeasance by or on behalf of, the Indemnified Party or Indemnified Person. Following indemnification as provided for hereunder, the indemnifying party shall be subrogated to all rights of the Indemnified Party or Indemnified Person with respect to all third parties, firms or corporations relating to the matter for which indemnification has been made. The failure to deliver written notice to the indemnifying party within a reasonable time of the commencement of any such action shall not relieve such indemnifying party of any liability to the Indemnified Person or Indemnified Party under this Section 6, except to the extent that the indemnifying party is prejudiced in its ability to defend such action.

(d) The indemnification required by this Section 6 shall be made by periodic payments during the course of the investigation or defense, as and when bills are received or Indemnified Damages are incurred. Any Person receiving a payment pursuant to this Section 6 which person is later determined to not be entitled to such payment shall return such payment (including reimbursement of expenses) to the person making it.

(e) The indemnity agreements contained herein shall be in addition to (i) any cause of action or similar right of the Indemnified Party or Indemnified Person against the indemnifying party or others and (ii) any liabilities the indemnifying party may be subject to pursuant to the law.

7. CONTRIBUTION.

To the extent any indemnification by an indemnifying party is prohibited or limited by law, the indemnifying party agrees to make the maximum contribution with respect to any amounts for which it would otherwise be liable under Section 6 to the fullest extent permitted by law; provided, however, that: (i) no seller of Registrable Securities guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any seller of Registrable Securities who was not guilty of fraudulent misrepresentation and (ii) contribution by any seller of Registrable Securities shall be limited in amount to the amount of proceeds (net of all expenses paid by such holder in connection with any claim relating to this Section 7 and the amount of any damages such holder has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission) received by such seller from the sale of such Registrable Securities giving rise to such contribution obligation.

8. ASSIGNMENT OF REGISTRATION RIGHTS.

The Company shall not assign this Agreement or any rights or obligations hereunder (whether by operation of law or otherwise) without the prior written consent of the Purchaser; provided, however, that in any transaction, whether by merger, reorganization, restructuring, consolidation, financing or otherwise, whereby the Company is a party and in which the Registrable Securities are converted into the equity securities of another Person, from and after the effective time of such transaction, such Person shall, by virtue of such transaction, be deemed to have assumed the obligations of the Company hereunder, the term "Company" shall be deemed to refer to such Person and the term "Registrable Securities" shall be deemed to include the securities received by the Purchaser in connection with such transaction unless such securities are otherwise freely tradable by the Purchaser after giving effect to such transaction, and the prior written consent of the Purchaser shall not be required for such transaction.

The Purchaser may transfer or assign its rights hereunder, in whole or from time to time in part, to one or more Persons in connection with the transfer (i) of not fewer than 100,000 (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization) Registrable Securities by the Purchaser to such Person or (ii) to an Affiliate of the Purchaser regardless of the number of Registrable Securities being transferred to such Affiliate, provided that the Purchaser complies with all laws applicable thereto, and the provisions of the Purchase Agreement, and provides written notice of assignment to the Company promptly after such assignment is effected, and such Person agrees in writing to be bound by all of the provisions contained herein.

The provisions of this Agreement shall be binding upon and inure to the benefit of the Purchaser and its successors and permitted assigns.

9. AMENDMENTS AND WAIVERS.

The provisions of this Agreement, including the provisions of this sentence, may be amended, modified or supplemented, or waived only by a written instrument executed by (i) the Company and (ii) the Purchaser.

10. MISCELLANEOUS.

(a) Notices. Any notices or other communications required or permitted to be given hereunder shall be in writing and shall be deemed to be given (a) when delivered if personally delivered to the party for whom it is intended, (b) when delivered, if sent by electronic mail during normal business hours of the recipient, and if not sent during normal business hours, then on the recipient's next business day, (c) three days after having been sent by certified or registered mail, return-receipt requested and postage prepaid or (d) one business day after deposit with a nationally recognized overnight courier, freight prepaid, specifying next business day delivery, with written verification of receipt:

i. If to the Company, addressed as follows:

Athira Pharma, Inc.
18706 North Creek Parkway, Suite 104,
Bothell, Washington 98011
Attention: Legal
Email:

with a copy (which shall not constitute notice):

Wilson Sonsini Goodrich & Rosati, P.C.
701 5th Ave #5100,
Seattle, WA 98104
Attention: Michael Nordtvedt & Bryan D. King
Email:

ii. If to the Purchaser, at its e-mail address or address set forth on its signature page to the Purchase Agreement or to such e-mail address or address as subsequently modified by written notice given in accordance with this Section 10.

Any Person may change the address to which notices and communications to it are to be addressed by notification as provided for herein.

(b) Consent to Electronic Notice. The Purchaser consents to the delivery of any stockholder notice pursuant to the Delaware General Corporation Law (the "**DGCL**"), as amended or superseded from time to time, by electronic mail pursuant to Section 232 of the DGCL (or any successor thereto) at the e-mail address set forth below the Purchaser's name on its signature page to the Purchase Agreement, as updated from time to time by notice to the Company. To the extent that any notice given by means of electronic mail is returned or undeliverable for any reason, the foregoing consent shall be deemed to have been revoked until a new or corrected e-mail address has been provided, and such attempted electronic notice shall be ineffective and deemed to not have been given. Each party agrees to promptly notify the other parties of any change in its e-mail address, and that failure to do so shall not affect the foregoing.

(c) Waiver. No waiver of any term, provision or condition of this Agreement, whether by conduct or otherwise, in any one or more instances, shall be deemed to be, or be construed as, a further or continuing waiver of any such term, provision or condition or as a waiver of any other term, provision or condition of this Agreement.

(d) Governing Law. The provisions of Section 8.5 of the Purchase Agreement are incorporated by reference herein *mutatis mutandis*.

(e) Headings. The titles, subtitles and headings in this Agreement are for convenience of reference and shall not form part of, or affect the interpretation of, this Agreement.

(f) Counterparts. This Agreement may be executed in two or more identical counterparts, all of which shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party; provided that a facsimile or pdf signature including any electronic signatures complying with the U.S. federal ESIGN Act of 2000, e.g., www.docusign.com shall be considered due execution and shall be binding upon the signatory thereto with the same force and effect as if the signature were an original, not a facsimile or pdf (or other electronic reproduction of a) signature.

(g) Further Assurances. Each party shall do and perform, or cause to be done and performed, all such further acts and things, and shall execute and deliver all such other agreements, certificates, instruments and documents as the other party may reasonably request in order to carry out the intent and accomplish the purposes of this Agreement and the consummation of the transactions contemplated hereby.

(h) Contract Interpretation. This Agreement is the joint product of the Purchaser and the Company and each provision hereof has been subject to the mutual consultation, negotiation and agreement of such parties and shall not be construed for or against either party hereto.

(i) No Third Party Beneficiaries. Except as set forth in Sections 6 and 7, nothing in this Agreement, express or implied, is intended to confer on any Person other than the parties to this Agreement, and their respective permitted successors and assigns, any rights, remedies, claims, benefits, obligations or liabilities under or by reason of this Agreement, and no Person that is not a party to this Agreement (including, without limitation, any partner, member, shareholder, director, officer, employee or other beneficial owner of either party to this Agreement, in its own capacity as such or in bringing a derivative action on behalf of a party to this Agreement) shall have any standing as a third party beneficiary with respect to this Agreement or the transactions contemplated hereby.

(j) Severability. If any part or provision of this Agreement is held unenforceable or in conflict with the applicable laws or regulations of any jurisdiction, the invalid or unenforceable part or provisions shall be replaced with a provision which accomplishes, to the extent possible, the original business purpose of such part or provision in a valid and enforceable manner, and the remainder of this Agreement shall remain binding upon the parties hereto.

(k) Non-Recourse. Notwithstanding anything that may be expressed or implied in this Agreement, the Company covenants, agrees and acknowledges that no recourse under this Agreement or any documents or instruments delivered in connection with this Agreement shall be had against any current or future director, officer, employee, stockholder, general or limited partner or member of the Purchaser or of any affiliates or assignees thereof, whether by the enforcement of any assessment or by any legal or equitable proceeding, or by virtue of any statute, regulation or other applicable law, it being expressly agreed and acknowledged that no personal liability whatsoever shall attach to, be imposed on or otherwise be incurred by any current or future director, officer, employee, stockholder, general or limited partner or member of the Purchaser or of any affiliates or assignees thereof, as such for any obligation of the Purchaser under this Agreement or any documents or instruments delivered in connection with this Agreement for any claim based on, in respect of or by reason of such obligations or their creation.

(l) Specific Performance. In addition to any and all other remedies that may be available at law in the event of any breach of this Agreement, the Purchaser shall be entitled to specific

performance of the agreements and obligations of the Company hereunder and to such other injunction or other equitable relief as may be granted by a court of competent jurisdiction.

(m) Cumulative Remedies. The remedies provided herein are cumulative and not exclusive of any remedies provided by law.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties have caused this Registration Rights Agreement to be duly executed as of date first written above.

COMPANY:

ATHIRA PHARMA, INC.

By: _____
Name: _____
Title: _____

[Signature Page to Registration Rights Agreement]

IN WITNESS WHEREOF, the parties have caused this Registration Rights Agreement to be duly executed as of date first written above.

PURCHASER:

SERMONIX PHARMACEUTICALS, INC.

By: _____

Name: _____

Title: _____

[Signature Page to Registration Rights Agreement]

Exhibit A

PLAN OF DISTRIBUTION

The selling stockholders, which as used herein includes donees, pledgees, transferees or other successors-in-interest selling shares of common stock or interests in shares of common stock received after the date of this prospectus from a selling stockholder as a gift, pledge, partnership distribution or other transfer, may, from time to time, sell, transfer or otherwise dispose of any or all of their shares of common stock or interests in shares of common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

These sales may be effected in transactions, which may involve crosses or block transactions. The selling stockholders may use any one or more of the following methods when disposing of shares or interests therein:

- distributions to members, partners, stockholders or other equityholders of the selling stockholders;
- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales and settlement of short sales entered into after the effective date of the registration statement of which this prospectus is a part;
- through the writing or settlement of options or other hedging transactions, whether such options are listed on an options exchange or otherwise;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The selling stockholders may, from time to time, pledge or grant a security interest in some or all of the shares of common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock, from time to time, under this prospectus, or under an amendment to this prospectus under Rule 424(b)(3) or other

applicable provision of the Securities Act, amending, if necessary, the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus. The selling stockholders also may transfer or donate the shares of common stock in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling stockholders for purposes of this prospectus.

In connection with the sale of our common stock or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our common stock short and deliver these securities to close out their short positions, or loan or pledge the common stock to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the selling stockholders from the sale of the common stock offered by them will be the purchase price of the common stock less discounts or commissions, if any. Each of the selling stockholders reserves the right to accept and, together with their agents from time to time, to reject, in whole or in part, any proposed purchase of common stock to be made directly or through agents. We will not receive any of the proceeds from this offering. Upon any exercise of the pre-funded warrant by payment of cash, however, we will receive the exercise price of the pre-funded warrant.

The selling stockholders also may resell all or a portion of the shares in open market transactions in reliance upon Rule 144 under the Securities Act, provided that they meet the criteria and conform to the requirements of that rule, or another available exemption from the registration requirements under the Securities Act. Broker-dealers engaged by the selling stockholders may arrange for other broker-dealers to participate in sales. If the selling stockholders effect such transactions by selling shares of common stock to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from the selling stockholders or commissions from purchasers of the shares of common stock for whom they may act as agent or to whom they may sell as principal. Such commissions will be in amounts to be negotiated, but, except as set forth in a supplement to this Prospectus, in the case of an agency transaction will not be in excess of a customary brokerage commission in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440.

The selling stockholders and any underwriters, broker-dealers or agents that participate in the sale of the common stock or interests therein may be “underwriters” within the meaning of Section 2(a)(11) of the Securities Act (it being understood that the selling stockholders shall not be deemed to be underwriters solely as a result of their participation in this offering). Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. Selling stockholders who are “underwriters” within the meaning of Section 2(a)(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act.

To the extent required, the shares of our common stock to be sold, the names of the selling stockholders, the respective purchase prices and public offering prices, the names of any agent, dealer or underwriter, and any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to the registration statement that includes this prospectus.

Each selling stockholder has informed the Company that it is not a registered broker-dealer and does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the common stock. Upon the Company being notified in writing by a selling stockholder that any material arrangement has been entered into with a broker-dealer for the sale of common stock through a block trade, special offering, exchange distribution or secondary distribution or a purchase by a broker or dealer, a supplement to this prospectus will be filed, if required, pursuant to Rule 424(b) under the Securities Act, disclosing (i) the name of each such selling stockholder and of the participating broker-dealer(s), (ii) the number of shares involved, (iii) the price at which such the shares of common stock were sold, (iv) the commissions paid or discounts or concessions allowed to such broker-dealer(s), where applicable, (v) that such broker-dealer(s) did not conduct any investigation to verify the information set out or incorporated by reference in this prospectus and (vi) other facts material to the transaction. In no event shall any broker-dealer receive fees, commissions and markups, which, in the aggregate, would exceed eight percent (8.0%). In order to comply with the securities laws of some states, if applicable, the common stock may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the common stock may not be sold unless it has been registered or qualified for sale or an exemption from registration or qualification requirements is available and is complied with.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares in the market and to the activities of the selling stockholders and their affiliates. In addition, to the extent applicable, we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares against certain liabilities, including liabilities arising under the Securities Act. There can be no assurance that any selling stockholder will sell any or all of the shares of common stock registered pursuant to the registration statement, of which this prospectus forms a part.

We have agreed to indemnify the selling stockholders against liabilities, including liabilities under the Securities Act and state securities laws, relating to the registration of the shares offered by this prospectus.

We have agreed with the selling stockholders to use commercially reasonable efforts to cause the registration statement of which this prospectus constitutes a part to become effective and to remain continuously effective until the earlier of: (i) the date on which the selling stockholders shall have resold or otherwise disposed of all the shares covered by this prospectus pursuant to any applicable securities exemption, including Rule 144 (or any successor provision) or pursuant to this prospectus, and (ii) the date on which the shares covered by this prospectus no longer constitute “Registrable Securities” as such term is defined in the Registration Rights Agreement, such that they may be resold by the selling stockholders without registration and without regard to any volume or manner-of-sale limitations and

without current public information pursuant to Rule 144 under the Securities Act or any other rule of similar effect.

We will pay all expenses of the registration of the shares of common stock pursuant to the registration rights agreement, including, without limitation, SEC filing fees and expenses of compliance with state securities or "blue sky" laws; provided, however, that each selling stockholder will pay all underwriting discounts and selling commissions, if any and any related legal expenses incurred by it. We will indemnify the selling stockholders against certain liabilities, including some liabilities under the Securities Act, in accordance with the registration rights agreement, or the selling stockholders will be entitled to contribution. We may be indemnified by the selling stockholders against civil liabilities, including liabilities under the Securities Act, that may arise from any written information furnished to us by the selling stockholders specifically for use in this prospectus, in accordance with the related registration rights agreements, or we may be entitled to contribution.

Exhibit B

Purchaser Questionnaire

The undersigned hereby provides the following information to the Company and represents and warrants that such information is accurate:

QUESTIONNAIRE

1. Name.

(a) Full Legal Name of the Purchaser

_____

(b) Full Legal Name of Registered Holder (if not the same as (a) above) through which Registrable Securities are held:

_____

(c) Full Legal Name of Natural Control Person (which means a natural person who directly or indirectly alone or with others has power to vote or dispose of the securities covered by this Questionnaire):

_____

2. Address for Notices to the Purchaser:

_____

_____

_____

Telephone:

E-Mail: _____

Contact Person:

3. Broker-Dealer Status:

(a) Are you a broker-dealer?

Yes No

(b) If "yes" to Section 3(a), did you receive your Registrable Securities as compensation for investment banking services to the Company?

Yes No

Note: If "no" to Section 3(b), the Commission's staff has indicated that you should be identified as an underwriter in the Registration Statement.

(c) Are you an affiliate of a broker-dealer?

Yes No

(d) If you are an affiliate of a broker-dealer, do you certify that you purchased the Registrable Securities in the ordinary course of business, and at the time of the purchase of the Registrable Securities to be resold, you had no agreements or understandings, directly or indirectly, with any person to distribute the Registrable Securities?

Yes No

Note: If "no" to Section 3(d), the Commission's staff has indicated that you should be identified as an underwriter in the Registration Statement.

4. Beneficial Ownership of Securities of the Company Owned by the Purchaser.

Except as set forth below in this Item 4, the undersigned is not the beneficial or registered owner of any securities of the Company other than the securities issuable pursuant to the Purchase Agreement.

(a) Type and Amount of other securities beneficially owned by the Purchaser:

_____

_____

5. Relationships with the Company:

Except as set forth below, neither the undersigned nor any of its affiliates, officers, directors or principal equity holders (owners of 5% of more of the equity securities of the undersigned) has held

any position or office or has had any other material relationship with the Company (or its predecessors or affiliates) during the past three years.

State any exceptions here:

_____

_____

The undersigned agrees to promptly notify the Company of any material inaccuracies or changes in the information provided herein that may occur subsequent to the date hereof at any time while the Registration Statement remains effective; provided, that the undersigned shall not be required to notify the Company of any changes to the number of securities held or owned by the undersigned or its affiliates.

By signing below, the undersigned consents to the disclosure of the information contained herein in its answers to Items 1 through 5 and the inclusion of such information in the Registration Statement and the related prospectus and any amendments or supplements thereto. The undersigned understands that such information will be relied upon by the Company in connection with the preparation or amendment of the Registration Statement and the related prospectus and any amendments or supplements thereto.

IN WITNESS WHEREOF the undersigned, by authority duly given, has caused this Notice and Questionnaire to be executed and delivered either in person or by its duly authorized agent.

Date: _____ Beneficial Owner: _____

By: _____
Name:
Title:

PLEASE EMAIL A .PDF COPY OF THE COMPLETED AND EXECUTED QUESTIONNAIRE TO:

Exhibit 10.1

SECURITIES PURCHASE AGREEMENT

This **SECURITIES PURCHASE AGREEMENT** (this "**Agreement**") is dated as of December 18, 2025, by and among Athira Pharma, Inc., a Delaware corporation (the "**Company**"), and each of the entities listed on Exhibit A attached to this Agreement (each, an "**Investor**" and together, the "**Investors**").

WHEREAS, the Company and the Investors are executing and delivering this Agreement in reliance upon the exemption from securities registration afforded by Section 4(a)(2) of the Securities Act, Rule 506 of Regulation D promulgated under the Securities Act and/or Regulation S promulgated thereunder;

WHEREAS, the Company desires to sell to the Investors, and each Investor desires to purchase from the Company, severally and not jointly, upon the terms and subject to the conditions stated in this Agreement, in such amounts as set forth opposite such Investor's name on Exhibit A, (A) shares (the "**Initial Shares**") of the Company's common stock, par value $0.0001 per share (the "**Common Stock**"), (B) pre-funded warrants to purchase shares of Common Stock in the form attached hereto as Exhibit B (the "**Pre-Funded Warrants**"), (C) accompanying warrants to purchase up to that number of additional shares of Common Stock equal to 162.5% of the sum of the number of Initial Shares and the number of shares underlying the Pre-Funded Warrants (rounded down to the nearest whole share) in the form attached hereto as Exhibit C (the "**Series A Common Warrants**") and (D) accompanying warrants to purchase up to that number of additional shares of Common Stock equal to 150% of the sum of the number of Initial Shares and the number of shares underlying the Pre-Funded Warrants (rounded down to the nearest whole share) in the form attached hereto as Exhibit D (the "**Series B Common Warrants**" and together with the Series A Common Warrants, the "**Common Warrants**", and the Common Warrants together with the Pre-Funded Warrants, the "**Warrants**", and the Warrants together with the Initial Shares, the "**Securities**"); and

WHEREAS, contemporaneously with the sale of the Initial Shares and the Warrants, the parties hereto will execute and deliver a Registration Rights Agreement, substantially in the form attached hereto as Exhibit E, pursuant to which the Company will agree to provide certain registration rights in respect of the Initial Shares, the shares of Common Stock issuable pursuant to the Pre-Funded Warrants (the "**Pre-Funded Warrant Shares**"), the shares of Common Stock issuable pursuant to the Series A Common Warrants (the "**Series A Common Warrant Shares**") and the shares of Common Stock issuable pursuant to the Series B Common Warrants (the "**Series B Common Warrant Shares**", and together with the Series A Common Warrant Shares the "**Common Warrant Shares**" and, together with the Initial Shares and the Pre-Funded Warrant Shares, the "**Shares**") under the Securities Act and applicable state securities laws.

NOW THEREFORE, in consideration of the mutual agreements, representations, warranties and covenants herein contained, the Company and each Investor, severally and not jointly, agree as follows:

1. Definitions. As used in this Agreement, the following terms shall have the following respective meanings:

"**Affiliate**" means, with respect to any specified Person, any other Person that, directly or indirectly through one or more intermediaries, controls, is controlled by or is under common control with such Person; provided that the Affiliates of any Person that is an investment fund shall not include any portfolio companies of such investment fund or any affiliated investment fund.

"**Agreement**" has the meaning set forth in the recitals.

"**Amended and Restated Bylaws**" means the Bylaws of the Company, as currently in effect.

"**Amended and Restated Certificate of Incorporation**" means the Certificate of Incorporation of the Company, as currently in effect.

"**Annual Meeting**" has the meaning set forth in Section 5.12 hereof.

"**Benefit Plan**" or "**Benefit Plans**" means employee benefit plans as defined in Section 3(3) of ERISA and all other employee benefit practices or arrangements, including, without limitation, any such practices or arrangements providing severance pay, sick leave, vacation pay, salary continuation for disability, retirement benefits, deferred compensation, bonus pay, incentive pay, stock options or other stock-based compensation, hospitalization insurance, medical insurance, life insurance, scholarships or tuition reimbursements, maintained by the Company or to which the Company or any of its Subsidiaries is obligated to contribute for employees or former employees of the Company and its Subsidiaries.

"**Board of Directors**" means the board of directors of the Company.

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

"**Closing**" has the meaning set forth in Section 2.2.

"**Closing Date**" has the meaning set forth in Section 2.2.

"**Code**" means the U.S. Internal Revenue Code of 1986, as amended.

"**Common Stock**" has the meaning set forth in the recitals.

"**Common Stock Equivalents**" means any securities of the Company that would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, rights, options, restricted stock units, equity awards, warrants or other instrument that is at any time convertible into or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

"**Company**" has the meaning set forth in the recitals.

"**Common Warrants**" has the meaning set forth in the recitals.

"**Common Warrant Shares**" has the meaning set forth in the recitals.

"**Confidential Data**" has the meaning set forth in Section 3.30.

"**Disclosure Document**" has the meaning set forth in Section 5.3.

"**Disqualification Event**" means the disqualification provisions of Rule 506(d)(1)(i-viii) of Regulation D under the Securities Act.

"**Drug Regulatory Agency**" means the U.S. Food and Drug Administration ("**FDA**") or other foreign, state, local or comparable governmental authority responsible for regulation of the research, development, testing, manufacturing, processing, storage, labeling, sale, marketing, advertising, distribution and importation or exportation of drug or biological products and drug or biological product candidates.

"**ERISA**" means the U.S. Employee Retirement Income Security Act of 1974, as amended.

"**Exchange Act**" means the U.S. Securities Exchange Act of 1934, as amended, and all of the rules and regulations promulgated thereunder.

"**Financial Statements**" has the meaning set forth in Section 3.8(b).

"**Fundamental Representations"** means the representations and warranties made by the Company in Sections 3.1 (Organization and Power), 3.2 (Capitalization), 3.4 (Authorization), 3.5 (Valid Issuance), 3.6 (No Conflict), 3.7 (Consents), 3.8 (SEC Filings; Financial Statements), 3.17 (Nasdaq Stock Market), 3.18 (Sarbanes-Oxley Act), 3.22 (Price Stabilization of Common Stock), 3.23 (Investment Company Act), 3.24 (General Solicitation; No Integration or Aggregation), 3.25 (Brokers and Finders), 3.26 (Reliance by the Investors), 3.27 (Other Covered Persons) and 3.28 (No Additional Agreements).

"**GAAP**" has the meaning set forth in Section 3.8(b).

"**GDPR**" has the meaning set forth in Section 3.31.

"**Governmental Authorizations**" has the meaning set forth in Section 3.11.

"**Health Care Laws**" has the meaning set forth in Section 3.20.

"**HIPAA**" has the meaning set forth in Section 3.30.

"**Indemnified Person"** has the meaning set forth in Section 5.9.

"**Initial Shares**" has the meaning set forth in the recitals.

"**Intellectual Property**" has the meaning set forth in Section 3.12.

"**Investor**" and "**Investors**" have the meanings set forth in the recitals.

"**Issuer Covered Person**" means the Company and any of its (i) predecessors, (ii) Affiliates, (iii) directors, (iv) executive officers, (v) non-executive officers participating in the placement contemplated by this Agreement, (vi) beneficial owners of 20% or more of its outstanding voting equity securities (calculated on the basis of voting power), (vii) promoters or (viii) investment managers (including any of such investment managers' directors, executive officers or officers participating in the placement contemplated by this Agreement) or general partners or managing members of such investment managers (including any of such general partners' or managing members' directors, executive officers or officers participating in the placement contemplated by this Agreement).

"**IT Systems**" has the meaning set forth in Section 3.30.

"**Material Adverse Effect**" means any change, event, circumstance, development, condition, occurrence or effect that, individually or in the aggregate, (a) was, is, or would reasonably be expected to be, materially adverse to the business, financial condition, properties, assets, liabilities, stockholders' equity or results of operations of the Company and its Subsidiaries, taken as a whole, or (b) materially delays or materially impairs the ability of the Company to timely comply, or prevents the Company from timely complying, with its obligations under this Agreement, the other Transaction Agreements, or with respect to the Closing, or would reasonably be expected to do so.

"**Nasdaq**" means the Nasdaq Stock Market LLC.

"**National Exchange**" means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question, together with any successor thereto: the NYSE American, The New York Stock Exchange, The Nasdaq Global Market, The Nasdaq Global Select Market and The Nasdaq Capital Market.

"**Non-U.S. Investor**" has the meaning set forth in Section 4.5.

"**Person**" means an individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture or any other entity or organization.

"**Personal Data**" has the meaning set forth in Section 3.30.

"**Placement Agent**" means Cantor Fitzgerald & Co.

"**Pre-Funded Warrants**" has the meaning set forth in the recitals.

"**Pre-Funded Warrant Price**" means $6.349.

"**Pre-Funded Warrant Shares**" has the meaning set forth in the recitals.

"**Principal Trading Market**" means the National Exchange on which the Common Stock is primarily listed on and quoted for trading, which, as of the Closing Date, shall be the Nasdaq Capital Market.

"**Privacy Laws**" has the meaning set forth in Section 3.31.

"**Privacy Statements**" has the meaning set forth in Section 3.31.

"**Process**" or "**Processing**" has the meaning set forth in Section 3.31.

"**Registration Rights Agreement**" has the meaning set forth in Section 6.1(j).

"**Regulation S**" means Regulation S under the Securities Act.

"**Regulatory Agencies**" has the meaning set forth in Section 3.19.

"**Rule 144**" means Rule 144 promulgated by the SEC pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the SEC having substantially the same effect as such Rule.

"**SEC**" means the U.S. Securities and Exchange Commission.

"SEC Reports" means (a) the Company's most recently filed Annual Report on Form 10-K (including any information incorporated therein by reference from the Company's Definitive Proxy Statement on Schedule 14A), (b) all Quarterly Reports on Form 10-Q or Current Reports on Form 8-K filed or furnished (as applicable) by the Company following the end of the most recent fiscal year for which an Annual Report on Form 10-K has been filed and prior to the execution of this Agreement, together in each case with any documents incorporated by reference therein or exhibits thereto, and (c) the Disclosure Document.

"**Securities**" has the meaning set forth in the recitals.

"**Securities Act**" means the U.S. Securities Act of 1933, as amended, and all of the rules and regulations promulgated thereunder.

"**Series A Common Warrants**" has the meaning set forth in the recitals.

"**Series B Common Warrants**" has the meaning set forth in the recitals.

"**Series A Common Warrant Shares**" has the meaning set forth in the recitals.

"**Series B Common Warrant Shares**" has the meaning set forth in the recitals.

"**Share Price**" means $6.35.

"**Shares**" has the meaning set forth in the recitals.

"**Short Sales**" include, without limitation, (a) all "short sales" as defined in Rule 200 promulgated under Regulation SHO under the Exchange Act, whether or not against the box, and all types of direct and indirect stock pledges, forward sale contracts, options, puts, calls, short sales, swaps, "put equivalent positions" (as defined in Rule 16a-1(h) under the Exchange Act) and similar arrangements (including on a total return basis), and (b) sales and other transactions through non-U.S. broker dealers or non-U.S. regulated brokers (but shall not be deemed to include the location

and/or reservation of borrowable shares of Common Stock), in each case, solely to the extent it has the same economic effect as a "short sale" (as defined in Rule 200 promulgated under Regulation SHO under the Exchange Act).

"**Standard Settlement Period**" means the standard settlement period, expressed in a number of Trading Days for the Principal Trading Market with respect to the Common Stock that is in effect on the date of delivery of the applicable request to remove legends of Securities.

"**Stockholder Approval**" has the meaning set forth in Section 5.12 hereof.

"**Studies**" has the meaning set forth in Section 3.19.

"**Subsidiary**" has the meaning set forth in Section 3.1.

"**Tax**" or "**Taxes**" means any and all federal, state, local, foreign and other taxes, levies, fees, imposts, duties and charges of whatever kind (including any interest, penalties or additions to the tax imposed in connection therewith or with respect thereto), whether or not imposed on the Company or its Subsidiaries (if any) including, without limitation, taxes imposed on, or measured by, income, franchise, profits or gross receipts, and also ad valorem, value added, sales, use, service, real or personal property, capital stock, license, payroll, withholding, employment, social security, workers' compensation, unemployment compensation, utility, severance, production, excise, stamp, occupation, premium, windfall profits, transfer and gains taxes and customs duties.

"**Tax Returns**" means returns, reports, information statements and other documentation (including any additional or supporting material) filed or maintained, or required to be filed or maintained, in connection with the calculation, determination, assessment or collection of any Tax and shall include any amended returns required as a result of examination adjustments made by the Internal Revenue Service or other Tax authority.

"**Trading Day**" means any weekday on which the Principal Trading Market is normally open for trading.

"**Transaction Agreements**" means this Agreement, the Series A Common Warrants, the Series B Common Warrants, the Pre-Funded Warrants, and the Registration Rights Agreement.

"**Transfer Agent**" means, with respect to the Common Stock, Computershare Inc. or such other financial institution that provides transfer agent services as the Company may engage from time to time.

"**Warrants**" has the meaning set forth in the recitals.

"**Warrant Shares**" has the meaning set forth in Section 3.4.

2. Purchase and Sale of Securities.

2.1 Purchase and Sale. On the Closing Date, upon the terms and subject to the conditions set forth herein, the Company agrees to sell, and the Investors, severally and not jointly, agree to purchase, the number and type of Securities, for the aggregate purchase price, set forth

opposite the Investor's name on Exhibit A. The purchase price per Initial Share and the accompanying Common Warrants is equal to the Share Price. The purchase price per Pre-Funded Warrant and the accompanying Common Warrants is equal to the Pre-Funded Warrant Price.

2.2 Closing. Subject to the satisfaction or waiver of the conditions set forth in Section 6 of this Agreement, the closing of the purchase and sale of the Securities (the "**Closing**" and the date on which the Closing occurs, the "**Closing Date**") shall occur remotely via the exchange of documents and signatures at such time as agreed to by the Company and the Investors of at least a majority in interest of the Securities to be purchased at the Closing but (i) in no event earlier than the second Business Day after the date of this Agreement and (ii) in no event later than the fifth Business Day after the date of this Agreement. At the Closing, the Securities shall be issued and registered in the name of the Investor, or in such nominee name(s) as designated by such Investor, representing the number of Securities to be purchased by the Investor at such Closing as set forth in Exhibit A, in each case against payment to the Company of the purchase price therefor (the "**Aggregate Purchase Amount**") in full, by wire transfer to the Company of immediately available funds, at or prior to the Closing, in accordance with wire instructions provided by the Company to the Investors at least one Business Day prior to the Closing. On the Closing Date, the Company will cause (A) the Transfer Agent to issue the Initial Shares in book-entry form, free and clear of all restrictive and other legends (except as expressly provided in Section 4.11 hereof) and the Company shall provide evidence of such issuance from the Company's Transfer Agent as soon as reasonably practical following the Closing Date to each Investor and (B) deliver to such Investor (or such Investor's designated custodian per its delivery instructions), or in such nominee name(s) as designated by such Investor, electronic copies of the Warrants exercisable for a number of shares of Common Stock as set forth in Exhibit A with respect to such Investor, with a physical copy of the Warrants to be delivered to such Investor, if requested, within two Business Days after such Investor's request for such physical copy. In the event that the Closing has not occurred within one Business Day after the expected Closing Date, unless otherwise agreed by the Company and such Investor, the Company shall promptly (but no later than one Business Day thereafter) return the previously wired Aggregate Purchase Amount to each respective Investor by wire transfer of United States dollars in immediately available funds to the account specified by each Investor, and any book entries for the Securities shall be deemed cancelled; provided that, unless this Agreement has been terminated pursuant to Section 7, such return of funds shall not terminate this Agreement or relieve such Investor of its obligation to purchase, or the Company of its obligation to issue and sell, the Securities at the Closing.

3. Representations and Warranties of the Company. Except as set forth in the SEC Reports (other than as to the Fundamental Representations, which are not so qualified), the Company hereby represents and warrants to each of the Investors and the Placement Agent that the statements contained in this Section 3 are true and correct as of the date of this Agreement and as of the Closing Date (except for the representations and warranties that speak as of a specific date, which shall be made as of such date).

3.1 Organization and Power. The Company is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware, has the requisite power and authority to own, lease and operate its properties and to carry on its business as now conducted and described in the SEC Reports and is qualified to do business in each jurisdiction in which the character of its properties or the nature of its business requires such qualification, except

where such failure to be in good standing or to have such power and authority or to so qualify would not reasonably be expected to have a Material Adverse Effect. Each of the Company's subsidiaries that constitutes a "significant subsidiary" (as defined in Rule 1-02 of Regulation S-X under the Exchange Act) (each a "**Subsidiary**") is (i) duly incorporated and validly existing and in good standing under the laws of the jurisdiction of its incorporation and has the requisite power and authority to carry on its business as now conducted and to own or lease its properties and (ii) qualified to do business as a foreign corporation and in good standing in each jurisdiction in which such qualification is required, except in each case as would not reasonably be expected to have a Material Adverse Effect.

3.2 Capitalization. The Company's disclosure of its authorized, issued and outstanding capital stock in the SEC Reports containing such disclosure was accurate in all material respects as of the date indicated in such SEC Reports. All of the issued and outstanding shares of Common Stock have been duly authorized and validly issued and are fully paid and non-assessable. None of the outstanding shares of capital stock of the Company were issued in violation of any preemptive or other similar rights of any securityholder of the Company which have not been waived, and such shares were issued in compliance in all material respects with applicable state and federal securities law and any rights of third parties. There are no outstanding rights (including, without limitation, pre-emptive rights), warrants or options to acquire, or instruments convertible into or exchangeable for, any shares of capital stock or other equity interest in the Company or any of its Subsidiaries, or any contract, commitment, agreement, understanding or arrangement of any kind relating to the issuance of any capital stock of the Company or any such subsidiary, any such convertible or exchangeable securities or any such rights, warrants or options; the capital stock of the Company conforms in all material respects to the description thereof contained in the SEC Reports; and all the outstanding shares of capital stock or other equity interests of each Subsidiary owned, directly or indirectly, by the Company have been duly and validly authorized and issued, are fully paid and non-assessable (except, in the case of any foreign Subsidiary, for directors' qualifying shares) and are owned directly or indirectly by the Company, free and clear of any lien, charge, encumbrance, security interest, restriction on voting or transfer or any other claim of any third party.

3.3 Registration Rights. Except as set forth in the Transaction Agreements or as disclosed in the SEC Reports, the Company is presently not under any obligation, and has not granted any rights, to register under the Securities Act any of the Company's presently outstanding securities or any of its securities that may hereafter be issued, other than such rights and obligations that have expired or been satisfied or waived.

3.4 Authorization. The Company has all requisite corporate power and authority to enter into the Transaction Agreements and to carry out and perform its obligations under the terms of the Transaction Agreements, including the issuance and sale of the Securities and the issuance of the Pre-Funded Warrant Shares and the Common Warrant Shares (the "**Warrant Shares**"). All corporate action on the part of the Company, its officers, directors and stockholders necessary for the authorization of the Initial Shares and the Warrant Shares, the authorization, execution, delivery and performance of the Transaction Agreements and the consummation of the transactions contemplated herein, including the issuance and sale of the Securities and the Warrant Shares and the reservation of the Warrant Shares has been taken, including, without limitation, the approval of the Board of Directors (or a committee thereof) in

accordance with Section 144 of the DGCL This Agreement has been duly executed and delivered by the Company and, assuming the due authorization, execution and delivery by each Investor of this Agreement and that this Agreement constitutes the legal, valid and binding agreement of each Investor, this Agreement and each of the Warrants constitutes a legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium and similar laws relating to or affecting creditors generally or by general equity principles (regardless of whether such enforceability is considered in a proceeding in equity or at law). Upon its execution by the Company and the other parties thereto and assuming that it constitutes legal, valid and binding agreements of the other parties thereto, the Registration Rights Agreement will constitute a legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium and similar laws relating to or affecting creditors generally or by general equity principles (regardless of whether such enforceability is considered in a proceeding in equity or at law).

3.5 Valid Issuance. The Initial Shares being purchased by the Investors hereunder have been duly and validly authorized and, upon issuance pursuant to the terms of this Agreement against full payment therefor in accordance with the terms of this Agreement, will be duly and validly issued, fully paid and non-assessable and will be issued free and clear of any liens or other restrictions (other than those as provided in the Transaction Agreements or restrictions on transfer under applicable state and federal securities laws), and the holder of the Initial Shares shall be entitled to all rights accorded to a holder of Common Stock. The Warrant Shares have been duly and validly authorized and reserved for issuance and, upon issuance pursuant to the terms of the Warrants against full payment therefor in accordance with the terms of the Warrants, will be duly and validly issued, fully paid and non-assessable and will be issued free and clear of any liens or other restrictions (other than those as provided in the Transaction Agreements or restrictions on transfer under applicable state and federal securities laws), and the holder of the Warrant Shares shall be entitled to all rights accorded to a holder of Common Stock. The issuance and delivery of the Initial Shares and the Warrants does not, and the exercise in full of the Warrants and the issuance and delivery of the Warrant Shares thereupon will not, (a) obligate the Company to offer to issue, or issue, shares of Common Stock or other securities to any Person (other than the Investors) pursuant to any preemptive rights, rights of first refusal, rights of participation or similar rights, or (b) result in any adjustment (automatic, at the election of any Person or otherwise) of the exercise, conversion, exchange or reset price under, or any other anti-dilution adjustment pursuant to, any outstanding securities of the Company. Subject to the accuracy of the representations and warranties made by the Investors in Section 4, the offer and sale of the Securities to the Investors is, and will be, and the issuance of the Warrant Shares to the Investors will be (i) exempt from the registration and prospectus delivery requirements of the Securities Act and (ii) exempt from (or otherwise not subject to) the registration and qualification requirements of applicable securities laws of the states of the United States.

3.6 No Conflict. The execution, delivery and performance of the Transaction Agreements by the Company, the issuance and sale of the Securities and the consummation of the other transactions contemplated by the Transaction Agreements will not (i) violate any provision of the Amended and Restated Certificate of Incorporation or Amended and Restated Bylaws of the Company, (ii) conflict with or result in a violation of or default (with or without notice or lapse of

time, or both) under, or give rise to a right of termination, cancellation or acceleration of any obligation, a change of control right or to a loss of a benefit under any agreement or instrument, credit facility, franchise, license, judgment, order, statute, law, ordinance, rule or regulations, applicable to the Company or any of its Subsidiaries or their respective properties or assets, or (iii) result in a violation of any law, rule, regulation, order, judgment, injunction, decree or other restriction of any court or governmental authority to which the Company or any of its Subsidiaries is subject (including federal and state securities laws and regulations) and the rules and regulations of any self-regulatory organization to which the Company or its securities are subject, or by which any property or asset of the Company or any of its Subsidiaries is bound or affected, except, in the case of clauses (ii) and (iii), as would not, individually or in the aggregate, be reasonably expected to have a Material Adverse Effect.

3.7 Consents. Assuming the accuracy of the representations and warranties of each Investor set forth in Section 4 hereof, no consent, approval, authorization, filing with or order of or registration with, any court or governmental agency or body or other Person is required in connection with the authorization, execution or delivery by the Company of the Transaction Agreements, the issuance and sale of the Securities and the performance by the Company of its other obligations under the Transaction Agreements, except (a) as have been or will be obtained or made under the Securities Act or the Exchange Act, (b) the filing of any requisite notices and/or application(s) to the National Exchange for the issuance and sale of the Initial Shares or the Warrant Shares and the listing of the Initial Shares or the Warrant Shares for trading or quotation, as the case may be, thereon in the time and manner required thereby, (c) customary post-closing filings with the SEC or pursuant to state securities laws in connection with the offer and sale of the Initial Shares or the Warrant Shares by the Company in the manner contemplated herein, which will be filed on a timely basis, (d) the filing of the registration statement required to be filed by the Registration Rights Agreement, or (e) such that the failure of which to obtain would not have a Material Adverse Effect. All notices, consents, authorizations, orders, filings and registrations which the Company is required to deliver or obtain prior to the Closing pursuant to the preceding sentence have been obtained or made or will be delivered or obtained or effected, and shall remain in full force and effect, on or prior to the Closing.

3.8 SEC Filings; Financial Statements.

(a) The Company has filed or furnished, as applicable, all forms, statements, certifications, reports and documents required to be filed or furnished by it with the SEC under Section 13, 14(a) and 15(d) of the Exchange Act for the one year preceding the date of this Agreement and is in compliance with General Instruction I.A.3 of Form S-3. As of the time it was filed with the SEC (or, if amended or superseded by a filing prior to the date of this Agreement, then on the date of such filing), each of the filed SEC Reports complied in all material respects with the applicable requirements of the Exchange Act, and, as of the time they were filed, none of the filed SEC Reports contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. There are no outstanding or unresolved comments from the SEC staff with respect to the SEC Reports. To the Company's knowledge, none of the SEC Reports are the subject of an ongoing SEC review. The interactive data in eXtensible Business Reporting Language included in the SEC Reports fairly presents the information called for in all material respects and has been prepared in accordance

with the SEC's rules and guidelines applicable thereto. The Company is not, and has never been, an issuer subject to Rule 144(i) under the Securities Act.

(b) The consolidated financial statements of the Company included in the SEC Reports (collectively, the "**Financial Statements**") comply in all material respects with applicable accounting requirements and the rules and regulations of the SEC with respect thereto as in effect at the time of filing (or to the extent corrected by a subsequent restatement) and fairly present in all material respects the consolidated financial position of the Company and its Subsidiaries as of the dates indicated, and the results of its operations and cash flows for the periods therein specified, and have been prepared in accordance with United States generally accepted accounting principles ("**GAAP**") applied on a consistent basis throughout the periods therein specified ((except as otherwise noted therein, and except that any unaudited financial statements may not contain certain footnotes and are subject to normal and recurring year-end adjustments). Except as set forth in the Financial Statements filed prior to the date of this Agreement, the Company has not incurred any liabilities, contingent or otherwise, except (i) those incurred in the ordinary course of business, consistent with past practices since the date of such financial statements or (ii) liabilities not required under GAAP to be reflected in the Financial Statements, in either case, none of which, individually or in the aggregate, have had or would reasonably be expected to have a Material Adverse Effect.

3.9 Absence of Changes. Since December 31, 2024, (a) the Company has conducted its business only in the ordinary course of business and there have been no material transactions entered into by the Company or any of its Subsidiaries (except for the execution and performance of this Agreement and the discussions, negotiations and transactions related thereto); (b) no material change to any material contract or arrangement by which the Company or any of its Subsidiaries is bound or to which any of its assets or properties is subject has been entered into that has not been disclosed in the SEC Reports; and (c) there has not been any other event or condition of any character that has had or would reasonably be expected to have a Material Adverse Effect.

3.10 Absence of Litigation. There is no action, suit, proceeding, arbitration, claim, investigation, charge, complaint or inquiry pending or, to the Company's knowledge, threatened in writing against the Company or any of its Subsidiaries which, individually or in the aggregate, has had or would reasonably be expected to have a Material Adverse Effect, nor are there any orders, writs, injunctions, judgments or decrees outstanding of any court or government agency or instrumentality and binding upon the Company or any of its Subsidiaries that have had or would reasonably be expected to have a Material Adverse Effect. Neither the Company nor any of its Subsidiaries, nor to the knowledge of the Company, any director or officer of the Company or any of its Subsidiaries, is, or within the last ten (10) years has been, the subject of any action involving a claim of violation of or liability under federal or state securities laws relating to the Company or such Subsidiary or a claim of breach of fiduciary duty relating to the Company or any of its Subsidiaries.

3.11 Compliance with Law; Permits. Neither the Company nor any of its Subsidiaries is in violation of, or has received any notices of violations with respect to, any laws, statutes, ordinances, rules or regulations of any governmental body, court or government agency or instrumentality, except for violations which, individually or in the aggregate, have not had and

would not reasonably be expected to have a Material Adverse Effect. The Company and its Subsidiaries have all required licenses, permits, certificates and other authorizations (collectively, "**Governmental Authorizations**") from such federal, state or local government or governmental agency, department or body that are currently necessary for the operation of the business of the Company and its Subsidiaries as currently conducted, except where the failure to possess currently such Governmental Authorizations has not had and is not reasonably expected to have a Material Adverse Effect. Neither the Company nor any Subsidiary has received any written (or, to the Company's knowledge, oral) notice regarding any revocation or material modification of any such Governmental Authorization, which, individually or in the aggregate, if the subject of an unfavorable decision, ruling or finding, has or would reasonably be expected to result in a Material Adverse Effect.

3.12 Intellectual Property. The Company and its Subsidiaries own, or have rights to use, all material inventions, patent applications, patents, trademarks, trade names, service names, service marks, copyrights, trade secrets, know how (including unpatented and/or unpatentable proprietary of confidential information, systems or procedures) and other intellectual property as described in the SEC Reports necessary for, or used in the conduct of their respective businesses (including as described in the SEC Reports) (collectively, "**Intellectual Property**"), except where any failure to own, possess or acquire such Intellectual Property has not had, and would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. The Intellectual Property of the Company and its Subsidiaries has not been adjudged by a court of competent jurisdiction to be invalid or unenforceable, in whole or in part. To the Company's knowledge: (i) there are no third parties who have rights to any Intellectual Property, including no material liens, security interests, or other encumbrances; and (ii) there is no infringement by third parties of any Intellectual Property, except, in each case, which, individually or in the aggregate, have not had and would not reasonably be expected to have a Material Adverse Effect. No action, suit, or other proceeding is pending, or, to the Company's knowledge, is threatened: (A) challenging the Company's or its Subsidiaries' rights in or to any Intellectual Property; (B) challenging the validity, enforceability or scope of any Intellectual Property; or (C) alleging that the Company or any of its Subsidiaries infringes, misappropriates, or otherwise violates any patent, trademark, trade name, service name, copyright, trade secret or other proprietary rights of others, except, in each case, which, individually or in the aggregate, have not had and would not reasonably be expected to have a Material Adverse Effect. The Company and its Subsidiaries have complied in all material respects with the terms of each agreement pursuant to which Intellectual Property has been licensed to the Company or any of its Subsidiaries in all material respects, and to the Company's knowledge all such agreements are in full force and effect except, in each case, which, individually or in the aggregate, have not had and would not reasonably be expected to have a Material Adverse Effect. To the Company's knowledge, there are no material defects in any of the patents or patent applications included in the Intellectual Property. The Company and its Subsidiaries have taken reasonable steps to protect, maintain and safeguard their Intellectual Property.

3.13 Employee Benefits. Except as would not be reasonably likely to result in a Material Adverse Effect, each Benefit Plan has been established and administered in accordance with its terms and in compliance with the applicable provisions of ERISA, the Code, the Patient Protection and Affordable Care Act of 2010, as amended, and other applicable laws, rules and regulations. The Company and its Subsidiaries are in compliance with all applicable federal, state

and local laws, rules and regulations regarding employment, except for any failures to comply that are not reasonably likely, individually or in the aggregate, to have a Material Adverse Effect. There is no labor dispute, strike or work stoppage against the Company or its Subsidiaries pending or, to the knowledge of the Company, threatened which may interfere with the business activities of the Company, except where such dispute, strike or work stoppage is not reasonably likely, individually or in the aggregate, to have a Material Adverse Effect.

3.14 Taxes. The Company and its Subsidiaries have filed all federal, state and foreign income Tax Returns and other Tax Returns required to have been filed under applicable law (or extensions have been duly obtained) and have paid all Taxes required to have been paid by them, except for those which are being contested in good faith and except where failure to file such Tax Returns or pay such Taxes would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. No assessment in connection with United States federal tax returns has been made against the Company. The charges, accruals and reserves on the books of the Company in respect of any income and corporation tax liability for any years not finally determined are adequate to meet any assessments or reassessments for additional income tax for any years not finally determined, except to the extent of any inadequacy that would not result in a Material Adverse Effect. No audits, examinations, or other proceedings with respect to any material amounts of Taxes of the Company and its Subsidiaries are presently in progress or have been asserted or proposed in writing without subsequently being paid, settled or withdrawn. There are no material liens on any of the assets of the Company. At all times since inception, the Company has been and continues to be classified as a corporation for U.S. federal income tax purposes. Neither the Company nor any of its Subsidiaries has been a United States real property holding corporation within the meaning of Code Section 897(c)-2 during the period specified in Code Section 897(c)(1)(A)(ii).

3.15 Title. Each of the Company and its Subsidiaries has good and marketable title to all personal property owned by it that is material to the business of the Company, free and clear of all liens, encumbrances and defects except such as do not materially and adversely affect the value of such property and do not materially and adversely interfere with the use made and proposed to be made of such property by the Company or its Subsidiaries, as the case may be. Any real property and buildings held under lease by the Company or its Subsidiaries is held under valid, subsisting and enforceable leases with such exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company or its Subsidiaries, as the case may be. The Company does not own any real property.

3.16 Insurance. The Company carries or is entitled to the benefits of insurance in such amounts and covering such risks that is customary for comparably situated companies and is adequate for the conduct of its business and the value of its real and personal properties (owned or leased) and tangible assets, and each of such insurance policies is in full force and effect and the Company is in compliance in all material respects with the terms of such insurance policies. Other than customary end-of-policy notifications from insurance carriers, since January 1, 2025, the Company has not received any notice or other communication regarding any actual or possible: (i) cancellation or invalidation of any material insurance policy or (ii) refusal or denial of any coverage, reservation of rights or rejection of any material claim under any insurance policy.

3.17 Nasdaq Stock Market. The issued and outstanding shares of Common Stock are registered pursuant to Section 12(b) of the Exchange Act and are listed for trading on the Nasdaq Capital Market under the symbol "ATHA". The Company is in compliance with all listing requirements of Nasdaq applicable to the Company. As of the date of this Agreement, there is no suit, action, proceeding or investigation pending or, to the knowledge of the Company, threatened against the Company by Nasdaq or the SEC, respectively, to prohibit or terminate the listing of the Common Stock on the Nasdaq Capital Market or to deregister the Common Stock under the Exchange Act. The Company has taken no action as of the date of this Agreement that is designed to terminate the registration of the Common Stock under the Exchange Act.

3.18 Sarbanes-Oxley Act. The Company is, and since January 1, 2025 has been, in compliance in all material respects with all applicable requirements of the Sarbanes-Oxley Act of 2002 and applicable rules and regulations promulgated by the SEC thereunder.

3.19 Clinical Data and Regulatory Compliance. Except as would not reasonably be expected to result in a Material Adverse Effect: (i) the preclinical tests and clinical trials and other studies used to support regulatory approval (collectively, "**Studies**") that, prior to the date of this Agreement, have been conducted by or on behalf of, or sponsored by, the Company or its Subsidiaries that are described in, or the results of which are referred to in, the SEC Reports were (and, if still pending, are being) conducted in all material respects in accordance with the protocols, approved for such Studies and applicable Law; (ii) each description of the results of such Studies is accurate and complete in all material respects and fairly presents the data derived from such Studies, and the Company and its Subsidiaries have no knowledge of any other studies the results of which would reasonably be expected to render, the results described or referred to in the SEC Reports false or misleading; (iii) the Company and its Subsidiaries have made all required filings and obtained all applicable approvals as required by the FDA or from any other U.S. federal, state or local government or foreign government or Drug Regulatory Agency, or Institutional Review Board, each having jurisdiction over biopharmaceutical products (collectively, the "**Regulatory Agencies**") for the conduct of its business as described in the SEC Reports; (iv) neither the Company nor any of its Subsidiaries has received any notice of, or correspondence from, any of the Regulatory Agencies requiring the termination or suspension of or imposing any clinical hold on any clinical trials that are described or referred to in the SEC Reports; and (v) the Company and its Subsidiaries have each operated and currently are in compliance in all material respects with all applicable rules and regulations of the Regulatory Agencies.

3.20 Compliance with Health Care Laws. The Company and its Subsidiaries are in compliance in all material respects with all Health Care Laws to the extent applicable to the current business of the Company and its Subsidiaries or any of their respective activities. For purposes of this Agreement, "**Health Care Laws**" means: (i) the Federal Food, Drug, and Cosmetic Act (21 U.S.C. Section 301 et seq.) and the Public Health Service Act (42 U.S.C. Section 201 et seq.), and the regulations promulgated thereunder; (ii) all applicable federal, state, local and foreign health care fraud and abuse laws, including, without limitation, the Anti-Kickback Statute (42 U.S.C. Section 1320a-7b(b)); (iii) HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act (42 U.S.C. Section 17921 et seq.); (iv) the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Reconciliation Act of 2010; (v) the European Union ("**EU**") Clinical Trials Regulation (Regulation (EU) No. 536/2014); (vi) the EU Regulation regarding community procedures for authorization and

supervision of medicinal products for human use and establishing a European Medicines Agency (Regulation (EC) No. 726/2004); (vii) licensure, quality, safety and accreditation requirements under applicable federal, state, local or foreign laws or regulatory bodies; (viii) all other local, state, federal, national, supranational and foreign laws, relating to the regulation of the Company or its Subsidiaries, and (ix) the regulations promulgated pursuant to such statutes and any state or non-U.S. counterpart thereof. Neither the Company nor any of its Subsidiaries has received written or, to the Company's knowledge, oral notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any court or arbitrator or governmental or regulatory authority or third party alleging that any product operation or activity is in material violation of any applicable Health Care Laws nor, to the Company's knowledge, is any such claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action threatened. The Company and its Subsidiaries have filed, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by applicable Health Care Laws, and, to the Company's knowledge, all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and accurate on the date filed in all material respects (or were corrected or supplemented by a subsequent submission). Neither the Company nor any of its Subsidiaries is a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement orders, or similar agreements with or imposed by any governmental or regulatory authority. Additionally, neither the Company nor any of its Subsidiaries nor any of their respective employees, officers, directors, or, to the knowledge of the Company, agents has been excluded, suspended or debarred from participation in any U.S. federal health care program or human clinical research or, to the knowledge of the Company, is subject to a governmental inquiry, investigation, proceeding, or other similar action that would reasonably be expected to result in debarment, suspension, or exclusion.

3.21 Accounting Controls and Disclosure Controls and Procedures. The Company maintains a system of internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act) that is designed to comply with the requirements of the Exchange Act applicable to the Company and provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP, including policies and procedures sufficient to provide reasonable assurance (i) that the Company maintains records that in reasonable detail accurately and fairly reflect the Company's transactions and dispositions of assets, (ii) that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, (iii) that receipts and expenditures are made only in accordance with authorizations of management and the Board of Directors and (iv) regarding prevention or timely detection of the unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the Company's financial statements. Except as disclosed in the Company's SEC Reports filed prior to the date of this Agreement, the Company has not identified any material weaknesses in the design or operation of the Company's internal control over financial reporting. The Company's "disclosure controls and procedures" (as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act) are designed to provide reasonable assurance that all information (both financial and non-financial) required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC, and that all such information is accumulated and communicated to the Company's management as appropriate to allow timely decisions regarding required disclosure.

3.22 Price Stabilization of Common Stock. The Company has not taken, nor will it take, directly or indirectly, any action designed to stabilize or manipulate the price of the Common Stock to facilitate the sale or resale of the Initial Shares, the Common Warrant Shares or the Pre-Funded Warrant Shares.

3.23 Investment Company Act. The Company is not, and immediately after receipt of payment for the Initial Shares and Pre-Funded Warrants will not be, an "investment company" within the meaning of the U.S. Investment Company Act of 1940, as amended.

3.24 General Solicitation; No Integration or Aggregation. Neither the Company nor any other person or entity authorized by the Company to act on its behalf has engaged in a general solicitation or general advertising (within the meaning of Regulation D of the Securities Act) of investors with respect to offers or sales of Securities pursuant to this Agreement. The Company has not, directly or indirectly, sold, offered for sale, solicited offers to buy or otherwise negotiated in respect of, any security (as defined in the Securities Act) which, to its knowledge, is or will be (i) integrated with the offer and sale of the Securities pursuant to this Agreement for purposes of the Securities Act or (ii) aggregated with prior offerings by the Company for the purposes of the rules and regulations of the Nasdaq Capital Market. Assuming the accuracy of the representations and warranties of the Investors set forth in Section 4, neither the Company nor any of its Affiliates, its Subsidiaries nor any Person acting on their behalf has, directly or indirectly, made any offers or sales of any Company security or solicited any offers to buy any Company security, under circumstances that would adversely affect reliance by the Company on Section 4(a)(2) and/or Rule 506 of Regulation D promulgated thereunder for the exemption from registration for the transactions contemplated hereby. With respect to those Securities sold in reliance upon Regulation S to a Non-U.S. Investor, (x) none of the Company, its Affiliates or any person acting on its or their behalf has engaged in any directed selling efforts within the meaning of Regulation S and (y) each of the Company and its Affiliates and any person acting on its or their behalf has complied with the offering restrictions set forth in Regulation S.

3.25 Brokers and Finders. Other than the Placement Agent, neither the Company nor any other Person authorized by the Company to act on its behalf has retained, utilized or been represented by any broker or finder in connection with the transactions contemplated by this Agreement.

3.26 Reliance by the Investors. The Company has a reasonable basis for making each of the representations set forth in this Section 3. The Company acknowledges that each of the Investors will rely upon the truth and accuracy of, and the Company's compliance with, the representations, warranties, agreements, acknowledgements and understandings of the Company set forth herein.

3.27 Other Covered Persons. Other than the Placement Agent(s), the Company is not aware of any person (other than any Issuer Covered Person) that has been or will be paid (directly or indirectly) remuneration for solicitation of purchasers in connection with the sale of any Securities.

3.28 No Additional Agreements. There are no agreements or understandings between the Company and any Investor with respect to the transactions contemplated by the

Transaction Agreements other than (i) as specified in the Transaction Agreements and (ii) any side letter agreements with any of the Investors, which side letters the Company has shared with all Investors and which, in each case, for the avoidance of doubt, does not contain terms (economic or otherwise) more favorable to such Investor.

3.29 Anti-Bribery and Anti-Money Laundering Laws. Each of the Company, its Subsidiaries and, to the knowledge of the Company, any of their respective officers, directors, supervisors, managers, agents, or employees are and have at all times been in compliance with: and its participation in the offering will not violate (A) anti-bribery laws, including but not limited to, any applicable law, rule, or regulation of any locality, including but not limited to any law, rule, or regulation promulgated to implement the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, signed December 17, 1997, including the U.S. Foreign Corrupt Practices Act of 1977, as amended, the U.K. Bribery Act 2010, or any other law, rule or regulation of similar purposes and scope; (B) anti-money laundering laws, including, but not limited to, applicable federal, state, international, foreign or other laws, regulations or government guidance regarding anti-money laundering, including, without limitation, Title 18 US. Code sections 1956 and 1957, the Patriot Act, the Bank Secrecy Act, and international anti-money laundering principles or procedures by an intergovernmental group or organization, such as the Financial Action Task Force on Money Laundering, of which the United States is a member and with which designation the United States representative to the group or organization continues to concur, all as amended, and any executive order, directive, or regulation pursuant to the authority of any of the foregoing, or any orders or licenses issued thereunder; or (C) any laws with respect to import and export control and economic sanctions, including the U.S. Export Administration Regulations, the U.S. International Traffic in Arms Regulations, and economic sanctions regulations and executive orders administered by the U.S. Department of the Treasury Office of Foreign Asset Control.

3.30 Cybersecurity. The Company and its Subsidiaries' material information technology assets and equipment, computers, systems, networks, hardware, software, websites, applications, and databases (collectively, "**IT Systems**") are adequate for, and operate and perform in all material respects as required in connection with the operation of the business of the Company and its Subsidiaries as currently conducted, and are free and clear of all material Trojan horses, time bombs, malware and other malicious code. The Company and its Subsidiaries have implemented and maintained commercially reasonable physical, technical and administrative controls designed to maintain and protect the confidentiality, integrity, availability, privacy and security of all sensitive, confidential or regulated data ("**Confidential Data**") used or maintained in connection with their businesses and Personal Data (defined below), and the integrity, availability continuous operation, redundancy and security of all IT Systems. "**Personal Data**" means the following data used in connection with the Company's and its Subsidiaries' businesses and in their possession or control: (i) a natural person's name, street address, telephone number, e-mail address, photograph, social security number or other tax identification number, driver's license number, passport number, credit card number or bank information; (ii) information that identifies or may reasonably be used to identify an individual; (iii) any information that would qualify as "protected health information" under the Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act (collectively, "**HIPAA**"); and (iv) any information that would qualify as "personal data," "personal information" (or similar term) under the Privacy Laws. To the

Company's knowledge, there have been no breaches, outages or unauthorized uses of or accesses to the Company's IT Systems, Confidential Data, or Personal Data that would require notification under Privacy Laws (as defined below).

3.31 Compliance with Data Privacy Laws. The Company and its Subsidiaries are, and at all prior times in the past five (5) years were, in material compliance with all applicable state, federal and foreign data privacy and security laws and regulations regarding the collection, use, storage, retention, disclosure, transfer, disposal, or any other processing (collectively "**Process**" or "**Processing**") of Personal Data, including without limitation HIPAA, the EU General Data Protection Regulation ("**GDPR**") (Regulation (EU) No. 2016/679), all other local, state, federal, national, supranational and foreign laws relating to the regulation of the Company or its Subsidiaries, and the regulations promulgated pursuant to such statutes and any state or non-U.S. counterpart thereof (collectively, the "**Privacy Laws**"). To ensure material compliance with the Privacy Laws, the Company and its Subsidiaries have in place, comply with, and take all appropriate steps necessary to ensure compliance in all material respects with their policies and procedures relating to data privacy and security, and the Processing of Personal Data and Confidential Data (the "**Privacy Statements**"). To the extent required by Privacy Laws, the Company and its Subsidiaries have, except as would not reasonably be expected, individually or in the aggregate, to result in a Material Adverse Effect, at all times since inception provided accurate notice of their Privacy Statements then in effect to its customers, employees, third party vendors and representatives. None of such disclosures made or contained in any Privacy Statements have been materially inaccurate, misleading, incomplete, or in material violation of any Privacy Laws.

3.32 Transactions with Affiliates and Employees. No relationship, direct or indirect, exists between or among the Company or any of its Subsidiaries, on the one hand, and any of the directors, officers, stockholders, customers or suppliers of the Company, on the other hand, that is required to be described in the SEC Reports that is not so described.

4. Representations and Warranties of Each Investor. Each Investor, severally for itself and not jointly with any other Investor, represents and warrants to the Company and the Placement Agent that the statements contained in this Section 4 are true and correct as of the date of this Agreement and the Closing Date:

4.1 Organization. The Investor is duly organized, validly existing and in good standing under the laws of the jurisdiction of its organization and has the requisite power and authority to own, lease and operate its properties and to carry on its business as now conducted.

4.2 Authorization. The Investor has all requisite corporate or similar power and authority to enter into this Agreement and the other Transaction Agreements to which it will be a party and to carry out and perform its obligations hereunder and thereunder. All corporate, member or partnership action on the part of such Investor or its stockholders, members or partners necessary for the authorization, execution, delivery and performance of this Agreement and the other Transaction Agreements to which it will be a party and the consummation of the other transactions contemplated in this Agreement has been taken. The execution, delivery and performance by such Investor of the Transaction Agreements to which such Investor is a party has been duly authorized and each has been duly executed. Assuming this Agreement constitutes the

legal and binding agreement of the Company, this Agreement constitutes a legal, valid and binding obligation of such Investor, enforceable against such Investor in accordance with its respective terms, except as such enforceability may be limited or otherwise affected by bankruptcy, insolvency, fraudulent conveyance, reorganization, moratorium and/or similar laws relating to or affecting the rights of creditors generally or by general equity principles (regardless of whether such enforceability is considered in a proceeding in equity or at law).

4.3 No Conflicts. The execution, delivery and performance of the Transaction Agreements by the Investor, the purchase of the Securities in accordance with their terms and the consummation by the Investor of the other transactions contemplated hereby will not conflict with or result in any violation of, breach or default by such Investor (with or without notice or lapse of time, or both) under, conflict with, or give rise to a right of termination, cancellation or acceleration of any obligation, a change of control right or to a loss of a material benefit under (i) any provision of the organizational documents of the Investor, including, without limitation, its incorporation or formation papers, bylaws, indenture of trust or partnership or operating agreement, as may be applicable or (ii) any agreement or instrument, undertaking, credit facility, franchise, license, judgment, order, ruling, statute, law, ordinance, rule or regulations, applicable to such Investor or its respective properties or assets, except, in the case of clause (ii), as would not, individually or in the aggregate, be reasonably expected to materially delay or materially hinder the ability of the Investor to perform its obligations under the Transaction Agreements (such delay or hindrance, a "**Purchaser Adverse Effect**").

4.4 Consents. All consents, approvals, orders and authorizations required on the part of such Investor in connection with the execution, delivery or performance of this Agreement, the issuance of the Securities, and the consummation of the other transactions contemplated herein have been obtained or made, other than such consents, approvals, orders and authorizations the failure of which to make or obtain, individually or in the aggregate, would not reasonably be expected to have a Purchaser Adverse Effect.

4.5 Residency; Holdings. The Investor's residence (if an individual) or offices in which its investment decision with respect to the Securities was made (if an entity) are located at the address immediately below the Investor's name on the pertinent signature page of this Agreement, except as otherwise communicated by the Investor to the Company. Any Investor with an address set forth on the pertinent signature page to this Agreement that is outside the United States, as such term is defined under Regulation S, is referred to herein as a "**Non-U.S. Investor**." Investor has disclosed to the Company the number of shares of Common Stock beneficially owned by Investor and the number of shares of Common Stock Equivalents beneficially owned by Investor, in each case as of immediately prior to the Closing.

4.6 Brokers and Finders. The Investor has not retained, utilized or been represented by any broker or finder in connection with the transactions contemplated by this Agreement whose fees the Company would be required to pay.

4.7 Investment Representations and Warranties. The Investor hereby represents and warrants that, it (i) as of the date of this Agreement is, if an entity, a "qualified institutional buyer" (as defined in Rule 144A under the Securities Act) or an "accredited investor" as that term is defined in Rule 501(a) under Regulation D promulgated pursuant to the Securities Act; or (ii) if

an individual, is an "accredited investor" as that term is defined in Rule 501(a) of Regulation D of the Securities Act and has such knowledge and experience in financial and business matters as to be able to protect its own interests in connection with an investment in the Securities. The Investor further represents and warrants that (x) it is capable of evaluating the merits and risk of such investment, and (y) that it has evaluated the merits and risk of such investment. The Investor understands and agrees that the offering and sale of the Securities has not been registered under the Securities Act or any applicable state securities laws and is being made in reliance upon federal and state exemptions for transactions not involving a public offering which depend upon, among other things, the bona fide nature of the investment intent and the accuracy of the Investor's representations as expressed herein. With respect to those Securities sold in reliance upon Regulation S to a Non-U.S. Investor, such Non-U.S. Investor (i) is acquiring the Securities outside the United States in an offshore transaction meeting the requirements of Regulation S; (ii) is not acquiring, has not offered, and will not offer prior to the expiration of the applicable compliance period pursuant to Rule 903 of Regulation S, the Securities for the account or benefit of any U.S. Person; (iii) did not become aware of the Company or the Securities through any form of "directed selling efforts" (as defined in Rule 902 of Regulation S); (iv) neither it nor its Affiliates, nor any persons acting on its or their behalf has engaged or will engage in any "directed selling efforts" (as defined in Rule 902 of Regulation S) with respect to the Securities; (v) was outside the United States at the time of the origination of contact concerning the transactions contemplated by this Agreement and on the date of execution and delivery of this Agreement by such Investor; (vi) is not acquiring the Securities in a transaction or part of series of transactions that, although in technical compliance with Regulation S, is part of a plan or scheme to evade the registration provisions of the Securities Act; (vii) is neither a U.S. Person nor a Distributor (in each case, as defined in Rule 902 of Regulation S) and (viii) is the sole beneficial owner of the Securities specified on signature pages hereto and has not pre-arranged any sale with a purchaser in the United States. Such Non-U.S. Investor hereby represents that it is satisfied as to the full observance of the laws of the Non-U.S. Investor's jurisdiction in connection with any invitation to subscribe for the Securities, the Common Warrant Shares and the Pre-Funded Warrant Shares or any use of the Transaction Agreements, including (i) the legal requirements within such Non-U.S. Investor's jurisdiction for the purchase of the Securities, the Common Warrant Shares and the Pre-Funded Warrant Shares, (ii) any foreign exchange restrictions applicable to such purchase, (iii) any governmental or other consents that may need to be obtained and (iv) the income tax and other tax consequences, if any, that may be relevant to the purchase, holding, redemption, sale or transfer of such securities. Such Non-U.S. Investor's subscription and payment for, and the Investor's continued beneficial ownership of, the Securities, the Common Warrant Shares and the Pre-Funded Warrant Shares will not violate any applicable securities or other laws of the Non-U.S. Investor's jurisdiction.

4.8 Intent. The Investor is purchasing the Securities solely for the Investor's own account and not for the account of others, and not with a view to the resale or distribution of any part thereof in violation of the Securities Act, and the Investor has no present intention of selling, granting any participation in, or otherwise distributing the same in violation of the Securities Act without prejudice, however, to the Investor's right at all times to sell or otherwise dispose of all or any part of such Securities in compliance with applicable federal and state securities laws. Notwithstanding the foregoing, if the Investor is purchasing the Securities as a fiduciary or agent for one or more investor accounts, the Investor has full investment discretion with respect to each such account, and the full power and authority to make the acknowledgements,

representations and agreements herein on behalf of each owner of each such account. The Investor has no present arrangement to sell the Securities to or through any person or entity. The Investor understands that the Securities must be held indefinitely unless such Securities are resold pursuant to a registration statement under the Securities Act or an exemption from registration is available. Nothing contained herein shall be deemed a representation or warranty by the Investor to hold the Securities for any period of time.

4.9 Investment Experience; Ability to Protect Its Own Interests and Bear Economic Risks. The Investor acknowledges that it can bear the economic risk and complete loss of its investment in the Securities and has knowledge and experience in finance, securities, taxation, investments and other business matters as to be capable of evaluating the merits and risks of investments of the kind described in this Agreement and contemplated hereby, and the Investor has had an opportunity to seek, and has sought, such accounting, legal, business and tax advice as the Investor has considered necessary to make an informed investment decision. The Investor acknowledges that the Investor (i) is a sophisticated investor, experienced in investing in private placements of equity securities and capable of evaluating investment risks independently, both in general and with regard to all transactions and investment strategies involving a security or securities and (ii) has exercised independent judgment in evaluating its participation in the purchase of the Securities. The Investor acknowledges that the Investor is aware that there are substantial risks incident to the purchase and ownership of the Securities, including those set forth in the Company's filings with the SEC. Alone, or together with any professional advisor(s), the Investor has adequately analyzed and fully considered the risks of an investment in the Securities and determined that the Securities are a suitable investment for the Investor. The Investor is, at this time and in the foreseeable future, able to afford the loss of the Investor's entire investment in the Securities and the Investor acknowledges specifically that a possibility of total loss exists.

4.10 Independent Investment Decision. The Investor understands that nothing in the Transaction Agreements or any other materials presented by or on behalf of the Company to the Investor in connection with the purchase of the Securities constitutes legal, tax or investment advice. The Investor has consulted such legal, tax and investment advisors as it, in such Investor's sole discretion, has deemed necessary or appropriate in connection with its purchase of the Securities.

4.11 Securities Not Registered; Legends. The Investor acknowledges and agrees that the Securities are being offered in a transaction not involving any public offering within the meaning of the Securities Act, and the Investor understands that the Securities have not been registered under the Securities Act, by reason of their issuance by the Company in a transaction exempt from the registration requirements of the Securities Act, and that the Securities must continue to be held and may not be offered, resold, transferred, pledged or otherwise disposed of by the Investor unless a subsequent disposition thereof is registered under the Securities Act or is exempt from such registration and in each case in accordance with any applicable securities laws of any state of the United States. The Investor understands that the exemptions from registration afforded by Rule 144 or Regulation S (the provisions of which are known to it) promulgated under the Securities Act depend on the satisfaction of various conditions including, but not limited to, the time and manner of sale, the holding period and on requirements relating to the Company which are outside of the Investor's control and which the Company may not be able to satisfy, and that, if applicable, Rule 144 may afford the basis for sales only in limited amounts. The Investor

acknowledges and agrees that it has been advised to consult legal counsel prior to making any offer, resale, transfer, pledge or disposition of any of the Securities. The Investor acknowledges that no federal or state agency has passed upon or endorsed the merits of the offering of the Securities or made any findings or determination as to the fairness of this investment.

The Investor understands that any certificates or book entry notations evidencing the Securities may bear the following legend, and for any Non-U.S. Investor, such additional legends as may be required for compliance with Regulation S:

> "THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES. THE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE SOLD, TRANSFERRED OR ASSIGNED UNLESS (I) SUCH SECURITIES HAVE BEEN REGISTERED FOR SALE PURSUANT TO THE SECURITIES ACT, (II) SUCH SECURITIES MAY BE SOLD PURSUANT TO RULE 144 UNDER THE SECURITIES ACT (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION BY THE HOLDER) OR REGULATION S, (III) THE COMPANY HAS RECEIVED AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO IT THAT SUCH TRANSFER MAY LAWFULLY BE MADE WITHOUT REGISTRATION UNDER THE SECURITIES ACT, OR (IV) THE SECURITIES ARE TRANSFERRED WITHOUT CONSIDERATION TO AN AFFILIATE OF SUCH HOLDER OR A CUSTODIAL NOMINEE (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION). [NO HEDGING TRANSACTIONS CAN BE CONDUCTED WITH REGARD TO THE SECURITIES EXCEPT AS PERMITTED BY THE SECURITIES ACT.] NOTWITHSTANDING THE FOREGOING THE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN OR FINANCING ARRANGEMENT SECURED BY THE SECURITIES."

In addition, the Securities may contain a legend regarding affiliate status of the Investor, if applicable.

4.12 No General Solicitation. The Investor acknowledges and agrees that the Investor is purchasing the Securities directly from the Company. Investor became aware of this offering of the Securities solely by means of direct contact from the Placement Agent or directly from the Company as a result of a pre-existing, substantive relationship with the Company or the Placement Agent, and/or their respective advisors (including, without limitation, attorneys, accountants, bankers, consultants and financial advisors), agents, control persons, representatives, Affiliates, directors, officers, managers, members, and/or employees, and/or the representatives of such persons. The Securities were offered to Investor solely by direct contact between Investor and the Company, the Placement Agent and/or their respective representatives. Investor did not become aware of this offering of the Securities, nor were the Securities offered to Investor, by any other means, and none of the Company, the Placement Agent and/or their respective representatives acted as investment advisor, broker or dealer to Investor. The Investor is not

purchasing the Securities as a result of advertising or, to its knowledge, general solicitation, within the meaning of the Securities Act.

4.13 Access to Information. In making its decision to purchase the Securities, such Investor has relied solely upon independent investigation made by such Investor, upon the SEC Reports and upon the representations, warranties and covenants set forth herein. Such Investor acknowledges and agrees that such Investor and the Investor's professional advisor(s), if any, have had the opportunity to ask such questions, receive such answers and obtain such information from the Company regarding the Company, its business and the terms and conditions of the offering of the Securities as the Investor and the Investor's professional advisor(s), if any, have deemed necessary to make an investment decision with respect to the Securities and that the Investor has independently made its own analysis and decision to invest in the Company. Neither such inquiries nor any other due diligence investigation conducted by the Investor shall modify, limit or otherwise affect the Investor's right to rely on the Company's representations and warranties contained in this Agreement.

4.14 Certain Trading Activities. Other than consummating the transaction contemplated hereby, the Investor has not, nor has any Person acting on behalf of or pursuant to any understanding with the Investor, directly or indirectly executed any purchases or sales, including Short Sales, of the securities of the Company during the period commencing as of the time that the Investor was first contacted by the Company or any other Person regarding the transaction contemplated hereby and ending immediately prior to the date of this Agreement. Notwithstanding the foregoing, in the case of an Investor that is a multi-managed investment vehicle whereby separate portfolio managers manage separate portions of such Investor's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of such Investor's assets, the representation set forth above shall only apply with respect to the portion of the assets managed by the portfolio manager that made the investment decision to purchase the Securities covered by this Agreement. Furthermore, in the case of an Investor whose investment advisor utilized an information barrier with respect to the information regarding the transactions contemplated hereunder after first being contacted by the Company or its representatives, the representation set forth above shall only apply after the point in time when the portfolio manager who manages such Investor's assets was informed of the information regarding the transactions contemplated hereunder and, with respect to the Investor's investment advisor, the representation set forth above shall only apply with respect to any purchases or sales, including Short Sales, of the securities of the Company on behalf of other funds or investment vehicles for which the Investor's investment advisor is also an investment advisor or sub-advisor after the point in time when the portfolio manager who manages the assets of such other funds or investment vehicles for which the Investor's investment advisor is also an investment advisor or sub-advisor was informed of the information regarding the transactions contemplated hereunder. Other than to other Persons party to this Agreement and to its advisors and agents who had a need to know such information, the Investor has maintained the confidentiality of all disclosures made to it in connection with this transaction (including the existence and terms of this transaction). Notwithstanding the foregoing, for avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to the identification of the availability of, or securing of, available shares to borrow in order to effect Short Sales or similar transactions in the future.

4.15 Disqualification Event. To the extent the Investor is one of the covered persons identified in Rule 506(d)(1), the Investor represents that no Disqualification Event is applicable to the Investor or any of its Rule 506(d) Related Parties (as defined below), except, if applicable, for a Disqualification Event as to which Rule 506(d)(2)(ii) or (iii) or (d)(3) is applicable. The Investor hereby agrees that it shall notify the Company promptly in writing in the event a Disqualification Event becomes applicable to the Investor or any of its Rule 506(d) Related Parties, except, if applicable, for a Disqualification Event as to which Rule 506(d)(2)(ii) or (iii) or (d)(3) is applicable. For purposes of this Section, "**Rule 506(d) Related Party**" means a person or entity that is a beneficial owner of the Investor's securities for purposes of Rule 506(d) of the Securities Act.

5. Covenants.

5.1 Further Assurances. Each party agrees to cooperate with each other and their respective officers, employees, attorneys, accountants and other agents, and, generally, do such other reasonable acts and things in good faith as may be necessary to effectuate the intents and purposes of this Agreement, subject to the terms and conditions of this Agreement and compliance with applicable law, including taking reasonable action to facilitate the filing of any document or the taking of reasonable action to assist the other parties hereto in complying with the terms of this Agreement. The Investor acknowledges that the Company and the Placement Agent will rely on the acknowledgments, understandings, agreements, representations and warranties contained in this Agreement. Prior to the Closing, (i) the Investor agrees to promptly notify the Company if any of the acknowledgments, understandings, agreements, representations and warranties set forth in Section 4 of this Agreement are no longer accurate and (ii) the Company agrees to promptly notify each Investor and the Placement Agent if any of the acknowledgements, understandings, agreements, representations and warranties set forth in Section 3 of this Agreement are no longer accurate.

5.2 Listing. The Company shall use commercially reasonable efforts to maintain the listing and trading of its Common Stock on the Nasdaq Capital Market and, in accordance therewith, will use reasonable best efforts to comply in all material respects with the Company's reporting, filing and other obligations under the rules and regulations of Nasdaq.

5.3 Disclosure of Transactions.

(a) The Company shall, by 9:00 a.m., New York City time, on the first (1st) Business Day immediately following the date of this Agreement (provided that, if this Agreement is executed between midnight and 9:00 a.m., New York City time on any Business Day, no later than 9:01 a.m. on the date hereof), issue a press release and/or file with the SEC a Current Report on Form 8-K (including, if applicable, all exhibits thereto, the "**Disclosure Document**", and the actual filing of such press release and Current Report on Form 8-K, the "**Disclosure Time**") disclosing (i) all material terms of the transactions contemplated hereby and by the other Transaction Agreements and, if the Disclosure Document is a Current Report on Form 8-K, attaching this Agreement and the other Transaction Agreements as exhibits to such Disclosure Document, and (ii) all material non-public information concerning the Company and the transactions contemplated hereby disclosed to the Investors prior to the Disclosure Time. Following the issuance or filing of the Disclosure Document, no Investor shall be in possession of

any material non-public information concerning the Company or any of its Subsidiaries disclosed to the Investors by the Company, its Subsidiaries or any of their respective representatives, officers, directors, or employees or agents, including the Placement Agent. The Company understands and confirms that the Investors will rely on the foregoing representation in effecting securities transactions. From and after the issuance or filing of the Disclosure Document, the Company shall not provide material non-public information to any Investor, unless otherwise specifically agreed in writing by such Investor prior to any such disclosure. In addition, unless it has already done so by filing the Disclosure Document, on or before the fourth (4th) Business Day following the date of this Agreement, the Company shall file with the SEC a Current Report on Form 8-K disclosing all material terms of the transactions contemplated by this Agreement. Notwithstanding anything in this Agreement to the contrary, the Company shall not publicly disclose the name of any Investor or any of its Affiliates or advisors, or include the name of any Investor or any of its Affiliates or advisors in any marketing materials (whether or not made publicly available), press release, public announcement or filing with the SEC (other than any registration statement contemplated by the Registration Rights Agreement or restatement of disclosure that had previously been made in compliance with the requirements of this Agreement) or any regulatory agency, without the prior written consent of the Investor, except (i) as required by the federal securities law in connection with (A) any registration statement contemplated by the Registration Rights Agreement and (B) the filing of final Transaction Agreements with the SEC or pursuant to other routine proceedings of regulatory authorities, or (ii) to the extent such disclosure is required by law, at the request of the staff of the SEC or regulatory agency or under the regulations of the Nasdaq Capital Market in which case the Company will provide the Investor with prior written notice (including by e-mail) of and an opportunity to review and comment on such required disclosure.

5.4 Integration; Regulation S Compliance. The Company shall not, and shall use its commercially reasonable efforts to ensure that no Affiliate of the Company shall, sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that will be integrated with the offer or sale of the Securities in a manner that would require the registration under the Securities Act of the sale of the Securities to the Investors, or that will be integrated with the offer or sale of the Securities for purposes of the rules and regulations of any National Exchange such that it would require stockholder approval prior to the closing of such other transaction unless stockholder approval is obtained before the closing of such subsequent transaction. With respect to those Securities sold in reliance upon Regulation S to a Non-U.S. Investor, (i) none of the Company, its Affiliates or any person acting on its or their behalf will engage in any directed selling efforts within the meaning of Regulation S and (ii) each of the Company and its Affiliates and any person acting on its or their behalf will comply with the offering restrictions set forth in Regulation S.

5.5 Removal of Legends.

(a) In connection with any sale, assignment, transfer or other disposition of the Initial Shares or Warrant Shares by an Investor pursuant to Rule 144 or pursuant to any other exemption under the Securities Act such that the purchaser acquires freely tradable shares and upon compliance by the Investor with the requirements of this Agreement, if requested by the Investor by written notice to the Company, the Company shall request the Transfer Agent to remove any restrictive legends related to the book entry account holding such shares and make

a new, unlegended entry for such book entry shares sold or disposed of without restrictive legends within the earlier of (i) one (1) business day and (ii) the Standard Settlement Period, in each case, of any such request therefor from the Investor, provided that the Company has timely received from the Investor customary representations and other documentation reasonably acceptable to the Company in connection therewith. The Company shall be responsible for the fees of its Transfer Agent and its legal counsel associated with such legend removal.

(b) Subject to receipt from the Investor by the Company and the Transfer Agent of customary representations and other documentation reasonably acceptable to the Company and the Transfer Agent in connection therewith, upon the earliest of such time as the Initial Shares or Warrant Shares (i) have been registered under the Securities Act pursuant to an effective registration statement; (ii) have been sold pursuant to Rule 144 or Regulation S, or (iii) are eligible for resale under Rule 144(b)(1) without the requirement for the Company to be in compliance with the current public information requirements under Rule 144(c)(1) (or any successor provision), the Company shall, in accordance with the provisions of this Section 5.5(b) and within the earlier of (i) one (1) business day and (ii) the Standard Settlement Period, in each case, of any request therefor from an Investor accompanied by such customary and reasonably acceptable documentation referred to above, (A) deliver to the Transfer Agent irrevocable instructions that the Transfer Agent shall make a new, unlegended entry for such book entry shares, and (B) cause its counsel to deliver to the Transfer Agent one or more opinions to the effect that the removal of such legends in such circumstances may be effected under the Securities Act if required by the Transfer Agent to effect the removal of the legend in accordance with the provisions of this Agreement. Any shares subject to legend removal under this Section 5.5 may be transmitted by the Transfer Agent to the Investor by crediting the account of the Investor's prime broker with the DTC System as directed by such Investor. The Company shall be responsible for the fees of its Transfer Agent and all DTC fees associated with such issuance.

5.6 Withholding Taxes. Each Investor agrees to furnish the Company with any information, representations and forms as shall reasonably be requested by the Company from time to time to assist the Company in complying with any applicable tax law (including any withholding obligations).

5.7 Fees and Commissions. The Company shall be solely responsible for the payment of any placement agent's fees, financial advisory fees, or broker's commissions (other than for Persons engaged by an Investor) relating to or arising out of the transactions contemplated hereby, including, without limitation, any fees or commissions payable to the Placement Agent.

5.8 No Conflicting Agreements. The Company will not take any action, enter into any agreement or make any commitment that would conflict or interfere in any material respect with the Company's obligations to the Investors under the Transaction Agreements.

5.9 Indemnification.

(a) The Company agrees to indemnify and hold harmless each Investor and its Affiliates, and their respective directors, officers, trustees, members, managers, employees, investment advisors and agents (collectively, the "**Indemnified Persons**"), from and against any and all losses, claims, damages, liabilities and expenses (including without limitation reasonable

and documented attorney fees and disbursements and other documented out-of-pocket expenses reasonably incurred in connection with investigating, preparing or defending any action, claim or proceeding, pending or threatened and the costs of enforcement thereof) to which such Person may become subject as a result of any breach of representation, warranty, covenant or agreement made by or to be performed on the part of the Company under the Transaction Agreements, and will reimburse any such Person in quarterly payments for all such amounts incurred by such Person solely to the extent such amounts have been finally judicially determined not to have resulted from such Person's fraud, gross negligence, willful misconduct or bad faith.

(b) Any person entitled to indemnification hereunder shall (i) give prompt written notice to the indemnifying party of any claim with respect to which it seeks indemnification and (ii) permit such indemnifying party to assume the defense of such claim with counsel reasonably satisfactory to the indemnified party; provided that any person entitled to indemnification hereunder shall have the right to employ separate counsel and to participate in the defense of such claim, but the fees and expenses of such counsel shall be at the expense of such person unless (a) the indemnifying party has agreed in writing to pay such fees or expenses, (b) the indemnifying party shall have failed to assume the defense of such claim and employ counsel reasonably satisfactory to such person; and provided, further, that the failure of any indemnified party to give written notice as provided herein shall not relieve the indemnifying party of its obligations hereunder, except to the extent that such failure to give notice shall materially adversely affect the indemnifying party in the defense of any such claim or litigation or (c) in the reasonable judgment of any such person, based upon written advice of its counsel, a conflict of interest exists between such person and the indemnifying party with respect to such claims (in which case, if the person notifies the indemnifying party in writing that such person elects to employ separate counsel at the expense of the indemnifying party, the indemnifying party shall not have the right to assume the defense of such claim on behalf of such person). It is understood that the indemnifying party shall not, in connection with any proceeding in the same jurisdiction, be liable for fees or expenses of more than one separate firm of attorneys at any time for all such indemnified parties. No indemnifying party will, except with the consent of the indemnified party, which consent shall not be unreasonably withheld, conditioned or delayed, consent to entry of any judgment or enter into any settlement unless such judgment or settlement (i) imposes no liability or obligation on, (ii) includes as an unconditional term thereof the giving of a complete, explicit and unconditional release from the party bringing such indemnified claims of all liability of the indemnified party in respect of such claim or litigation in favor of, and (iii) does not include any admission of fault, culpability, wrongdoing, or wrongdoing or malfeasance by or on behalf of, the indemnified party. No indemnified party will, except with the prior written consent of the indemnifying party, which consent shall not be unreasonably withheld, conditioned or delayed, consent to entry of any judgment or enter into any settlement.

5.10 Subsequent Equity Sales. From the date of this Agreement until the earlier of (a) sixty (60) days after the Closing Date and (b) the Business Day immediately following the effective date of the registration statement filed pursuant to the Registration Rights Agreement, the Company shall not (A) issue shares of Common Stock or Common Stock Equivalents, (B) effect a reverse stock split, recapitalization, share consolidation, reclassification or similar transaction affecting the outstanding Common Stock or (C) file with the SEC a registration statement under the Securities Act relating to any shares of Common Stock or Common Stock Equivalents, except pursuant to the terms of the Registration Rights Agreement and pursuant to

the terms of any registration rights agreement disclosed in the Disclosure Document. Notwithstanding the foregoing, the provisions of this Section 5.10 shall not apply to (i) the issuance of the Securities hereunder and pursuant to any transaction disclosed in the Disclosure Document, (ii) the issuance of Common Stock or Common Stock Equivalents upon the conversion, exercise or vesting of any securities of the Company outstanding on the date of this Agreement or outstanding pursuant to clause (iii) below; provided that such conversion, exercise or vesting is effected pursuant to the terms of such securities as in effect on the date of this Agreement and without giving effect to any amendments or adjustments thereto after the date hereof, (iii) the grant or issuance of any Common Stock or Common Stock Equivalents pursuant to any existing or hereinafter adopted or amended Company stock-based compensation plans approved by the Board of Directors of the Company or in accordance with Nasdaq Stock Market Rule 5635(c)(4), or (iv) the filing of registration statements on Form S-8 under the Securities Act to register the offer and sale of securities on an equity incentive plan or employee stock purchase plan.

5.11 Reservation of Common Stock. As of the date of this Agreement, the Company has reserved and the Company shall continue to reserve and keep available at all times, free of preemptive rights, a sufficient number of shares of Common Stock for the purpose of enabling the Company to issue the Warrant Shares that are issuable upon the exercise of the Warrants.

5.12 Stockholder Approval. To the extent any of the transactions contemplated by the Transaction Agreements, including the issuance of the Series A Common Warrant Shares, Series B Common Warrant Shares and the Pre-Funded Warrant Shares upon exercise of the Series A Common Warrants, Series B Common Warrants or the Pre-Funded Warrants (as applicable), requires stockholder approval pursuant to the rules and regulations of Nasdaq, the Company will, no later than in connection with its 2026 annual meeting of stockholders (the "**Annual Meeting**"), provide notice of, and solicit proxies for the Company's stockholders to obtain such required approvals such that the Series A Common Warrants and Series B Common Warrants can be exercised pursuant to the terms of such Series A Common Warrants or Series B Common Warrants (as applicable) and the Pre-Funded Warrants can be exercised at any time, subject to beneficial ownership limitations contained therein, in each case without restriction or additional stockholder approval (the "**Stockholder Approval**"). The Annual Meeting shall occur no later than June 30, 2026. To the extent the Stockholder Approval is not obtained at or before the Annual Meeting, the Company shall cause an additional meeting (special or general) of the Company's stockholders to be held every 90 days thereafter for the purpose of obtaining the Stockholder Approval until the Stockholder Approval is obtained.

5.13 Use of Proceeds. The Company shall use the net proceeds from the sale of the Securities hereunder for working capital purposes and shall not use such proceeds: (a) for the repayment of Company debt for borrowed money, (b) for the redemption of any Common Stock or Common Stock Equivalents (excluding, for the avoidance of doubt, the redemption of that certain pre-funded warrant issued to Sermonix Pharmaceuticals, Inc. on or about the date hereof (the "**Sermonix Warrant**") pursuant to Section 5 thereof and the net settlement of any Common Stock Equivalents, including options, RSUs and other equity incentive awards awarded by the Board of Directors, or a committee appointed thereby, the Sermonix Warrant, the Warrants and any transaction contemplated by Section 9(i) of the Series A Common Warrants, (c) for the settlement of any litigation outstanding as of Closing or (d) to in-license or develop a drug

candidate other than Lasofoxifene or any drug or drug candidate in the Company's pipeline until the earlier of such time as the topline results of ELAINE-3 become available and the second anniversary of the Closing Date.

5.14 Board Rights.

(a) From and after the Closing Date and for so long as Commodore Capital LP and its Affiliates (collectively, "**Commodore**") beneficially own five percent (5%) or more of the Company's outstanding Common Stock (which solely for the purposes herein shall include any shares of Common Stock issuable upon exercise of the Warrants whose Initial Exercise Date (as defined in the applicable Warrant) has occurred, without giving effect to any limitations on exercise of the Warrants), Commodore shall have the right, but not the obligation, to designate one (1) individual to be appointed to the Board of Directors (such person, the "**Commodore Designee**"), which Commodore Designee shall be "independent" under the listing standards of Nasdaq. Following such designation, the Company shall take all actions reasonably necessary to have the Commodore Designee promptly appointed to the Board of Directors, including, but not limited to, increasing the size of the Board of Directors to accommodate the appointment of the Commodore Designee.

(b) From and after the Closing Date and for so long as TCG Crossover Management LLC and its Affiliates (collectively, "**TCGX**") beneficially own five percent (5%) or more of the Company's outstanding Common Stock (which solely for the purposes herein shall include any shares of Common Stock issuable upon exercise of the Warrants whose Initial Exercise Date (as defined in the applicable Warrant) has occurred, without giving effect to any limitations on exercise of the Warrants), TCGX shall have the right, but not the obligation, to designate one (1) individual to be appointed to the Board of Directors (such person, the "**TCGX Designee**"), which TCGX Designee shall be "independent" under the listing standards of Nasdaq. Following such designation, the Company shall take all actions reasonably necessary to have the TCGX Designee promptly appointed to the Board of Directors, including, but not limited to, increasing the size of the Board of Directors to accommodate the appointment of the TCGX Designee.

(c) The Company shall use its reasonable best efforts to cause, by the six (6) month anniversary of the Closing Date, the resignation of two (2) current members of the Board of Directors, such that following the appointment of the Commodore Designee and the TCGX Designee, the Board of Directors shall consist of eight (8) directors.

(d) During the period that Commodore or TCGX is entitled to designate a Commodore Designee or a TCGX Designee, respectively, for appointment to the Board of Directors pursuant to Section 5.14(a) or Section 5.14(b), as applicable, the Company shall include in the slate of nominees recommended by the Board of Directors, at all of the Company's applicable annual or special meetings of stockholders at which directors are to be elected (or in any written consent for election of directors), the Commodore Designee and/or the TCGX Designee designated in accordance with this Section 5.14, and the Company shall use its reasonable best efforts to cause the election of such designee to the Board of Directors, in connection therewith.

(e) During the period that Commodore or TCGX is entitled to designate the Commodore Designee or the TCGX Designee, as applicable, for appointment to the Board of Directors pursuant to Section 5.14(a) or Section 5.14(b), as applicable, in the event that a vacancy is created at any time by the death, disability, retirement, resignation or removal of a Commodore Designee and/or a TCGX Designee, as the case may be, the Company agrees to take at any time and from time to time all commercially reasonable actions necessary to cause the vacancy created thereby to be filled as promptly as practicable by a new designee of Commodore and/or TCGX, as applicable, designated in accordance with this Section 5.14.

(f) In the event that the aggregate ownership of Common Stock of Commodore or TCGX falls below the applicable threshold set forth in Section 5.14(a) or Section 5.14(b), as applicable, the Commodore Designee or TCGX Designee, as applicable, shall promptly tender their resignation as a director, and the Company may take all commercially reasonable actions within its control to cause the removal of such Commodore Designee or TCGX Designee.

(g) Notwithstanding anything to the contrary in this Section 5.14, the appointment and service of any such Commodore Designee or TCGX Designee on the Board of Directors shall be subject to and conditioned upon: (i) such Commodore Designee or TCGX Designee providing all such information (including information necessary to determine the nominee's independence status under various requirements and institutional investor guidelines as well as information necessary to determine any disclosure obligations of the Company) as the Board of Directors may reasonably request, including such information required by applicable law and all information required to be disclosed for directors, candidates for directors and their respective Affiliates in a proxy statement or other filing in accordance with applicable law or any stock exchange rules or listing standards, including the submission on a timely basis to the Company of a completed and executed questionnaire in the form that the Company provides to its outside directors generally, and (ii) the absence of any reasonable and good faith determination by a majority of the independent members of the Board of Directors, after consultation with the Company's outside legal counsel, that such designee would not be qualified to serve or be appointed as a director of the Company under any applicable law (including requirements of fiduciary duties under applicable law), rule or regulation, the listing rules of the Nasdaq (or other stock exchange on which the Company's shares of Common Stock are listed from time to time), the Certificate of Incorporation or Bylaws, or any policy or guidelines previously approved by the Board of Directors or any committee thereof, including the Company's Corporate Governance Guidelines as then in effect (provided that a direct or indirect purpose of any such policy or guideline is not to obstruct Commodore or TCGX's, as applicable, right to designate an individual as a nominee to the Board of Directors or its rights under this Section 5.14(g)).

(h) The Company shall reimburse the Commodore Designee and TCGX Designee for all reasonable travel and other reasonable and documented out-of-pocket expenses related to his or her role as such and relating to the performance of his or her duties on the Board of Directors, as applicable, on the same terms as other members of the Board of Directors. At any time that a Commodore Designee or TCGX Designee serves as a member of the Board of Directors, the Company agrees to have in effect, at the expense of the Company, a director and officer liability insurance policy for the benefit of the Company and such Commodore Designee or TCGX Designee to the same extent as the Company provides such insurance covering the other members of the Board of Directors.

6. Conditions of Closing.

6.1 Conditions to the Obligation of the Investors. The several obligations of each Investor to consummate the transactions to be consummated at the Closing, and to purchase and pay for the Securities being purchased by it at the Closing pursuant to this Agreement, are subject to the satisfaction or waiver in writing of the following conditions precedent:

(a) Representations and Warranties. The representations and warranties of the Company contained herein shall be true and correct in all material respects, except for those representations and warranties qualified by materiality or Material Adverse Effect, which shall be true and correct in all respects, as of the date of this Agreement and as of the Closing Date, as though made on and as of such date, except to the extent any such representation or warranty expressly speaks as of an earlier date, in which case such representation or warranty shall be true and correct in all material respects as of such earlier date, except for those representations and warranties qualified by materiality or Material Adverse Effect, which shall be true and correct in all respects as of such earlier date and consummation of the Closing shall constitute a reaffirmation by the Company of each of the representations, warranties, covenants and agreements of the Investor contained in this Agreement as of the Closing Date.

(b) Performance. The Company shall have performed in all material respects the obligations and conditions herein required to be performed or observed by the Company on or prior to the Closing Date.

(c) No Injunction. The purchase of and payment for the Securities by each Investor shall not be prohibited or enjoined by any law or governmental or court order or regulation and no such prohibition shall have been threatened in writing.

(d) Consents. The Company shall have obtained any and all consents, permits, approvals, registrations and waivers necessary for the consummation of the purchase and sale of the Securities, all of which shall be in full force and effect.

(e) Transfer Agent. The Company shall have furnished all required materials to the Transfer Agent to reflect the issuance of the Initial Shares at the Closing.

(f) Adverse Changes. Since the date of this Agreement, no event or series of events shall have occurred that has had or would reasonably be expected to have a Material Adverse Effect.

(g) Opinion of Company Counsel. The Company shall have delivered to the Investors and the Placement Agent the opinion of Wilson Sonsini Goodrich & Rosati, P.C. ("**WSGR**"), dated as of the Closing Date, in customary form and substance to be reasonably agreed upon with the Investors and addressing such legal matters as the Investors and the Company reasonably agree.

(h) Compliance Certificate. An authorized officer of the Company shall have delivered to the Investors at the Closing Date a certificate certifying that the conditions specified in Sections 6.1(a) (Representations and Warranties), 6.1(b) (Performance), 6.1(c) (No Injunction), Section 6.1(d) (Consents), Section 6.1(e) (Transfer Agent), 6.1(f) (Adverse Changes),

6.1(l) (Listing Requirements) and Section 6.1(m) (No Injunction), of this Agreement have been fulfilled.

(i) Secretary's Certificate. The Secretary of the Company shall have delivered to the Investors at the Closing Date a certificate certifying (i) the Amended and Restated Certificate of Incorporation; (ii) the Amended and Restated Bylaws; and (iii) resolutions of the Company's Board of Directors (or an authorized committee thereof) approving this Agreement, the other Transaction Agreements, the transactions contemplated by this Agreement and the issuance of the Securities and the Warrant Shares.

(j) Registration Rights Agreement. The Company shall have executed and delivered the Registration Rights Agreement in the form attached hereto as Exhibit B (the "**Registration Rights Agreement**") to the Investors.

(k) Lock-Up Agreements. The Company shall have furnished to the Placement Agent a lock-up agreement executed by each of the Company's executive officers and directors (in their capacity in such positions) restricting sales for a period not to exceed 60 days from the Closing Date.

(l) Listing Requirements. No stop order or suspension of trading shall have been imposed by Nasdaq, the SEC or any other governmental or regulatory body with respect to public trading in the Common Stock. The Common Stock shall be listed on a National Exchange and shall not have been suspended, as of the Closing Date, by the SEC or the National Exchange from trading thereon nor shall suspension by the SEC or the National Exchange have been threatened, as of the Closing Date, in writing by the SEC or the National Exchange; and the Company shall have filed with Nasdaq a Notification Form: Listing of Additional Shares for the listing of the Initial Shares and the Warrant Shares and Nasdaq shall have raised no objection to such notice and the transactions contemplated hereby.

(m) No Injunction. No judgment, writ, order, injunction, award or decree of or by any court, or judge, justice or magistrate, including any bankruptcy court or judge, or any order of or by any Governmental Entity, shall have been issued, and no action or proceeding shall have been instituted by any Governmental Entity, enjoining or preventing the consummation of the transactions contemplated hereby or in the other Transaction Agreements.

(n) Payment. The Company shall have received payment, by wire transfer of immediately available funds, in the full amount of the purchase price for the number of Securities being purchased by each other Investor at the Closing as set forth in Exhibit A.

6.2 Conditions to the Obligation of the Company. The obligation of the Company to consummate the transactions to be consummated at the Closing, and to issue and sell to each Investor the Securities to be purchased by it at the Closing pursuant to this Agreement, is subject to the satisfaction or waiver in writing of the following conditions precedent:

(a) Representations and Warranties. The representations and warranties of each Investor in Section 4 hereto shall be true and correct in all material respects, except for those representation and warranties qualified by materiality or material adverse effect, which shall be true and correct in all respects, on and as of the Closing Date, with the same force and effect as

though made on and as of the Closing Date and consummation of the Closing shall constitute a reaffirmation by the Investor of each of the representations, warranties, covenants and agreements of the Investor contained in this Agreement as of the Closing Date.

(b) Performance. Each Investor shall have performed or complied with in all material respects all obligations and conditions herein required to be performed or observed by such Investor on or prior to the Closing Date.

(c) Injunction. The purchase of and payment for the Securities by each Investor shall not be prohibited or enjoined by any law or governmental or court order or regulation.

(d) Registration Rights Agreement. Each Investor shall have executed and delivered the Registration Rights Agreement to the Company in the form attached as Exhibit B.

(e) Payment. Except as may be agreed to among the Company and such Investor in accordance with Section 2.2, the Company shall have received payment, by wire transfer of immediately available funds, in the full amount of the purchase price for the number of Securities being purchased by each Investor at the Closing as set forth in Exhibit A.

7. Termination.

7.1 Termination. The obligations of the Company, on the one hand, and the Investors, on the other hand, to effect the Closing shall terminate as follows:

(i) Upon the mutual written consent of the Company and the Investors that agreed to purchase a majority of the Securities prior to the Closing;

(ii) By the Company if any of the conditions set forth in Section 6.2 shall have become incapable of fulfillment, and shall not have been waived by the Company;

(iii) By an Investor (with respect to itself only) if any of the conditions set forth in Section 6.1 shall have become incapable of fulfillment, and shall not have been waived by such Investor; or

(iv) By either the Company or an Investor (with respect to itself only) if the Closing has not occurred on or prior to the fifth Business Day following the date of this Agreement;

provided, however, that, in the case of clauses (ii) and (iii) above, the party seeking to terminate its obligation to effect the Closing shall not then be in breach of any of its representations, warranties, covenants or agreements contained in the Transaction Agreements if such breach has resulted in the circumstances giving rise to such party's seeking to terminate its obligation to effect the Closing.

7.2 Notice. In the event of termination by the Company or the Investor of its obligations to effect the Closing pursuant to Section 7.1, written notice thereof shall be given to

the other Investors by the Company. Nothing in this Section 7 shall be deemed to release any party from any liability for any breach by such party of the other terms and provisions of the Transaction Agreements or to impair the right of any party to compel specific performance by any other party of its other obligations under the Transaction Agreements.

8. Miscellaneous Provisions.

8.1 Public Statements or Releases. Except as set forth in Section 5.3, neither the Company nor any Investor shall make any public announcement with respect to the existence or terms of this Agreement or the transactions provided for herein without the prior consent of the other party (which consent shall not be unreasonably withheld) other than filings pursuant to Section 13 and/or Section 16 of the Exchange Act, which, for avoidance of doubt, shall not require the Company's consent. Notwithstanding the foregoing, and subject to compliance with Section 5.3, nothing in this Section 8.1 shall prevent any party from making any public announcement it considers necessary in order to satisfy its obligations under the law, including applicable securities laws, or under the rules of any national securities exchange or securities market, in which case the Company shall allow the Investors reasonable time to comment on such release or announcement in advance of such issuance, and the Company will consider in good faith any Investor comments. The Company shall not include the name of any Investor in any press release or public announcement (which, for the avoidance of doubt, shall not include any filing with the SEC if so required by the applicable rules of the SEC) without the prior written consent of such Investor, except as otherwise required by law or the applicable rules or regulations of any securities exchange or securities market, in which case the Company shall allow such Investor, to the extent reasonably practicable in the circumstances, reasonable time to comment on such release or announcement in advance of such issuance. Notwithstanding anything to the contrary in this Section 8.1, Investor review shall not be required for Company disclosures that are substantially consistent with prior Company disclosures.

8.2 Notices. Any notices or other communications required or permitted to be given hereunder shall be in writing and shall be deemed to be given (a) when delivered if personally delivered to the party for whom it is intended, (b) when delivered, if sent by electronic mail during normal business hours of the recipient, and if not sent during normal business hours, then on the recipient's next Business Day, (c) three (3) days after having been sent by certified or registered mail, return-receipt requested and postage prepaid, or (d) one (1) Business Day after deposit with a nationally recognized overnight courier, freight prepaid, specifying next business day delivery, with written verification of receipt:

(a) If to the Company, addressed as follows:

Athira Pharma, Inc.
18706 North Creek Parkway, Suite 104,
Bothell, Washington 98011
Attention: Legal
Email: legal@athira.com

with a copy (which shall not constitute notice):

Wilson Sonsini Goodrich & Rosati, P.C.
701 5th Ave #5100,
Seattle, WA 98104
Attention: Michael Nordtvedt & Bryan D. King
Email: mnordtvedt@wsgr.com; bking@wsgr.com

(b) If to any Investor, at its address or e-mail address set forth on Exhibit A, or such address as subsequently modified by written notice given in accordance with this Section 8.2.

Any Person may change the address to which notices and communications to it are to be addressed by notification as provided for herein.

8.3 Consent to Electronic Notice. Each Investor consents to the delivery of any stockholder notice pursuant to Section 232 of the Delaware General Corporation Law, as amended or superseded from time to time (the "DGCL"), at the e-mail address set forth below the Investor's name on the signature page or Exhibit A, as updated from time to time by notice to the Company. To the extent that any notice given by means of electronic mail is returned or undeliverable for any reason, the foregoing consent shall be deemed to have been revoked until a new or corrected e-mail address has been provided, and such attempted electronic notice shall be ineffective and deemed to not have been given. Each party agrees to promptly notify the other parties of any change in its e-mail address, and that failure to do so shall not affect the foregoing.

8.4 Severability. If any part or provision of this Agreement is held unenforceable or in conflict with the applicable laws or regulations of any jurisdiction, the invalid or unenforceable part or provisions shall be replaced with a provision which accomplishes, to the extent possible, the original business purpose of such part or provision in a valid and enforceable manner, and the remainder of this Agreement shall remain binding upon the parties hereto.

8.5 Governing Law; Submission to Jurisdiction; Venue; Waiver of Trial by Jury.

(a) This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York without regard to choice of laws or conflicts of laws provisions thereof that would require the application of the laws of any other jurisdiction, except to the extent that mandatory principles of Delaware law may apply.

(b) The Company and each of the Investors hereby irrevocably and unconditionally:

(i) submits for itself and its property in any legal action or proceeding relating solely to this Agreement or the transactions contemplated hereby, to the general jurisdiction of the any state court or United States Federal court sitting in the Borough of Manhattan, City of New York in the State of New York;

(ii) consents that any such action or proceeding may be brought in such courts, and waives any objection that it may now or hereafter have to the venue of any such action

or proceeding in any such court or that such action or proceeding was brought in an inconvenient court and agrees not to plead or claim the same to the extent permitted by applicable law;

(iii) agrees that service of process in any such action or proceeding may be effected by mailing a copy thereof by registered or certified mail (or any substantially similar form of mail), postage prepaid, to the party, as the case may be, at its address set forth in Section 8.2 or at such other address of which the other party shall have been notified pursuant thereto;

(iv) agrees that nothing herein shall affect the right to effect service of process in any other manner permitted by law or shall limit the right to sue in any other jurisdiction for recognition and enforcement of any judgment or if jurisdiction in the courts referenced in the foregoing clause (i) are not available despite the intentions of the parties hereto;

(v) agrees that final judgment in any such suit, action or proceeding brought in such a court may be enforced in the courts of any jurisdiction to which such party is subject by a suit upon such judgment, provided that service of process is effected upon such party in the manner specified herein or as otherwise permitted by law;

(vi) agrees that to the extent that such party has or hereafter may acquire any immunity from jurisdiction of any court or from any legal process with respect to itself or its property, such party hereby irrevocably waives such immunity in respect of its obligations under this Agreement, to the extent permitted by law; and

(vii) irrevocably and unconditionally waives trial by jury in any legal action or proceeding in relation to this Agreement.

8.6 Waiver. No waiver of any term, provision or condition of this Agreement, whether by conduct or otherwise, in any one or more instances, shall be deemed to be, or be construed as, a further or continuing waiver of any such term, provision or condition or as a waiver of any other term, provision or condition of this Agreement.

8.7 Expenses. Except as expressly set forth in the Transaction Agreements to the contrary, each party shall pay its own out-of-pocket fees and expenses, including the fees and expenses of attorneys, accountants and consultants employed by such party, incurred in connection with the proposed investment in the Securities and the consummation of the transactions contemplated thereby; provided, however, that the Company shall pay all Transfer Agent fees (including, without limitation, any fees required for same-day processing of any instruction letter delivered by the Company), stamp taxes and other taxes (other than income taxes) and duties levied in connection with the delivery of any Securities to the Investors. Notwithstanding the foregoing, at the Closing, the Company shall pay the reasonable and documented fees and expenses of (a) Paul Hastings LLP, counsel for certain Investors, in an amount not to exceed $75,000 in the aggregate and (b) McDermott Will & Schulte, LLP, counsel for Commodore and Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP, counsel for TCGX, in an amount not to exceed $150,000 in the aggregate, which amounts may be withheld by such Investors from their purchase price at the Closing. The Company shall pay all Placement Agent fees relating to or arising out of the transactions contemplated by this Agreement.

8.8 Assignment. None of the parties may assign its rights or obligations under this Agreement or designate another person (i) to perform all or part of its obligations under this Agreement or (ii) to have all or part of its rights and benefits under this Agreement, in each case without the prior written consent of (x) the Company, in the case of an Investor, and (y) the Investors, in the case of the Company, provided that an Investor may, without the prior consent of the Company, assign its rights to purchase the Securities hereunder to any of its Affiliates or to any other investment funds or accounts managed or advised by the investment manager who acts on behalf of such Investor (provided each such assignee agrees to be bound by the terms of this Agreement and makes the same representations and warranties set forth in Section 4). In the event of any assignment in accordance with the terms of this Agreement, the assignee shall specifically assume and be bound by the provisions of this Agreement by executing a writing agreeing to be bound by and subject to the provisions of this Agreement and shall deliver an executed counterpart signature page to this Agreement and, notwithstanding such assumption or agreement to be bound hereby by an assignee, no such assignment shall relieve any party assigning any interest hereunder from its obligations or liability pursuant to this Agreement.

8.9 Confidential Information.

(a) Each Investor covenants that until such time as the transactions contemplated by this Agreement and any material non-public information provided to such Investor are publicly disclosed by the Company, such Investor will maintain the confidentiality of all disclosures made to it in connection with this transaction (including the existence and terms of this transaction), other than to such Investor's outside attorney, accountant, auditor or investment advisor only to the extent necessary to permit evaluation of the investment, and the performance of the necessary or required tax, accounting, financial, legal, or administrative tasks and services and other than as may be required by law.

(b) The Company may request from the Investors such reasonable and customary additional information as the Company may deem necessary to evaluate the eligibility of the Investor to acquire the Securities, and the Investor shall promptly provide such information as may reasonably be requested to the extent readily available; provided, that the Company agrees to keep any such information provided by the Investor confidential, except (i) as required by the federal securities laws, rules or regulations and (ii) to the extent such disclosure is required by other laws, rules or regulations, at the request of the staff of the SEC or regulatory agency or under the regulations of Nasdaq, in which case the Company will use commercially reasonable efforts to notify the Investor and provide the Investor with opportunity to review any disclosure that is not a restatement of disclosure previously made in compliance with the requirements of this Agreement. The Investor acknowledges that the Company may file a copy of this Agreement and the Registration Rights Agreement with the SEC as exhibit to a periodic report or a registration statement of the Company.

8.10 Reliance by and Exculpation of Placement Agent.

(a) Each Investor agrees for the express benefit of the Placement Agent, its affiliates and its representatives that (i) it is not relying upon, and has not relied upon, any statement, representation or warranty made by the Placement Agent, any of its affiliates or any of its or its representatives, in making its investment or decision to invest in the Company, (ii) the

Placement Agent is acting solely as placement agent in connection with the transactions contemplated hereby and is not acting as an underwriter, initial purchaser, dealer or in any other such capacity and is not and shall not be construed as a fiduciary for such Investor, (iii) the Placement Agent, its affiliates and representatives have not made, and will not make any representations or warranties with respect to the Company or the offer and sale of the Securities or any other matter concerning the Company or the transactions contemplated hereby, and the Investor will not rely on any statements made by the Placement Agent, orally or in writing, to the contrary, (iv) the Investor will be responsible for conducting its own due diligence investigation with respect to the Company and the offer and sale of the Securities, (v) the Investor will be purchasing Securities based on the results of its own due diligence investigation of the Company and the Placement Agent and each of its directors, officers, employees, representatives, and controlling persons have made no independent investigation with respect to the Company, the Securities, or the accuracy, completeness, or adequacy of any information supplied to the Investor by the Company, (vi) the Investor has negotiated the offer and sale of the Securities directly with the Company, and the Placement Agent will not be responsible for the ultimate success of any such investment and (vii) the decision to invest in the Company will involve a significant degree of risk, including a risk of total loss of such investment. Each Investor further represents and warrants to the Placement Agent that it, including any fund or funds that it manages or advises that participates in the offer and sale of the Securities, is permitted under its constitutive documents (including, without limitation, all limited partnership agreements, charters, bylaws, limited liability company agreements, all applicable side letters with investors, and similar documents) to make investments of the type contemplated by this Agreement. This Section 8.10 shall survive any termination of this Agreement.

(b) The Company agrees and acknowledges that the Placement Agent may rely on its representations, warranties, agreements and covenants contained in this Agreement and each Investor agrees that the Placement Agent may rely on such Investor's representations and warranties contained in this Agreement as if such representations and warranties, as applicable, were made directly to the Placement Agent.

(c) Neither the Placement Agent nor any of its Affiliates or representatives (1) shall be liable for any improper payment made in accordance with the information provided by the Company; (2) makes any representation or warranty, or has any responsibilities as to the validity, enforceability, accuracy, value or genuineness of any information, certificates or documentation delivered by or on behalf of the Company pursuant to the Transaction Agreements or in connection with any of the transactions contemplated therein; or (3) shall be liable (x) for any action taken, suffered or omitted by any of them in good faith and reasonably believed to be authorized or within the discretion or rights or powers conferred upon it by the Transaction Agreements or (y) for anything which any of them may do or refrain from doing in connection with the Transaction Agreements, except in each case for such party's own gross negligence or willful misconduct.

(d) The Company agrees that the Placement Agent, its affiliates and representatives shall be entitled to (1) rely on, and shall be protected in acting upon, any certificate, instrument, notice, letter or any other document or security delivered to any of them by or on behalf of the Company, and (2) be indemnified by the Company for acting as the Placement Agent

hereunder pursuant to the indemnification provisions set forth in the applicable letter agreement between the Company and the Placement Agent.

8.11 Third Parties. Nothing in this Agreement, express or implied, is intended to confer on any Person other than the parties to this Agreement any rights, remedies, claims, benefits, obligations or liabilities under or by reason of this Agreement, and no Person that is not a party to this Agreement (including, without limitation, any partner, member, shareholder, director, officer, employee or other beneficial owner of any party to this Agreement, in its own capacity as such or in bringing a derivative action on behalf of a party to this Agreement) shall have any standing as a third party beneficiary with respect to this Agreement or the transactions contemplated hereby. Notwithstanding the foregoing, (i) the Placement Agent is an intended third-party beneficiary of the representations and warranties of the Company and of each Investor set forth in Section 3, Section 4 and Section 6.1(h) and Section 8.10 respectively, of this Agreement and (ii) the Indemnified Persons are intended third-party beneficiaries of Section 5.9.

8.12 Independent Nature of Investors' Obligations and Right. The obligations of each Investor under this Agreement are several and not joint with the obligations of any other Investor, and no Investor shall be responsible in any way for the performance obligations of any other Investor under this Agreement. Nothing contained herein, and no action taken by any Investor pursuant hereto, shall be deemed to constitute the Investors as, and the Company acknowledges that the Investors do not so constitute, a partnership, an association, a joint venture or any other kind of entity, or create a presumption that the Investors are in any way acting in concert or as a group (including a "group" within the meaning of Section 13(d)(3) of the Exchange Act), and the Company will not assert any such claim with respect to such obligations or the transactions contemplated by this Agreement and the Company acknowledges that the Investors are not acting in concert or as a group with respect to such obligations or the transactions contemplated by this Agreement. It is expressly understood that each provision contained in this Agreement is between the Company and an Investor, solely, and not between the Company and the Investors collectively and not between and among the Investors. The Company acknowledges and each Investor confirms that it has independently participated in the negotiation of the transaction contemplated hereby with the advice of its own counsel and advisors. Each Investor also acknowledges that WSGR and Mintz, Levin, Cohn, Ferris Glovsky and Popeo, P.C. have not rendered legal advice to such Investor. Each Investor shall be entitled to independently protect and enforce its rights, including, without limitation, the rights arising out of this Agreement, and it shall not be necessary for any other Investor to be joined as an additional party in any proceeding for such purpose. The Company has elected to provide all Investors with the same terms and Transaction Agreements for the convenience of the Company and not because it was required or requested to do so by any Investor.

8.13 Headings. The titles, subtitles and headings in this Agreement are for convenience of reference and shall not form part of, or affect the interpretation of, this Agreement.

8.14 Counterparts. This Agreement may be executed in two or more identical counterparts, all of which shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party; provided that a facsimile or pdf signature including any electronic signatures complying with the U.S. federal ESIGN Act of 2000, e.g., www.docusign.com shall be considered due execution and

shall be binding upon the signatory thereto with the same force and effect as if the signature were an original, not a facsimile or pdf (or other electronic reproduction of a) signature.

8.15 Entire Agreement; Amendments. This Agreement and the other Transaction Agreements (including all schedules and exhibits hereto and thereto), together with any side letter agreements with any of the Investors, constitute the entire agreement between the parties hereto respecting the subject matter of this Agreement and supersedes all prior agreements, negotiations, understandings, representations and statements respecting the subject matter of this Agreement, whether written or oral. No amendment, modification, alteration, or change in any of the terms of this Agreement shall be valid or binding upon the parties hereto unless made in writing and duly executed by the Company and the Investors of at least a majority in interest of the Securities then held by the Investors, provided that prior to the Closing the consent of all Investors shall be required, except as otherwise provided herein. Notwithstanding the foregoing, this Agreement may not be amended and the observance of any term of this Agreement may not be waived with respect to any Investor without the written consent of such Investor unless such amendment or waiver applies to all Investors in the same fashion. The Company, on the one hand, and each Investor, on the other hand, may by an instrument signed in writing by such parties waive the performance, compliance or satisfaction by such Investor or the Company, respectively, with any term or provision of this Agreement or any condition hereto to be performed, complied with or satisfied by such Investor or the Company, respectively. Notwithstanding the foregoing or anything else herein to the contrary, no amendment, modification, alteration, change or waiver of this Section 8.15 shall be valid without the prior written consent of the Placement Agent, which consent may be granted or withheld in the sole discretion of the Placement Agent. In addition, no consideration shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of any of this Agreement unless the same consideration (other than the reimbursement of legal fees) also is offered to all Investors.

8.16 Survival. The covenants, representations and warranties made by each party hereto contained in this Agreement shall survive the Closing and the delivery of the Securities in accordance with their respective terms. Each Investor shall be responsible only for its own representations, warranties, agreements and covenants hereunder.

8.17 Contract Interpretation. This Agreement is the joint product of each Investor and the Company and each provision of this Agreement has been subject to the mutual consultation, negotiation and agreement of such parties and shall not be construed for or against any party hereto.

8.18 Arm's Length Negotiations. For the avoidance of doubt, the parties acknowledge and confirm that the terms and conditions of the Securities were determined as a result of arm's-length negotiations.

8.19 Waiver of Conflicts. Each party to this Agreement acknowledges that Wilson Sonsini Goodrich & Rosati, P.C., counsel for the Company, may have in the past performed, and may continue to or in the future perform, legal services for certain of the Investors in matters that are similar, but not substantially related, to the transactions described in this Agreement, including the representation of such Investors in financings and other matters. Accordingly, each party to this Agreement hereby acknowledges that (a) they have had an

opportunity to ask for information relevant to this disclosure, and (b) Wilson Sonsini Goodrich & Rosati, P.C. represents only the Company with respect to the Agreement and the transactions contemplated hereby. The Company gives its informed consent to Wilson Sonsini Goodrich & Rosati, P.C.'s existing and/or future representation of such Investors in matters not substantially related to this Agreement, and each of the Investors hereby gives its informed consent to Wilson Sonsini Goodrich & Rosati, P.C.'s representation of the Company in connection with this Agreement and the transactions contemplated hereby.

[Remainder of Page Intentionally Left Blank.]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

COMPANY:

ATHIRA PHARMA, INC.

By: /s/Mark Litton

Name: Mark Litton

Title: CEO

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

SPRUCE STREET AGGREGATOR L.P.
By: Blackstone Alternative Asset Management Associates LLC, its General Partner

By: /s/ Stephen O'Connor
Name: Stephen O'Connor
Title: Authorized Person

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

CDK ASSOCIATES, LLC

By: /s/ Karen Cross
Name: Karen Cross
Title: Treasurer

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

THIRD STREET HOLDINGS, LLC
By: Pelican Management, LLC, its Managing Member

By: /s/ Peter P. D'Angelo
Name: Peter P. D'Angelo
Title: Manager

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

PERCEPTIVE LIFE SCIENCES MASTER FUND, LTD.
By: Perceptive Advisors LLC

By: /s/ James Mannix
Name: James Mannix
Title: Chief Operating Officer

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

PERCEPTIVE XONTOGENY VENTURE FUND II, LP
By: Perceptive Xontogeny Venture II GP, LLC
Its: General Partner

By: /s/ James Mannix
Name: James Mannix
Title: Chief Operating Officer

By: /s/ Christopher Garabedian
Name: Christopher Garabedian
Title: Authorized Signatory

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

ADAR1 PARTNERS, LP

By: /s/ Daniel Schneeberger
Name: Daniel Schneeberger
Title: Manager of General Partner

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

SPEARHEAD INSURANCE SOLUTIONS IDF, LLC – SERIES ADAR1

By: /s/ Ken Foley
Name: Ken Foley
Title: Manager

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

COMMODORE CAPITAL MASTER LP

By: /s/ Michael Kramarz
Name: Michael Kramarz, MD
Title: Authorized Signatory

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

KALEHUA CAPITAL PARTNERS LP

By: /s/ Tai-Li Chang
Name: Tai-Li Chang
Title: Authorized Member

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

TCG CROSSOVER FUND II, L.P.
By: TCG Crossover GP II, LLC
Its: General Partner

By: /s/ Chen Yu
Name: Chen Yu
Title: Managing Member

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

TCG CROSSOVER FUND III, L.P.
By: TCG Crossover GP III, LLC
Its: General Partner

By: /s/ Chen Yu
Name: Chen Yu
Title: Managing Member

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

MAP 852 SP, a segregated portfolio of MAP Institutional SPC
By: Spruce Street Capital LP
Its: Investment Manager

By: /s/ Simon Basseyn
Name: Simon Basseyn
Title: Managing Partner

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

SPRUCE STREET CAPITAL MASTER FUND LP
By: Spruce Street Capital Fund GP, LLC
Its: General Partner

By: /s/ Simon Basseyn
Name: Simon Basseyn
Title: Managing Member

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

NEMEAN ASSET MANAGEMENT, LLC

By: /s/ Steven Oliveira
Name: Steven Oliveira
Title: Manager

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

GROWTH EQUITY OPPORTUNITIES 18 VGE, LLC

By: /s/ Nicole Hatcher
Name: Nicole Hatcher
Title: General Counsel

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

LIGAND PHARMACEUTICALS INCORPORATED

By: /s/ Tavo Espinoza
Name: Tavo Espinoza
Title: Chief Financial Officer

Address:

Email:

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

9VC SPV 1, LIMITED PARTNERSHIP
By: Beyond Capital VC Ltd.
Its: General Partner

By: /s/ Anat Naschitz
Name: Anat Naschitz
Title: Chief Executive Officer

Address:

Email:

EXHIBIT A

INVESTORS

Investor Name	Initial Shares	Share Price	Pre-Funded Warrant Shares	Pre-Funded Warrant Price	Series A Common Warrant Shares	Series B Common Warrant Shares	Aggregate Purchase Price
9vc SPV 1, Limited Partnership	157,480	$6.350	0	$6.349	255,905	236,220	$999,998.00
ADAR1 Partners, LP	340,552	$6.350	0	$6.349	553,397	510,828	$2,162,505.20
CDK Associates, LLC	429,197	$6.350	271,528	$6.349	1,138,678	1,051,087	$4,449,332.23
Commodore Capital Master LP	464,398	$6.350	2,685,209	$6.349	5,118,111	4,724,410	$19,997,319.25
Growth Equity Opportunities 18 VGE, LLC	464,398	$6.350	1,110,406	$6.349	2,559,056	2,362,206	$9,998,895.00
Kalehua Capital Partners LP	393,701	$6.350	0	$6.349	639,764	590,551	$2,500,001.35
Ligand Pharmaceuticals Incorporated	157,480	$6.350	0	$6.349	255,905	236,220	$999,998.00
MAP 852 SP, a segregated portfolio of MAP Institutional SPC	69,900	$6.350	0	$6.349	113,587	104,850	$443,865.00
Nemean Asset Management, LLC	236,220	$6.350	0	$6.349	383,857	354,330	$1,499,997.00
Perceptive Life Sciences Master Fund, Ltd.	989,270	$6.350	1,372,935	$6.349	3,838,583	3,543,307	$14,998,628.82
Perceptive Xontogeny Venture Fund II, LP	329,756	$6.350	457,645	$6.349	1,279,526	1,181,101	$4,999,538.71
Spearhead Insurance Solutions IDF, LLC – Series ADAR1	53,149	$6.350	0	$6.349	86,367	79,723	$337,496.15
Spruce Street Aggregator L.P.	456,022	$6.350	216,782	$6.349	1,093,306	1,009,206	$4,272,088.62
Spruce Street Capital Master Fund LP	323,801	$6.350	0	$6.349	526,176	485,701	$2,056,136.35
TCG Crossover Fund II, L.P.	232,199	$6.350	1,342,605	$6.349	2,559,056	2,362,206	$9,998,662.80
TCG Crossover Fund III, L.P.	232,199	$6.350	1,342,604	$6.349	2,559,054	2,362,204	$9,998,656.45

Third Street Holdings, LLC	26,825	$6.350	16,970	$6.349	71,166	65,692	$278,081.28
TOTAL:	**5,356,547**		**8,816,684**		**23,031,494**	**21,259,842**	**$89,991,200.21**

EXHIBIT B

FORM OF PRE-FUNDED WARRANT

EXHIBIT C

FORM OF SERIES A COMMON WARRANT

EXHIBIT D

FORM OF SERIES B COMMON WARRANT

EXHIBIT E

REGISTRATION RIGHTS AGREEMENT

Exhibit 10.2

SECURITIES PURCHASE AGREEMENT

This **SECURITIES PURCHASE AGREEMENT** (this "**Agreement**") is dated as of December 18, 2025, by and among Athira Pharma, Inc., a Delaware corporation (the "**Company**"), and Sermonix Pharmaceuticals, Inc., a Delaware corporation (the "**Purchaser**").

WHEREAS, the Company is party to that certain License Agreement, dated as of the date hereof (as may be amended, supplemented or otherwise modified from time to time, the "**License Agreement**"), by and between the Company and the Purchaser, pursuant to which the Purchaser will grant to the Company an exclusive license to develop, manufacture, commercialize, and otherwise exploit products containing lasofoxifene in certain territories (the "**License Transaction**");

WHEREAS, the Closing (as defined below) is contingent upon, and shall be consummated immediately following, the entry into and the continued effectiveness of the License Agreement;

WHEREAS, in partial consideration for Purchaser's entry into the License Agreement, the Company desires to sell and issue to the Purchaser a pre-funded warrant substantially in the form attached hereto as Exhibit A (the "**Pre-Funded Warrant**" or the "**Securities**") to purchase up to 5,502,402 shares of the Company's common stock, par value $0.0001 per share (the "**Common Stock**"); and

WHEREAS, contemporaneously with the sale of the Pre-Funded Warrant, the parties hereto will execute and deliver a Registration Rights Agreement, substantially in the form attached hereto as Exhibit B, pursuant to which the Company will agree to provide certain registration rights in respect of the shares of Common Stock issuable pursuant to the Pre-Funded Warrant (the "**Pre-Funded Warrant Shares**" or the "**Shares**") under the Securities Act and applicable state securities laws.

NOW THEREFORE, in consideration of the mutual agreements, representations, warranties and covenants herein contained, the Company and the Purchaser agree as follows:

1. Definitions. As used in this Agreement, the following terms shall have the following respective meanings:

"**Affiliate**" means, with respect to any specified Person, any other Person that, directly or indirectly through one or more intermediaries, controls, is controlled by or is under common control with such Person; provided that the Affiliates of any Person that is an investment fund shall not include any portfolio companies of such investment fund or any affiliate investment fund.

"**Agreement**" has the meaning set forth in the recitals.

"**Amended and Restated Bylaws**" means the Bylaws of the Company, as currently in effect.

"**Amended and Restated Certificate of Incorporation**" means the Certificate of Incorporation of the Company, as currently in effect.

"**Annual Meeting**" has the meaning set forth in Section 5.12 hereof.

"**Benefit Plan**" or "**Benefit Plans**" means employee benefit plans as defined in Section 3(3) of ERISA and all other employee benefit practices or arrangements, including, without limitation, any such practices or arrangements providing severance pay, sick leave, vacation pay, salary continuation for disability, retirement benefits, deferred compensation, bonus pay, incentive pay, stock options or other stock-based compensation, hospitalization insurance, medical insurance, life insurance, scholarships or tuition reimbursements, maintained by the Company or to which the Company or any of its Subsidiaries is obligated to contribute for employees or former employees of the Company and its Subsidiaries.

"**Board of Directors**" means the board of directors of the Company.

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

"**Closing**" has the meaning set forth in Section 2.2.

"**Closing Date**" has the meaning set forth in Section 2.2.

"**Code**" means the U.S. Internal Revenue Code of 1986, as amended.

"**Common Stock**" has the meaning set forth in the recitals.

"**Common Stock Equivalents**" means any securities of the Company that would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, rights, options, restricted stock units, equity awards, warrants or other instrument that is at any time convertible into or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

"**Company**" has the meaning set forth in the recitals.

"**Confidential Data**" has the meaning set forth in Section 3.30.

"**Disclosure Document**" has the meaning set forth in Section 5.3.

"**Disqualification Event**" means the disqualification provisions of Rule 506(d)(1)(i-viii) of Regulation D under the Securities Act.

"**Drug Regulatory Agency**" means the U.S. Food and Drug Administration ("**FDA**") or other foreign, state, local or comparable governmental authority responsible for regulation of the research, development, testing, manufacturing, processing, storage, labeling, sale, marketing, advertising, distribution and importation or exportation of drug or biological products and drug or biological product candidates.

"**ERISA**" means the U.S. Employee Retirement Income Security Act of 1974, as amended.

"**Exchange Act**" means the U.S. Securities Exchange Act of 1934, as amended, and all of the rules and regulations promulgated thereunder.

"**Financial Statements**" has the meaning set forth in Section 3.8(b).

"**Fundamental Representations**" means the representations and warranties made by the Company in Sections 3.1 (Organization and Power), 3.2 (Capitalization), 3.4 (Authorization), 3.5 (Valid Issuance), 3.6 (No Conflict), 3.7 (Consents), 3.8 (SEC Filings; Financial Statements), 3.17 (Nasdaq Stock Market), 3.18 (Sarbanes-Oxley Act), 3.22 (Price Stabilization of Common Stock), 3.23 (Investment Company Act), 3.24 (General Solicitation; No Integration or Aggregation), 3.25 (Brokers and Finders), 3.26 (Reliance by the Purchaser), 3.27 (Other Covered Persons) and 3.28 (No Additional Agreements).

"**GAAP**" has the meaning set forth in Section 3.8(b).

"**GDPR**" has the meaning set forth in Section 3.31.

"**Governmental Authorizations**" has the meaning set forth in Section 3.11.

"**Health Care Laws**" has the meaning set forth in Section 3.20.

"**HIPAA**" has the meaning set forth in Section 3.30.

"**Indemnified Person"** has the meaning set forth in Section 5.9.

"**Intellectual Property**" has the meaning set forth in Section 3.12.

"**Issuer Covered Person**" means the Company's (i) predecessors, (ii) Affiliates, (iii) directors, (iv) executive officers, (v) non-executive officers participating in the placement contemplated by this Agreement, (vi) beneficial owners of 20% or more of its outstanding voting equity securities (calculated on the basis of voting power), (vii) promoters or (viii) investment managers (including any of such investment managers' directors, executive officers or officers participating in the placement contemplated by this Agreement) or general partners or managing members of such investment managers (including any of such general partners' or managing members' directors, executive officers or officers participating in the placement contemplated by this Agreement).

"**IT Systems**" has the meaning set forth in Section 3.30.

"**License Agreement**" has the meaning set forth in the recitals.

"**License Transaction**" has the meaning set forth in the recitals.

"**Material Adverse Effect**" means any change, event, circumstance, development, condition, occurrence or effect that, individually or in the aggregate, (a) was, is, or would reasonably be expected to be, materially adverse to the business, financial condition, properties, assets, liabilities, stockholders' equity or results of operations of the Company and its Subsidiaries, taken as a whole, or (b) materially delays or materially impairs the ability of the Company to timely

comply, or prevents the Company from timely complying, with its obligations under this Agreement, the other Transaction Agreements, or with respect to the Closing, or would reasonably be expected to do so.

"**Nasdaq**" means the Nasdaq Stock Market LLC.

"**National Exchange**" means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question, together with any successor thereto: the NYSE American, The New York Stock Exchange, The Nasdaq Global Market, The Nasdaq Global Select Market and The Nasdaq Capital Market.

"**Person**" means an individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture or any other entity or organization.

"**Personal Data**" has the meaning set forth in Section 3.30.

"**Pre-Funded Warrant**" has the meaning set forth in the recitals.

"**Pre-Funded Warrant Price**" means $6.349.

"**Pre-Funded Warrant Shares**" has the meaning set forth in the recitals.

"**Principal Trading Market**" means the National Exchange on which the Common Stock is primarily listed on and quoted for trading, which, as of the Closing Date, shall be the Nasdaq Capital Market.

"**Privacy Laws**" has the meaning set forth in Section 3.31.

"**Privacy Statements**" has the meaning set forth in Section 3.31.

"**Process**" or "**Processing**" has the meaning set forth in Section 3.31.

"**Purchaser**" has the meaning set forth in the recitals.

"**Registration Rights Agreement**" has the meaning set forth in Section 6.1(i).

"**Regulatory Agencies**" has the meaning set forth in Section 3.19.

"**Restricted Period**" has the meaning set forth in Section 5.13.

"**Restricted Securities**" has the meaning set forth in Section 5.13.

"**Rule 144**" means Rule 144 promulgated by the SEC pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the SEC having substantially the same effect as such Rule.

"**SEC**" means the U.S. Securities and Exchange Commission.

"SEC Reports" means (a) the Company's most recently filed Annual Report on Form 10-K (including any information incorporated therein by reference from the Company's Definitive Proxy Statement on Schedule 14A), (b) all Quarterly Reports on Form 10-Q or Current Reports on Form 8-K filed or furnished (as applicable) by the Company following the end of the most recent fiscal year for which an Annual Report on Form 10-K has been filed and prior to the execution of this Agreement, together in each case with any documents incorporated by reference therein or exhibits thereto and (c) the Disclosure Document.

"**Securities**" has the meaning set forth in the recitals.

"**Securities Act**" means the U.S. Securities Act of 1933, as amended, and all of the rules and regulations promulgated thereunder.

"**Shares**" has the meaning set forth in the recitals.

"**Short Sales**" include, without limitation, (a) all "short sales" as defined in Rule 200 promulgated under Regulation SHO under the Exchange Act, whether or not against the box, and all types of direct and indirect stock pledges, forward sale contracts, options, puts, calls, short sales, swaps, "put equivalent positions" (as defined in Rule 16a-1(h) under the Exchange Act) and similar arrangements (including on a total return basis) and (b) sales and other transactions through non-U.S. broker dealers or non-U.S. regulated brokers (but shall not be deemed to include the location and/or reservation of borrowable shares of Common Stock) in each case, solely to the extent it has the same economic effect as a "short sale" (as defined in Rule 200 promulgated under Regulation SHO under the Exchange Act).

"**Standard Settlement Period**" means the standard settlement period, expressed in a number of Trading Days for the Principal Trading Market with respect to the Common Stock that is in effect on the date of delivery of the applicable request to remove legends of Securities.

"**Stockholder Approval**" has the meaning set forth in Section 5.12 hereof.

"**Studies**" has the meaning set forth in Section 3.19.

"**Subsidiary**" has the meaning set forth in Section 3.1.

"**Tax**" or "**Taxes**" means any and all federal, state, local, foreign and other taxes, levies, fees, imposts, duties and charges of whatever kind (including any interest, penalties or additions to the tax imposed in connection therewith or with respect thereto), whether or not imposed on the Company or its Subsidiaries (if any) including, without limitation, taxes imposed on, or measured by, income, franchise, profits or gross receipts, and also ad valorem, value added, sales, use, service, real or personal property, capital stock, license, payroll, withholding, employment, social security, workers' compensation, unemployment compensation, utility, severance, production, excise, stamp, occupation, premium, windfall profits, transfer and gains taxes and customs duties.

"**Tax Returns**" means returns, reports, information statements and other documentation (including any additional or supporting material) filed or maintained, or required to be filed or maintained, in connection with the calculation, determination, assessment or collection of any Tax

and shall include any amended returns required as a result of examination adjustments made by the Internal Revenue Service or other Tax authority.

"**Trading Day**" means any weekday on which the Principal Trading Market is normally open for trading.

"**Transaction Agreements**" means this Agreement, the Pre-Funded Warrant and the Registration Rights Agreement.

"**Transfer Agent**" means, with respect to the Common Stock, Computershare Inc. or such other financial institution that provides transfer agent services as the Company may engage from time to time.

2. Purchase and Sale of Securities.

2.1 Purchase and Sale. On the Closing Date, upon the terms and subject to the conditions set forth herein, the Company agrees to sell, and the Purchaser agrees to purchase, a Pre-Funded Warrant to purchase up to 5,502,402 Pre-Funded Warrant Shares. The Pre-Funded Warrant shall be issued in partial consideration for the Purchaser's entry into the License Agreement, in addition to further consideration as set forth in the License Agreement.

2.2 Closing. Subject to the satisfaction or waiver of the conditions set forth in Section 6 of this Agreement, the closing of the purchase and sale of the Securities (the "**Closing**" and the date on which the Closing occurs, the "**Closing Date**") shall occur remotely via the exchange of documents and signatures at such time as agreed to by the Company and the Purchaser but (i) in no event earlier than the second Business Day after the date of this Agreement and (ii) in no event later than the fifth Business Day after the date of this Agreement. At the Closing, the Securities shall be issued and registered in the name of the Purchaser, or in such nominee name(s) as designated by the Purchaser. On the Closing Date, the Company will deliver to the Purchaser (or the Purchaser's designated custodian per its delivery instructions), or in such nominee name(s) as designated by the Purchaser, an electronic copy of the Pre-Funded Warrant, with a physical copy of the Pre-Funded Warrant to be delivered to Purchaser within two Business Days, if requested, after Purchaser's request for such physical copy. The failure of the Closing to occur on the Closing Date shall not terminate this Agreement or relieve the parties of any of their obligations hereunder.

3. Representations and Warranties of the Company. Except as set forth in the SEC Reports (other than as to the Fundamental Representations, which are not so qualified), the Company hereby represents and warrants to the Purchaser that the statements contained in this Section 3 are true and correct as of the date of this Agreement and as of the Closing Date (except for the representations and warranties that speak as of a specific date, which shall be made as of such date).

3.1 Organization and Power. The Company is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware, has the requisite power and authority to own, lease and operate its properties and to carry on its business as now conducted and described in the SEC Reports and is qualified to do business in each jurisdiction in which the character of its properties or the nature of its business requires such qualification, except

where such failure to be in good standing or to have such power and authority or to so qualify would not reasonably be expected to have a Material Adverse Effect. Each of the Company's subsidiaries that constitutes a "significant subsidiary" (as defined in Rule 1-02 of Regulation S-X under the Exchange Act) (each a "**Subsidiary**") is (i) duly incorporated and validly existing and in good standing under the laws of the jurisdiction of its incorporation and has the requisite power and authority to carry on its business as now conducted and to own or lease its properties and (ii) qualified to do business as a foreign corporation and in good standing in each jurisdiction in which such qualification is required, except in each case as would not reasonably be expected to have a Material Adverse Effect.

3.2 Capitalization. The Company's disclosure of its authorized, issued and outstanding capital stock in the SEC Reports containing such disclosure was accurate in all material respects as of the date indicated in such SEC Reports. All of the issued and outstanding shares of Common Stock have been duly authorized and validly issued and are fully paid and non-assessable. None of the outstanding shares of capital stock of the Company were issued in violation of any preemptive or other similar rights of any securityholder of the Company which have not been waived, and such shares were issued in compliance in all material respects with applicable state and federal securities law and any rights of third parties. There are no outstanding rights (including, without limitation, pre-emptive rights), warrants or options to acquire, or instruments convertible into or exchangeable for, any shares of capital stock or other equity interest in the Company or any of its Subsidiaries, or any contract, commitment, agreement, understanding or arrangement of any kind relating to the issuance of any capital stock of the Company or any such subsidiary, any such convertible or exchangeable securities or any such rights, warrants or options; the capital stock of the Company conforms in all material respects to the description thereof contained in the SEC Reports; and all the outstanding shares of capital stock or other equity interests of each Subsidiary owned, directly or indirectly, by the Company have been duly and validly authorized and issued, are fully paid and non-assessable (except, in the case of any foreign Subsidiary, for directors' qualifying shares) and are owned directly or indirectly by the Company, free and clear of any lien, charge, encumbrance, security interest, restriction on voting or transfer or any other claim of any third party.

3.3 Registration Rights. Except as set forth in the Transaction Agreements or as disclosed in the SEC Reports, the Company is presently not under any obligation, and has not granted any rights, to register under the Securities Act any of the Company's presently outstanding securities or any of its securities that may hereafter be issued, other than such rights and obligations that have expired or been satisfied or waived.

3.4 Authorization. The Company has all requisite corporate power and authority to enter into the Transaction Agreements and to carry out and perform its obligations under the terms of the Transaction Agreements, including the issuance and sale of the Securities and the issuance of the Pre-Funded Warrant Shares. Other than receipt of the Stockholder Approval, all corporate action on the part of the Company, its officers, directors and stockholders necessary for the authorization of the Pre-Funded Warrant and Pre-Funded Warrant Shares, the authorization, execution, delivery and performance of the Transaction Agreements and the consummation of the transactions contemplated herein, including the issuance and sale of the Securities and the Pre-Funded Warrant Shares has been taken, including, without limitation, the approval of the Board of Directors (or a committee thereof) in accordance with Section 144 of the

DGCL. This Agreement has been duly executed and delivered by the Company and, assuming the due authorization, execution and delivery by the Purchaser of this Agreement and that this Agreement constitutes the legal, valid and binding agreement of the Purchaser, this Agreement and the Pre-Funded Warrant constitutes a legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium and similar laws relating to or affecting creditors generally or by general equity principles (regardless of whether such enforceability is considered in a proceeding in equity or at law). Upon its execution by the Company and the other parties thereto and assuming that it constitutes legal, valid and binding agreements of the other parties thereto, the Registration Rights Agreement will constitute a legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium and similar laws relating to or affecting creditors generally or by general equity principles (regardless of whether such enforceability is considered in a proceeding in equity or at law).

3.5 Valid Issuance. The Pre-Funded Warrant has been duly and validly authorized and, upon issuance pursuant to the terms of this Agreement against full payment therefor in accordance with the terms of this Agreement, will be duly and validly issued and will be issued free and clear of any liens or other restrictions (other than those as provided in the Transaction Agreements or restrictions on transfer under applicable state and federal securities laws). The Pre-Funded Warrant Shares have been duly and validly authorized and reserved for issuance and, upon issuance pursuant to the terms of the Pre-Funded Warrant (including, for the avoidance of doubt, compliance with the Stockholder Approval requirement) against full payment therefor in accordance with the terms of the Pre-Funded Warrant, will be duly and validly issued, fully paid and non-assessable and will be issued free and clear of any liens or other restrictions (other than those as provided in the Transaction Agreements or restrictions on transfer under applicable state and federal securities laws), and the holder of the Pre-Funded Warrant Shares shall be entitled to all rights accorded to a holder of Common Stock. The issuance and delivery of the Pre-Funded Warrant does not, and the exercise in full of the Pre-Funded Warrant and the issuance and delivery of the Pre-Funded Warrant Shares (as applicable) thereupon will not, (a) obligate the Company to offer to issue, or issue, shares of Common Stock or other securities to any Person (other than the Purchaser) pursuant to any preemptive rights, rights of first refusal, rights of participation or similar rights or (b) result in any adjustment (automatic, at the election of any Person or otherwise) of the exercise, conversion, exchange or reset price under, or any other anti-dilution adjustment pursuant to, any outstanding securities of the Company. Subject to the accuracy of the representations and warranties made by the Purchaser in Section 4, the offer and sale of the Securities to the Purchaser is, and will be, and the issuance of the Pre-Funded Warrant Shares to the Purchaser will be (i) exempt from the registration and prospectus delivery requirements of the Securities Act and (ii) exempt from (or otherwise not subject to) the registration and qualification requirements of applicable securities laws of the states of the United States.

3.6 No Conflict. The execution, delivery and performance of the Transaction Agreements by the Company, the issuance and sale of the Securities and the consummation of the other transactions contemplated by the Transaction Agreements will not (i) violate any provision of the Amended and Restated Certificate of Incorporation or Amended and Restated Bylaws of the

Company, (ii) conflict with or result in a violation of or default (with or without notice or lapse of time, or both) under, or give rise to a right of termination, cancellation or acceleration of any obligation, a change of control right or to a loss of a benefit under any agreement or instrument, credit facility, franchise, license, judgment, order, statute, law, ordinance, rule or regulations, applicable to the Company or any of its Subsidiaries or their respective properties or assets or (iii) result in a violation of any law, rule, regulation, order, judgment, injunction, decree or other restriction of any court or governmental authority to which the Company or any of its Subsidiaries is subject (including federal and state securities laws and regulations) and the rules and regulations of any self-regulatory organization to which the Company or its securities are subject, or by which any property or asset of the Company or any of its Subsidiaries is bound or affected, except, in the case of clauses (ii) and (iii), as would not, individually or in the aggregate, be reasonably expected to have a Material Adverse Effect.

3.7 Consents. Assuming the accuracy of the representations and warranties of the Purchaser set forth in Section 4 hereof, no consent, approval, authorization, filing with or order of or registration with, any court or governmental agency or body or other Person is required in connection with the authorization, execution or delivery by the Company of the Transaction Agreements, the issuance and sale of the Securities and the performance by the Company of its other obligations under the Transaction Agreements, except (a) as have been or will be obtained or made under the Securities Act or the Exchange Act, (b) the filing of any requisite notices and/or application(s) to the National Exchange for the issuance and sale of the Pre-Funded Warrant Shares and the listing of the Pre-Funded Warrant Shares for trading or quotation, as the case may be, thereon in the time and manner required thereby, (c) customary post-closing filings with the SEC or pursuant to state securities laws in connection with the offer and sale of the Pre-Funded Warrant Shares by the Company in the manner contemplated herein, which will be filed on a timely basis, (d) the filing of the registration statement required to be filed by the Registration Rights Agreement, (e) receipt of Stockholder Approval for issuance of the Pre-Funded Warrant Shares or (f) such that the failure of which to obtain would not have a Material Adverse Effect. All notices, consents, authorizations, orders, filings and registrations which the Company is required to deliver or obtain prior to the Closing pursuant to the preceding sentence have been obtained or made or will be delivered or obtained or effected, and shall remain in full force and effect, on or prior to the Closing.

3.8 SEC Filings; Financial Statements.

(a) The Company has filed or furnished, as applicable, all forms, statements, certifications, reports and documents required to be filed or furnished by it with the SEC under Section 13, 14(a) and 15(d) of the Exchange Act for the one year preceding the date of this Agreement and is in compliance with General Instruction I.A.3 of Form S-3. As of the time it was filed with the SEC (or, if amended or superseded by a filing prior to the date of this Agreement, then on the date of such filing), each of the filed SEC Reports complied in all material respects with the applicable requirements of the Exchange Act, and, as of the time they were filed, none of the filed SEC Reports contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. There are no outstanding or unresolved comments from the SEC staff with respect to the SEC Reports. To the Company's knowledge, none of the SEC Reports are the subject of an ongoing SEC review. The interactive

data in eXtensible Business Reporting Language included in the SEC Reports fairly presents the information called for in all material respects and has been prepared in accordance with the SEC's rules and guidelines applicable thereto. The Company is not, and has never been, an issuer subject to Rule 144(i) under the Securities Act.

(b) The consolidated financial statements of the Company included in the SEC Reports (collectively, the "**Financial Statements**") comply in all material respects with applicable accounting requirements and the rules and regulations of the SEC with respect thereto as in effect at the time of filing (or to the extent corrected by a subsequent restatement) and fairly present in all material respects the consolidated financial position of the Company and its Subsidiaries as of the dates indicated, and the results of its operations and cash flows for the periods therein specified, and have been prepared in accordance with United States generally accepted accounting principles ("**GAAP**") applied on a consistent basis throughout the periods therein specified ((except as otherwise noted therein, and except that any unaudited financial statements may not contain certain footnotes and are subject to normal and recurring year-end adjustments). Except as set forth in the Financial Statements filed prior to the date of this Agreement, the Company has not incurred any liabilities, contingent or otherwise, except (i) those incurred in the ordinary course of business, consistent with past practices since the date of such financial statements or (ii) liabilities not required under GAAP to be reflected in the Financial Statements, in either case, none of which, individually or in the aggregate, have had or would reasonably be expected to have a Material Adverse Effect.

3.9 Absence of Changes. Since December 31, 2024, (a) the Company has conducted its business only in the ordinary course of business and there have been no material transactions entered into by the Company or any of its Subsidiaries (except for the execution and performance of this Agreement and the discussions, negotiations and transactions related thereto), (b) no material change to any material contract or arrangement by which the Company or any of its Subsidiaries is bound or to which any of its assets or properties is subject has been entered into that has not been disclosed in the SEC Reports and (c) there has not been any other event or condition of any character that has had or would reasonably be expected to have a Material Adverse Effect.

3.10 Absence of Litigation. There is no action, suit, proceeding, arbitration, claim, investigation, charge, complaint or inquiry pending or, to the Company's knowledge, threatened in writing against the Company or any of its Subsidiaries which, individually or in the aggregate, has had or would reasonably be expected to have a Material Adverse Effect, nor are there any orders, writs, injunctions, judgments or decrees outstanding of any court or government agency or instrumentality and binding upon the Company or any of its Subsidiaries that have had or would reasonably be expected to have a Material Adverse Effect. Neither the Company nor any of its Subsidiaries, nor to the knowledge of the Company, any director or officer of the Company or any of its Subsidiaries, is, or within the last ten (10) years has been, the subject of any action involving a claim of violation of or liability under federal or state securities laws relating to the Company or such Subsidiary or a claim of breach of fiduciary duty relating to the Company or any of its Subsidiaries.

3.11 Compliance with Law; Permits. Neither the Company nor any of its Subsidiaries is in violation of, or has received any notices of violations with respect to, any laws,

statutes, ordinances, rules or regulations of any governmental body, court or government agency or instrumentality, except for violations which, individually or in the aggregate, have not had and would not reasonably be expected to have a Material Adverse Effect. The Company and its Subsidiaries have all required licenses, permits, certificates and other authorizations (collectively, "**Governmental Authorizations**") from such federal, state or local government or governmental agency, department or body that are currently necessary for the operation of the business of the Company and its Subsidiaries as currently conducted, except where the failure to possess currently such Governmental Authorizations has not had and is not reasonably expected to have a Material Adverse Effect. Neither the Company nor any Subsidiary has received any written (or, to the Company's knowledge, oral) notice regarding any revocation or material modification of any such Governmental Authorization, which, individually or in the aggregate, if the subject of an unfavorable decision, ruling or finding, has or would reasonably be expected to result in a Material Adverse Effect.

3.12 Intellectual Property. The Company and its Subsidiaries own, or have rights to use, all material inventions, patent applications, patents, trademarks, trade names, service names, service marks, copyrights, trade secrets, know how (including unpatented and/or unpatentable proprietary of confidential information, systems or procedures) and other intellectual property as described in the SEC Reports necessary for, or used in the conduct of their respective businesses (including as described in the SEC Reports) (collectively, "**Intellectual Property**"), except where any failure to own, possess or acquire such Intellectual Property has not had, and would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. The Intellectual Property of the Company and its Subsidiaries has not been adjudged by a court of competent jurisdiction to be invalid or unenforceable, in whole or in part. To the Company's knowledge: (i) there are no third parties who have rights to any Intellectual Property, including no material liens, security interests, or other encumbrances; and (ii) there is no infringement by third parties of any Intellectual Property, except, in each case, which, individually or in the aggregate, have not had and would not reasonably be expected to have a Material Adverse Effect. No action, suit, or other proceeding is pending, or, to the Company's knowledge, is threatened: (A) challenging the Company's or its Subsidiaries' rights in or to any Intellectual Property; (B) challenging the validity, enforceability or scope of any Intellectual Property; or (C) alleging that the Company or any of its Subsidiaries infringes, misappropriates, or otherwise violates any patent, trademark, trade name, service name, copyright, trade secret or other proprietary rights of others, except, in each case, which, individually or in the aggregate, have not had and would not reasonably be expected to have a Material Adverse Effect. The Company and its Subsidiaries have complied in all material respects with the terms of each agreement pursuant to which Intellectual Property has been licensed to the Company or any of its Subsidiaries in all material respects, and to the Company's knowledge all such agreements are in full force and effect except, in each case, which, individually or in the aggregate, have not had and would not reasonably be expected to have a Material Adverse Effect. To the Company's knowledge, there are no material defects in any of the patents or patent applications included in the Intellectual Property. The Company and its Subsidiaries have taken reasonable steps to protect, maintain and safeguard their Intellectual Property.

3.13 Employee Benefits. Except as would not be reasonably likely to result in a Material Adverse Effect, each Benefit Plan has been established and administered in accordance with its terms and in compliance with the applicable provisions of ERISA, the Code, the Patient

Protection and Affordable Care Act of 2010, as amended, and other applicable laws, rules and regulations. The Company and its Subsidiaries are in compliance with all applicable federal, state and local laws, rules and regulations regarding employment, except for any failures to comply that are not reasonably likely, individually or in the aggregate, to have a Material Adverse Effect. There is no labor dispute, strike or work stoppage against the Company or its Subsidiaries pending or, to the knowledge of the Company, threatened which may interfere with the business activities of the Company, except where such dispute, strike or work stoppage is not reasonably likely, individually or in the aggregate, to have a Material Adverse Effect.

3.14 Taxes. The Company and its Subsidiaries have filed all federal, state and foreign income Tax Returns and other Tax Returns required to have been filed under applicable law (or extensions have been duly obtained) and have paid all Taxes required to have been paid by them, except for those which are being contested in good faith and except where failure to file such Tax Returns or pay such Taxes would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect. No assessment in connection with United States federal tax returns has been made against the Company. The charges, accruals and reserves on the books of the Company in respect of any income and corporation tax liability for any years not finally determined are adequate to meet any assessments or reassessments for additional income tax for any years not finally determined, except to the extent of any inadequacy that would not result in a Material Adverse Effect. No audits, examinations, or other proceedings with respect to any material amounts of Taxes of the Company and its Subsidiaries are presently in progress or have been asserted or proposed in writing without subsequently being paid, settled or withdrawn. There are no material liens on any of the assets of the Company. At all times since inception, the Company has been and continues to be classified as a corporation for U.S. federal income tax purposes. Neither the Company nor any of its Subsidiaries has been a United States real property holding corporation within the meaning of Code Section 897(c)-2 during the period specified in Code Section 897(c)(1)(A)(ii).

3.15 Title. Each of the Company and its Subsidiaries has good and marketable title to all personal property owned by it that is material to the business of the Company, free and clear of all liens, encumbrances and defects except such as do not materially and adversely affect the value of such property and do not materially and adversely interfere with the use made and proposed to be made of such property by the Company or its Subsidiaries, as the case may be. Any real property and buildings held under lease by the Company or its Subsidiaries is held under valid, subsisting and enforceable leases with such exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company or its Subsidiaries, as the case may be. The Company does not own any real property.

3.16 Insurance. The Company carries or is entitled to the benefits of insurance in such amounts and covering such risks that is customary for comparably situated companies and is adequate for the conduct of its business and the value of its real and personal properties (owned or leased) and tangible assets, and each of such insurance policies is in full force and effect and the Company is in compliance in all material respects with the terms of such insurance policies. Other than customary end-of-policy notifications from insurance carriers, since January 1, 2025, the Company has not received any notice or other communication regarding any actual or possible: (i) cancellation or invalidation of any material insurance policy or (ii) refusal or denial of any coverage, reservation of rights or rejection of any material claim under any insurance policy.

3.17 Nasdaq Stock Market. The issued and outstanding shares of Common Stock are registered pursuant to Section 12(b) of the Exchange Act and are listed for trading on the Nasdaq Capital Market under the symbol "ATHA". The Company is in compliance with all listing requirements of Nasdaq applicable to the Company. As of the date of this Agreement, there is no suit, action, proceeding or investigation pending or, to the knowledge of the Company, threatened against the Company by Nasdaq or the SEC, respectively, to prohibit or terminate the listing of the Common Stock on the Nasdaq Capital Market or to deregister the Common Stock under the Exchange Act. The Company has taken no action as of the date of this Agreement that is designed to terminate the registration of the Common Stock under the Exchange Act.

3.18 Sarbanes-Oxley Act. The Company is, and since January 1, 2025 has been, in compliance in all material respects with all applicable requirements of the Sarbanes-Oxley Act of 2002 and applicable rules and regulations promulgated by the SEC thereunder.

3.19 Clinical Data and Regulatory Compliance. Except as would not reasonably be expected to result in a Material Adverse Effect: (i) the preclinical tests and clinical trials and other studies used to support regulatory approval (collectively, "**Studies**") that, prior to the date of this Agreement, have been conducted by or on behalf of, or sponsored by, the Company or its Subsidiaries that are described in, or the results of which are referred to in, the SEC Reports were (and, if still pending, are being) conducted in all material respects in accordance with the protocols, approved for such Studies and applicable Law, (ii) each description of the results of such Studies is accurate and complete in all material respects and fairly presents the data derived from such Studies, and the Company and its Subsidiaries have no knowledge of any other studies the results of which would reasonably be expected to render, the results described or referred to in the SEC Reports false or misleading, (iii) the Company and its Subsidiaries have made all required filings and obtained all applicable approvals as required by the FDA or from any other U.S. federal, state or local government or foreign government or Drug Regulatory Agency, or Institutional Review Board, each having jurisdiction over biopharmaceutical products (collectively, the "**Regulatory Agencies**") for the conduct of its business as described in the SEC Reports, (iv) neither the Company nor any of its Subsidiaries has received any notice of, or correspondence from, any of the Regulatory Agencies requiring the termination or suspension of or imposing any clinical hold on any clinical trials that are described or referred to in the SEC Reports and (v) the Company and its Subsidiaries have each operated and currently are in compliance in all material respects with all applicable rules and regulations of the Regulatory Agencies.

3.20 Compliance with Health Care Laws. The Company and its Subsidiaries are in compliance in all material respects with all Health Care Laws to the extent applicable to the current business of the Company and its Subsidiaries or any of their respective activities. For purposes of this Agreement, "**Health Care Laws**" means: (i) the Federal Food, Drug, and Cosmetic Act (21 U.S.C. Section 301 et seq.) and the Public Health Service Act (42 U.S.C. Section 201 et seq.), and the regulations promulgated thereunder; (ii) all applicable federal, state, local and foreign health care fraud and abuse laws, including, without limitation, the Anti-Kickback Statute (42 U.S.C. Section 1320a-7b(b)); (iii) HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act (42 U.S.C. Section 17921 et seq.); (iv) the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Reconciliation Act of 2010; (v) the European Union ("**EU**") Clinical Trials Regulation (Regulation (EU) No. 536/2014); (vi) the EU Regulation regarding community procedures for authorization and

supervision of medicinal products for human use and establishing a European Medicines Agency (Regulation (EC) No. 726/2004); (vii) licensure, quality, safety and accreditation requirements under applicable federal, state, local or foreign laws or regulatory bodies; (viii) all other local, state, federal, national, supranational and foreign laws, relating to the regulation of the Company or its Subsidiaries, and (ix) the regulations promulgated pursuant to such statutes and any state or non-U.S. counterpart thereof. Neither the Company nor any of its Subsidiaries has received written or, to the Company's knowledge, oral notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any court or arbitrator or governmental or regulatory authority or third party alleging that any product operation or activity is in material violation of any applicable Health Care Laws nor, to the Company's knowledge, is any such claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action threatened. The Company and its Subsidiaries have filed, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by applicable Health Care Laws, and, to the Company's knowledge, all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and accurate on the date filed in all material respects (or were corrected or supplemented by a subsequent submission). Neither the Company nor any of its Subsidiaries is a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement orders, or similar agreements with or imposed by any governmental or regulatory authority. Additionally, neither the Company nor any of its Subsidiaries nor any of their respective employees, officers, directors, or, to the knowledge of the Company, agents has been excluded, suspended or debarred from participation in any U.S. federal health care program or human clinical research or, to the knowledge of the Company, is subject to a governmental inquiry, investigation, proceeding, or other similar action that would reasonably be expected to result in debarment, suspension, or exclusion.

3.21 Accounting Controls and Disclosure Controls and Procedures. The Company maintains a system of internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act) that is designed to comply with the requirements of the Exchange Act applicable to the Company and provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP, including policies and procedures sufficient to provide reasonable assurance (i) that the Company maintains records that in reasonable detail accurately and fairly reflect the Company's transactions and dispositions of assets, (ii) that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, (iii) that receipts and expenditures are made only in accordance with authorizations of management and the Board of Directors and (iv) regarding prevention or timely detection of the unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the Company's financial statements. Except as disclosed in the Company's SEC Reports filed prior to the date of this Agreement, the Company has not identified any material weaknesses in the design or operation of the Company's internal control over financial reporting. The Company's "disclosure controls and procedures" (as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act) are designed to provide reasonable assurance that all information (both financial and non-financial) required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC, and that all such information is accumulated and communicated to the Company's management as appropriate to allow timely decisions regarding required disclosure.

3.22 Price Stabilization of Common Stock. The Company has not taken, nor will it take, directly or indirectly, any action designed to stabilize or manipulate the price of the Common Stock to facilitate the sale or resale of the Pre-Funded Warrant Shares.

3.23 Investment Company Act. The Company is not, and immediately after receipt of payment for the Pre-Funded Warrant will not be, an "investment company" within the meaning of the U.S. Investment Company Act of 1940, as amended.

3.24 General Solicitation; No Integration or Aggregation. Neither the Company nor any other person or entity authorized by the Company to act on its behalf has engaged in a general solicitation or general advertising (within the meaning of Regulation D of the Securities Act) of investors with respect to offers or sales of Securities pursuant to this Agreement. The Company has not, directly or indirectly, sold, offered for sale, solicited offers to buy or otherwise negotiated in respect of, any security (as defined in the Securities Act) which, to its knowledge, is or will be (i) integrated with the offer and sale of the Securities pursuant to this Agreement for purposes of the Securities Act or (ii) aggregated with prior offerings by the Company for the purposes of the rules and regulations of the Nasdaq Capital Market. Assuming the accuracy of the representations and warranties of the Purchaser set forth in Section 4, neither the Company nor any of its Affiliates, its Subsidiaries nor any Person acting on their behalf has, directly or indirectly, made any offers or sales of any Company security or solicited any offers to buy any Company security, under circumstances that would adversely affect reliance by the Company on Section 4(a)(2) and/or Rule 506 of Regulation D promulgated thereunder for the exemption from registration for the transactions contemplated hereby.

3.25 Brokers and Finders. Neither the Company nor any other Person authorized by the Company to act on its behalf has retained, utilized or been represented by any broker or finder in connection with the transactions contemplated by this Agreement.

3.26 Reliance by the Purchaser. The Company has a reasonable basis for making each of the representations set forth in this Section 3. The Company acknowledges that the Purchaser will rely upon the truth and accuracy of, and the Company's compliance with, the representations, warranties, agreements, acknowledgements and understandings of the Company set forth herein.

3.27 Other Covered Persons. The Company is not aware of any person (other than any Issuer Covered Person) that has been or will be paid (directly or indirectly) remuneration for solicitation of purchasers in connection with the sale of any Securities.

3.28 No Additional Agreements. There are no agreements or understandings between the Company and the Purchaser with respect to the transactions contemplated by the Transaction Agreements other than (i) as specified in the Transaction Agreements and (ii) any side letter agreements with the Purchaser.

3.29 Anti-Bribery and Anti-Money Laundering Laws. Each of the Company, its Subsidiaries and, to the knowledge of the Company, any of their respective officers, directors, supervisors, managers, agents or employees are and have at all times been in compliance with, and its participation in the offering will not violate, (A) anti-bribery laws, including but not limited to,

any applicable law, rule, or regulation of any locality, including but not limited to any law, rule, or regulation promulgated to implement the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, signed December 17, 1997, including the U.S. Foreign Corrupt Practices Act of 1977, as amended, the U.K. Bribery Act 2010, or any other law, rule or regulation of similar purposes and scope; (B) anti-money laundering laws, including, but not limited to, applicable federal, state, international, foreign or other laws, regulations or government guidance regarding anti-money laundering, including, without limitation, Title 18 US. Code sections 1956 and 1957, the Patriot Act, the Bank Secrecy Act, and international anti-money laundering principles or procedures by an intergovernmental group or organization, such as the Financial Action Task Force on Money Laundering, of which the United States is a member and with which designation the United States representative to the group or organization continues to concur, all as amended, and any executive order, directive, or regulation pursuant to the authority of any of the foregoing, or any orders or licenses issued thereunder; or (C) any laws with respect to import and export control and economic sanctions, including the U.S. Export Administration Regulations, the U.S. International Traffic in Arms Regulations, and economic sanctions regulations and executive orders administered by the U.S. Department of the Treasury Office of Foreign Asset Control.

3.30 Cybersecurity. The Company and its Subsidiaries' material information technology assets and equipment, computers, systems, networks, hardware, software, websites, applications and databases (collectively, "**IT Systems**") are adequate for, and operate and perform in all material respects as required in connection with the operation of the business of the Company and its Subsidiaries as currently conducted, and are free and clear of all material Trojan horses, time bombs, malware and other malicious code. The Company and its Subsidiaries have implemented and maintained commercially reasonable physical, technical and administrative controls designed to maintain and protect the confidentiality, integrity, availability, privacy and security of all sensitive, confidential or regulated data ("**Confidential Data**") used or maintained in connection with their businesses and Personal Data (defined below), and the integrity, availability continuous operation, redundancy and security of all IT Systems. "**Personal Data**" means the following data used in connection with the Company's and its Subsidiaries' businesses and in their possession or control: (i) a natural person's name, street address, telephone number, e-mail address, photograph, social security number or other tax identification number, driver's license number, passport number, credit card number or bank information, (ii) information that identifies or may reasonably be used to identify an individual, (iii) any information that would qualify as "protected health information" under the Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act (collectively, "**HIPAA**") and (iv) any information that would qualify as "personal data," "personal information" (or similar term) under the Privacy Laws. To the Company's knowledge, there have been no breaches, outages or unauthorized uses of or accesses to the Company's IT Systems, Confidential Data, or Personal Data that would require notification under Privacy Laws (as defined below).

3.31 Compliance with Data Privacy Laws. The Company and its Subsidiaries are, and at all prior times in the past five (5) years were, in material compliance with all applicable state, federal and foreign data privacy and security laws and regulations regarding the collection, use, storage, retention, disclosure, transfer, disposal or any other processing (collectively "**Process**" or "**Processing**") of Personal Data, including without limitation HIPAA, the EU

General Data Protection Regulation ("**GDPR**") (Regulation (EU) No. 2016/679), all other local, state, federal, national, supranational and foreign laws relating to the regulation of the Company or its Subsidiaries, and the regulations promulgated pursuant to such statutes and any state or non-U.S. counterpart thereof (collectively, the "**Privacy Laws**"). To ensure material compliance with the Privacy Laws, the Company and its Subsidiaries have in place, comply with, and take all appropriate steps necessary to ensure compliance in all material respects with their policies and procedures relating to data privacy and security, and the Processing of Personal Data and Confidential Data (the "**Privacy Statements**"). To the extent required by Privacy Laws, the Company and its Subsidiaries have, except as would not reasonably be expected, individually or in the aggregate, to result in a Material Adverse Effect, at all times since inception provided accurate notice of their Privacy Statements then in effect to its customers, employees, third party vendors and representatives. None of such disclosures made or contained in any Privacy Statements have been materially inaccurate, misleading, incomplete or in material violation of any Privacy Laws.

3.32 Transactions with Affiliates and Employees. No relationship, direct or indirect, exists between or among the Company or any of its Subsidiaries, on the one hand, and any of the directors, officers, stockholders, customers or suppliers of the Company, on the other hand, that is required to be described in the SEC Reports that is not so described.

4. Representations and Warranties of the Purchaser. The Purchaser represents and warrants to the Company that the statements contained in this Section 4 are true and correct as of the date of this Agreement and the Closing Date:

4.1 Organization. The Purchaser is duly organized, validly existing and in good standing under the laws of the jurisdiction of its organization and has the requisite power and authority to own, lease and operate its properties and to carry on its business as now conducted.

4.2 Authorization. The Purchaser has all requisite corporate or similar power and authority to enter into this Agreement and the other Transaction Agreements to which it will be a party and to carry out and perform its obligations hereunder and thereunder. All corporate, member or partnership action on the part of the Purchaser or its stockholders, members or partners necessary for the authorization, execution, delivery and performance of this Agreement and the other Transaction Agreements to which it will be a party and the consummation of the other transactions contemplated in this Agreement has been taken. The execution, delivery and performance by the Purchaser of the Transaction Agreements to which the Purchaser is a party has been duly authorized and each has been duly executed. Assuming this Agreement constitutes the legal and binding agreement of the Company, this Agreement constitutes a legal, valid and binding obligation of the Purchaser, enforceable against the Purchaser in accordance with its respective terms, except as such enforceability may be limited or otherwise affected by bankruptcy, insolvency, fraudulent conveyance, reorganization, moratorium and/or similar laws relating to or affecting the rights of creditors generally or by general equity principles (regardless of whether such enforceability is considered in a proceeding in equity or at law).

4.3 No Conflicts. The execution, delivery and performance of the Transaction Agreements by the Purchaser, the purchase of the Securities in accordance with their terms and the consummation by the Purchaser of the other transactions contemplated hereby will not conflict

with or result in any violation of, breach or default by the Purchaser (with or without notice or lapse of time, or both) under, conflict with, or give rise to a right of termination, cancellation or acceleration of any obligation, a change of control right or to a loss of a material benefit under (i) any provision of the organizational documents of the Purchaser, including, without limitation, its incorporation or formation papers, bylaws, indenture of trust or partnership or operating agreement, as may be applicable or (ii) any agreement or instrument, undertaking, credit facility, franchise, license, judgment, order, ruling, statute, law, ordinance, rule or regulations, applicable to the Purchaser or its respective properties or assets, except, in the case of clause (ii), as would not, individually or in the aggregate, be reasonably expected to materially delay or materially hinder the ability of the Purchaser to perform its obligations under the Transaction Agreements (such delay or hindrance, a "**Purchaser Adverse Effect**").

4.4 Consents. All consents, approvals, orders and authorizations required on the part of such Purchaser in connection with the execution, delivery or performance of this Agreement, the issuance of the Securities, and the consummation of the other transactions contemplated herein have been obtained or made, other than such consents, approvals, orders and authorizations the failure of which to make or obtain, individually or in the aggregate, would not reasonably be expected to have a Purchaser Adverse Effect.

4.5 Residency; Holdings. The Purchaser's offices in which its investment decision with respect to the Securities was made (if an entity) are located at the address immediately below the Purchaser's name on the pertinent signature page of this Agreement, except as otherwise communicated by the Purchaser to the Company. Purchaser has set forth on the pertinent signature page to this Agreement the number of shares of Common Stock beneficially owned by Purchaser and the number of shares of Common Stock Equivalents beneficially owned by Purchaser, in each case as of immediately prior to the Closing.

4.6 Brokers and Finders. The Purchaser has not retained, utilized or been represented by any broker or finder in connection with the transactions contemplated by this Agreement whose fees the Company would be required to pay.

4.7 Investment Representations and Warranties. The Purchaser hereby represents and warrants that, it as of the date of this Agreement is a "qualified institutional buyer" (as defined in Rule 144A under the Securities Act) or an institutional "accredited investor" as that term is defined in Rule 501(a) under Regulation D promulgated pursuant to the Securities Act. The Purchaser further represents and warrants that it is capable of evaluating the merits and risk of such investment, and has so evaluated the merits and risk of such investment. The Purchaser understands and agrees that the offering and sale of the Securities has not been registered under the Securities Act or any applicable state securities laws and is being made in reliance upon federal and state exemptions for transactions not involving a public offering which depend upon, among other things, the bona fide nature of the investment intent and the accuracy of the Purchaser's representations as expressed herein.

4.8 Intent. The Purchaser is purchasing the Securities solely for the Purchaser's own account and not for the account of others, and not with a view to the resale or distribution of any part thereof in violation of the Securities Act, and the Purchaser has no present intention of selling, granting any participation in, or otherwise distributing the same in violation of the

Securities Act without prejudice, however, to the Purchaser's right at all times to sell or otherwise dispose of all or any part of such Securities in compliance with applicable federal and state securities laws. The Purchaser has no present arrangement to sell the Securities to or through any person or entity. The Purchaser understands that the Securities must be held indefinitely unless such Securities are resold pursuant to a registration statement under the Securities Act or an exemption from registration is available. Nothing contained herein shall be deemed a representation or warranty by the Purchaser to hold the Securities for any period of time.

4.9 Investment Experience; Ability to Protect Its Own Interests and Bear Economic Risks. The Purchaser acknowledges that it can bear the economic risk and complete loss of its investment in the Securities and has knowledge and experience in finance, securities, taxation, investments and other business matters as to be capable of evaluating the merits and risks of investments of the kind described in this Agreement and contemplated hereby, and the Purchaser has had an opportunity to seek, and has sought, such accounting, legal, business and tax advice as the Purchaser has considered necessary to make an informed investment decision. The Purchaser acknowledges that the Purchaser (i) is a sophisticated investor, experienced in investing in private placements of equity securities and capable of evaluating investment risks independently, both in general and with regard to all transactions and investment strategies involving a security or securities and (ii) has exercised independent judgment in evaluating its participation in the purchase of the Securities. The Purchaser acknowledges that the Purchaser is aware that there are substantial risks incident to the purchase and ownership of the Securities, including those set forth in the Company's filings with the SEC. Alone, or together with any professional advisor(s), the Purchaser has adequately analyzed and fully considered the risks of an investment in the Securities and determined that the Securities are a suitable investment for the Purchaser. The Purchaser is, at this time and in the foreseeable future, able to afford the loss of the Purchaser's entire investment in the Securities and the Purchaser acknowledges specifically that a possibility of total loss exists.

4.10 Independent Investment Decision. The Purchaser understands that nothing in the Transaction Agreements or any other materials presented by or on behalf of the Company to the Purchaser in connection with the purchase of the Securities constitutes legal, tax or investment advice. The Purchaser has consulted such legal, tax and investment advisors as it, in the Purchaser's sole discretion, has deemed necessary or appropriate in connection with its purchase of the Securities.

4.11 Securities Not Registered; Legends. The Purchaser acknowledges and agrees that the Securities are being offered in a transaction not involving any public offering within the meaning of the Securities Act, and the Purchaser understands that the Securities have not been registered under the Securities Act, by reason of their issuance by the Company in a transaction exempt from the registration requirements of the Securities Act, and that the Securities must continue to be held and may not be offered, resold, transferred, pledged or otherwise disposed of by the Purchaser unless a subsequent disposition thereof is registered under the Securities Act or is exempt from such registration and in each case in accordance with any applicable securities laws of any state of the United States. The Purchaser understands that the exemptions from registration afforded by Rule 144 (the provisions of which are known to it) promulgated under the Securities Act depend on the satisfaction of various conditions including, but not limited to, the time and manner of sale, the holding period and on requirements relating to the Company which are outside of the Purchaser's control and which the Company may not be able to satisfy, and that, if

applicable, Rule 144 may afford the basis for sales only in limited amounts. The Purchaser acknowledges and agrees that it has been advised to consult legal counsel prior to making any offer, resale, transfer, pledge or disposition of any of the Securities. The Purchaser acknowledges that no federal or state agency has passed upon or endorsed the merits of the offering of the Securities or made any findings or determination as to the fairness of this investment.

The Purchaser understands that any certificates or book entry notations evidencing the Securities may bear one or more legends in substantially the following form and substance:

> "THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES. THE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE SOLD, TRANSFERRED OR ASSIGNED UNLESS (I) SUCH SECURITIES HAVE BEEN REGISTERED FOR SALE PURSUANT TO THE SECURITIES ACT, (II) SUCH SECURITIES MAY BE SOLD PURSUANT TO RULE 144 UNDER THE SECURITIES ACT (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION BY THE HOLDER), (III) THE COMPANY HAS RECEIVED AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO IT THAT SUCH TRANSFER MAY LAWFULLY BE MADE WITHOUT REGISTRATION UNDER THE SECURITIES ACT, OR (IV) THE SECURITIES ARE TRANSFERRED WITHOUT CONSIDERATION TO AN AFFILIATE OF SUCH HOLDER OR A CUSTODIAL NOMINEE (WHICH FOR THE AVOIDANCE OF DOUBT SHALL REQUIRE NEITHER CONSENT NOR THE DELIVERY OF AN OPINION). NOTWITHSTANDING THE FOREGOING THE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN OR FINANCING ARRANGEMENT SECURED BY THE SECURITIES."

In addition, the Securities may contain a legend regarding affiliate status of the Purchaser, if applicable.

4.12 No General Solicitation. The Purchaser acknowledges and agrees that the Purchaser is purchasing the Securities directly from the Company. The Securities were offered to the Purchaser solely by direct contact between the Purchaser and the Company and/or their respective representatives. The Purchaser did not become aware of this offering of the Securities, nor were the Securities offered to the Purchaser, by any other means, and none of the Company and/or their respective representatives acted as investment advisor, broker or dealer to the Purchaser. The Purchaser is not purchasing the Securities as a result of advertising or, to its knowledge, general solicitation within the meaning of the Securities Act.

4.13 Access to Information. In making its decision to purchase the Securities, the Purchaser has relied solely upon independent investigation made by the Purchaser, upon the SEC Reports and upon the representations, warranties and covenants set forth herein and in the other Transaction Agreements and the License Agreement. The Purchaser acknowledges and agrees that the Purchaser and the Purchaser's professional advisor(s), if any, have had the opportunity to ask such questions, receive such answers and obtain such information from the Company regarding

the Company, its business and the terms and conditions of the offering of the Securities as the Purchaser and the Purchaser's professional advisor(s), if any, have deemed necessary to make an investment decision with respect to the Securities and that the Purchaser has independently made its own analysis and decision to invest in the Company. Neither such inquiries nor any other due diligence investigation conducted by the Purchaser shall modify, limit or otherwise affect the Purchaser's right to rely on the Company's representations and warranties contained in this Agreement.

4.14 Certain Trading Activities. Other than consummating the transaction contemplated hereby, the Purchaser has not, nor has any Person acting on behalf of or pursuant to any understanding with the Purchaser, directly or indirectly executed any purchases or sales, including Short Sales, of the securities of the Company during the period commencing as of the time that the Purchaser was first contacted by the Company or any other Person regarding the transaction contemplated hereby and ending immediately prior to the date of this Agreement. Notwithstanding the foregoing, if the Purchaser's investment advisor utilized an information barrier with respect to the information regarding the transactions contemplated hereunder after first being contacted by the Company or its representatives, the representation set forth above shall only apply after the point in time when the portfolio manager who manages the Purchaser's assets was informed of the information regarding the transactions contemplated hereunder and, with respect to the Purchaser's investment advisor, the representation set forth above shall only apply with respect to any purchases or sales, including Short Sales, of the securities of the Company on behalf of other funds or investment vehicles for which the Purchaser's investment advisor is also an investment advisor or sub-advisor after the point in time when the portfolio manager who manages the assets of such other funds or investment vehicles for which the Purchaser's investment advisor is also an investment advisor or sub-advisor was informed of the information regarding the transactions contemplated hereunder. Other than to other Persons party to this Agreement and to its advisors and agents who had a need to know such information, the Purchaser has maintained the confidentiality of all disclosures made to it in connection with this transaction (including the existence and terms of this transaction). Notwithstanding the foregoing, for avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to the identification of the availability of, or securing of, available shares to borrow in order to effect Short Sales or similar transactions in the future.

4.15 Disqualification Event. To the extent the Purchaser is one of the covered persons identified in Rule 506(d)(1), the Purchaser represents that no Disqualification Event is applicable to the Purchaser or any of its Rule 506(d) Related Parties (as defined below), except, if applicable, for a Disqualification Event as to which Rule 506(d)(2)(ii) or (iii) or (d)(3) is applicable. The Purchaser hereby agrees that it shall notify the Company promptly in writing in the event a Disqualification Event becomes applicable to the Purchaser or any of its Rule 506(d) Related Parties, except, if applicable, for a Disqualification Event as to which Rule 506(d)(2)(ii) or (iii) or (d)(3) is applicable. For purposes of this Section, "**Rule 506(d) Related Party**" means a person or entity that is a beneficial owner of the Purchaser's securities for purposes of Rule 506(d) of the Securities Act.

5. Covenants.

5.1 Further Assurances. Each party agrees to cooperate with each other and their respective officers, employees, attorneys, accountants and other agents, and, generally, do such other reasonable acts and things in good faith as may be necessary to effectuate the intents and purposes of this Agreement, subject to the terms and conditions of this Agreement and compliance with applicable law, including taking reasonable action to facilitate the filing of any document or the taking of reasonable action to assist the other parties hereto in complying with the terms of this Agreement. The Purchaser acknowledges that the Company will rely on the acknowledgments, understandings, agreements, representations and warranties contained in this Agreement. Prior to the Closing, (i) the Purchaser agrees to promptly notify the Company if any of the acknowledgments, understandings, agreements, representations and warranties set forth in Section 4 of this Agreement are no longer accurate and (ii) the Company agrees to promptly notify each Purchaser if any of the acknowledgements, understandings, agreements, representations, and warranties set forth in Section 3 of this Agreement are no longer accurate.

5.2 Listing. The Company shall use commercially reasonable efforts to maintain the listing and trading of its Common Stock on the Nasdaq Capital Market and, in accordance therewith, will use reasonable best efforts to comply in all material respects with the Company's reporting, filing and other obligations under the rules and regulations of Nasdaq.

5.3 Disclosure of Transactions.

(a) The Company shall, by 9:00 a.m., New York City time, on the first (1st) Business Day immediately following the date of this Agreement (provided that, if this Agreement is executed between midnight and 9:00 a.m., New York City time on any Business Day, no later than 9:01 a.m. on the date hereof, issue a press release and/or file with the SEC a Current Report on Form 8-K (including, if applicable, all exhibits thereto, the "**Disclosure Document**" and the actual filing of such press release and Current Report on Form 8-K, the "**Disclosure Time**") disclosing (i) all material terms of the transactions contemplated hereby and by the other Transaction Agreements and, if the Disclosure Document is a Current Report on Form 8-K, attaching this Agreement and the other Transaction Agreements as exhibits to such Disclosure Document and (ii) all material non-public information concerning the Company and the transactions contemplated hereby disclosed to the Purchaser prior to the Disclosure Time. Following the issuance or filing of the Disclosure Document, the Purchaser shall not be in possession of any material non-public information concerning the Company disclosed to the Purchaser by the Company or its representatives, officers, directors, ore employees or agents. The Company understands and confirms that the Purchaser will rely on the foregoing representation in effecting securities transactions. From and after the issuance or filing of the Disclosure Document, the Company shall not provide material non-public information to Purchaser, unless otherwise specifically agreed in writing by Purchaser prior to any such disclosure. In addition, unless it has already done so by filing the Disclosure Document, on or before the fourth (4th) Business Day following the date of this Agreement, the Company shall file with the SEC a Current Report on Form 8-K disclosing all material terms of the transactions contemplated by this Agreement.

5.4 Integration. The Company shall not, and shall use its commercially reasonable efforts to ensure that no Affiliate of the Company shall, sell, offer for sale or solicit

offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that will be integrated with the offer or sale of the Securities in a manner that would require the registration under the Securities Act of the sale of the Securities to the Purchaser, or that will be integrated with the offer or sale of the Securities for purposes of the rules and regulations of any National Exchange such that it would require stockholder approval prior to the closing of such other transaction unless stockholder approval is obtained before the closing of such subsequent transaction.

5.5 Removal of Legends.

(a) In connection with any sale, assignment, transfer or other disposition of the Pre-Funded Warrant Shares by the Purchaser pursuant to Rule 144 or pursuant to any other exemption under the Securities Act such that the purchaser acquires freely tradable shares and upon compliance by the Purchaser with the requirements of this Agreement, if requested by the Purchaser by written notice to the Company, the Company shall request the Transfer Agent to remove any restrictive legends related to the book entry account holding such shares and make a new, unlegended entry for such book entry shares sold or disposed of without restrictive legends within the earlier of (i) one (1) business day and (ii) the Standard Settlement Period, in each case, of any such request therefor from the Purchaser, provided that the Company has timely received from the Purchaser customary representations and other documentation reasonably acceptable to the Company in connection therewith. The Company shall be responsible for the fees of its Transfer Agent and its legal counsel associated with such legend removal.

(b) Subject to receipt from the Purchaser by the Company and the Transfer Agent of customary representations and other documentation reasonably acceptable to the Company and the Transfer Agent in connection therewith, and subject to any legends related the restrictions on transfer contemplated by Section 5.13 hereof upon the earliest of such time as the Pre-Funded Warrant Shares (i) have been registered under the Securities Act pursuant to an effective registration statement, (ii) have been sold pursuant to Rule 144 or (iii) are eligible for resale under Rule 144(b)(1) without the requirement for the Company to be in compliance with the current public information requirements under Rule 144(c)(1) (or any successor provision), the Company shall, in accordance with the provisions of this Section 5.5(b) and within the earlier of (i) one (1) business day and (ii) the Standard Settlement Period, in each case, of any request therefor from the Purchaser accompanied by such customary and reasonably acceptable documentation referred to above, (A) deliver to the Transfer Agent irrevocable instructions that the Transfer Agent shall make a new, unlegended entry for such book entry shares (other than any legends related the restrictions on transfer contemplated by Section 5.13 hereof) and (B) cause its counsel to deliver to the Transfer Agent one or more opinions to the effect that the removal of such legends in such circumstances may be effected under the Securities Act if required by the Transfer Agent to effect the removal of the legend in accordance with the provisions of this Agreement. Any shares subject to legend removal under this Section 5.5 may be transmitted by the Transfer Agent to Purchaser by crediting the account of Purchaser's prime broker with the DTC System as directed by Purchaser. The Company shall be responsible for the fees of its Transfer Agent and all DTC fees associated with such issuance.

5.6 Withholding Taxes. The Purchaser agrees to furnish the Company with any information, representations and forms as shall reasonably be requested by the Company from time

to time to assist the Company in complying with any applicable tax law (including any withholding obligations).

5.7 Fees and Commissions. The Company shall be solely responsible for the payment of any placement agent's fees, financial advisory fees or broker's commissions (other than for Persons engaged by the Purchaser) relating to or arising out of the transactions contemplated hereby.

5.8 No Conflicting Agreements. The Company will not take any action, enter into any agreement or make any commitment that would conflict or interfere in any material respect with the Company's obligations to the Purchaser under the Transaction Agreements.

5.9 Indemnification.

(a) The Company agrees to indemnify and hold harmless the Purchaser and its Affiliates, and their respective directors, officers, trustees, members, managers, employees, investment advisors and agents (collectively, the "**Indemnified Persons**"), from and against any and all losses, claims, damages, liabilities and expenses (including without limitation reasonable and documented attorney fees and disbursements and other documented out-of-pocket expenses reasonably incurred in connection with investigating, preparing or defending any action, claim or proceeding, pending or threatened and the costs of enforcement thereof) to which such Person may become subject as a result of any breach of representation, warranty, covenant or agreement made by or to be performed on the part of the Company under the Transaction Agreements, and will reimburse any such Person in quarterly payments for all such amounts incurred by such Person solely to the extent such amounts have been finally judicially determined not to have resulted from such Person's fraud, gross negligence, willful misconduct or bad faith.

(b) Any person entitled to indemnification hereunder shall (i) give prompt written notice to the indemnifying party of any claim with respect to which it seeks indemnification and (ii) permit such indemnifying party to assume the defense of such claim with counsel reasonably satisfactory to the indemnified party; provided that any person entitled to indemnification hereunder shall have the right to employ separate counsel and to participate in the defense of such claim, but the fees and expenses of such counsel shall be at the expense of such person unless (a) the indemnifying party has agreed in writing to pay such fees or expenses, (b) the indemnifying party shall have failed to assume the defense of such claim and employ counsel reasonably satisfactory to such person; and provided, further, that the failure of any indemnified party to give written notice as provided herein shall not relieve the indemnifying party of its obligations hereunder, except to the extent that such failure to give notice shall materially adversely affect the indemnifying party in the defense of any such claim or litigation or (c) in the reasonable judgment of any such person, based upon written advice of its counsel, a conflict of interest exists between such person and the indemnifying party with respect to such claims (in which case, if the person notifies the indemnifying party in writing that such person elects to employ separate counsel at the expense of the indemnifying party, the indemnifying party shall not have the right to assume the defense of such claim on behalf of such person). It is understood that the indemnifying party shall not, in connection with any proceeding in the same jurisdiction, be liable for fees or expenses of more than one separate firm of attorneys at any time for all such indemnified parties. No indemnifying party will, except with the consent of the indemnified party,

which consent shall not be unreasonably withheld, conditioned or delayed, consent to entry of any judgment or enter into any settlement unless such judgment or settlement (i) imposes no liability or obligation on, (ii) includes as an unconditional term thereof the giving of a complete, explicit and unconditional release from the party bringing such indemnified claims of all liability of the indemnified party in respect of such claim or litigation in favor of, and (iii) does not include any admission of fault, culpability, wrongdoing, or wrongdoing or malfeasance by or on behalf of, the indemnified party. No indemnified party will, except with the prior written consent of the indemnifying party, which consent shall not be unreasonably withheld, conditioned or delayed, consent to entry of any judgment or enter into any settlement.

5.10 Subsequent Equity Sales. From the date of this Agreement until the earlier of (a) sixty (60) days after the Closing Date and (b) the Business Day immediately following the effective date of the registration statement filed pursuant to the Registration Rights Agreement, the Company shall not (A) issue shares of Common Stock or Common Stock Equivalents, (B) effect a reverse stock split, recapitalization, share consolidation, reclassification or similar transaction affecting the outstanding Common Stock or (C) file with the SEC a registration statement under the Securities Act relating to any shares of Common Stock or Common Stock Equivalents, except pursuant to the terms of the Registration Rights Agreement and pursuant to the terms of any registration rights agreement disclosed in the Disclosure Document. Notwithstanding the foregoing, the provisions of this Section 5.10 shall not apply to (i) the issuance of the Securities hereunder and pursuant to any transaction disclosed in the Disclosure Document, (ii) the issuance of Common Stock or Common Stock Equivalents upon the conversion, exercise or vesting of any securities of the Company outstanding on the date of this Agreement or outstanding pursuant to clause (iii) below; provided that such conversion, exercise or vesting is effected pursuant to the terms of such securities as in effect on the date of this Agreement and without giving effect to any amendments or adjustments thereto after the date hereof,, (iii) the grant or issuance of any Common Stock or Common Stock Equivalents pursuant to any existing or hereinafter adopted or amended Company stock-based compensation plans approved by the Board of Directors of the Company or in accordance with Nasdaq Stock Market Rule 5635(c)(4) or (iv) the filing of registration statements on Form S-8 under the Securities Act to register the offer and sale of securities on an equity incentive plan or employee stock purchase plan.

5.11 Reservation of Common Stock. As of the date of this Agreement, the Company has reserved and the Company shall continue to reserve and keep available at all times, free of preemptive rights, a sufficient number of shares of Common Stock for the purpose of enabling the Company to issue the Pre-Funded Warrant Shares that are issuable upon the exercise of the Pre-Funded Warrant.

5.12 Stockholder Approval.

(a) To the extent any of the transactions contemplated by the Transaction Agreements, including the issuance of the Pre-Funded Warrant Shares upon exercise of the Pre-Funded Warrant, requires stockholder approval pursuant to the rules and regulations of Nasdaq, the Company will, no later than in connection with its 2026 annual meeting of stockholders (the "**Annual Meeting**"), provide notice of, and solicit proxies for the Company's stockholders to obtain such required approvals such that the Pre-Funded Warrant can be exercised at any time, subject to beneficial ownership limitations contained therein, in each case without

restriction or additional stockholder approval (the "**Stockholder Approval**"). The Annual Meeting shall occur no later than June 30, 2026. To the extent the Stockholder Approval is not obtained at or before the Annual Meeting, the Company shall cause an additional meeting (special or general) of the Company's stockholders to be held every 90 days thereafter for the purpose of obtaining the Stockholder Approval until the Stockholder Approval is obtained.

5.13 Lock-up. Without the prior written consent of the Company, Purchaser will not, and will not publicly disclose an intention to, during the period commencing on the date hereof and ending 180 days after the Closing Date (the "**Restricted Period**"), (1) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock beneficially owned (as such term is used in Rule 13d-3 of the Exchange Act), by Purchaser or any other securities so owned convertible into or exercisable or exchangeable for Common Stock including the Securities (collectively, the "**Restricted Securities**") or (2) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the Common Stock or the Securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise. The undersigned acknowledges and agrees that the foregoing precludes the undersigned from engaging in any hedging or other transactions designed or intended, or which could reasonably be expected to lead to or result in, a sale or disposition of any shares of Common Stock, or securities convertible into or exercisable or exchangeable for Common Stock including the Securities, even if any such sale or disposition transaction or transactions would be made or executed by or on behalf of someone other than the Purchaser. Notwithstanding the foregoing, and subject to compliance with applicable securities laws, Purchaser may transfer the Restricted Securities as part of a pro rata distribution to stockholders of the Purchaser that does not involve a disposition for value; provided that prior to any such distribution, the Company receives a signed lock-up agreement from each distributee containing substantially the same restrictions to this Section 5.13.

6. Conditions of Closing.

6.1 Conditions to the Obligation of the Purchaser. The obligations of the Purchaser to consummate the transactions to be consummated at the Closing, and to purchase and pay for the Securities being purchased by it at the Closing pursuant to this Agreement, are subject to the satisfaction or waiver in writing of the following conditions precedent:

(a) Representations and Warranties. The representations and warranties of the Company contained herein shall be true and correct in all material respects, except for those representations and warranties qualified by materiality or Material Adverse Effect, which shall be true and correct in all respects, as of the date of this Agreement and as of the Closing Date, as though made on and as of such date, except to the extent any such representation or warranty expressly speaks as of an earlier date, in which case such representation or warranty shall be true and correct in all material respects as of such earlier date, except for those representations and warranties qualified by materiality or Material Adverse Effect, which shall be true and correct in all respects as of such earlier date and consummation of the Closing shall constitute a reaffirmation by the Company of each of the representations, warranties, covenants and agreements of Purchaser contained in this Agreement as of the Closing Date.

(b) Performance. The Company shall have performed in all material respects the obligations and conditions herein required to be performed or observed by the Company on or prior to the Closing Date.

(c) No Injunction. The purchase of and payment for the Securities by the Purchaser shall not be prohibited or enjoined by any law or governmental or court order or regulation and no such prohibition shall have been threatened in writing.

(d) Consents. The Company shall have obtained any and all consents, permits, approvals, registrations and waivers necessary for the consummation of the purchase and sale of the Securities, all of which shall be in full force and effect.

(e) Adverse Changes. Since the date of this Agreement, no event or series of events shall have occurred that has had or would reasonably be expected to have a Material Adverse Effect.

(f) Opinion of Company Counsel. The Company shall have delivered to the Purchaser the opinion of Wilson Sonsini Goodrich & Rosati, P.C. ("**WSGR**"), dated as of the Closing Date, in customary form and substance to be reasonably agreed upon with the Purchaser and addressing such legal matters as the Purchaser and the Company reasonably agree.

(g) Compliance Certificate. An authorized officer of the Company shall have delivered to the Purchaser at the Closing Date a certificate certifying that the conditions specified in Sections 6.1(a) (Representations and Warranties), 6.1(b) (Performance), 6.1(c) (No Injunction), 6.1(e) (Adverse Changes) and 6.1(k) (Listing Requirements) of this Agreement have been fulfilled.

(h) Secretary's Certificate. The Secretary of the Company shall have delivered to the Purchaser at the Closing Date a certificate certifying (i) the Amended and Restated Certificate of Incorporation, (ii) the Amended and Restated Bylaws and (iii) resolutions of the Company's Board of Directors (or an authorized committee thereof) approving this Agreement, the other Transaction Agreements, the transactions contemplated by this Agreement and the issuance of the Securities and the Pre-Funded Warrant Shares.

(i) License Agreement. The License Agreement shall have been executed by the parties thereto, have come into force and remain effective.

(j) Registration Rights Agreement. The Company shall have executed and delivered the Registration Rights Agreement in the form attached hereto as Exhibit B (the "**Registration Rights Agreement**") to the Purchaser.

(k) Listing Requirements. No stop order or suspension of trading shall have been imposed by Nasdaq, the SEC or any other governmental or regulatory body with respect to public trading in the Common Stock. The Common Stock shall be listed on a National Exchange and shall not have been suspended, as of the Closing Date, by the SEC or the National Exchange from trading thereon nor shall suspension by the SEC or the National Exchange have been threatened, as of the Closing Date, in writing by the SEC or the National Exchange; and the Company shall have filed with Nasdaq a Notification Form: Listing of Additional Shares for the

listing of the Pre-Funded Warrant Shares and Nasdaq shall have raised no objection to such notice and the transactions contemplated hereby.

(l) No Injunction. No judgment, writ, order, injunction, award or decree of or by any court, or judge, justice or magistrate, including any bankruptcy court or judge, or any order of or by any Governmental Entity, shall have been issued, and no action or proceeding shall have been instituted by any Governmental Entity, enjoining or preventing the consummation of the transactions contemplated hereby or in the other Transaction Agreements.

6.2 Conditions to the Obligation of the Company. The obligation of the Company to consummate the transactions to be consummated at the Closing, and to issue and sell to the Purchaser the Securities to be purchased by it at the Closing pursuant to this Agreement, is subject to the satisfaction or waiver in writing of the following conditions precedent:

(a) Representations and Warranties. The representations and warranties of the Purchaser in Section 4 hereto shall be true and correct in all material respects, except for those representation and warranties qualified by materiality or material adverse effect, which shall be true and correct in all respects, on and as of the Closing Date, with the same force and effect as though made on and as of the Closing Date and consummation of the Closing shall constitute a reaffirmation by the Purchaser of each of the representations, warranties, covenants and agreements of the Purchaser contained in this Agreement as of the Closing Date.

(b) Performance. The Purchaser shall have performed or complied with in all material respects all obligations and conditions herein required to be performed or observed by the Purchaser on or prior to the Closing Date.

(c) Injunction. The purchase of and payment for the Securities by the Purchaser shall not be prohibited or enjoined by any law or governmental or court order or regulation.

(d) License Agreement. The License Agreement shall have been executed by the parties thereto, have come into force and remain effective.

(e) Registration Rights Agreement. The Purchaser shall have executed and delivered the Registration Rights Agreement to the Company in the form attached as Exhibit B.

7. Termination.

7.1 Termination. The obligations of the Company, on the one hand, and the Purchaser, on the other hand, to effect the Closing shall terminate as follows:

(i) Upon the mutual written consent of the Company and the Purchaser;

(ii) By either party if the License Agreement is terminated in accordance with its terms;

(iii) By the Company if any of the conditions set forth in Section 6.2 shall have become incapable of fulfillment, and shall not have been waived by the Company;

(iv) By the Purchaser if any of the conditions set forth in Section 6.1 shall have become incapable of fulfillment, and shall not have been waived by the Purchaser; or

(v) By either the Company or the Purchaser if the Closing has not occurred on or prior to the fifth Business Day following the date of this Agreement;

provided, however, that, in the case of clauses (iii) and (iv) above, the party seeking to terminate its obligation to effect the Closing shall not then be in breach of any of its representations, warranties, covenants or agreements contained in the Transaction Agreements if such breach has resulted in the circumstances giving rise to such party's seeking to terminate its obligation to effect the Closing.

8. Miscellaneous Provisions.

8.1 Public Statements or Releases. Except as set forth in Section 5.3, neither the Company nor the Purchaser shall make any public announcement with respect to the existence or terms of this Agreement or the transactions provided for herein without the prior consent of the other party (which consent shall not be unreasonably withheld) other than filings pursuant to Section 13 and/or Section 16 of the Exchange Act, which, for avoidance of doubt, shall not require the Company's consent. Notwithstanding the foregoing, and subject to compliance with Section 5.3, nothing in this Section 8.1 shall prevent any party from making any public announcement it considers necessary in order to satisfy its obligations under the law, including applicable securities laws, or under the rules of any national securities exchange or securities market, in which case the Company shall allow the Purchaser reasonable time to comment on such release or announcement in advance of such issuance, and the Company will consider in good faith the Purchaser's comments. The Company shall not include the name of the Purchaser in any press release or public announcement (which, for the avoidance of doubt, shall not include any filing with the SEC if so required by the applicable rules of the SEC) without the prior written consent of the Purchaser, except as otherwise required by law or the applicable rules or regulations of any securities exchange or securities market, in which case the Company shall allow the Purchaser, to the extent reasonably practicable in the circumstances, reasonable time to comment on such release or announcement in advance of such issuance. Notwithstanding anything to the contrary in this Section 8.1, the Purchaser's review shall not be required for Company disclosures that are substantially consistent with prior Company disclosures.

8.2 Notices. Any notices or other communications required or permitted to be given hereunder shall be in writing and shall be deemed to be given (a) when delivered if personally delivered to the party for whom it is intended, (b) when delivered, if sent by electronic mail during normal business hours of the recipient, and if not sent during normal business hours, then on the recipient's next Business Day, (c) three (3) days after having been sent by certified or registered mail, return-receipt requested and postage prepaid, or (d) one (1) Business Day after deposit with a nationally recognized overnight courier, freight prepaid, specifying next business day delivery, with written verification of receipt:

(a) If to the Company, addressed as follows:

Athira Pharma, Inc.
18706 North Creek Parkway, Suite 104,
Bothell, Washington 98011
Attention: Legal
Email:

with a copy (which shall not constitute notice):

Wilson Sonsini Goodrich & Rosati, P.C.
701 5th Ave #5100,
Seattle, WA 98104
Attention: Michael Nordtvedt & Bryan D. King
Email:

(b) If to the Purchaser, at its address or e-mail address set forth on the signature page hereto, or such address as subsequently modified by written notice given in accordance with this Section 8.2.

Any Person may change the address to which notices and communications to it are to be addressed by notification as provided for herein.

8.3 Consent to Electronic Notice. The Purchaser consents to the delivery of any stockholder notice pursuant to Section 232 of the Delaware General Corporation Law, as amended or superseded from time to time (the "DGCL"), at the e-mail address set forth below the Purchaser's name on the pertinent signature page, as updated from time to time by notice to the Company. To the extent that any notice given by means of electronic mail is returned or undeliverable for any reason, the foregoing consent shall be deemed to have been revoked until a new or corrected e-mail address has been provided, and such attempted electronic notice shall be ineffective and deemed to not have been given. Each party agrees to promptly notify the other parties of any change in its e-mail address, and that failure to do so shall not affect the foregoing.

8.4 Severability. If any part or provision of this Agreement is held unenforceable or in conflict with the applicable laws or regulations of any jurisdiction, the invalid or unenforceable part or provisions shall be replaced with a provision which accomplishes, to the extent possible, the original business purpose of such part or provision in a valid and enforceable manner, and the remainder of this Agreement shall remain binding upon the parties hereto.

8.5 Governing Law; Submission to Jurisdiction; Venue; Waiver of Trial by Jury.

(a) This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York without regard to choice of laws or conflicts of laws provisions thereof that would require the application of the laws of any other jurisdiction, except to the extent that mandatory principles of Delaware law may apply.

(b) The Company and the Purchaser hereby irrevocably and unconditionally:

(i) submit for each party and each party's respective property in any legal action or proceeding relating solely to this Agreement or the transactions contemplated hereby, to the general jurisdiction of the any state court or United States Federal court sitting in the Borough of Manhattan, City of New York in the State of New York;

(ii) consent that any such action or proceeding may be brought in such courts, and waive any objection that each party may now or hereafter have to the venue of any such action or proceeding in any such court or that such action or proceeding was brought in an inconvenient court and agree not to plead or claim the same to the extent permitted by applicable law;

(iii) agree that service of process in any such action or proceeding may be effected by mailing a copy thereof by registered or certified mail (or any substantially similar form of mail), postage prepaid, to the party, as the case may be, at its address set forth in Section 8.2 or at such other address of which the other party shall have been notified pursuant thereto;

(iv) agree that nothing herein shall affect the right to effect service of process in any other manner permitted by law or shall limit the right to sue in any other jurisdiction for recognition and enforcement of any judgment or if jurisdiction in the courts referenced in the foregoing clause (i) are not available despite the intentions of the parties hereto;

(v) agree that final judgment in any such suit, action or proceeding brought in such a court may be enforced in the courts of any jurisdiction to which such party is subject by a suit upon such judgment, provided that service of process is effected upon such party in the manner specified herein or as otherwise permitted by law;

(vi) agree that to the extent that such party has or hereafter may acquire any immunity from jurisdiction of any court or from any legal process with respect to itself or its property, such party hereby irrevocably waives such immunity in respect of its obligations under this Agreement, to the extent permitted by law; and

(vii) irrevocably and unconditionally waive trial by jury in any legal action or proceeding in relation to this Agreement.

8.6 Waiver. No waiver of any term, provision or condition of this Agreement, whether by conduct or otherwise, in any one or more instances, shall be deemed to be, or be construed as, a further or continuing waiver of any such term, provision or condition or as a waiver of any other term, provision or condition of this Agreement.

8.7 Expenses. Except as expressly set forth in the Transaction Agreements to the contrary, each party shall pay its own out-of-pocket fees and expenses, including the fees and expenses of attorneys, accountants and consultants employed by such party, incurred in connection with the proposed investment in the Securities and the consummation of the transactions contemplated thereby; provided, however, that the Company shall pay all Transfer Agent fees (including, without limitation, any fees required for same-day processing of any instruction letter

delivered by the Company), stamp taxes and other taxes (other than income taxes) and duties levied in connection with the delivery of any Securities to the Purchaser.

8.8 Assignment. Except for an assignment by the Company in the case of a Fundamental Transaction as contemplated in the Pre-Funded Warrant, neither of the parties may assign its rights or obligations under this Agreement or designate another person (i) to perform all or part of its obligations under this Agreement or (ii) to have all or part of its rights and benefits under this Agreement, in each case without the prior written consent of (x) the Company, in the case of the Purchaser and (y) the Purchaser, in the case of the Company provided that Purchaser may, without the prior consent of the Company, assign its rights to purchase the Securities hereunder to any of its Affiliates or to any other investment funds or accounts managed or advised by the investment manager who acts on behalf of the Purchaser (provided each such assignee agrees to be bound by the terms of this Agreement and makes the same representations and warranties set forth in Section 4). In the event of any assignment in accordance with the terms of this Agreement, the assignee shall specifically assume and be bound by the provisions of this Agreement by executing a writing agreeing to be bound by and subject to the provisions of this Agreement and shall deliver an executed counterpart signature page to this Agreement and, notwithstanding such assumption or agreement to be bound hereby by an assignee, no such assignment shall relieve any party assigning any interest hereunder from its obligations or liability pursuant to this Agreement.

8.9 Confidential Information.

(a) The Purchaser covenants that until such time as the transactions contemplated by this Agreement and any material non-public information provided to the Purchaser are publicly disclosed by the Company, the Purchaser will maintain the confidentiality of all disclosures made to it in connection with this transaction (including the existence and terms of this transaction), other than to the Purchaser's outside attorney, accountant, auditor or investment advisor only to the extent necessary to permit evaluation of the investment, and the performance of the necessary or required tax, accounting, financial, legal, or administrative tasks and services and other than as may be required by law.

(b) The Company may request from the Purchaser such reasonable and customary additional information as the Company may deem necessary to evaluate the eligibility of the Purchaser to acquire the Securities, and the Purchaser shall promptly provide such information as may reasonably be requested to the extent readily available; provided, that the Company agrees to keep any such information provided by the Purchaser confidential, except (i) as required by the federal securities laws, rules or regulations and (ii) to the extent such disclosure is required by other laws, rules or regulations, at the request of the staff of the SEC or regulatory agency or under the regulations of Nasdaq, in which case the Company will use commercially reasonable efforts to notify the Purchaser and provide the Purchaser with opportunity to review any disclosure that is not a restatement of disclosure previously made in compliance with the requirements of this Agreement. The Purchaser acknowledges that the Company may file a copy of this Agreement and the Registration Rights Agreement with the SEC as exhibit to a periodic report or a registration statement of the Company.

8.10 Third Parties. Nothing in this Agreement, express or implied, is intended to confer on any Person other than the parties to this Agreement any rights, remedies, claims, benefits, obligations or liabilities under or by reason of this Agreement, and no Person that is not a party to this Agreement (including, without limitation, any partner, member, shareholder, director, officer, employee or other beneficial owner of any party to this Agreement, in its own capacity as such or in bringing a derivative action on behalf of a party to this Agreement) shall have any standing as a third party beneficiary with respect to this Agreement or the transactions contemplated hereby. Notwithstanding the foregoing, the Indemnified Persons are intended third-party beneficiaries of Section 5.9.

8.11 Headings. The titles, subtitles and headings in this Agreement are for convenience of reference and shall not form part of, or affect the interpretation of, this Agreement.

8.12 Counterparts. This Agreement may be executed in two or more identical counterparts, all of which shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party; provided that a facsimile or pdf signature including any electronic signatures complying with the U.S. federal ESIGN Act of 2000, e.g., www.docusign.com shall be considered due execution and shall be binding upon the signatory thereto with the same force and effect as if the signature were an original, not a facsimile or pdf (or other electronic reproduction of a) signature.

8.13 Entire Agreement; Amendments. This Agreement and the other Transaction Agreements and the License Agreement (including all schedules and exhibits hereto and thereto) constitute the entire agreement between the parties hereto respecting the subject matter of this Agreement and supersedes all prior agreements, negotiations, understandings, representations and statements respecting the subject matter of this Agreement, whether written or oral. No amendment, modification, alteration or change in any of the terms of this Agreement shall be valid or binding upon the parties hereto unless made in writing and duly executed by the Company and the Purchaser. The Company, on the one hand, and the Purchaser, on the other hand, may by an instrument signed in writing by such parties waive the performance, compliance or satisfaction by the Purchaser or the Company, respectively, with any term or provision of this Agreement or any condition hereto to be performed, complied with or satisfied by the Purchaser or the Company, respectively.

8.14 Survival. The covenants, representations and warranties made by each party hereto contained in this Agreement shall survive the Closing and the delivery of the Securities in accordance with their respective terms. The Purchaser shall be responsible only for its own representations, warranties, agreements and covenants hereunder.

8.15 Contract Interpretation. This Agreement is the joint product of the Purchaser and the Company and each provision of this Agreement has been subject to the mutual consultation, negotiation and agreement of such parties and shall not be construed for or against any party hereto.

8.16 Arm's Length Negotiations. For the avoidance of doubt, the parties acknowledge and confirm that the terms and conditions of the Securities were determined as a result of arm's-length negotiations.

8.17 Waiver of Conflicts. Each party to this Agreement acknowledges that Wilson Sonsini Goodrich & Rosati, P.C., counsel for the Company, may have in the past performed, and may continue to or in the future perform, legal services for certain of the Purchaser in matters that are similar, but not substantially related, to the transactions described in this Agreement, including the representation of the Purchaser in financings and other matters. Accordingly, each party to this Agreement hereby acknowledges that (a) such party has had an opportunity to ask for information relevant to this disclosure, and (b) Wilson Sonsini Goodrich & Rosati, P.C. represents only the Company with respect to the Agreement and the transactions contemplated hereby. The Company gives its informed consent to Wilson Sonsini Goodrich & Rosati, P.C.'s existing and/or future representation of the Purchaser in matters not substantially related to this Agreement, and the Purchaser hereby gives its informed consent to Wilson Sonsini Goodrich & Rosati, P.C.'s representation of the Company in connection with this Agreement and the transactions contemplated hereby.

[Remainder of Page Intentionally Left Blank.]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

COMPANY:

ATHIRA PHARMA, INC.

By: /s/ Mark Litton
Name: Mark Litton
Title: CEO

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

PURCHASER:

SERMONIX PHARMACEUTICALS, INC.

By: /s/ David Portman

Name: David Portman

Title: CEO

Address:

Email:

EXHIBIT A

FORM OF PRE-FUNDED WARRANT

EXHIBIT B

REGISTRATION RIGHTS AGREEMENT

Exhibit 99.1

Athira Pharma Announces Exclusive License to Lasofoxifene Phase 3 Development Program for Metastatic Breast Cancer Candidate and a Financing for up to $236 Million

Phase 3 Development Program of Novel Selective Estrogen Receptor Modulator (SERM) Represents Potential Multi-Billion Dollar Opportunity as Treatment Option for Patients with ESR1-Mutations

Financing Co-Led by Commodore Capital, Perceptive Advisors and TCGX Supports Development of Lasofoxifene through Phase 3 Clinical Topline Data Readout and Regulatory Milestones

Conference Call Today at 8:30 am Eastern Time

BOTHELL, Wash., December 18, 2025 – Athira Pharma, Inc. (NASDAQ: ATHA), a clinical-stage biopharmaceutical company dedicated to the development of novel therapeutics for high unmet medical needs, today announced that it has entered into an agreement to acquire the rights for the development and commercialization of lasofoxifene, a promising clinical asset in a potentially registrational Phase 3 trial. The ongoing Phase 3 ELAINE-3 clinical trial (NCT05696626) is greater than 50% enrolled with data expected in mid-2027.

Athira has acquired an exclusive global license (excluding Asia and certain countries in the Middle East) from Sermonix Pharmaceuticals, Inc. for rights to develop and commercialize lasofoxifene, a selective estrogen receptor modulator (SERM) for the potential treatment of metastatic breast cancer.

In conjunction with this transaction, Athira also announced an upfront financing of $90 million in private placement financing of common stock and warrants, with the warrants providing, if exercised, up to an additional $146 million to support development of the new program through key clinical and regulatory milestones. The financing was co-led by Commodore Capital, Perceptive Advisors, and TCGX, with participation from ADAR1, Blackstone Multi-Asset Investing, Kalehua Capital, Ligand Pharmaceuticals, New Enterprise Associates (NEA), Spruce Street Capital, and 9vc. The Company anticipates the upfront financing will support lasofoxifene development through its topline data readout and key regulatory milestones, with sufficient capital for runway into 2028.

“Today marks a defining moment for our company. This agreement for the rights to the Phase 3 lasofoxifene program for metastatic breast cancer is a significant step in building a pipeline with the potential to change lives and create enduring value,” said Mark Litton, Ph.D., President and Chief Executive Officer of Athira. “This program provides a near-term opportunity to generate pivotal data necessary for the approval of lasofoxifene and to establish it as the new standard of care to treat ESR1-mutant breast cancer in patients who have progressed on aromatase inhibitors and prior CDK4/6 inhibitors. Supported by compelling Phase 2 clinical data and backed by blue-chip investors, we have a clear development strategy and are committed to advancing therapies that matter to patients while delivering value for our shareholders.”

“In the ELAINE-2 clinical trial, lasofoxifene demonstrated the potential to provide meaningful combination efficacy with 13 months of progression-free survival in heavily pre-treated second- and third-line ESR1-mutated metastatic breast cancer patients. We believe lasofoxifene has the potential to be the preferred endocrine therapy for metastatic breast cancer patients given its tissue-selective SERM profile may allow for the preservation of estrogen function in non-breast tissue, which provides tolerability and potential

bone protection and quality of life benefits," noted David Portman, M.D., Chief Executive Officer of Sermonix. "With the Phase 3 trial now more than 50% enrolled, we look forward to delivering pivotal data in mid-2027 and advancing toward a regulatory submission."

"We are excited to announce this financing to help accelerate the development of lasofoxifene," said Cariad Chester, Managing Partner at TCGX. "With its differentiated profile, lasofoxifene has the potential to become the endocrine therapy of choice for the approximately 40% of breast cancer patients who develop ESR1 mutations and have progressed on aromatase inhibitors and prior CDK4/6 inhibitors. The accomplished team at Athira is committed to efficiently executing the ongoing pivotal trial of lasofoxifene, and we believe, lasofoxifene, may become the treatment of choice for oncologists and patients who are battling this challenging disease."

"The scientific and clinical data supporting lasofoxifene are compelling, and we are confident in Athira's leadership to drive the Company's next chapter with clarity, urgency, and excellence. We're proud to support this evolution and excited by the opportunity to deliver meaningful impact for patients and shareholders alike," stated Joseph Edelman, Founder and CEO of Perceptive Advisors.

Details of the Transaction

Sermonix License Agreement

In connection with the entry into the Sermonix license agreement, Athira will issue to Sermonix, as partial consideration, a pre-funded warrant to purchase approximately 5.5 million shares of common stock, with an exercise price of $0.001 per share. Athira will also be obligated to make certain payments to Sermonix of up to $100.0 million if Athira achieves certain commercialization or annual net sales milestones with respect to licensed products with respect to lasofoxifene, including royalty payments on the net sales of any licensed products in any licensed territory, ranging from sub-single digit to low-single digit royalties depending on pre-specified net sales.

Financing

On December 18, 2025, Athira entered into a securities purchase agreement with certain investors, pursuant to which Athira has agreed to issue and sell approximately 5.4 million shares of common stock, pre-funded warrants to purchase approximately 8.8 million shares of common stock and accompanying warrants to purchase approximately 23.0 million shares of common stock and/or pre-funded warrants (representing 162.5% of the aggregate shares and shares underlying the pre-funded warrants), with an exercise price of $6.35 per share (the "Series A common warrants"), and accompanying warrants to purchase approximately 21.3 million shares of common stock and/or pre-funded warrants (representing 150% of the aggregate shares and shares underlying the pre-funded warrants), with an exercise price of $7.62 per share (the "Series B common warrants") (the "Private Placement"). The common stock, including the accompanying Series A common warrants and Series B common warrants, will be sold at a price of $6.35 per share, and the pre-funded warrants, including the accompanying Series A common warrants and Series B common warrants, will be sold at the price per underlying pre-funded warrant share of the common stock less the exercise price of $0.001 per share.

The Private Placement is expected to close on or about December 23, 2025, subject to the satisfaction of customary closing conditions. Additional details regarding the Private Placement and the other transactions discussed herein will be included in a Current Report on Form 8-K to be filed by Athira with the Securities and Exchange Commission ("SEC").

Athira intends to use the net proceeds from the Private Placement to fund the development of lasofoxifene for the potential treatment of treatment-resistant metastatic breast cancer, and other clinical assets in its pipeline, such as ATH-1105 as a treatment for ALS, and for working capital and general corporate purposes.

Cantor is acting as exclusive financial advisor to Athira in connection with the license transaction and sole placement agent in connection with the Private Placement.

The securities being sold in the private placements discussed herein have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), or state securities laws and may not be offered or sold in the United States absent registration with the SEC or an applicable exemption from applicable registration requirements. Athira has agreed to file registration statements with the SEC covering the resale of the shares of common stock issuable in connection with the private placements and upon exercise of the pre-funded warrants and warrants.

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

Conference Call Details
Athira management will host a conference call and webcast today, December 18, 2025, at 8:30 AM Eastern Time to discuss these transactions and answer questions. A live webcast of the conference call can be accessed at https://edge.media-server.com/mmc/p/zwdrpi3i and in the "Events & Presentations" section of Athira's website at www.athira.com. A recording of the webcast will be archived on the company's website for approximately 90 days.

About Metastatic Breast Cancer
Metastatic breast cancer (MBC) occurs when cancer spreads from the breast to other parts of the body—such as bones, lungs, liver, or brain. While approximately 66% of breast cancers are diagnosed at a localized stage, a notable proportion either present as metastatic at diagnosis or progress to that stage over time.
In the United States, there are approximately 4.65 million new cases of female breast cancer, with approximately 260,000 (5.6%) diagnosed as distant (metastatic) stage at initial diagnosis. The metastatic breast cancer treatment market represents a sizable and rapidly expanding global opportunity with a global market of **$**17.1 billion in 2021, expected to expand to $41.7 billion by 2030, with a CAGR of around 10.4%.
These projections reflect a market rich with innovation—from chemotherapy and hormone therapies to biologics, targeted agents and emerging personalized medicine. Growth is driven by the persistent incidence of metastatic disease, regulatory and clinical advances and evolving treatment landscapes.

About Lasofoxifene
Lasofoxifene is a novel, nonsteroidal selective estrogen receptor modulator (SERM) with a unique binding profile, designed to confer potent activity against both wild-type and mutant estrogen receptors, including the clinically significant ESR1 mutations commonly associated with resistance to endocrine therapy in

metastatic breast cancer. Two Phase 2 studies—ELAINE-1 and ELAINE-2—have demonstrated its potential to address a critical unmet need in this patient population.

ELAINE-1, a randomized trial comparing lasofoxifene to fulvestrant, showed improved outcomes for lasofoxifene, including longer median progression-free survival (5.6 vs. 3.7 months), higher objective response rates (13.3% vs. 2.9%), and a durable complete response lasting more than 2.5 years. Patients also reported quality-of-life benefits and the treatment was well tolerated.

ELAINE-2, an open-label study evaluating lasofoxifene in combination with abemaciclib, demonstrated clinical benefits in heavily pretreated patients, with a median progression-free survival of approximately 13 months, an objective response rate of 56%, and a clinical benefit rate of 65.5%. The combination was generally well tolerated, with most adverse events being low grade.

Lasofoxifene is being advanced in a Phase 3 clinical trial as a targeted therapy for estrogen receptor-positive (ER+), HER2-negative, ESR1-mutated metastatic breast cancer, a population with limited treatment options following progression on aromatase inhibitors and CDK4/6 inhibitors. The ongoing ELAINE-3 trial (NCT05696626) is evaluating lasofoxifene in combination with the CDK4/6 inhibitor, abemaciclib, and is aiming to establish a new standard of care for this genetically defined patient group.

About ATH-1105
ATH-1105 is Athira's novel, orally available, brain-penetrant, next-generation small molecule drug candidate designed to positively modulate the neurotrophic HGF system for potential treatment of neurodegenerative diseases, including amyotrophic lateral sclerosis (ALS), Alzheimer's disease, and Parkinson's disease. ATH-1105 is currently in clinical development for the potential treatment of ALS.

In May 2025, Athira presented data from the first-in-human Phase 1 clinical trial (NCT06432647) of ATH-1105 at the 4th Annual ALS Drug Development Summit highlighting ATH-1105 has demonstrated consistent and robust beneficial effects in preclinical models of ALS, showed a favorable safety profile and was well tolerated in both single and multiple ascending dose studies in healthy volunteers. In addition, ATH-1105 showed dose proportional pharmacokinetics and central nervous system penetration in this first-in-human study.

The first-in-human Phase 1 (NCT06432647) double-blind, placebo-controlled clinical trial enrolled 80 healthy volunteers to evaluate single and multiple oral ascending doses of ATH-1105. Athira plans to initiate a Phase 2 clinical trial of ATH-1105 in ALS patients in early 2026.

About Athira

Athira Pharma, Inc., headquartered in the Seattle, Washington area, is a clinical-stage biopharmaceutical company dedicated to the development of novel therapeutics for high unmet medical needs, including amyotrophic lateral sclerosis (ALS) and treatment-resistant metastatic breast cancer, with the goal of improving patients' lives. Our lead drug candidates, lasofoxifene and ATH-1105, are novel, small molecule therapies with the potential to address devastating diseases where current treatment options are limited or ineffective. With a strong commitment to scientific excellence and patient-centered innovation, we are dedicated to developing meaningful new therapies for those who need them most.

For more information, visit www.athira.com. You can also follow Athira on Facebook, LinkedIn, X (formerly known as Twitter) and Instagram.

Forward-Looking Statements
This communication contains “forward-looking statements” within the meaning of Section 27A of the Securities Act, Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. These forward-looking statements are not based on historical fact and include statements regarding: the beneficial characteristics, safety and efficacy of Athira’s drug candidates; the anticipated consummation of the transactions described herein; Athira’s ability to obtain funding for its operations, including funding necessary to develop and commercialize its drug candidates and funding necessary for the payment of future milestone and other payments that may be earned by its collaboration partners; the success, cost, and timing of Athira’s development activities, nonclinical studies and clinical trials; the potential of any subsequent clinical trials to show the beneficial characteristics, safety and efficacy of ATH-1105; the potential of Athira to complete the Phase 3 ELAINE-3 clinical trial for lasofoxifene and any subsequent clinical trials to show the clinical benefits of lasofoxifene; the potential for the Phase 3 ELAINE-3 clinical trial to be pivotal; the potential learnings from preclinical studies and other nonclinical data and their ability to inform and improve future clinical development plans; the rate and degree of market acceptance of Athira’s drug candidates; the size and growth potential of the markets for Athira’s drug candidates, if approved for commercial use, and Athira’s ability to serve those markets; anticipated milestone timelines, such as the timing of data releases, and Athira’s ability to meet such timelines; Athira’s ability to obtain and maintain orphan drug designations for any product candidates for which it may seek such designation; the potential for lasofoxifene to be a new standard of care in the genetically defined patient group; Athira’s ability to obtain and maintain regulatory approval of its drug candidates in the United States and other jurisdictions and the timing thereof, and any related restrictions, limitations or warnings in the label of any approved drug candidate; and Athira’s expected rebranding efforts. Forward-looking statements generally include statements that are predictive in nature and depend upon or refer to future events or conditions, and include words such as “may,” “will,” “should,” “on track,” “would,” “expect,” “plan,” “believe,” “intend,” “pursue,” “continue,” “suggest,” “potential,” “target” and similar expressions. Any forward-looking statements are based on management’s current expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. These risks and uncertainties include, but are not limited to, the risk that the conditions to the closing of any or all of the transactions are not satisfied; uncertainties as to the timing of the consummation of the proposed transactions and the ability of each of the parties thereto to consummate them; unexpected costs, charges, or expenses resulting from the transactions; potential adverse reactions or changes to business relationships resulting from the announcement or completion of any or all of the proposed transactions; risks associated with the possible failure to realize certain anticipated benefits of any or all of the proposed transactions, including with respect to future financial and operating results; the data from preclinical and clinical trials may not support the safety, efficacy and tolerability of Athira’s drug candidates; development of drug candidates may cease or be delayed; regulatory authorities could object to protocols, amendments and other submissions; future potential regulatory milestones for drug candidates, including those related to current and planned clinical studies, may be insufficient to support regulatory submissions or approval; whether Athira’s trials are sufficiently powered to meet the planned endpoints; Athira may not be able to recruit sufficient patients for its clinical trials; the outcome of legal proceedings that may in the future be instituted against Athira, its directors and officers; possible negative interactions of Athira's drug candidates with other treatments; FDA regulatory delays and uncertainty and new policies, including executive orders, changes in the leadership of federal agencies such as the FDA and SEC, staff layoffs, budget cuts to agency programs and research and changes in drug pricing controls; Athira’s assumptions regarding its financial condition and the sufficiency of its cash, cash equivalents and investments to fund its planned operations may be incorrect; adverse conditions in the general domestic and global economic markets, including as a result of tariffs; the impact of competition; the impact of drug candidate development and clinical activities on operating expenses; the impact of new or changing laws

and regulations; as well as the other risks detailed in Athira's filings with the SEC from time to time. These forward-looking statements speak only as of the date hereof and Athira undertakes no obligation to update forward-looking statements. Athira may not actually achieve the plans, intentions or expectations disclosed in its forward-looking statements, and you should not place undue reliance on the forward-looking statements.

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Corporate Presentation

December 2025

Athira PHARMA

Disclaimer

This presentation and any accompanying oral commentary contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements are based on our management's beliefs and assumptions and on information currently available to our management. Forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "could," "expect," "plan," anticipate," "believe," "estimate," "predict," "intend," "potential," "would," "continue," "on track," "ongoing" or the negative of these terms or other comparable terminology. Forward-looking statements include all statements other than statements of historical fact contained in this presentation, including information concerning our future financial performance and financial condition, business plans and objectives, our ability to obtain funding for our operations, including funding necessary to develop and commercialize our drug candidates and funding necessary for the payment of future milestone and other payments that may be earned by our collaboration partners, timing and success of our planned or future development activities, including our ability to consummate definitive agreements for our future development of lasofoxifene, our ability to obtain regulatory approval, the potential therapeutic benefits and economic value of (1) ATH-1105 as a potential treatment for Alzheimer's disease, Parkinson's disease, Parkinson's disease dementia, amyotrophic lateral sclerosis, neuropathic pain and other neurodegenerative diseases and disorders, and (2) lasofoxifene as a potential treatment for breast cancer, the anticipated reporting of data, the potential learnings from preclinical studies and other nonclinical data and clinical studies and their ability to inform and improve future clinical development plans and to demonstrate the safety and efficacy of our drug candidates, our ability to initiate and successfully advance clinical trials for the development of our product candidates, the rate and degree of market acceptance of our drug candidates, anticipated milestone timelines, such as the timing of data releases, and our ability to meet such timelines, our plans related to commercializing our drug candidates, if approved, the success of competing therapies that are or may become available, potential growth opportunities, our plans for any potential financing, strategic transaction, or partnership, including for ATH-1105 and lasofoxifene, competitive position, and industry environment and potential market opportunities. We do not undertake any duty to update these forward-looking statements.

Forward-looking statements are subject to known and unknown risks, uncertainties, assumptions and other factors, including, but not limited to, the risk that the conditions to the closing of any or all of the proposed transactions related to the definitive agreements for our future development of lasofoxifene are not satisfied (the "Transactions"); uncertainties as to the timing of the consummation of the Transactions and the ability of each of the parties thereto to consummate them; unexpected costs, charges or expenses resulting from the Transactions; potential adverse reactions or changes to business relationships resulting from the announcement or completion of the Transactions; risks associated with the possible failure to realize certain anticipated benefits of the Transactions, including with respect to future financial and operating results; the data from preclinical and clinical trials may not support the safety, efficacy and tolerability of our drug candidates; development of drug candidates may cease or be delayed; regulatory authorities could object to protocols, amendments and other submissions; future potential regulatory milestones for drug candidates, including those related to current and planned clinical studies, may be insufficient to support regulatory submissions or approval; whether our trials are sufficiently powered to meet the planned endpoints; we may not be able to recruit sufficient patients for our clinical trials; the outcome of legal proceedings that may in the future be instituted against us, our directors and officers; possible negative interactions of our drug candidates with other treatments; U.S. Food and Drug Administration ("FDA") regulatory delays and uncertainty and new policies, including executive orders, changes in the leadership of federal agencies such as the FDA and U.S. Securities and Exchange Commission ("SEC"), staff layoffs, budget cuts to agency programs and research, and changes in drug pricing controls; our assumptions regarding our financial condition and the sufficiency of our cash, cash equivalents and investments to fund our planned operations may be incorrect; adverse conditions in the general domestic and global economic markets, including as a result of tariffs; the impact of competition; the impact of drug candidate development and clinical activities on operating expenses; the impact of new or changing laws and regulations; as well as the other risks detailed in our filings with the SEC from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. These factors, together with those that are described in greater detail in our filings with the SEC may cause our actual results, performance or achievements to differ materially and adversely from those anticipated or implied by our forward-looking statements.

In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this presentation, and although we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted a thorough inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and readers are cautioned not to unduly rely upon these statements. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

By attending or receiving this presentation you acknowledge that you will be solely responsible for your own assessment of the market and our market position and that you will conduct your own analysis and be solely responsible for forming your own view of the potential future performance of our business. This presentation contains estimates, projections and other information concerning market, industry and other data. We obtained this data from our own internal estimates and research and from academic and industry research, publications, surveys, and studies conducted by third parties, including governmental agencies. These data involve a number of assumptions and limitations, are subject to risks and uncertainties, and are subject to change based on various factors, including those discussed in our filings with the SEC. These and other factors could cause results to differ materially from those expressed in the estimates made by the independent parties and by us. While we believe such information is generally reliable, we have not independently verified any third-party information.

This presentation concerns drug candidates that are under clinical investigation and which have not yet been approved for marketing by the FDA. The drug candidates are currently limited by federal law to investigational use, and no representation is made as to their safety or effectiveness for the purposes for which they are being investigated.

We announce material information to the public through a variety of means, including filings with the SEC, press releases, public conference calls, our website (www.athira.com/), our investor relations website (investors.athira.com), and our news site (investors.athira.com/news-and-events/press-releases). We use these channels, as well as social media, including our X account (@athirapharma) and Facebook page (https://www.facebook.com/athirapharmainc), to communicate with investors and the public about Athira, our products, and other matters. Therefore, we encourage investors, the media, and others interested in Athira to review the information we make public in these locations, as such information could be deemed to be material information.

Building a pipeline with the potential to change lives and create enduring value

Rebranding coming soon!

Management team with significant drug development and approval experience

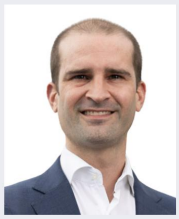
LEADERSHIP

Mark Litton, PhD
President and CEO

Javier San Martin, MD
CMO

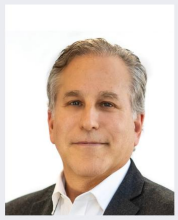
Kevin Church, PhD
CSO

Mark Worthington, JD
General Counsel



Robert Renninger
CFO

Mark Kubik
Head of BD (consultant)



David Portman, MD
CEO, Sermonix*

Select prior companies

arrowhead pharmaceuticals · ultragenyx · Seagen · Lilly · AMGEN · ALDER BIOPHARMACEUTICALS · Lundbeck · CELLTECH · ucb

Approved therapies

prolia (denosumab) · DOJOLVI (triheptanoin) · Vectibix (panitumumab) · PADCEV (enfortumab vedotin-ejfv) · Margenza (margetuximab-cmkb) · FORTÉO (teriparatide (rDNA origin) injection) · CRYSVITA · EVENITY (romosozumab-aqqg) · EVISTA · ADCETRIS (brentuximab vedotin) · Wyepti · Mepsevii · POLIVY (polatuzumab vedotin-piq) · tivdak (tisotumab vedotin-tftv) · ZENAPAX (Daclizumab)

Athira PHARMA

*Expected to provide consulting services to the Company on a post-transaction basis.

Collectively involved in multiple developed products and exits

Expected key inflection points within ~2 years

✓ **Lasofoxifene**

- Phase 3 registrational study ongoing with >50% enrolled

Topline results expected in mid-2027

✓ **ATH-1105**

- Phase 2 POC study in ALS planned to start in 1H2026

Topline results expected 2027

Exciting opportunity in metastatic breast cancer

Late-stage program diversifies pipeline

Large Market Opportunity

- ER+/HER2- disease remains most common breast cancer subtype[1]
- Represents approximately 70% of all breast cancers[1]
- Global metastatic ER+/HER2- market expected to grow from ~$10.9B in 2025 to ~$15.9B by 2029[2]

Differentiated Mechanism of Action

- Designed to overcome resistance that limits current endocrine agents[3,4,5]
- Tissue-selective pharmacology[6]
- Strong combinability profile[7]

Positive Phase 2 data

- Demonstrated compelling signals of clinical activity[7,8]
- Achieved 13 months of progression free survival (PFS)[7]
- Favorable safety profile and well tolerated with potential QoL benefits[6,7,8]

Strategic Fit

- Right company and team to bring this program forward
- Builds on Athira's late-stage development infrastructure
- Leverages deep regulatory and development expertise of Athira leadership

Sources: 1. NCI. *Retrieved from https://seer.cancer.gov/statfacts/html/breast-subtypes.html;* 2. Research and Markets. *Retrieved from: https://www.researchandmarkets.com/reports/6076080/metastatic-hrher2-breast-cancer-global-market;* 3. Venetis et al. *Cancer Treat Rev 2023;* 4. Laine et al. *Breast Cancer Res 2021; 5.* Adreano et al, *Mol Cancer Ther 2020;* 6. Goldfarb et al, *Clinical Breast Cancer 2024;* 7. Damodaran et. al, *Annals of Oncology 2023;* 8. Goetz et. al, *Annals of Oncology 2023*

Lasofoxifene for the potential treatment of metastatic breast cancer

Small molecule selective estrogen receptor modulator (SERM)

Athira PHARMA

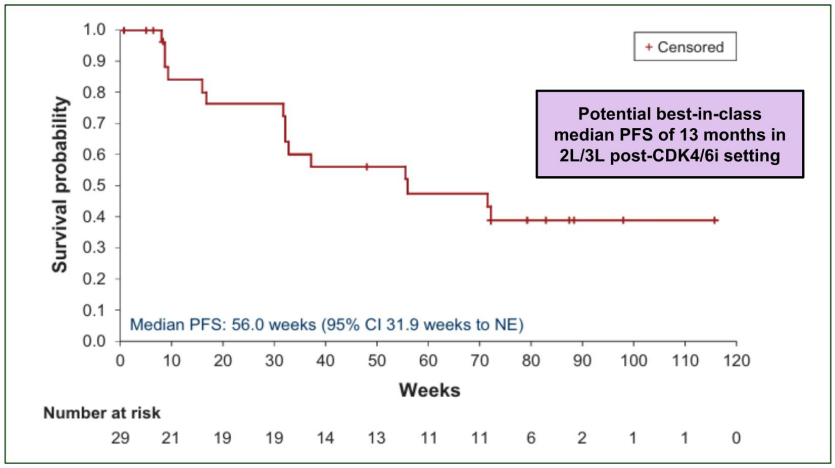
Lasofoxifene: Differentiated SERM for mESR1+ metastatic breast cancer

Designed to overcome resistance, improve QoL, and redefine the standard of care as the endocrine partner of choice

Key Differentiators:

- Potential best-in-class combination efficacy (13 months PFS)[1]
- Recent outcomes (EMBER-3, EvERA) validate the combination approach to 2L+ mBC[2,3]
- Active against WT and mutant ESR1 where SoC can fail
  - Reduced new onset breast cancer by 83% in a large prevention trial[4]
- As the only SERM in the 2L+ mESR1 space, advantages in tolerability, QoL, and additional clinical benefits (bone, urogenital health)[5,6]

Lasofoxifene + Abema combo led to a potential best-in-class median PFS in a heavily pre-treated mESR1 population in Phase 2 ELAINE-2 trial[2]

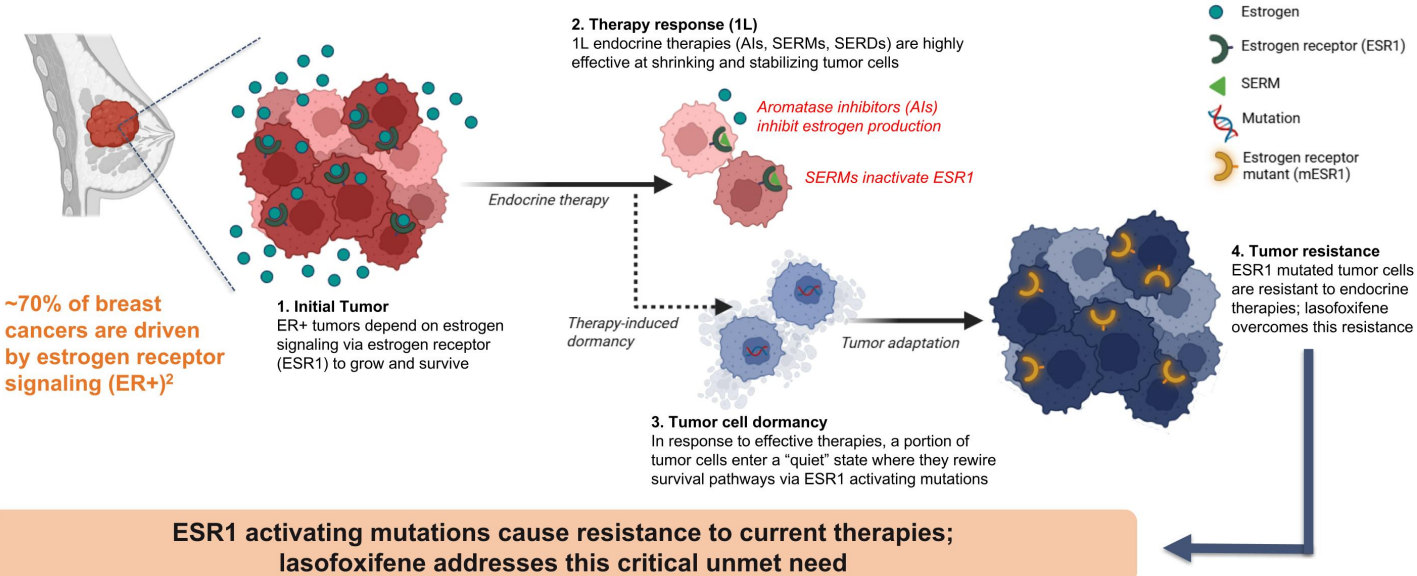


FDA-aligned registrational Phase 3 trial is ongoing

Sources: 1. Damodaran et. al, *Annals of Oncology, 2023;* 2. Jhaveri et al *NEMJ 2024;* 3. Mayer et al, *ESMO 2025;* 4. LaCroix et al, *J Natl Cancer Inst, 2010;* 5. Goldfarb et al, *Clinical Breast Cancer 2024*; 6. Cummings et al. *NEJM 2010;*

Treatment–resistant ER+ breast cancer is a critical unmet need

Global ER+ breast cancer ~1.6M patients[1,2]* → **30% progress to mBC[3] ~480k patients** → **40% acquire ESR1 mutations[4] ~192k patients**



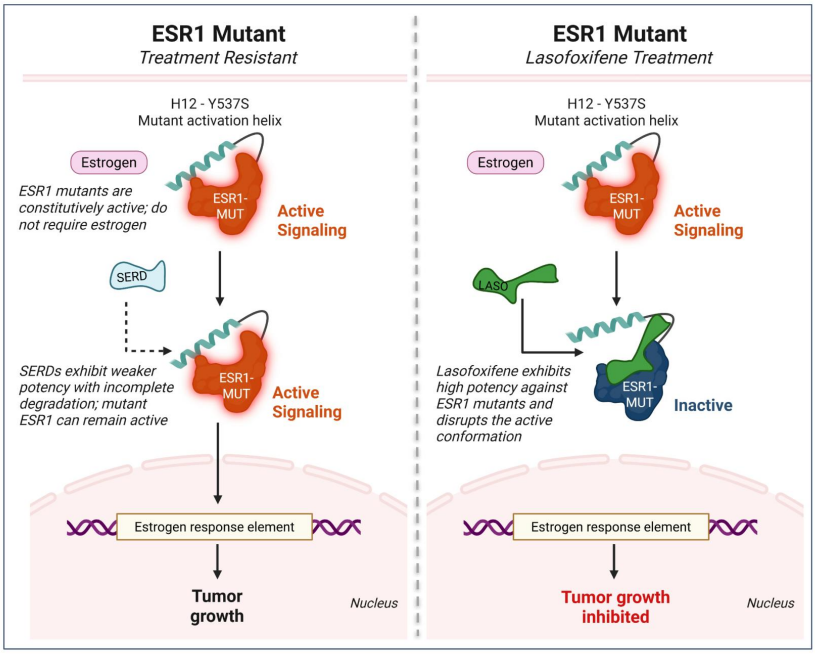
ESR1 activating mutations cause resistance to current therapies; lasofoxifene addresses this critical unmet need

**1.6M estimated using global breast cancer incidence (2.3M; Bray et al) and ER+ prevalence (~70%; NCI)*

Sources: 1. Bray et al. *American Cancer Society 2022*; 2. NCI. *Retrieved from https://seer.cancer.gov/statfacts/html/breast-subtypes.html*; 3. OncLive. *Retrieved from https://www.onclive.com/view/targeted-agents-expand-the-hr-her2-metastatic-breast-cancer-treatment-arena*; 4. Venetis et al. *Cancer Treat Rev 2023*.

Lasofoxifene is a SERM that blocks ESR1 breast cancer signaling even in the presence of mutations

- Active ESR1 signaling drives tumor growth and metastasis in ER+ breast cancer[1]
- Current endocrine therapies (SERDs, SERMs) aim to inhibit ESR1 signaling[2]
- ESR1 mutations cause resistance to endocrine therapies[3]
- Structural features of lasofoxifene inhibit mutant ESR1, overcoming resistance[4,5]



Sources: 1. Miziak et al. *Cancers (Basel) 2023*; 2. Cao et al. *Front Pharmacol 2024*; 3. Venetis et al. *Cancer Treat Rev 2023;* 4. Laine et al. *Breast Cancer Res 2021; 5.* Adreano et al, *Mol Cancer Ther 2020.*

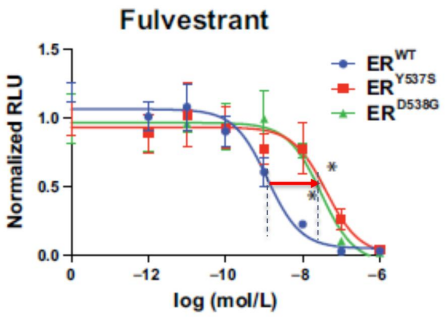
Lasofoxifene retains potency against ESR1 mutations, overcoming a key driver of endocrine resistance

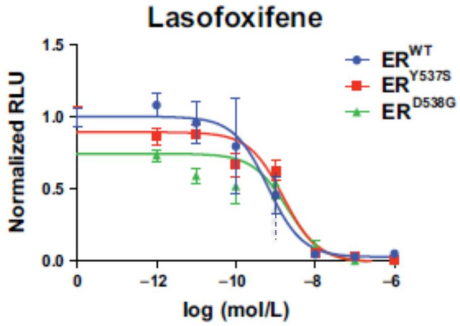
Outperforms SoC SERDs and SERMs across ESR1 mutations, sustaining inhibitory potency, and driving superior anti-tumor activity

Competitors (e.g., fulvestrant) lose potency against mutant ESR1 → resistance

Lasofoxifene maintains similar potency against WT and mutant ESR1 → sustained inhibition

Superior anti-tumor activity in ESR-1 mutant breast cancer models





Adapted from Adreano et al, *Mol Cancer Ther 2020*

Inhibition of proliferation of CAMA-1 ESR1^{Y537S}	
Drug	IC_{50} (nM)↓
Lasofoxifene	1.9
Vepdegestrant	22
Elacestrant	90
4OH-Tamoxifen	14
Fulvestrant	15
Imlunestrant	13
OP-1250	14

Adapted from Parisian et. al, *Mol Cancer Ther, 2023*

Affinity assay: Tested in luciferase reporter lines transfected with WT or mutant versions of ESR1. ESR1 was stimulated with a constant concentration of 17β-estradiol and inhibition of activation was assessed by reduction in luciferase reporter signal.
Cell proliferation assay: ESR1-mutant cells treated with antiestrogen in the presence of 100 pmol/L E2. Proliferation assessed by CyQUANTreagent is normalized to E2-treated vehicle.

Unique lasofoxifene MOA and pre-clinical data establish PoC in ESR1 mutations

- Lasofoxifene reduces tumor growth in *in vivo* animal models and maintains potency in lines with mutated estrogen receptors[1,2]
- Long half-life (6 days), excellent bioavailability, and volume of distribution optimizes receptor antagonism and tumor engagement[2,3]
- No receptor degradation necessary and lack of DDIs potentially allow for favorable dosing, tolerability, and combinability characteristics

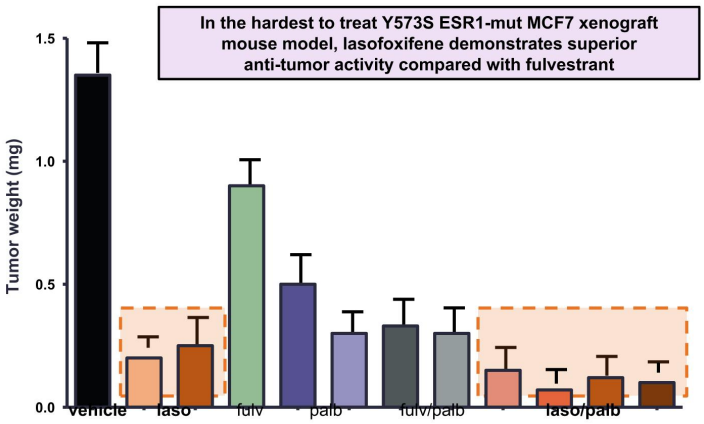


***Figure**: Effect of combination therapies on primary tumor growth in the Y537S ERα mutant model*

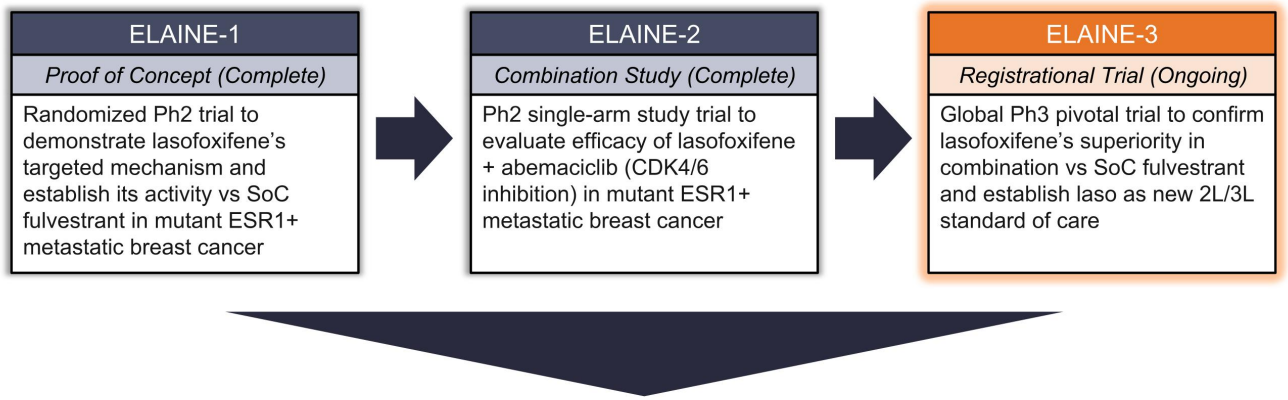
Adapted from Laine et. al, *Breast Cancer Ther, 2021*

Figure: Multiple bars under the same group denote different dose combinations

1. Adreano et al, *Mol Cancer Ther 2020;* 2. *Laine et al Breast Cancer Res 2021*; 3. Gennari, *Expert Opin Pharmacother 2009*

ELAINE Program: Stepwise validation toward a new standard of care

Establishing lasofoxifene as the next-generation endocrine backbone for ER+ metastatic breast cancer



Building on an extensive safety database, a systematic step-wise clinical development plan was designed to establish confidence in lasofoxifene through proof-of-concept (ELAINE-1) and a combination study (ELAINE-2), leading to a registrational Phase 3 trial to confirm superiority and establish lasofoxifene as a new standard of care for ER+ metastatic breast cancer

ELAINE-1: Increased PFS and anti-tumor activity with lasofoxifene compared to SoC fulvestrant in mESR1 population

Lasofoxifene clinical activity vs. fulvestrant (SoC) in ESR1-mutant breast cancer in a PoC Phase 2 study

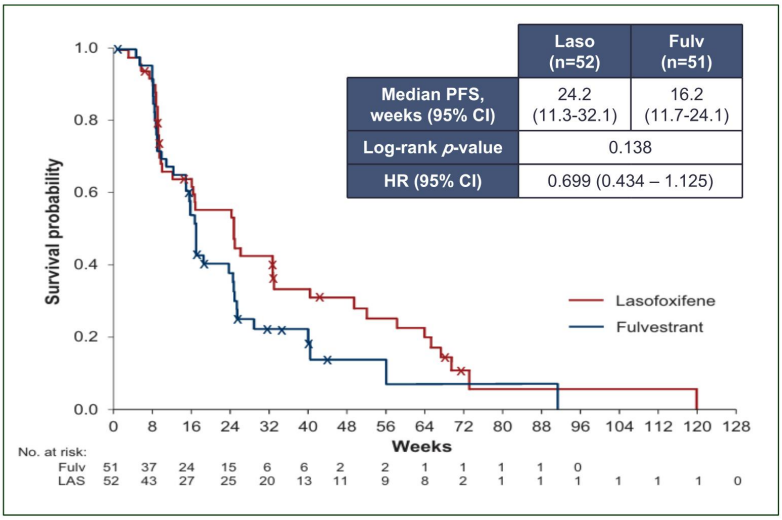
ELAINE-1

Proof of Concept

Clear efficacy advantage: Lasofoxifene delivered longer progression-free survival and higher tumor response rates vs SoC fulvestrant.

Validated targeted approach: ctDNA confirm lasofoxifene's direct activity against ESR1 mutations.

Strong differentiation: Well-tolerated with added quality-of-life benefits, including improvement in urogenital symptoms.



	Laso (n=52)	Fulv (n=51)
Median PFS, weeks (95% CI)	24.2 (11.3-32.1)	16.2 (11.7-24.1)
Log-rank *p*-value	0.138	
HR (95% CI)	0.699 (0.434 – 1.125)	

Figure: *Kaplan-Meier estimates of progression-free survival*

	Laso	Fulv
CBR	37%	22%
ORR	13%	3%

Table: *Tumor response rates for lasofoxifene vs fulvestrant*

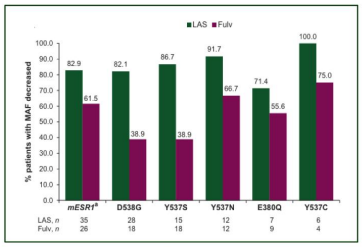


Figure: *Proportions of patients with ESR1 mutant allele fraction decreased with lasofoxifene treatment*

HR, Hazard ratio

Source: Goetz et. al, *Annals of Oncology 2023.*

ELAINE-2: Demonstrated potential best-in-class 13 months PFS with lasofoxifene combination with abemaciclib in a heavily pre-treated mESR1 population

Lasofoxifene combination with CDK4/6i abemaciclib in ESR1-mutant breast cancer, 100% prior CDK4/6i (Phase 2)

ELAINE-2

Combination Study

Potential best-in-class durability: Laso+Abema delivered 13-month (56 weeks) median PFS – among the longest seen in 2L/3L post-CDK4/6i.

Strong efficacy: High tumor response (56% ORR, 66% CBR) with durable disease control

Robust biology: Deep ctDNA and ESR1 clearance correlated with PFS, with benefits extending even to patients with co-mutations.

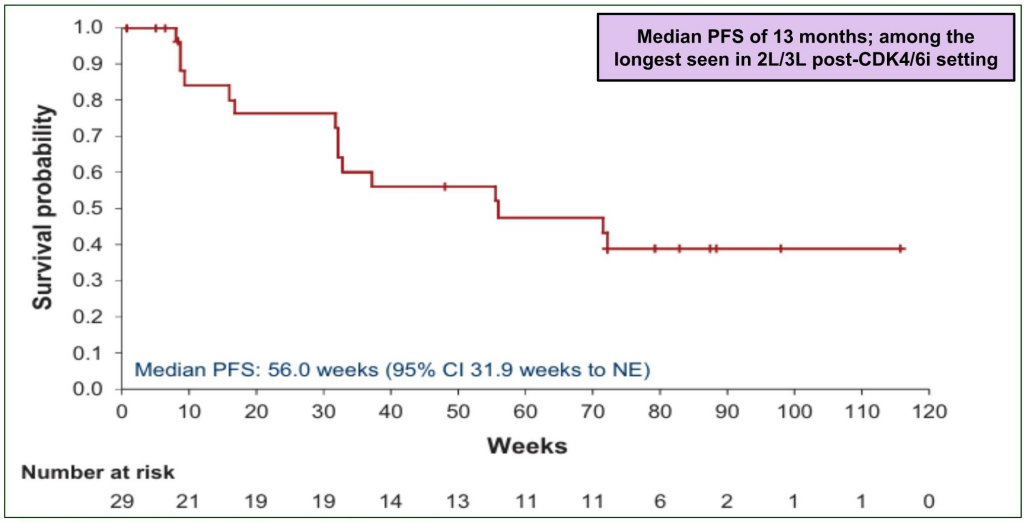


***Figure**: Kaplan-Meier estimates of progression-free survival*

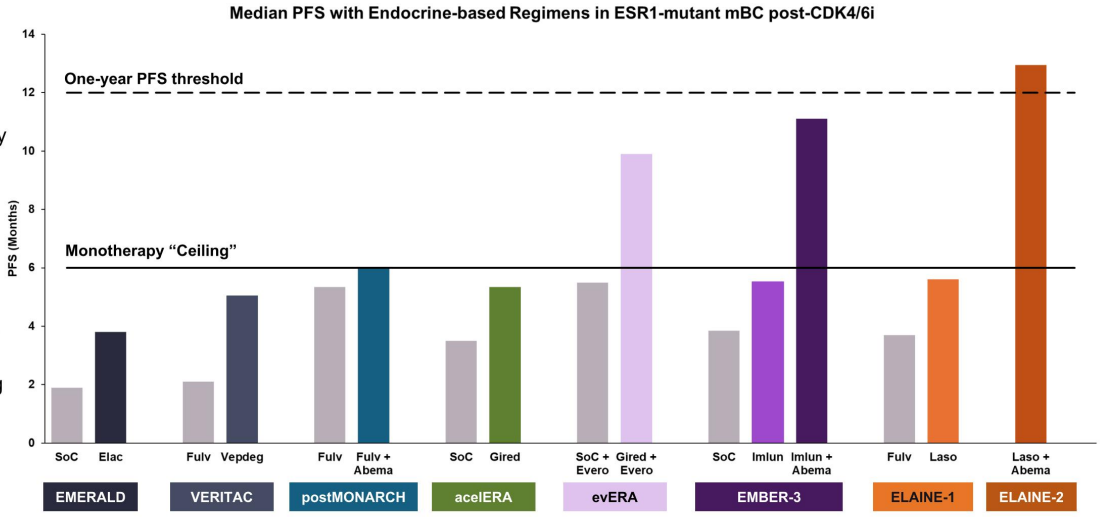
No head-to-head trials have been conducted comparing lasofoxifene combination regimens to SoC combination regimens. Therefore, such data may not be directly comparable due to differences in trial protocols, dosing regimens, and patient populations. Accordingly, these cross-trial comparisons should not be relied on.

Source: Damodaran et. al, *Annals of Oncology 2023.*

Treatment landscape is shifting toward combination regimen

Emerging data support combination endocrine approaches in CDK4/6 inhibitor–pretreated ER+ breast cancer

- In the 2L+ space, endocrine monotherapy approaches appear to reach a ceiling of ~6 months PFS
- Durable disease control is increasingly pursued through biomarker-driven combination strategies, rather than next-generation endocrine monotherapy alone
  - With combination therapy, safety and tolerability become even more important
- With combination therapy, particularly laso + abema, median PFS can extend beyond 12 months, surpassing the one-year benchmark in 2L+ post-CDK4/6 ESR1-mutant disease
  - No stacking of toxicity, laso + abema was well-tolerated with favorable safety profile



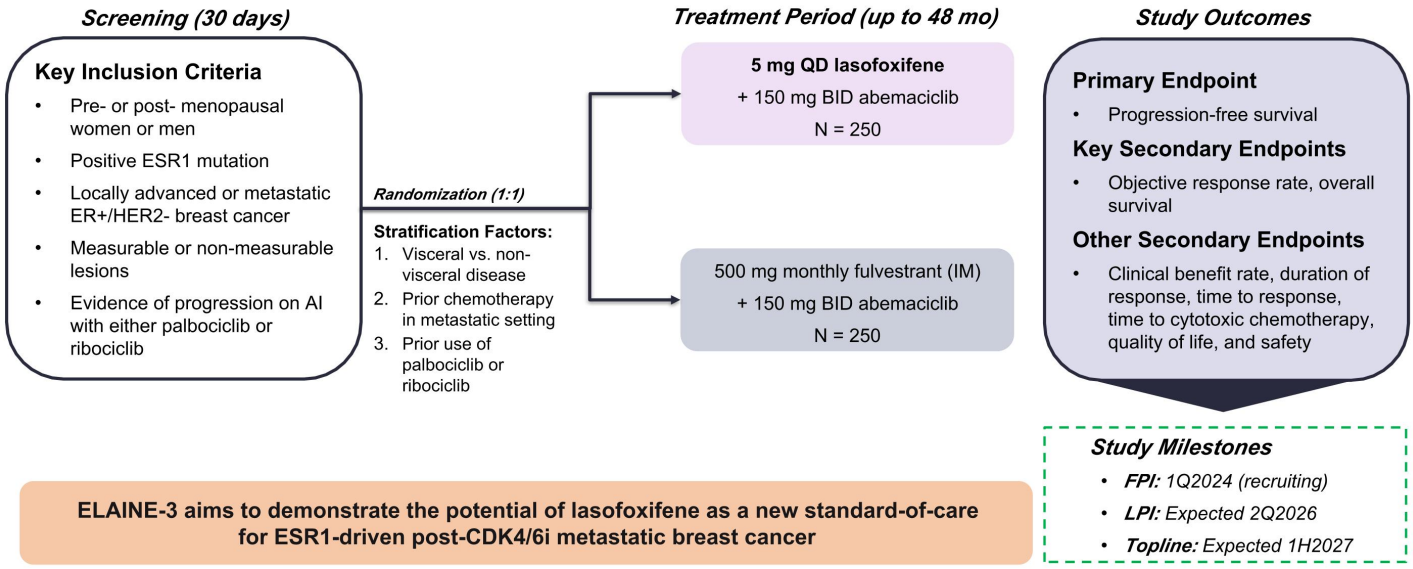
Abema, abemaciclib; Elac, elsacestrant; Evero, everolimus; Fulv, fulvestrant; Gired, girdestrant; Imlun, imlunestrant; Laso, lasofoxifene; SoC, standard-of-care; Vepdeg, vepdegestrant

Comparisons are based on independently published study results. No head-to-head trials have been conducted comparing lasofoxifene combination regimens to SoC combination regimens. Therefore, such data may not be directly comparable due to differences in trial protocols, dosing regimens, and patient populations. Accordingly, these cross-trial comparisons should not be relied on.

Sources: EMERALD – Bardia et al, *SABCS 2021*; VERITAC – Campone et al, *NEMJ 2025*; postMONARCH – Kalinsky et al, JCO 2024; acelERA – Martin et al, *ESMO 2022*; evERA – Mayer et al, *ESMO 2025*; EMBER-3 – Jhaveri et al *NEMJ 2024*; ELAINE-1, Goetz et al, *Annals of Oncology 2023*; ELAINE-2 – Damodaran et. al, *Annals of Oncology 2023*

ELAINE-3: Registrational trial of lasofoxifene in mESR1 population

FDA-aligned Ph3 registrational trial to establish improved efficacy of lasofoxifene + abemaciclib compared to current SoC combination



Study Milestones

- ***FPI:*** *1Q2024 (recruiting)*
- ***LPI:*** *Expected 2Q2026*
- ***Topline:*** *Expected 1H2027*

ELAINE-3 aims to demonstrate the potential of lasofoxifene as a new standard-of-care for ESR1-driven post-CDK4/6i metastatic breast cancer

Adapted from Goetz et. al, *Future Oncology, 2025.*

ELAINE-3 is on track to complete enrollment by mid-2026

Over 50% enrolled - expected to readout in mid-2027

- Global study with >200 sites Europe, North America, and APAC (including China)
- Study is being executed by Medpace, a full-service global CRO with extensive experience running large, successful breast cancer trials
- Primary endpoint is determined by an independent review of centralized scans using industry standard RECIST criteria
- Primary readout conducted when 285 patients have been determined as meeting the RECIST criteria for progression

Lasofoxifene was generally well-tolerated and had a differentiated impact on women's quality of life over standard of care in early trials

- Lasofoxifene is a SERM that primarily reduces estrogen signaling in breast tissue sparing healthy signaling in other tissues such as bone and urogenital
- Participants in the ELAINE-1 trial participated in self-assessed urogenital symptom surveys[1]
- Lasofoxifene treatment tended to **reduce** incidence of VAS/VuAS symptoms
  - Fulvestrant, the SoC comparator tended to increase symptoms

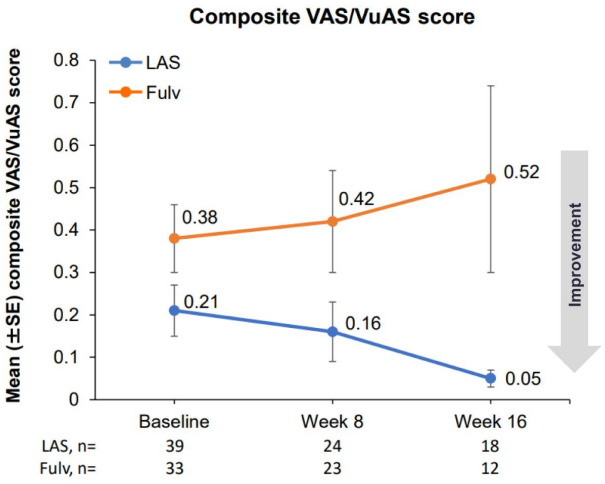


Figure: *Self-assessed urogenital symptoms (composite VAS/VuAS) for lasofoxifene vs fulvestrant.*

"Lasofoxifene is reported to promote vaginal and sexual health benefits […] **this could have broad implications for both the survival and quality of life for women** in the metastatic and early-stage adjuvant settings." [2]

MD, the iSPY-2 EOP study's principal investigator

VAS, vaginal assessment scale; VuAS, vulvar assessment scale

Sources: 1. Goldfarb et al. *ISSWSH Annual Meeting 2023 (Poster)*; 2. Sermonix Conf Presentation (Slide #82).

Lasofoxifene exhibits added clinical benefits over other endocrine therapies important to breast cancer patients and clinicians

- The effects of lasofoxifene have been extensively investigated in several clinical studies
  - Increased bone density and reduced vertebral and non-vertebral fractures[1,2]
  - Reduced LDL and coronary heart disease events [2,3,4]
  - Improved symptoms of vaginal atrophy in two Phase 3 studies[5]

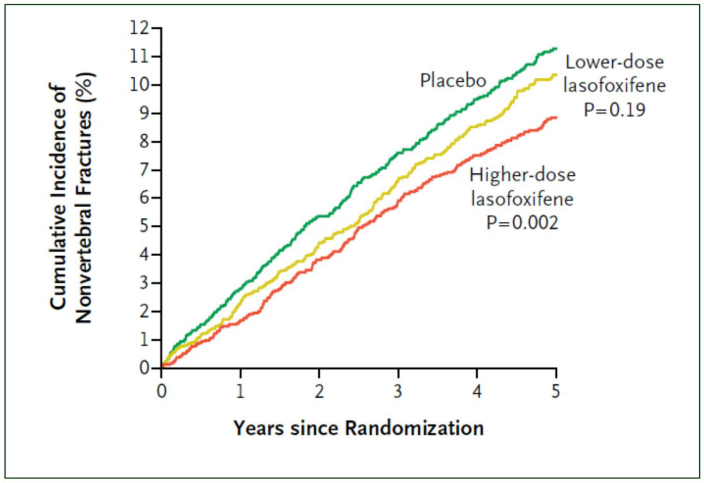


Figure: *Cumulative incidence of nonvertebral fractures showing placebo, lasofoxifene 0.25 mg (low dose), lasofoxifene 5 mg (high dose)*

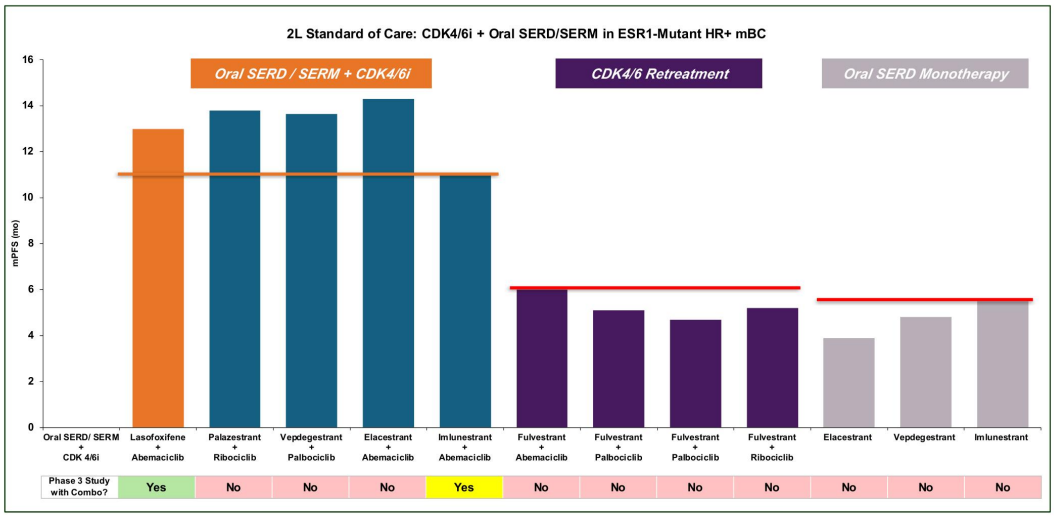
No head-to-head trials have been conducted comparing combination lasofoxifene therapy to other endocrine therapies

Sources: 1. McClung et al. *American Society of Bone and Mineral Res Annual Meeting 2015 (Poster);*
2. Cummings et al. *NEJM 2010*; 3. Lewiecki et al., *Ther Clin Risk Manag. 2009;* 4. Ensrud et al *Circulation AHA Journal, 2010*, 5. Kagan et al., Menopause 2024

ELAINE-3 is a registrational Phase 3 program

Built on established biology, prior clinical signal, and established standard-of-care benchmarks

- ✓ **Clear, validated comparator:** Fulv + abema is a well-established 2L SoC in mESR1 mBC, enabling a clear and interpretable superiority test
- ✓ **Promising prior efficacy signal:** ~13 mo PFS exceeds historical benchmarks
- ✓ **Mechanistically differentiated backbone:** SERM profile enables mESR1 suppression with favorable tolerability and potential for added clinical benefit
- ✓ **Aligned with emerging treatment paradigm:** Oral SERD/SERM + CDK4/6i combinations increasingly defining the post-CDK4/6 treatment landscape



Comparisons are based on independently published study results. No head-to-head trials have been conducted comparing lasofoxifene combination regimens to SoC combination regimens. Therefore, such data may not be directly comparable due to differences in trial protocols, dosing regimens, and patient populations. Accordingly, these cross-trial comparisons should not be relied on.

Sources – Laso+abema: Damodaran et. al, *Annals of Oncology 2023;* Palazestrant + Ribo: Olema oncology, *ESMO 2025*; Vepdegestrant + Palbociclib: Arvinas and Pfizer, *ESMO 2024*; Elacestrant + abema: Rugo et al, SABCS 2025; Imlunestrant + abema: Jhaveri et al *NEMJ 2024*; Fulvestrant + abema: Kalinsky et al, JCO 2024; Fulvestrant + Palbociclib (2): Mayer et al, JCO 2024; Fulvestrant + Ribociclib: Kalinsky et al, JCO 2023; Elacestrant monotherapy: Bidard et al, JCO 2022; Vepdegestrant monotherapy: Campone et al *NEJM 2025;* Imlunestrant monotherapy: Jhaveri et al *NEMJ 2024*

Competitive advantages of Laso combo in 2L/3L ESR1-mutated mBC

Lasofoxifene profile:

- ✓ Differentiated MOA
- ✓ Competitive efficacy profile
- ✓ Strong safety and tolerability profile
- ✓ Exhibits QoL & clinical benefits over SERDs
- ✓ Large pivotal Phase 3 (n=500) underway in all post-CDK4/6i ESR1 mutations to support potential registration
- ✓ FDA-recommended combination comparator as opposed to monotherapy in EMBER-3

	Imlunestrant + Abema[1,2]	Lasofoxifene + Abema[3,4]
Administration	Oral, 400 mg daily tablet, must be taken fasting	Oral, 5 mg daily tablet, no food effect
MOA	SERD (ER degradation)	**SERM** (ER modulation; tissue selectivity)
Efficacy	EMBER-3, mESR1 population, 60-75% prior CDK4/6i: PFS 11.1 mo (n=67) ORR 39% (n= 54)	ELAINE-3, mESR1 population, 100% prior CDK4/6i: **PFS ~13 mo** (n=29) **ORR 56%** (n=29)
Safety & Tolerability	• Dose reductions: 42% • Grade 3 diarrhea: 9% • Anemia: 46%	• **Dose reductions: 21%** • **Grade 3 diarrhea: 0%** • **Anemia: 28%**
QoL & Clinical Benefits	• None	• **Improved urogenital symptoms (ELAINE-1)** • **Potential bone density and lipids health benefits (PEARL, CORAL, OPAL studies)**

Ongoing Phase 3 registrational trial (ELAINE-3) will directly evaluate lasofoxifene + abema vs fulvestrant + abema (SoC) and potentially establish lasofoxifene as endocrine backbone 2L/3L SOC

ER, estrogen receptor; SERD, selective estrogen receptor degrader; SERM, selective estrogen receptor modulator; ESR1 (gene), estrogen receptor 1; ORR, objective response rate; QoL, Quality of life; PFS, progression-free survival

Comparisons are based on independently published study results. No head-to-head trials have been conducted comparing combination lasofoxifene therapy to other combinations presented in this slide. Therefore, such data may not be directly comparable due to differences in trial protocols, dosing regimens, and patient populations. Accordingly, these cross-trial comparisons should not be relied on. Sources: 1. Jhaveri et al, *NEJM 2025;* 2. Jhaveri et al *SABCS presentation 2025*; 3. Goldfarb et al. *ISSWSH Annual Meeting 2023 (Poster)*; 4. Damodaran et. al, *Annals of Oncology 2023.*

Endocrine backbone choice drives long-term risk and differentiation

Lasofoxifene + abemaciclib vs. SERD + CDK4/6i regimens

Safety and tolerability

- While cross trial comparisons should be interpreted with caution, lasofoxifene exhibits a favorable safety and tolerability profile, specifically with regards to dose reduction and serious AEs, and additional QoL benefits
  - No stacking with abemaciclib for diarrhea

Combination treatment strategy drives long-term risk

- Regimens rely on chronic CDK4/6 inhibition, which defines the dominant toxicity burden
- Endocrine backbone choice therefore determines **safety risk, tolerability, combinability and long-term adherence**

Chronic exposure considerations

- Oral SERDs are entering longer-duration use across lines and combinations
- While short-term safety is reassuring, SERD chronic toxicity profiles are still maturing, and longer-term use may impact ER in healthy tissues (e.g. bone, vagina)
- SERMs bring decades of human exposure and predictable long-term safety characteristics

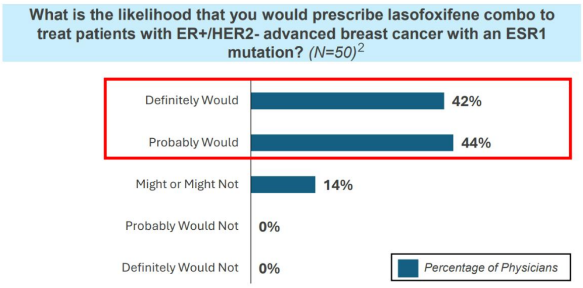
Lasofoxifene has the potential to deliver durable efficacy, minimize long-term safety risks, and provide QoL and clinical benefits that may position it as the next backbone endocrine therapy

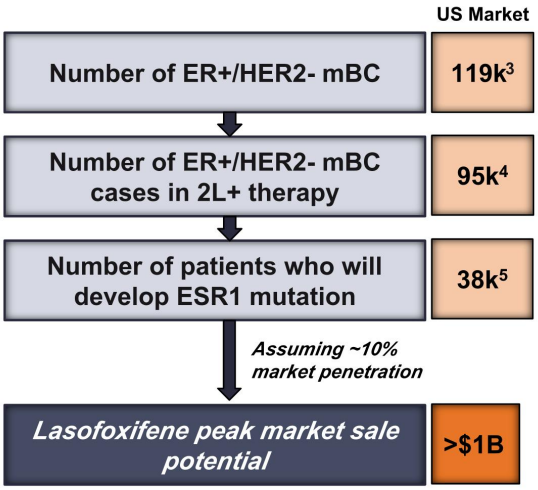
Athira PHARMA

Comparisons are based on independently published study results. No head-to-head trials have been conducted comparing combination lasofoxifene therapy to other combinations presented in this slide. Therefore, such data may not be directly comparable due to differences in trial protocols, dosing regimens, and patient populations. Accordingly, these cross-trial comparisons should not be relied on.

Lasofoxifene's targeted activity in mutant ESR1 presents a billion-dollar precision oncology opportunity in 2L/3L ER+ mBC

- **Global breast cancer market:** $55B (2027)[1]
- **Expected payer acceptance:** Fulvestrant, elacestrant precedents
- **Favorable outlook:** Physician enthusiasm and QoL advantages may help increase adherence and compliance





Sources: 1. Fortune Business Insights. *Retrieved from https://www.fortunebusinessinsights.com/industry-reports/breast-cancer-therapeutics-market-100163*; 2. LifeSci 1Q2023 Quantitative Survey, Sermonix; 3. *Calculated from* Komen MBC prevalence (~170k) × NCI ER+/HER2− share (~70%), Komen: *Retrieved from https://www.komen.org/breast-cancer/facts-statistics/breast-cancer-statistics*, NCI: *Retrieved from https://seer.cancer.gov/statfacts/html/breast-subtypes.html*; *4. Calculated based on 80% transition to 2L+ (*Almekinders et al. *Breast Cancer Res Treat 2025); 5. Calculated based on 40% ESR1 mutation incidence (*Venetis et al. *Cancer Treat Rev 2023).*

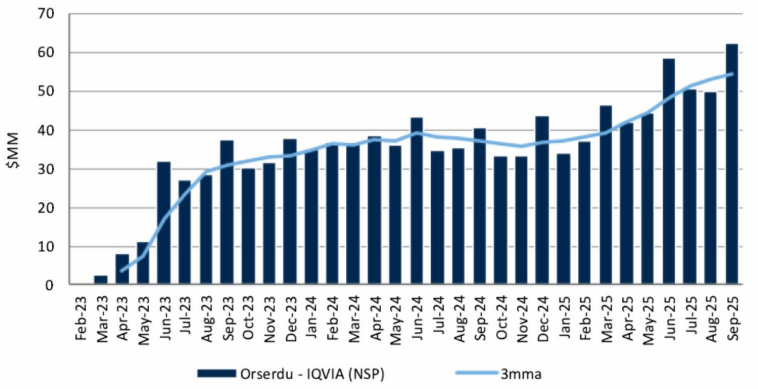
Orserdu sales illustrate the commercial opportunity for lasofoxifene's precision oncology opportunity in 2L/3L ER+ mBC

- **Orserdu (elacestrant) achieved rapid commercial uptake**, validating ESR1 mutation as a commercially viable biomarker
- **Commercial success** was achieved despite modest clinical efficacy with PFS of ~4 months and low ORR in post-CDK4/6 setting[2]
- **Adoption occurred despite notable tolerability challenges**, including GI adverse events and lipid abnormalities, underscoring strong physician willingness to use targeted endocrine agents in ESR1-mutant disease

Lasofoxifene has the potential to meaningfully expand this validated market, with:

✓ Superior efficacy signals including prolonged PFS
✓ Improved tolerability, QoL profile, and exhibits added clinical benefits
✓ Combination-ready positioning aligned with evolving treatment paradigm

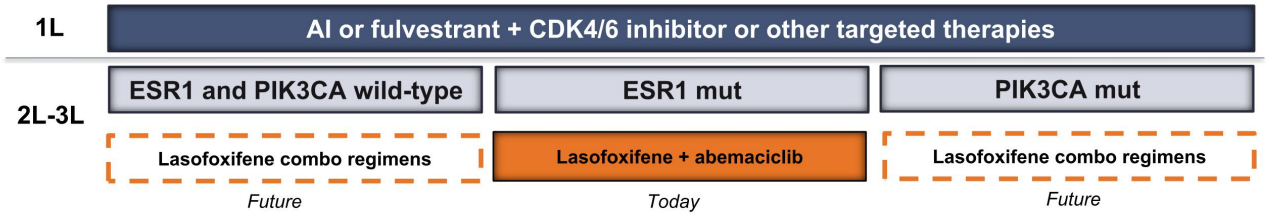
Orserdu sales[1]



Sources: 1. IQVIA, RBC Capital Markets; 2. Bidard et al, *J Clin Oncol 2022*

Lasofoxifene has the potential to be a backbone endocrine candidate with expansion potential beyond ESR1 mutant disease

Driven by combinability, tolerability, and differentiated clinical benefit



<u>If lasofoxifene demonstrates superiority vs fulvestrant</u>, we believe it has the potential to:

- Replace fulvestrant as the preferred endocrine partner in CDK4/6-based regimens
- Expand beyond ESR1-mutant disease into broader post-CDK4/6 populations with other targeted therapies
- Opportunity to move into earlier lines including the adjuvant setting, and serve as a more tolerable and combinable endocrine backbone

Athira PHARMA Treatment landscape schematic is illustrative and not intended to be comprehensive

Lasofoxifene: Ongoing registrational Phase 3 trial with readout in 2027

A differentiated therapy designed to overcome resistance, improve QoL, and establish a new standard of care in ER+ ESR1-mutant breast cancer

- Oral administration
- Favorable safety profile and generally well-tolerated
- Large unmet need
- Exhibits improved QoL and clinical benefits
- Superior PFS from Ph2
- Expansion potential as endocrine partner of choice

ATH-1105 for the potential treatment of ALS

Small molecule positive modulator of HGF

Athira PHARMA

Slowing neurodegeneration in ALS is a critical unmet need

Burden of ALS

ALS is a devasting neurodegenerative disease in which people progressively lose muscle control

- 225,000 people globally affected by ALS[1] with ~33,000 of those cases in the US[2]
- Average life expectancy is 2-5 years post-diagnosis[3]
- Every 90 minutes someone is diagnosed with ALS[4]
- Estimated annual out-of-pocket cost for care is $250,000[5]

Treatment Limitations[6]

- There is no cure for ALS and few effective treatment options
- Approved therapies only modestly slow progression and improve survival
- No current ALS drugs significantly protect motor neurons from the complex pathology and progressive degeneration

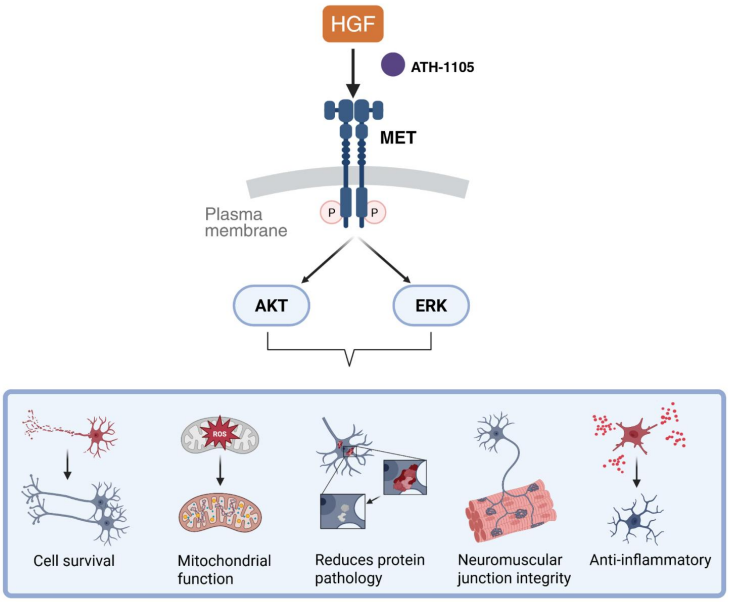
Significant Unmet Need

There is an urgent need for therapies that meaningfully slow neurodegeneration, preserve motor function, improve quality of life, and prolong survival

Sources: 1. Packard Center. *Retrieved from https://packardcenter.org/answer-als-partners-to-launch-the-end-als-challenge-digital-competition;* 2. CDC. *Retrieved from https://www.cdc.gov/als/php/abstracts-publications-reports/prevalence-2022-2030.html;* 3. ALS United. *Retrieved from https://alsunitedchicago.org/als-life-expectancy-by-age/;* 4. ALS Association. *Retrieved from https://www.als.org/understanding-als;* 5. ALS Association. *Retrieved from https://www.als.org/advocacy/federal-public-policy-priorities;* 6. ALS Association. *https://www.als.org/navigating-als/living-with-als/therapies-care.*

ATH-1105: A CNS-penetrant positive modulator of HGF as a potential treatment for ALS

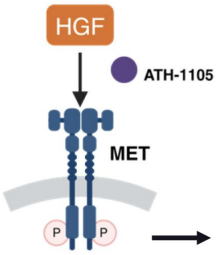
- ATH-1105 enhances activity of HGF, a critical neurotrophic factor in the nervous system
- Activation of HGF signaling through MET (HGF receptor) on the surface of neurons and glia initiates processes that counteract neurodegeneration
- Strong rationale from literature to support HGF modulation in ALS
  - Improves motor function, preserves motor neurons, and delays disease progression[1,2,3]
- ATH-1105 has demonstrated robust effects in preclinical models of ALS[4]

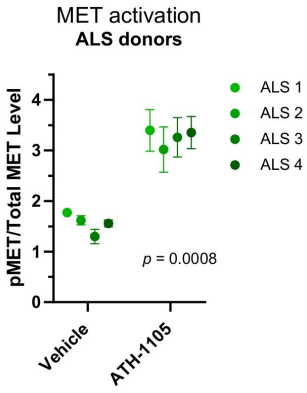


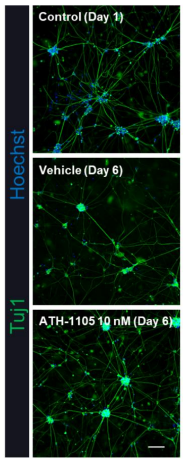
Sources: 1. Ishigaki et al., *J Neuropathol Exp Neurol* 2007; 2. Lee et al., *Acta Neuropathol Commun* 2019; 3. Vallarola et al., *Int J Mol Sci* 2020; 4. Berthiaume et al., *Front. Neurosci 2024.*

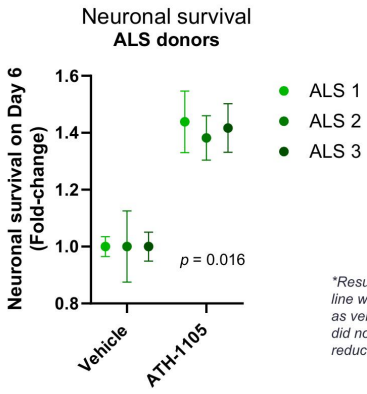
ATH-1105 enhanced MET activation and survival in ALS patient-derived motor neurons

Cells derived from four people with sporadic ALS









**Results from ALS 4 cell line were uninterpretable as vehicle-treated group did not exhibit a significant reduction in survival.*

ALS patient-derived motor neurons treated with ATH-1105 exhibited an increase in MET activation (pMET) resulting in improved neuronal survival confirming neuroprotective activity in ALS relevant tissue

MET activation: Data presented as mean ± SEM. Statistical significance was determined via paired t-test comparing MET activation (pMET/Total MET) in motor neurons treated with vehicle or ATH-1105 10 nM for 24 hours ; n = 2-3 technical replicates from each donor

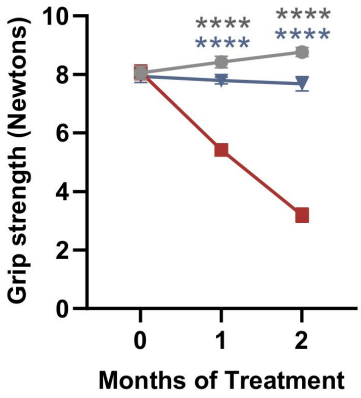
Neuronal survival: Representative image highlighting effect of ATH-1105 on ALS patient-derived motor neurons (ALS 1) in culture. Neuronal survival (number of Tuji1+ neurons) was measured as surviving neurons on Day 6 divided by number of neurons on Day 1 (control expressed as 100%). Scale bar = 100 µm. Data expressed as fold-change between vehicle and ATH-1105 and presented as mean ± SEM. Statistical significance was determined via paired t-test comparing vehicle (containing HGF 0.05 ng/ml) with ATH-1105 10 nM; n = 3-6 technical replicates from each donor . Select doses shown.

Source: Reda et al. *ALS Drug Development Summit 2025 (Poster).*

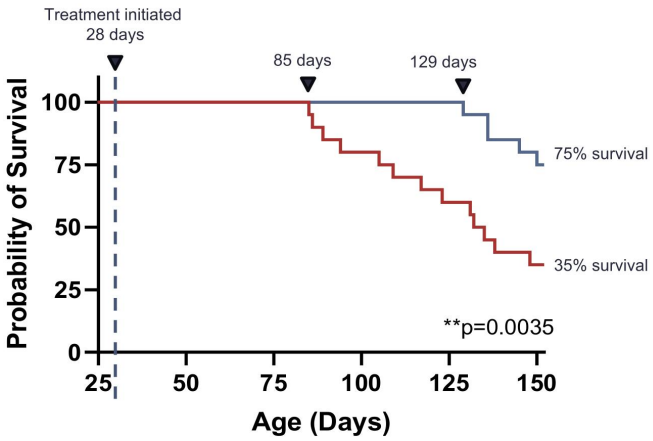
ATH-1105 preserved motor function and prolonged survival in preclinical model of ALS

Prp-TDP43^{A315T} transgenic mouse model of ALS

Motor Function



Survival



WT + vehicle ALS + vehicle ALS + ATH-1105 20 mg/kg

Motor Function: Data presented as mean ± SEM. Statistics applied: 2-way ANOVA with the Dunnett's test versus ALS + vehicle. ****p < 0.0001. n=10 mice per group

Survival: Data presented as Kaplan-Meier survival curves. Statistics applied: Log-rank (Mantel-Cox) test, n=20 mice per group at start. Treatment initiated at 28 days old.

Source: Berthiaume et al., *Front. Neurosci 2024.*

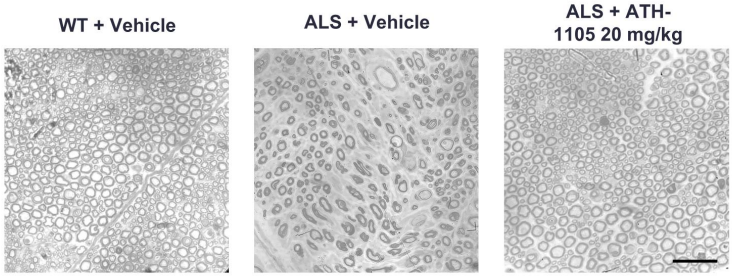
ATH-1105 protected against neurodegeneration

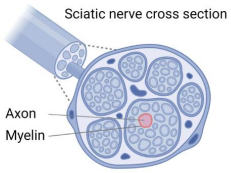
Prp-TDP-43^{A315T} mouse model

Sciatic nerve histopathology

In ALS mice (center), axons in the sciatic nerve are smaller, fewer, and more poorly myelinated → Neurodegeneration

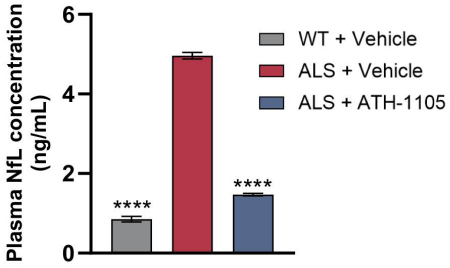
ATH-1105 (right) normalizes axon morphology

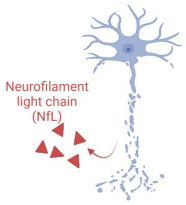




NfL in plasma

In ALS mice, ATH-1105 reduces NfL, a robust marker of neurodegeneration





NfL release from degenerating neurons is a translatable biomarker of ALS

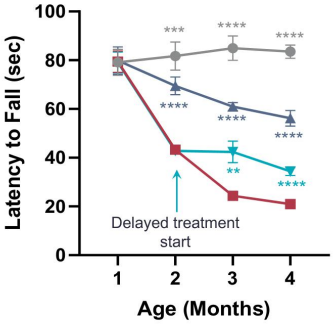
Two months of treatment, Prp-TDP43^{A315T} transgenic mice. "ALS" or "ALS mice.". WT = wild type (healthy control). Sciatic nerve sections stained with toluene blue to highlight axon structure. Scale bar = 10 µm. Data presented as mean ± SEM. Statistics applied: One-way ANOVA with Dunnett's multiple comparisons test ; ****p<0.0001 vs ALS + vehicle. n=10 mice/group
Source: Berthiaume et al., *Front. Neurosci 2024.*

Disease progression was attenuated in ALS mice following early or delayed treatment initiation with ATH-1105

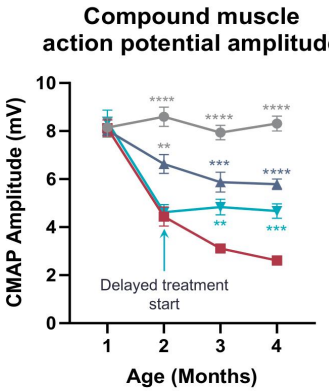
Prp-TDP43^{A315T} transgenic mouse model of ALS

WT + Vehicle
ALS + Vehicle
ALS + ATH-1105 20 mg/kg (Early)
ALS + ATH-1105 20 mg/kg (Delayed)

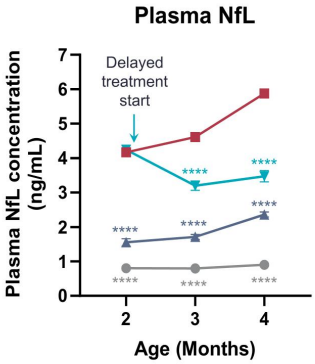
Motor function



Nerve function



Neurodegeneration



Delayed intervention with ATH-1105 resulted in a**slowing of further disease progression** from time of treatment onset

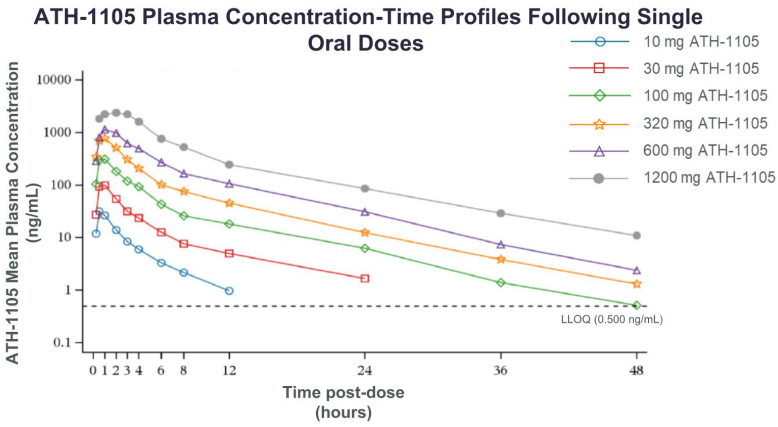
A **reduction** in plasma NfL levels observed once delayed ATH-1105 treatment begins

Data presented as mean ± SEM. Statistics applied: 2-way ANOVA with the Dunnett's test versus ALS + vehicle. **p < 0.01; ***p < 0.001; ****p < 0.0001. n=10 mice per group
Source: Berthiaume et al., *Front. Neurosci 2024.*

Phase 1 results support continued development of ATH-1105 for the treatment of ALS

Completed Phase 1 single and multiple dose studies in healthy volunteers

- All doses studied were generally well tolerated with no dose-limiting adverse events
  - All adverse events were mild
  - There were no serious adverse events
  - No trends suggestive of a safety signal
- Favorable PK profile
  - Dose linearity
  - Rapid absorption; consistent elimination
  - No accumulation after repeat doses for 10 days
  - Good CNS penetration reaching target exposures that were effective in preclinical studies



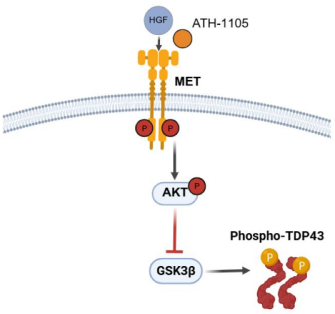
- Encouraging exploratory findings in a potential target engagement biomarker from plasma samples

Source: Ooi et al. *NEALS Annual Meeting 2025 (Poster).*

Biomarker results indicated a biological effect of ATH-1105 in humans and suggest potential to improve protein pathology in ALS

Exploratory analysis of neuronal-derived exosomes (NDE) in the plasma from Phase 1 studies

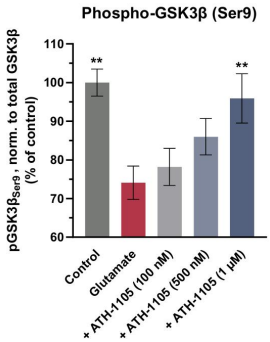
Mechanism



Preclinical data supports mechanism

HGF/MET→AKT is known to phosphorylate **GSK3β** at Ser9 inhibiting its activity and ability to promote protein pathology (**pTDP-43**)

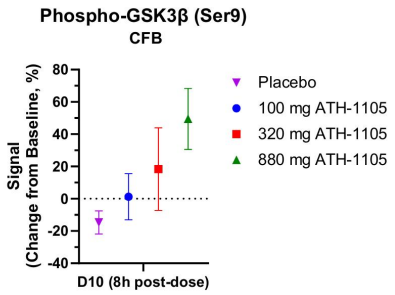
In vitro (spinal motor neurons)



ATH-1105 treatment inhibited **GSK3β** activity in vitro (increased phosphorylation at Ser 9) shown above, and reduced **phospho-TDP-43** in the Prp-TDP43 mouse model of ALS

NDEs in human plasma

Exploratory biomarker analysis suggests translation of effects on **GSK3β**



ATH-1105 treatment led to increased expression of **phospho-GSK3β** (inactive form), a potential biomarker of target engagement that may be relevant for TDP-43 pathology

In vitro data: **p<0.01, ***p<0.001 vs. glutamate alone. One-way ANOVA with Fisher's multiple comparison post-test; n = 3-4 biological replicates.
NDE: Data expressed as percent change from baseline (Day 1 Pre-dose). Mean ± SEM. Mixed effects model analysis with Dunnett's multiple comparison test vs placebo at 8h-post dose; n = 5-6 subjects per treatment group

ATH-1105 is ready for a Phase 2 study in people living with ALS

- Planning underway for a Phase 2 proof-of concept study to explore functional measures, biomarkers, and safety in people living with ALS
- Design considerations:
  - ≥ 6 months treatment duration
  - Biomarkers, including plasma NfL and NDEs
  - Functional measures
    - ALSFRS-R
    - Vital capacity
    - Grip strength
- Aim is to explore safety and preliminary efficacy to inform a potentially pivotal clinical trial

ATH-1105 is a Phase 2 ready asset for the treatment of ALS

A novel therapy designed to address the complex pathology and mitigate neurodegeneration in ALS

- Oral administration
- Favorable safety profile and generally well-tolerated
- Neuroprotective*
- Biomarker signals in Phase 1
- Reduces plasma NfL*
- Expansion potential

*in preclinical models

Transforming our future

Advancing 2 programs that have the potential to deliver life-changing therapies in breast cancer and ALS

Compelling clinical development programs in areas of profound need

Multibillion-dollar market opportunities

Key clinical readouts within 2 years

PIPE financing up to $236 million

$90M upfront financing provides cash runway through data readout and into 2028

- Up front financing supports lasofoxifene development program through topline data with sufficient capital runway into 2028
- $90M upfront priced at a greater than 50% premium to our December 17, 2025 closing price [$6.35/share]
- If exercised, warrants provide up to additional $146M for further support

Expected key inflection points within ~2 years

✓ **Lasofoxifene**

- Phase 3 registrational study ongoing with >50% enrolled

Topline results expected in mid-2027

✓ **ATH-1105**

- Phase 2 POC study in ALS planned to start in 1H2026

Topline results expected 2027

Athira PHARMA

Risk Factors

You should carefully consider the following risk factors, in addition to the other information contained in this Current Report on Form 8-K, or the Form 8-K, the Company's Annual Report on Form 10-K filed on February 27, 2025 and the Company's Quarterly Report on Form 10-Q filed on November 6, 2025, together with the Form 8-K, the SEC Reports. If any of the events described in the following risk factors and the risks described in the SEC Reports occurs, our business, operating results and financial condition could be seriously harmed. The Form 8-K also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of factors that are described below and elsewhere in the Form 8-K. Our Risk Factors are not guarantees that no such conditions exist as of the date of the Form 8-K and should not be interpreted as an affirmative statement that such risks or conditions have not materialized, in whole or in part.

Risks Related to Our Business and the Development of Our Drug Candidates

We are a clinical-stage biopharmaceutical company with a limited operating history.

We are a clinical-stage biopharmaceutical company dedicated to the development of novel therapeutics for high unmet medical needs. Our limited operating history may make it difficult to evaluate the success of our business. Drug development is a highly uncertain undertaking and involves a substantial degree of risk. To date, we have not completed a pivotal clinical trial, obtained marketing approval for any drug candidate, manufactured a commercial scale drug candidate, or conducted sales and marketing activities necessary for successful drug candidate commercialization. Our history as a company makes any assessment of our future success and viability subject to significant uncertainty. We will encounter risks and difficulties frequently experienced by clinical-stage biopharmaceutical companies in rapidly evolving fields, and we have not yet demonstrated an ability to overcome such risks and difficulties successfully. If we do not address these risks and difficulties successfully, our business will suffer.

We may fail to or be unable to design and execute clinical trials to support marketing approval of ATH-1105, lasofoxifene or any other drug candidates we seek to develop. We cannot be certain that our current or planned clinical trials or any other future clinical trials will be completed on time or be successful. We cannot guarantee that the FDA or foreign regulatory authorities will agree with our study design, protocol or protocol amendments, or statistical plan, or that they will interpret clinical trial results as we do, and more clinical trials could be required before we are able to submit applications seeking approval of our drug candidates. To the extent that the results of the clinical trials are not satisfactory to the FDA or foreign regulatory authorities for support of a marketing application, we may be required to expend significant resources, which may not be available to us, to conduct additional clinical trials in support of potential approval of our drug candidates. Even if regulatory approval is secured for any of our drug candidates, the terms of such approval may limit the scope and use of our drug candidates, which may also limit their commercial potential.

Our approach to inhibiting estrogen receptor signaling in both wild-type and ESR1-mutated breast cancer through treatment by lasofoxifene exposes us to unforeseen risks. We have limited data from preclinical studies and clinical trials to date, and we cannot be certain that future trials will yield data in support of the safety, efficacy and tolerability of our drug candidates.

We are developing lasofoxifene to treat breast cancer. Lasofoxifene is a next-generation selective estrogen receptor modulator ("SERM"), that inhibits estrogen receptor signaling in both wild-type and ESR1-mutated breast cancer. Unlike other endocrine agents that lose potency in the presence of ESR1 mutations such as Y537S and D538G, lasofoxifene maintains full inhibitory activity by stabilizing the receptor in an inactive conformation. Structural and preclinical data show that lasofoxifene fully disrupts the activation helix within the ER ligand-binding domain, uniquely preventing downstream estrogen signaling. This mechanism effectively shuts down the constitutive signaling that drives proliferation and metastasis in ESR1-mutated tumors. Given this unique approach, we cannot be certain of

the safety and efficacy of lasofoxifene in applicable patients or that our clinical trials will provide sufficient evidence that our design approach results in the intended therapeutic effect.

We have limited evidence regarding the efficacy, safety and tolerability of lasofoxifene. We or a future partner may ultimately determine that lasofoxifene does not possess certain properties required for therapeutic effectiveness. We or a future partner may spend substantial funds attempting to develop lasofoxifene and never succeed in doing so.

Our approach to targeting neurotrophic factors through the use of small molecules like ATH-1105 is based on a novel therapeutic approach, which exposes us to unforeseen risks. We have limited data from preclinical studies and clinical trials to date, including for ATH-1105, and we cannot be certain that future trials will yield data in support of the safety, efficacy and tolerability of our drug candidates.

We have discovered and are developing small molecule drug candidates to treat neurodegenerative diseases, including ALS. Our drug candidates target an endogenous neurotrophic factor which is expected to protect and repair neuronal networks, which we believe could ultimately result in improvements in clinical outcomes and disease-relevant biomarkers. The therapeutic promise of neurotrophic factors in neurodegenerative diseases had been hampered in earlier therapies by the lack of efficient and non-invasive delivery to the CNS. Our small molecule drug candidates are designed to penetrate the BBB and enhance the activity of a neurotrophic factor, but we cannot be certain of the safety and efficacy of our drug candidates in applicable patients or that our clinical trials will provide sufficient evidence that our design approach results in the intended therapeutic effect.

Fosgonimeton a first-generation small molecule designed to positively modulate the neurotrophic HGF system for potential treatment of CNS disorders, has been tested in Phase 1 to 2/3 clinical trials. The primary and all secondary endpoints of our Phase 2 ACT-AD clinical trial of fosgonimeton in AD were not met by protocoled analysis. A subsequent post hoc analysis of the data in a pre-specified subgroup from patients on fosgonimeton without background AChEIs showed a meaningful, but not statistically significant, improvement in both ERP P300 latency and cognitive performance compared to placebo at 26 weeks. Although post hoc analyses cannot be used to establish efficacy, these analyses can be helpful in informing the design of current and future clinical studies. The topline data from our Phase 2/3 LIFT-AD clinical trial of fosgonimeton in AD showed that neither the trial's primary endpoint (the Global Statistical Test, or GST, a combination of results from measures of cognition (ADAS-Cog11) and function (ADCS-ADL23)) nor its key secondary endpoints of ADAS-Cog11 and ADCS-ADL23 reached statistical significance compared with placebo at 26 weeks. However, both components of GST, cognition (ADAS-Cog11) and function (ADCS-ADL23), directionally favored fosgonimeton treatment, and in pre-specified subgroups characterized by more rapid disease progression (moderate AD and APOE4 carriers), cognition and function improved or stabilized in the fosgonimeton treated group. In addition, data across biomarkers of protein pathology (Aβ42/40, p-Tau181, and p-Tau217), inflammation (GFAP) and neurodegeneration (NfL) showed directional improvements with fosgonimeton treatment that are consistent with the broad neuroprotective mechanism of HGF modulation. Based on these results, we decided to pause further development of fosgonimeton.

Since the readout of topline data from LIFT-AD, in September 2024 we have been focused on advancing the clinical development program for ATH-1105, a next generation small molecule designed for the potential treatment of ALS. We completed our first-in-human Phase 1 clinical trial in healthy volunteers evaluating the safety and tolerability of ATH-1105, in November 2024. The results of the Phase 1 clinical trial showed that ATH-1105 demonstrated a favorable safety profile and was well-tolerated in healthy volunteers, supporting continued clinical development. We have substantially completed preparation activities to enable initiation of a future clinical trial in people living with ALS, either by us or in conjunction with a partner subject to our continued exploration of strategic alternatives focused on maximizing stockholder value; however, our plans, including trial design, timing and other factors have not yet been finalized.

We have limited evidence regarding the efficacy, safety and tolerability of ATH-1105 and other small molecules in our drug product pipeline. We or a future partner may ultimately determine that ATH-1105, or any of our other

small molecules, does not possess certain properties required for therapeutic effectiveness. We or a future partner may spend substantial funds attempting to develop these drug candidates and never succeed in doing so.

Our development of ATH-1105 or lasofoxifene may never lead to marketable products.

We are developing ATH-1105 and lasofoxifene to address devastating diseases where current treatment options are limited or ineffective. We have not received regulatory approval for any of our product candidates and cannot be certain that our approach will lead to the development of an approvable or marketable product, alone or in combination with other therapies.

Advancing our product candidates creates significant challenges for us or a future partner, including:

- obtaining marketing approval;
- if ATH-1105 or lasofoxifene is approved, educating medical personnel regarding the potential efficacy and safety benefits, as well as the challenges, of incorporating ATH-1105 or lasofoxifene into existing treatment regimens, including in combination with other treatments or as a monotherapy; and
- establishing the sales and marketing capabilities upon obtaining any marketing approvals to gain market acceptance.

Our prospects as a standalone business are highly dependent on the successful development of ATH-1105 and lasofoxifene. Following the September 2024 announcement of topline results from the Phase 2/3 LIFT-AD clinical trial of fosgonimeton showing that neither the trial's primary endpoint nor its key secondary endpoints were met, we announced our intention to focus on advancing the clinical development program for ATH-1105 as a potential treatment for ALS and other neurodegenerative diseases. Like fosgonimeton, ATH-1105 is a small molecule designed to positively modulate the HGF system. Although we are encouraged about the potential for ATH-1105 based on preclinical data, and about the potential of lasofoxifene based on clinical and preclinical data, we or a future partner may decide to discontinue development of some or all of our product candidates, including if we or a future partner do not demonstrate the safety and efficacy of our product candidates in current and future clinical trials.

Our ability to generate revenue and achieve profitability depends significantly on our ability to achieve a number of objectives.

Our business depends entirely on the successful discovery, development and commercialization of our drug candidates. We have no drug products approved for commercial sale and do not anticipate generating any revenue from drug product sales for the next several years, if ever. Our ability to generate drug product revenue will depend heavily on the successful clinical development and eventual commercialization of ATH-1105, lasofoxifene or any other drug candidates we may seek to develop. Our ability to generate revenue and achieve profitability depends significantly on our ability to achieve a number of objectives, including:

- successful and timely completion of nonclinical and clinical development of our drug candidates and any future drug candidates, as well as the associated costs, including any unforeseen costs;
- establishing and maintaining relationships with contract research organizations ("CROs"), and clinical sites for the clinical development, both in the United States and internationally, of our drug candidates and any future drug candidates;
- timely submission of application for and receipt of marketing approvals from applicable regulatory authorities for any drug candidates for which we successfully complete clinical development;
- making any required post-marketing approval commitments to applicable regulatory authorities;
- developing an efficient and scalable manufacturing process for our drug candidates, including obtaining finished products that are appropriately packaged for sale;
- establishing and maintaining commercially viable supply and manufacturing relationships with third parties that can provide adequate, in both amount and quality, products and services to support clinical development and meet the market demand for drug candidates that we develop, if approved;

- successful commercial launch following any marketing approval, including the development of a commercial infrastructure, whether inhouse or with one or more collaborators;
- a continued acceptable safety profile following any marketing approval of our drug candidates;
- commercial acceptance of our drug candidates by patients, the medical community and third-party payors;
- identifying, assessing and developing new drug candidates;
- obtaining, maintaining and expanding patent protection, trade secret protection and regulatory exclusivity, both in the United States and internationally;
- protecting our rights in our intellectual property portfolio;
- defending against third-party patent challenges, derivation proceedings, or interference or infringement claims, if any;
- negotiating favorable terms in any collaboration, licensing or other arrangement that may be necessary or desirable to develop, manufacture or commercialize our drug candidates;
- obtaining coverage and adequate reimbursement by hospitals, government and third-party payors for drug candidates that we develop;
- addressing any competing therapies and technological and market developments; and
- attracting, hiring and retaining qualified personnel.

We may never be successful in achieving our objectives and, even if we are, may never generate revenue that is significant or large enough to achieve profitability. If we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable may decrease the value of our company and could impair our ability to maintain or further our research and development efforts, raise additional necessary capital, grow our business and continue our operations.

We may also experience delays in developing a sustainable, reproducible and scalable manufacturing process or transferring that process to commercial partners, which may prevent us from completing our clinical trials or commercializing our drug candidates on a timely or profitable basis, if at all. Changes in the manufacturing process or facilities will require further comparability analysis and approval by the FDA before implementation, which could delay our clinical trials and drug candidate development, and could require additional clinical trials, including bridging studies and potential confirmatory or Phase 3 registrational trials, to demonstrate consistent and continued safety and efficacy.

We have not previously submitted a new drug application ("NDA") to the FDA or similar approval filings to a comparable foreign regulatory authority, for any drug candidate. An NDA or other relevant regulatory filing must include extensive nonclinical and clinical data and supporting information to establish that the drug candidate is safe and effective for each desired indication. The NDA or other relevant regulatory filing must also include significant information regarding the chemistry, manufacturing and controls for the drug product. We cannot be certain that our current or future drug candidates will be successful in clinical trials. Further, even if they are successful in clinical trials, our drug candidates or any future drug candidates may not receive regulatory approval. If we do not receive regulatory approvals for current or future drug candidates, we may not be able to continue our operations. Even if we successfully obtain regulatory approval to market a drug candidate, our revenue will depend, in part, upon the size of the markets in the territories for which we gain regulatory approval and have commercial rights, as well as the availability of competitive products, whether there is sufficient third-party reimbursement and adoption by physicians.

Historically, we have concentrated our research and development efforts on the treatment of central and peripheral nervous system degenerative disorders, a field that has seen very limited success in product development.

Prior to our in-licensing of lasofoxifene, we have focused our research and development efforts on addressing CNS and PNS degenerative disorders. Collectively, efforts by pharmaceutical companies in the field of CNS and PNS degenerative disorders have seen very limited successes in product development. The development of CNS therapies presents unique challenges, including an imperfect understanding of the biology, the presence of the BBB that can

restrict the flow of drugs to the brain, a frequent lack of translatability of preclinical study results in subsequent clinical trials and dose selection, and the product candidate having an effect that may be too small to be detected using the outcome measures selected in clinical trials or if the outcomes measured do not reach statistical significance. There are limited effective therapeutic options available for patients with AD, ALS, and other CNS or PNS disorders. Our future success is highly dependent on the successful development of our technology and our drug candidates for treating CNS and PNS disorders. Developing and, if approved, commercializing our drug candidates for treatment of CNS and PNS disorders subjects us to a number of challenges, including ensuring that we have selected the optimal doses, executing an appropriate clinical trial to test for efficacy and obtaining regulatory approval from the FDA and other regulatory authorities.

We have no marketed proprietary products and have not yet completed any Phase 3 clinical trials, which makes it difficult to assess our ability to develop our future product candidates and commercialize any resulting products independently.

While we have completed Phase 1 and 2/3 clinical trials for product candidates focused on addressing CNS and PNS disorders, we have no previous experience in completing a Phase 3 clinical trial or in completing clinical trials in oncology, and the related regulatory requirements, or the commercialization of any products. We have not yet demonstrated our ability to independently and repeatedly conduct clinical development after Phase 2, obtain regulatory approval, manufacture drug product on a registrational and commercial scale or arrange for a third-party to do so on our behalf, and commercialize therapeutic products. If we do not find a partner to assist with the later stage clinical development and commercialization of our product candidates, we will need to develop such abilities in order to successfully develop and commercialize our product candidates. To develop and commercialize our product candidates independently, we will need to successfully:

- reach agreement with multiple regulatory agencies on clinical and pre-clinical studies required for registration;
- execute our clinical development and manufacturing plans for later-stage product candidates;
- obtain required regulatory approvals in each jurisdiction in which we will seek to commercialize products;
- build and maintain appropriate pre-commercialization capabilities as well as commercial sales, distribution and marketing capabilities;
- build and implement effective market access strategy and gain market acceptance for our future products, if any; and
- manage our spending as costs and expenses increase due to clinical trials, regulatory approvals and commercialization activities.

If we are unsuccessful in accomplishing these objectives, we will not be able to develop and commercialize any future product candidates independently and could fail to realize the potential advantages of doing so.

Clinical development involves a lengthy and expensive process with an uncertain outcome, and results of preclinical studies and earlier clinical trials with a single or few clinical trial sites may not be predictive of eventual safety or effectiveness in large-scale potentially pivotal clinical trials across multiple clinical trial sites. We may encounter substantial delays in clinical trials, or may not be able to conduct or complete clinical trials on the expected timelines, if at all.

We currently have two clinical-stage drug candidates, each for the treatment of different indications. It is impossible to predict when or if any of our drug candidates will prove to be effective and safe in humans or will receive regulatory approval.

Before obtaining regulatory approvals for the commercial sale of our drug candidates, we or a future partner must demonstrate through lengthy, complex and expensive nonclinical studies and clinical trials that our drug candidates are both safe and effective for each target indication. Nonclinical and clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Clinical trials can also be lengthy due to the challenge of identifying patients. Even if patients are successfully identified, they may fail screening criteria and, as a result, not be enrolled in the trial. These uncertainties are enhanced where the diseases or disorders under study lack

established clinical endpoints, validated measures of efficacy, as is often the case with disorders for which no drugs have been developed previously and where the product candidates target novel mechanisms. In oncology clinical trials, there is often a need to enroll large numbers of patients, which can be expensive and time-consuming. Failure can occur at any time during the nonclinical study and clinical trial processes, and there is a high risk of failure and we may never succeed in developing marketable products. The results of nonclinical studies and early clinical trials of our drug candidates may not be predictive of the results of later-stage clinical trials. Although product candidates may demonstrate promising results in nonclinical studies and early clinical trials, they may not prove to be safe or effective in subsequent clinical trials. For example, testing on animals occurs under different conditions than testing in humans and therefore, the results of animal studies may not accurately predict safety and effectiveness in humans. There is typically an extremely high rate of attrition from the failure of product candidates proceeding through nonclinical studies and clinical trials. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy profile despite having progressed through nonclinical studies and initial clinical trials. For example, we paused further development of our fosgonimeton product candidate after our Phase 2 and Phase 2/3 clinical trials failed to meet their primary endpoints and secondary endpoints.

Early, smaller-scale studies, biomarker analyses, and clinical trials with a single or relatively few clinical trial sites may not be predictive of eventual safety and effectiveness in large-scale pivotal clinical trials across multiple clinical trial sites. Even if data from a pivotal clinical trial are positive, regulators may not agree that such data are sufficient for approval and may require that we conduct additional clinical trials, which could materially delay our anticipated development timelines, require additional funding for such additional clinical trials, and adversely impact our business. A number of companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or unacceptable safety issues, notwithstanding promising results in earlier trials. Most product candidates that commence nonclinical studies and clinical trials are never approved as products.

In addition, in some instances, there can be significant variability in safety or efficacy results between different nonclinical studies and clinical trials of the same product candidate due to numerous factors, including changes in clinical trial procedures set forth in protocols, differences in the size and type of the patient populations, changes in and adherence to the clinical trial protocols and the rate of dropout among clinical trial participants.

In the future, we may initiate an open-label trial for one or more of our product candidates. An “open-label” clinical trial is one where both the patient and investigator know whether the patient is receiving the investigational product candidate or either an existing approved drug or placebo. Most typically, open-label clinical trials test only the investigational product candidate and sometimes may do so at different dose levels. Open-label clinical trials are subject to various limitations that may exaggerate any therapeutic effect as patients in open-label clinical trials are aware when they are receiving treatment. Open-label clinical trials may be subject to a “patient bias” where patients perceive their symptoms to have improved merely due to their awareness of receiving an experimental treatment. In addition, open-label clinical trials may be subject to an “investigator bias” where those assessing and reviewing the physiological outcomes of the clinical trials are aware of which patients have received treatment and may interpret the information of the treated group more favorably given this knowledge.

We could also encounter delays if a clinical trial is suspended or terminated by us, by the institutional review boards (“IRBs”) of the institutions in which such clinical trials are being conducted, by a data safety monitoring board for such clinical trial, or by the FDA or comparable foreign regulatory authorities. Clinical trials can be delayed or terminated or fail to meet endpoints for a variety of reasons, including delays or failures related to:

- the FDA or comparable foreign regulatory authorities disagreeing as to the design or implementation of our clinical trials;
- the FDA or comparable foreign regulatory authorities disagreeing with our clinical development strategy or statistical plan;
- changes in governmental regulations or administrative actions;
- delays in our ability to commence a clinical trial;
- reaching agreement on acceptable terms with prospective CROs and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and clinical trial sites;

- obtaining IRB approval at each clinical trial site;
- recruiting an adequate number of suitable patients to participate in a clinical trial on a timely basis;
- the number of patients required for clinical trials of our drug candidates may be larger than we anticipate;
- having subjects complete a clinical trial or return for post-treatment follow-up;
- clinical trial sites deviating from clinical trial protocol or dropping out of a clinical trial;
- protocol deviations or non-compliance with good clinical practice ("GCP") requirements, or other data integrity reasons, that cause us or the FDA or other regulatory authorities to exclude data from non-compliant sites or investigators, which may cause the trial to be underpowered to meet the endpoints;
- delays by us or our CROs in qualifying or analyzing patient data at the completion of clinical trials;
- failure to demonstrate a benefit from using a drug candidate;
- addressing subject safety concerns that arise during the course of a clinical trial;
- adding a sufficient number of clinical trial sites; or
- obtaining sufficient supply of drug candidates for use in nonclinical studies or clinical trials from third-party suppliers.

Further, conducting clinical trials in foreign countries, as we may do for our drug candidates, presents additional risks that may delay completion of our clinical trials. These risks include the failure of enrolled patients in foreign countries to adhere to clinical protocol as a result of differences in healthcare services or cultural customs, managing additional administrative burdens associated with foreign regulatory schemes, as well as political and economic risks relevant to such foreign countries.

Moreover, principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and receive compensation in connection with such services. Under certain circumstances, we may be required to report some of these relationships to the FDA or comparable foreign regulatory authorities. The FDA or comparable foreign regulatory authority may conclude that a financial relationship between us and a principal investigator has created a conflict of interest or otherwise affected interpretation of the study. The FDA or comparable foreign regulatory authority may therefore question the integrity of the data generated at the applicable clinical trial site and the utility of the clinical trial itself may be jeopardized. This could result in a delay in approval, or rejection, of our marketing applications by the FDA or comparable foreign regulatory authority, as the case may be, and may ultimately lead to the denial of marketing approval of one or more of our drug candidates. If we experience delays in the completion of, or termination of, any clinical trial of our drug candidates, the commercial prospects of our drug candidates will be harmed, and our ability to generate product revenues from any of these drug candidates will be delayed. Moreover, any delays in completing our clinical trials will increase our costs, slow down our drug candidate development and approval process and jeopardize our ability to commence product sales and generate revenues.

If the results of our current and future clinical trials are inconclusive with respect to the efficacy of our drug candidates, if we or a future partner do not meet the clinical endpoints with statistical and clinically meaningful significance, or if there are safety concerns associated with our drug candidates, we may:

- incur unplanned costs;
- determine to limit or terminate clinical trials, including our open-label extension trial;
- be delayed in or prevented from obtaining marketing approval for our drug candidates;
- obtain approval for indications or patient populations that are not as broad as intended or desired;
- obtain approval with labeling that includes significant use or distribution restrictions or safety warnings including boxed warnings;
- be subject to changes in the way our drug candidates are administered;

- be required to perform additional clinical trials to support approval or be subject to additional post-marketing testing requirements;
- have regulatory authorities withdraw their approval of the drug product or impose restrictions on its distribution in the form of a modified risk evaluation and mitigation strategy ("REMS");
- be subject to the addition of labeling statements, such as warnings or contraindications;
- be sued; or
- experience damage to our reputation.

We may not be successful in integrating lasofoxifene into our pipeline of product candidates.

In December 2025, we entered into agreements with Sermonix Pharmaceuticals, Inc. and Ligand Pharmaceuticals Incorporated granting the Company exclusive licenses and rights to develop, manufacture and commercialize oral forms of the selective estrogen-receptor modulator known as lasofoxifene in all countries and territories of the world except for Asia and certain countries in the Middle East. The development and any potential partnering or independent commercialization of this product candidate will require substantial additional cash to fund the costs associated with conducting the necessary preclinical and clinical testing and obtaining regulatory approval. In addition, the consummation of this transaction may also require more time or greater cash resources than we anticipate and expose us to other operational and financial risks, including:

- increased near-term and long-term expenditures;
- exposure to unknown liabilities;
- higher than expected acquisition, disposition or integration costs;
- incurrence of substantial debt or dilutive issuances of equity securities to fund future operations;
- write-downs of assets or incurrence of non-recurring, impairment or other charges;
- difficulty and cost in integrating the development of lasofoxifene into our operations;
- impairment of relationships with key suppliers or service providers involved in the historical development of lasofoxifene;
- inability to hire for key areas of need or retain our employees that are necessary for the development of our product candidates and management of our business; and
- possibility of future litigation.

If any of the foregoing risks materialize it could have a material adverse effect on our business, financial condition and prospects.

We may expend our limited resources to pursue a particular drug candidate or indication and fail to capitalize on drug candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we focus on research programs and drug candidates that we identify for specific indications. As a result, we may forgo or delay pursuit of opportunities with other drug candidates or for other indications that later prove to have greater commercial potential or a greater likelihood of success. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs and drug candidates for specific indications may not yield any commercially viable products. If we do not accurately evaluate the commercial potential or target market for a particular drug candidate, we may relinquish valuable rights

to that drug candidate through collaboration, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights.

Our long-term prospects depend in part upon discovering, developing and commercializing additional drug candidates, which may fail in development or suffer delays that adversely affect their commercial viability.

Our future operating results are dependent on our ability to successfully discover, develop, obtain regulatory approval for and commercialize drug candidates beyond those we currently have in clinical and nonclinical development. A drug candidate can unexpectedly fail at any stage of nonclinical and clinical development. The historical failure rate for drug candidates is high due to risks relating to safety, efficacy, clinical execution, changing standards of medical care and other unpredictable variables. The results from nonclinical testing or early clinical trials of a drug candidate may not be predictive of the results that will be obtained in later stage clinical trials of the drug candidate.

The success of other future drug candidates we may develop will depend on many factors, including the following:

- generating sufficient data to support the initiation or continuation of clinical trials;
- obtaining regulatory permission to initiate clinical trials;
- contracting with the necessary parties to conduct clinical trials;
- successful enrollment of patients in, and the completion of, clinical trials on a timely basis;
- the timely manufacture of sufficient quantities of the drug candidate for use in clinical trials; and
- adverse events in the clinical trials.

Even if we successfully advance any other future drug candidates into clinical development, their success will be subject to all of the clinical, regulatory and commercial risks described elsewhere in this "Risk Factors" section. Accordingly, we cannot assure you that we will ever be able to discover, develop, obtain regulatory approval of, commercialize or generate significant revenue from our other future drug candidates.

We have been and may in the future be subject to claims, lawsuits, arbitration proceedings, government investigations, securities class action litigation and other legal, regulatory and administrative proceedings and face potential liability and expenses related thereto, which could divert management's attention, and insurance coverage may not be sufficient to cover all costs and damages. This could have a material adverse effect on our business, operating results and financial condition.

In the ordinary course of business, we have been and may in the future be the subject of various legal claims, lawsuits, arbitration proceedings, government investigations, securities class action litigation and other legal, regulatory and administrative proceedings. Any such claims, investigations or proceedings against us, whether meritorious or not, could be time-consuming, result in costly litigation, be harmful to our reputation, require significant management attention and divert significant resources, and the resolution of any such claims, investigations or proceedings could result in substantial damages, settlement costs, fines or penalties that could adversely affect our business, financial condition or operating results or result in harm to our reputation and brand, sanctions, consent decrees, injunctions or other remedies requiring a change in our business practices.

In the past, securities class action litigation has often followed announcement of significant business transactions, such as the sale of a company or other strategic transaction, or of negative events, such as negative results from clinical trials. We may be exposed to such litigation or government or regulatory investigations even if no wrongdoing occurred. Litigation and investigations are usually expensive and divert management's attention and

resources, which could adversely affect our business and cash resources and our ability to consummate a potential strategic transaction or the ultimate value our stockholders receive in any such transaction.

Further, under certain circumstances we may have contractual or other legal obligations to indemnify and to incur legal expenses on behalf of investors, directors, officers, employees, customers, vendors or other third-parties. For example, our amended and restated bylaws provide that we will indemnify our directors and officers, and may indemnify our employees, agents and other persons, to the fullest extent permitted by the Delaware General Corporation Law. We have also entered into indemnification agreements with directors and officers that require us, among other things, to indemnify them against claims that may arise due to their service in those capacities. These indemnification agreements also require us to advance expenses reasonably and actually incurred by them in investigating or defending any such claims, and it may be difficult or impossible to recover any advanced expenses if it turns out the person was not entitled to indemnification. If we are required or agree to defend or indemnify, or advance expenses to, any of our investors, directors, officers, employees, customers, vendors or other third-parties, we could incur material costs and expenses that could adversely affect our business, results of operations or financial condition.

Washington State University ("WSU"), previously announced that it had undertaken a review of prior claims of potential research misconduct involving our former chief executive officer's doctoral research at WSU. We cannot predict what conclusions WSU has reached or may reach in the future, whether or when WSU would share its conclusions with us or the public, and what effect, if any, this review could have on our business and reputation.

In connection with 2021 claims of potential research misconduct involving our former chief executive officer's research at WSU, WSU previously announced that it would undertake a review of these claims. These claims precipitated an investigation by our board of directors, securities class action and shareholder derivative litigation, and a Department of Justice civil investigation that have all since been resolved. We cannot predict what, if any, effect this review may have on our business and reputation, including with regards to our in-licensed patents and our relationship with WSU, from which we in-license patents underlying our previous lead drug candidate, fosgonimeton.

Any "topline", interim, initial, or preliminary data from our clinical trials that we announce or publish from time to time may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we may publicly disclose preliminary or topline data from our nonclinical studies and clinical trials, which is based on a preliminary analysis of then-available data, and the results and related findings and conclusions are subject to change following a more comprehensive review of the data related to the particular study or clinical trial. We also make assumptions, estimations, calculations and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. As a result, the topline or preliminary results that we report may differ from future results of the same studies, or different conclusions or considerations may qualify such results, once additional data have been received and fully evaluated. Topline data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, topline data should be viewed with caution until the final data are available.

From time to time, we may also disclose interim data from our nonclinical studies and clinical trials. Interim data from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available or as patients from our clinical trials continue other treatments for their disease. Adverse differences between preliminary or interim data and final data could significantly harm our business prospects. Further, disclosure of interim data by us or by our competitors could result in volatility in the price of our common stock.

Additionally, we rely on data received from clinical trials, whether preliminary or final, to inform decisions on future clinical trials, including trial design, trial size, and whether or not to initiate additional clinical trials. However, this does not guarantee that our expectations based on earlier data will be realized in future clinical trials. For example, in November 2020, we initiated ACT-AD, an exploratory Phase 2 clinical trial, to better understand the overall effects of fosgonimeton on working memory processing speed and cognitive measures. Topline results of ACT-AD were announced in June 2022. We used these data to help inform strategic decisions around LIFT-AD. In September 2024,

we announced the topline results for LIFT-AD, showing that the trial did not meet its primary or key secondary endpoints. Moreover, preliminary or topline results are based on a preliminary analysis of then-available data, and a more comprehensive and full review of the data may result in different conclusions, which could have a negative impact on our decisions regarding any additional trials.

Further, others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular program, the approvability or commercialization of the particular drug candidate or drug and our company in general. In addition, the information we choose to publicly disclose regarding a particular study or clinical trial is based on what is typically extensive information, and you or others may not agree with what we determine is material or otherwise appropriate information to include in our disclosure. If the interim, topline, or preliminary data that we report differ from actual results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, our drug candidates may be harmed, which could harm our business, operating results, prospects or financial condition.

Our reporting of topline or final data for our clinical trials may be delayed and our regulatory submissions or receipt of necessary marketing approvals could be delayed or prevented.

Our projected timeline for announcing our topline data for ATH-1105, lasofoxifene or any other drug candidates we may seek to develop may be delayed, including, among other reasons, due to possible delays in data cleaning, processing or analysis, either on our part and/or on the part of any of our third-party vendors, which could harm our business, operating results, prospects or financial condition.

We also may not be able to initiate or continue clinical trials for our drug candidates if we are unable to recruit and enroll a sufficient number of eligible patients to participate in these clinical trials through completion of such trials as required by the FDA or other comparable foreign regulatory authorities. Patient enrollment is a significant factor in the timing of clinical trials. Our ability to enroll eligible patients may be limited or may result in slower enrollment than we anticipate. Patient enrollment may also be affected if our competitors have ongoing clinical trials for programs that are under development for the same indications as our drug candidates, and patients who would otherwise be eligible for our clinical trials instead enroll in clinical trials of our competitors' programs. Additionally, publicly reported results of our clinical trials or third-party clinical trials for similar indications may impact enrollment of our trials in progress. If we are unable to locate a sufficient number of such patients, our clinical trial and development plans could be delayed.

In addition, the timely completion of our clinical trials in accordance with their protocols and applicable requirements depends, among other things, on our ability to enroll a sufficient number of participants who remain in the study until its conclusion. If we are delayed or unsuccessful in enrolling the desired number of subjects in our trials, whether as a result of the outcomes of prior trials conducted by us, competing clinical trials, overly stringent eligibility requirements, or other factors, our clinical trial results could be delayed, the costs of our clinical trials could materially increase, and the overall development timelines for ATH-1105, lasofoxifene or any other drug candidates we may seek to develop could be negatively impacted. Even if we are successful in enrolling the targeted number of subjects in our trials, the FDA and other regulators may request additional clinical trials with larger numbers of subjects as a condition to any regulatory approval.

Our inability to enroll a sufficient number of patients for our clinical trials would result in significant delays or may require us to abandon one or more clinical trials altogether. Further, to the extent any of our clinical trial sites fail to comply with the approved study protocol, good clinical practices, or FDA regulations, we may be required to exclude such sites, participants such sites may have enrolled, as well as the data collected by such sites. If any of these events were to occur, or if we are required to exclude any data for any reason, we may be required to recruit more sites or more participants than we initially thought. Enrollment delays or other delays in our clinical trials may result in increased development costs for our drug candidates and jeopardize our ability to obtain marketing approval for the sale of our drug candidates. Furthermore, even if we are able to enroll a sufficient number of patients for our clinical trials, we may have difficulty maintaining participation in our clinical trials through the treatment and any follow-up periods.

We face significant competition, and if our competitors develop and market technologies or products more rapidly than we do or that are more effective, safer, or less expensive than the drug candidates we develop, our commercial opportunities will be negatively impacted.

The biotechnology and pharmaceutical industries utilize rapidly advancing technologies and are characterized by intense competition. While we believe that our scientific knowledge, technology and development expertise provide us with competitive advantages, we face competitive pressures from both large and small pharmaceutical companies, emerging biotechnology companies, as well as academic, government and private research institutions. Many of our competitors have access to greater financial resources, market presence, expertise in development, preclinical and clinical testing, manufacturing, commercialization, regulatory approval process, or marketing and sales than we do. Specifically, there are a large number of companies developing or marketing treatments for cancer, including many major pharmaceutical and biotechnology companies. Our competitors may compete with us in patient recruitment, use of clinical research organizations, and procurement of operational resources. As a result, our competitors may discover, develop, license or commercialize products before or more successfully than we do.

Drug candidates that we may successfully develop and commercialize will compete with existing therapies and new therapies that may become available in the future. Key product features that would affect our ability to effectively compete with other therapeutics include the efficacy, safety and convenience of our drug products. Our competitors may obtain patent protection or other intellectual property rights that limit our ability to develop or commercialize our drug candidates. The availability of reimbursement from government and other third-party payors will also significantly affect the pricing and competitiveness of our drug products. Current and future Centers for Medicare & Medicaid Services("CMS"), coverage restrictions on classes of drugs that encompass our drug candidates could have a material adverse impact on our ability to commercialize our drug candidates, if approved, generate revenue and attain profitability. It is unclear how future CMS coverage decisions and policies will impact our business. Our competitors may also obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. For additional information regarding our competition, see the subsections of this Form 8-K titled "Competition" under the section titled "Business".

We may develop drug candidates in combination with other therapies, which exposes us to additional risks.

We may develop drug candidates in combination with one or more other approved or unapproved therapies. Even if any drug candidate we develop were to receive marketing approval or be commercialized for use in combination with other existing therapies, we would continue to be subject to the risks that the FDA or comparable foreign regulatory authorities outside of the United States could revoke approval of the therapy used in combination with our drug product or that safety, efficacy, manufacturing or supply issues could arise with any of those existing therapies. If the therapies we use in combination with our drug candidates are replaced as the standard of care for the indications we choose for any of our drug candidates, the FDA or comparable foreign regulatory authorities may require us to conduct additional clinical trials. The occurrence of any of these risks could result in our own drug products, if approved, being removed from the market or being less successful commercially.

We also may choose to evaluate drug candidates in combination with one or more therapies that have not yet been approved for marketing by the FDA or comparable foreign regulatory authorities. We will not be able to market and sell any drug candidate we develop in combination with an unapproved therapy for a combination indication if that unapproved therapy does not ultimately obtain marketing approval either alone or in combination with our drug product. In addition, unapproved therapies face the same risks described with respect to our drug candidates currently in development and clinical trials, including the potential for serious adverse effects, delay in their clinical trials and lack of FDA approval. If the FDA or comparable foreign regulatory authorities do not approve these other drugs or revoke their approval of, or if safety, efficacy, quality, manufacturing or supply issues arise with, the drugs we choose to evaluate in combination with our drug candidates we develop, we may be unable to obtain approval of or market such combination therapy.

We may not realize all the anticipated benefits of our expected corporate rebranding and it may result in unanticipated disruptions to our on-going business.

In order to reflect our strategic shift to focus on developing lasofoxifene, in addition to ATH-1105, we expect to change our name and re-brand our business (the "Corporate Rebrand"). The Corporate Rebrand is expected to involve the adoption of a new ticker symbol on The Nasdaq Stock Market. We may face unanticipated disruptions to our business arising from the Corporate Rebrand, and it may expose us to additional risks, including:

- Disruptions or unanticipated delays accessing certain markets or segments due to delays or other issues with regulatory approvals, clinical trials, or other updates arising from or related to the Corporate Rebrand;
- Intellectual property risks associated with the adoption of a new corporate identity and trade dress; and
- Loss of goodwill and brand equity associated with our legacy brand that will become less prominent over time.

The Corporate Rebrand is expected to involve a significant financial and resource investment as we complete this transition. The anticipated benefits of the Corporate Rebrand may not be achieved within the anticipated timeframe, without additional near or long-term investment, or at all. Any of these factors could negatively impact our brand and reputation, decrease or delay the expected accretive effect of the Corporate Rebrand, and negatively impact the price of our common stock.

Risks Related to Our Financial Position and Capital Needs

We will require substantial additional funding to finance our operations, complete the development and commercialization of our product candidates, and develop and commercialize other current and potential drug candidates. If we are unable to raise this funding and access capital when needed, we may be forced to delay, reduce, or eliminate our drug product development programs, commercialization efforts or other operations.

Since our inception, we have used substantial amounts of cash to fund our operations, and we will continue to incur expenses for the foreseeable future in connection with our ongoing activities, particularly as we continue the research and development of, initiate clinical trials of, and seek marketing approval for, ATH-1105 and lasofoxifene. Developing ATH-1105 and lasofoxifene and conducting clinical trials for the potential treatment of ALS and breast cancer, respectively, and any other indications that we may pursue in the future will require substantial amounts of capital. In addition, if we or a future partner obtain marketing approval for our current or any future product candidates, we expect this would result in significant commercialization expenses related to sales, marketing, manufacturing, and distribution. Furthermore, we expect to continue to incur additional costs associated with operating as a public company.

Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. As of September 30, 2025, we had cash, cash equivalents and investments of $25.2 million. Based upon our current operating plan, we estimate that our existing cash, cash equivalents and investments will be sufficient to fund our operating expenses and capital expenditure requirements through at least the next 12 months. On December 18, 2025, we announced that we entered into a securities purchase agreement with certain institutional investors whereby we agreed to issue and sell, by way of a private placement, shares of common stock and pre-funded warrants to purchase common stock, which, upon closing, will provide us with approximately $90 million in gross proceeds, excluding placement agent fees and offering expenses. While we expect to use these proceeds to fund the clinical development of our product candidates, we will need to raise substantial additional capital to advance these product candidates through later-stage clinical development, partnering or independent commercialization. If we raise additional funds by issuing equity securities, our stockholders will suffer additional dilution, and the terms of any financing may adversely affect the rights of our stockholders.

The amount and timing of our future funding requirements depends on many factors, some of which are outside of our control, including but not limited to:

- the progress, costs, clinical trial design, results of and timing of our clinical trials, including for potential additional indications that we may pursue;
- the willingness of the FDA, EMA and any other regulatory agencies to accept ATH-1105 or lasofoxifene or clinical trial data, as well as data from any completed and planned clinical and nonclinical studies and other work, as the basis for review and approval of ATH-1105 for ALS and lasofoxifene for breast cancer and the potential need for additional clinical trials;

- the outcome, costs and timing of seeking and obtaining FDA, EMA and any other regulatory approvals, including ongoing management of regulatory activities;
- the number and characteristics of drug candidates that we pursue;
- our ability to manufacture sufficient quantities of our drug candidates;
- our need to expand our research and development activities and resources;
- the costs associated with securing and establishing commercialization and manufacturing capabilities;
- the costs of acquiring, licensing or investing in businesses, drug candidates and technologies;
- the cost, timing and outcomes of any litigation involving our company, including securities class actions and government investigations which we may be or may in the future become involved in;
- our ability to maintain, expand and defend the scope of our intellectual property portfolio, including the amount and timing of any payments we may be required to make, or that we may receive, in connection with the licensing, filing, prosecution, defense and enforcement of any patents or other intellectual property rights;
- our need and ability to retain management and hire scientific, clinical and other personnel;
- the effect of competing drugs and drug candidates and other market developments;
- our need to implement additional internal systems and infrastructure, including financial, quality, and reporting systems; and
- the economic and other terms, timing of and success of any collaboration, licensing or other arrangements into which we may enter in the future.

Because the time and efforts required for successful research and development of our product candidates is highly uncertain, we are unable to estimate the actual funds we will require for development and any marketing and commercialization activities for any product candidates that ultimately may be approved for sale.

In addition, in January 2023, we entered into a sales agreement with Cantor and BTIG to sell shares of our common stock having aggregate sales proceeds of up to $75.0 million, from time to time, subject to applicable limitations on sales pursuant to SEC rules and regulations, through an at-the-market ("ATM") equity offering program under which Cantor and BTIG are acting as sales agents. We have not sold any securities pursuant to this ATM offering. However, additional funding may not be available to us on acceptable terms or at all. Any such funding may result in dilution to stockholders, imposition of debt covenants and repayment obligations, or other restrictions that may affect our business. If we are unable to obtain funding on a timely basis, we may be required to significantly curtail or abandon one or more of our research or development programs. We also could be required to seek funds through arrangements with collaborative partners or otherwise that may require us to relinquish rights to some of our technologies or drug candidates or otherwise agree to terms unfavorable to us.

We expect to finance our cash needs through a combination of public or private equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing or distribution arrangements. In addition, we may seek additional capital to take advantage of favorable market conditions or strategic opportunities even if we believe we have sufficient funds for our current or future operating plans.

Our ability to raise additional funds will depend on financial, economic and other factors, many of which are beyond our control. For example, the current inflationary economic environment and health epidemics have resulted in a disruption of global financial markets. If the disruption persists or deepens, we could be unable to access additional capital, which could negatively affect our ability to consummate certain corporate development transactions or other important, beneficial or opportunistic investments. If additional funds are not available to us when we need them, on terms that are acceptable to us, or at all, we may be required to take steps that could adversely impact our business, including delaying, limiting, reducing or terminating nonclinical studies, clinical trials or other research and development activities or eliminating one or more of our development programs altogether, or delaying, limiting or reducing or terminating efforts to prepare for commercialization of any future approved drug products. We currently

have a shelf registration statement effective and an existing ATM equity offering program, however, our ability to raise capital under this registration statement and through our ATM equity offering program may be limited in the future by, among other things, SEC rules and regulations impacting the eligibility of smaller companies to use Form S-3 for primary offerings of securities.

We have incurred significant losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future.

We have not generated any revenue from drug product sales and our drug candidates will require substantial additional investment before they may provide us with any revenue. We had net losses of $22.7 million and $81.9 million for the nine months ended September 30, 2025 and 2024, respectively, and an accumulated deficit of $428.9 million as of September 30, 2025.

We have devoted most of our financial resources to research and development, including our clinical and nonclinical development activities. To date, we have financed our operations primarily with proceeds from the sale and issuance of common stock, convertible preferred stock, common stock warrants, and convertible notes, and to a lesser extent from grant income and stock option exercises.

We expect to incur significant expenses and operating losses for the foreseeable future, including as a result of the following actions that we may take to:

- continue our research and nonclinical and clinical development of our drug candidates;
- expand the scope of our clinical studies for our current and prospective drug candidates;
- initiate additional nonclinical, clinical or other studies for our drug candidates;
- change or add additional manufacturers or suppliers and manufacture drug supply and drug product for clinical trials and commercialization;
- seek regulatory and marketing approvals for any of our drug candidates that successfully complete clinical trials;
- attract, hire and retain additional personnel;
- operate as a public company;
- maintain our facilities and lab space;
- seek to identify and validate additional drug candidates;
- acquire or in-license other drug candidates and technologies or engage in other strategic transactions;
- make milestone or other payments under our in-license or other agreements, including with respect to our license of lasofoxifene;
- maintain, protect and expand our intellectual property portfolio;
- create additional infrastructure to support our operations and our drug product development efforts; and
- incur expenses in connection with potential future legal proceedings, and addressing potential stockholder activism.

Our expenses could increase beyond expectations for a variety of reasons, including if we experience any delays or encounter issues with any of the above, are required by the FDA, the European Medicines Agency (“EMA”), or other regulatory agencies, domestic or foreign, to perform clinical and other studies in addition to those that we currently anticipate. Our prior losses, combined with expected future losses, have had and will continue to have an adverse effect on our stockholders’ equity.

Adverse events or perceptions affecting the financial services industry could adversely affect our operating results, liquidity, financial condition and prospects.

Limited liquidity, defaults, non-performance or other adverse developments affecting financial institutions or parties with which we do business, or perceptions regarding these or similar risks, have in the past and may in the future lead to market-wide liquidity problems. For example, in March 2023, Silicon Valley Bank ("SVB") was closed and placed in receivership and subsequently, additional financial institutions have been placed into receivership. We did not hold cash deposits or other accounts with SVB and did not, and as of the date of this report do not, otherwise have a direct business relationship with SVB or similarly situated financial institutions. However, companies that did have a business relationship with SVB faced:

- delayed access to deposits or other financial assets or the uninsured loss of deposits or other financial assets;
- loss of access to revolving existing credit facilities or other working capital sources or the inability to refund, roll over or extend the maturity of, or enter into new credit facilities or other working capital resources;
- potential or actual breach of obligations, including U.S. federal and state wage laws and contracts that required them to maintain letters or credit or other credit support arrangements; and
- termination of cash management arrangements or delays in accessing or actual loss of funds subject to cash management arrangements.

As a result of U.S. government intervention, account holders subsequently regained access to their accounts, including the uninsured portion of deposit accounts; however, borrowers under credit agreements, letters of credit and certain other financial instruments with SVB and similarly situated financial institutions were unable to access to such sources of liquidity. There is no guarantee that the U.S. government will intervene to provide access to uninsured funds in the future in the event of the failure of other financial institutions, or that they would do so in a timely fashion. In such an event, parties with which we have commercial agreements may be unable to satisfy their obligations to, or enter into new commercial arrangements with, us.

Concerns regarding the U.S. or international financial systems could impact the availability and cost of financing, thereby making it more difficult for us to acquire financing on acceptable terms or at all.

Any of these risks could materially impact our operating results, liquidity, financial condition and prospects.

The value of our investments is subject to significant capital markets risk related to changes in interest rates and credit spreads as well as other investment risks, which may adversely affect our operating results, liquidity, financial condition and prospects.

Our results of operations are affected by the performance of our investment portfolio. Our excess cash is invested by an external investment management service provider, under the direction of our management in accordance with our investment policy. The investment policy defines constraints and guidelines that restrict the asset classes that we may invest in by type, duration, quality and value. Our investments are subject to market-wide risks, and fluctuations, as well as to risks inherent in particular securities. The failure of any of the investment risk strategies that we employ could have a material adverse effect on our operating results, liquidity, financial condition and prospects.

The value of our investments is exposed to capital market risks, and our results of operations, liquidity, financial condition or cash flows could be adversely affected by realized losses, impairments and changes in unrealized positions as a result of: significant market volatility, changes in interest rates, changes in credit spreads and defaults, a lack of pricing transparency, a reduction in market liquidity, declines in equity prices, changes in national, state/provincial or local laws and the strengthening or weakening of foreign currencies against the U.S. dollar. Levels of write-down or impairment are impacted by our assessment of the intent to sell securities that have declined in value as well as actual losses as a result of defaults or deterioration in estimates of cash flows. If we reposition or realign

portions of the investment portfolio and sell securities in an unrealized loss position, we will incur realized losses. Any such charge may have a material adverse effect on our results of operations and business.

Our ability to use net operating losses to offset future taxable income may be subject to certain limitations.

As of December 31, 2024, we had federal net operating loss carryforwards("NOLs") to offset future taxable income of approximately $9.5 million and federal tax credit carryforwards of approximately $16.5 million, which expire over a period of 7 to 13 years. Federal NOLs of $196.0 million generated after the 2017 tax year will carry forward indefinitely and will be subject to the 80% of taxable income limitation. As of December 31, 2024, we also had state NOLs of $3.9 million, which expire over a period of 17 to 20 years. A lack of future taxable income would adversely affect our ability to utilize these NOLs.

In addition, under Section 382 of the Internal Revenue Code of 1986, as amended("the Code"), a corporation that undergoes an "ownership change," generally defined as a greater than 50% change (by value) in ownership by "5 percent shareholders" over a rolling three-year period, is subject to limitations on its ability to utilize its pre-change NOLs and tax credit carryforwards to offset post-change taxable income or taxes. We may have already experienced one or more ownership changes through our equity offerings and other changes in our stock ownership.

Depending on the timing of any future utilization of our pre-change NOLs and tax credit carryforwards, we may be limited as to the amount that can be utilized each year as a result of such previous ownership changes. In addition, future changes in our stock ownership as well as other changes that may be outside of our control, could result in additional ownership changes under Section 382 of the Code. Our NOLs may also be impaired under similar provisions of state law or limited pursuant to provisions of the Tax Cuts and Jobs Act amendments to the Code, as modified by the Coronavirus Aid, Relief, and Economic Security Act. We have recorded a full valuation allowance related to our NOLs and other deferred tax assets due to the uncertainty of the ultimate realization of the future benefits of those assets.

Changes in tax laws could have a material adverse effect on our business, cash flows, results of operations or financial condition.

We are subject to the tax laws, regulations, and policies of several taxing jurisdictions. Changes in tax laws, as well as other factors, could cause us to experience fluctuations in our tax obligations and effective tax rates and otherwise adversely affect our tax positions or our tax liabilities. For example, in August 2022, as part of the Inflation Reduction Act of 2022("IRA"), the United States enacted a 1% excise tax on stock buybacks and a 15% alternative minimum tax on adjusted financial statement income. Additionally, beginning in 2022, the Code eliminated the right to deduct research and development expenditures and instead requires taxpayers to capitalize and amortize U.S. and foreign research and development expenditures over five and 15 tax years, respectively. The One Big Beautiful Bill Act (or "OBBB"), enacted on July 4, 2025, revised these rules, permitting the deduction of certain U.S. research and development expenditures incurred in tax years beginning on or after January 1, 2025, but expenditures attributable to research and development conducted outside the U.S. must continue to be capitalized and amortized over a 15-year period. We do not anticipate a material impact on the Company resulting from the other provisions of OBBB, however, we continue to evaluate the full impact of OBBB on the Company. Additionally, many countries and local jurisdictions and organizations such as the Organization for Economic Cooperation and Development have proposed or implemented new tax laws or changes to existing tax laws, including additional taxes on payroll or employees. Any new or changes to tax laws could adversely affect our effective tax rate, operating results, tax credits or incentives or tax payments, which could have a material adverse effect on our business, cash flows, results of operations or financial condition.

Risks Related to Regulatory Approval and Other Legal Compliance Matters

The regulatory approval processes of the FDA and other comparable foreign regulatory authorities are lengthy, time consuming and inherently unpredictable. If we are not able to obtain, or if there are delays in obtaining, required regulatory approvals for our drug candidates, we will not be able to commercialize, or will be delayed in commercializing, our drug candidates, and our ability to generate revenue will be materially impaired.

Our drug candidates and the activities associated with their development and commercialization, including their design, testing, manufacture, safety, efficacy, recordkeeping, labeling, storage, approval, advertising, promotion, sale,

distribution, import and export are subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by comparable foreign regulatory authorities. Before we can commercialize any of our drug candidates, we must obtain marketing approval.

Obtaining approval by the FDA and other comparable foreign regulatory authorities is unpredictable, typically takes many years following the commencement of clinical trials and depends upon numerous factors, including the type, complexity and novelty of the product candidates involved. In addition, approval policies, regulations or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions, which may cause delays in the approval or the decision not to approve an application. Further, securing regulatory approval also requires the submission of information about the drug manufacturing process to, and inspection of manufacturing facilities by, the relevant regulatory authority. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional nonclinical, clinical or other data. Even if we eventually complete clinical testing and receive approval for our drug candidates, the FDA and other comparable foreign regulatory authorities may approve our drug candidates for a more limited indication or a narrower patient population than we originally requested or may impose other prescribing limitations or warnings that limit the drug product's commercial potential. We have not submitted for, or obtained, regulatory approval for any drug candidate, and it is possible that none of our drug candidates will ever obtain regulatory approval. Further, development of our drug candidates or regulatory approval may be delayed for reasons beyond our control.

Applications for our drug candidates could fail to receive regulatory approval for many reasons, including the following:

- the FDA or other comparable foreign regulatory authorities may disagree with the design, implementation or results of our clinical trials;
- the FDA or other comparable foreign regulatory authorities may determine that our drug candidates are not safe and effective or have undesirable or unintended side effects, toxicities or other characteristics that preclude our obtaining marketing approval or prevent or limit commercial use;
- the population studied in the clinical trial may not be sufficiently broad or representative to assure efficacy and safety in the full population for which we seek approval;
- the FDA or other comparable foreign regulatory authorities may disagree with our interpretation of data from nonclinical studies or clinical trials;
- we may be unable to demonstrate to the FDA or other comparable foreign regulatory authorities that our drug candidate's risk-benefit ratio for its proposed indication is acceptable;
- the FDA or other comparable foreign regulatory authorities may fail to approve the manufacturing processes, test procedures and specifications or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; and
- the approval policies or regulations of the FDA or other comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval or resulting in delays in our regulatory approval, including, for example, legislation or agency policies that aim to reform the accelerated approval process and FDA's increased scrutiny of post-approval confirmatory studies, which can result in withdrawal of accelerated approval if such studies fail to confirm a clinical benefit.

This lengthy approval process, as well as the unpredictability of the results of clinical trials, may result in our failing to obtain regulatory approval to market any of our drug candidates, which would significantly harm our business, results of operations and prospects. In addition, even if we obtain approval of our drug candidates, regulatory authorities may approve any of our drug candidates for fewer or more limited indications than we request, may impose significant limitations in the form of narrow indications, warnings, or a REMS. Regulatory authorities may not approve the price we intend to charge for drug products we may develop, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a drug candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that drug candidate. Any of the foregoing scenarios could seriously harm our business.

Of the large number of drugs in development, only a small percentage successfully complete the FDA or comparable foreign regulatory approval processes and are commercialized. The lengthy approval processes as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market our drug candidates, which would significantly harm our business, results of operations and prospects.

Further, under the current administration, agency reorganization, government shutdown, lapse of U.S. government appropriations, and mass layoffs due to the federal government reduction in force initiative may impact the normal operations at the FDA as well as other federal agencies. FDA may lack adequate staff and resources to meet current review, approval, and inspection schedules, which could delay our anticipated timelines. In January 2025, President Trump issued an executive order entitled "Unleashing Prosperity Through Deregulation", which calls for at least 10 existing regulations to be repealed whenever an executive department or agency publicly proposes for notice and comment or otherwise promulgates a new regulation. Fewer agency guidance documents could interfere with FDA programs or lead to more Complete Response Letters or refusals to approve products. Recent developments at the FDA include implementation of Elsa, a generative AI tool, across all centers at the agency, announcement of a plan to phase out animal testing for monoclonal antibodies and certain other drugs, and the announcement of a new Commissioner's National Priority Voucher program to companies supporting certain U.S. national health priorities and interests. FDA has also increased its scrutiny of foreign drug manufacturing facilities and other contractors based in China, especially with respect to the transfer of biological materials, genetic data, and other sensitive data of American patients to parties located in China. Further, FDA's "real-time" release of newly issued Complete Response Letters associated with withdrawn or abandoned applications, if applicable to any of our product candidates, can materially impact our competitive advantage and intellectual property. There is significant uncertainty in the industry and how federal agencies like the FDA will change in the coming years under the current administration. It is unclear how our industry and our clinical programs will be impacted by policies and regulations implemented under the current administration or other executive orders. To the extent agency changes and government shutdown lead to disruptions in FDA's operations, including changes in funding for certain programs at the FDA, correspondence and regulatory review processes with the FDA may be materially delayed.

Our current or future drug candidates may cause significant adverse events, toxicities or other undesirable side effects when used alone or in combination with other approved products or investigational new drugs that may result in a safety profile that could inhibit regulatory approval, prevent market acceptance, limit their commercial potential or result in significant negative consequences.

As is the case with pharmaceuticals generally, it is likely that there may be side effects and adverse events associated with our drug candidates' use. Results of our clinical trials could reveal a high and unacceptable severity and prevalence of side effects or unexpected characteristics. Undesirable side effects caused by our drug candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or comparable foreign regulatory authorities. The drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the clinical trial or result in potential product liability claims. Any of these occurrences may harm our business, financial condition and prospects significantly.

If our drug candidates are associated with undesirable side effects or have unexpected characteristics in nonclinical studies or clinical trials when used alone or in combination with other approved products or investigational new drugs we may need to interrupt, delay or abandon their development or limit development to more narrow uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective. Treatment-related side effects could also affect patient recruitment or the ability of enrolled subjects to complete the clinical trial, or result in potential product liability claims. Any of these occurrences may prevent us from achieving or maintaining market acceptance of the affected drug candidate and may harm our business, financial condition and prospects significantly.

Patients in our clinical trials may in the future suffer significant adverse events or other side effects not observed in our nonclinical studies or previous clinical trials. Some of our drug candidates may be used as chronic therapies or be used in populations for which safety concerns may be particularly scrutinized by regulatory agencies. In addition, if our drug candidates are used in combination with other therapies, our drug candidates may exacerbate adverse events associated with the therapy. Patients treated with our drug candidates may also be undergoing separate treatments which can cause side effects or adverse events that are unrelated to our drug candidates, but may still impact the success of our clinical trials, including, for example, by interfering with the effects of our drug candidates.

If significant adverse events or other side effects are observed in any of our current or future clinical trials, we may have difficulty recruiting patients to the clinical trials, patients may drop out of our clinical trials, or we may be required to abandon the clinical trials or our development efforts of that drug candidate altogether. We, the FDA other comparable regulatory authorities or an IRB may suspend clinical trials of a drug candidate at any time for various reasons, including a belief that subjects in such clinical trials are being exposed to unacceptable health risks or adverse side effects. Some potential therapeutics developed in the biotechnology industry that initially showed therapeutic promise in early-stage clinical trials have later been found to cause side effects that prevented their further development. Even if the side effects do not preclude the drug candidate from obtaining or maintaining marketing approval, undesirable side effects may inhibit market acceptance due to its tolerability versus other therapies. Any of these developments could materially harm our business, financial condition and prospects.

Further, if any of our drug candidates obtains marketing approval, toxicities associated with such drug candidates and not seen during clinical testing may also develop after such approval and lead to a requirement to conduct additional clinical safety trials, additional contraindications, warnings and precautions being added to the drug label, significant restrictions on the use of the drug product or the withdrawal of the drug product from the market. We cannot predict whether our drug candidates will cause toxicities in humans that would preclude or lead to the revocation of regulatory approval based on nonclinical studies or early-stage clinical trials.

Obtaining and maintaining regulatory approval of our drug candidates in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our drug candidates in other jurisdictions.

Obtaining and maintaining regulatory approval of our drug candidates in one jurisdiction does not guarantee that we will be able to obtain or maintain regulatory approval in any other jurisdiction. For example, even if the FDA grants marketing approval of a drug candidate, comparable regulatory authorities in foreign jurisdictions must also approve the manufacturing, marketing and promotion and reimbursement of the drug candidate in those countries. However, a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from those in the United States, including additional nonclinical studies or clinical trials as clinical trials conducted in one jurisdiction may not be accepted by regulatory authorities in other jurisdictions. In many jurisdictions outside the United States, a drug candidate must be approved for reimbursement before it can be approved for sale in that jurisdiction. In some cases, the price that we intend to charge for our drug products is also subject to approval.

We may also submit marketing applications in other countries. Regulatory authorities in jurisdictions outside of the United States have requirements for approval of drug candidates with which we must comply prior to marketing in those jurisdictions. Obtaining foreign regulatory approvals and establishing and maintaining compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our drug products in certain countries. If we or any future collaborator fail to comply with the regulatory requirements in international markets or fail to receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our potential drug candidates will be harmed.

Even if we receive regulatory approval of our drug candidates, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense and we may be

subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our drug candidates.

Any regulatory approvals that we receive for our drug candidates will require surveillance to monitor the safety and efficacy of the drug candidate. The FDA may also require a REMS in order to approve our drug candidates, which could entail requirements for a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA or a comparable foreign regulatory authority approves our drug candidates, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, advertising, promotion, import, export and recordkeeping for our drug candidates will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with current good manufacturing practice("cGMP") regulations, good laboratory practice, or GLP, regulations and GCP regulations for any clinical trials that we conduct post-approval. Later discovery of previously unknown problems with our drug candidates, including adverse events of unanticipated severity or frequency, or with our third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

- restrictions on the marketing or manufacturing of our drug candidates, withdrawal of the drug product from the market or voluntary or mandatory product recalls;
- manufacturing delays and supply disruptions where regulatory inspections identify observations of noncompliance requiring remediation;
- revisions to the labeling, including limitation on approved uses or the addition of additional warnings, contraindications or other safety information, including boxed warnings;
- imposition of a REMS, which may include distribution or use restrictions;
- requirements to conduct additional post-market clinical trials to assess the safety of the drug product;
- fines, warning letters or holds on clinical trials;
- refusal by the FDA to approve pending applications or supplements to approved applications filed by us or suspension or revocation of approvals;
- product seizure or detention, or refusal to permit the import or export of our drug candidates; and
- injunctions or the imposition of civil or criminal penalties.

The FDA's and other regulatory authorities' policies may change, and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our drug candidates. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, and we may not achieve or sustain profitability. We also cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. It is difficult to predict how current and future legislation, executive actions, and litigation, including the executive orders, will be implemented, and the extent to which they will impact our business, our clinical development, and the FDA's and other agencies' ability to exercise their regulatory authority, including FDA's pre-approval inspections and timely review of any regulatory filings or applications we submit to the FDA. To the extent any executive actions impose constraints on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted. In 2024, the U.S. Supreme Court overruled the Chevron doctrine, which gave deference to regulatory agencies' statutory interpretations in litigation against federal government agencies, such as the FDA, where the law is ambiguous. This landmark Supreme Court decision may invite more companies and other stakeholders to bring lawsuits against the FDA to challenge longstanding decisions and policies of the FDA, including FDA's statutory interpretations of market exclusivities and the "substantial evidence" requirements for drug approvals, which could undermine the FDA's authority, lead to uncertainties in the industry, and disrupt the FDA's normal operations, any of which could impact the FDA's review of our regulatory submissions. Further, mass layoffs, agency reorganizations, increased attrition, and changes in the leadership of the FDA and other federal agencies under the current administration may lead to new policies and changes in the regulations that could increase our compliance costs or delay our clinical development and timelines. We cannot predict the full impact of this decision, future judicial

challenges brought against the FDA, or the nature or extent of government regulation that may arise from future legislation or administrative action.

Moreover, the FDA strictly regulates the promotional claims that may be made about drug products. In particular, a product may not be promoted for uses that are not approved by the FDA as reflected in the product's approved labeling. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant civil, criminal and administrative penalties. The occurrence of any event or penalty described above may inhibit our ability to commercialize our drug candidates and generate revenue and could require us to expend significant time and resources in response and could generate negative publicity.

Disruptions at the FDA, the SEC and other government agencies under the current administration, funding cuts or shortages, global health concerns, or other events could hinder their ability to hire and retain key leadership and other personnel, or otherwise prevent new or modified products from being developed, approved or commercialized in a timely manner or at all, or otherwise prevent those agencies from performing normal business functions on which the operation of our business may rely, which could negatively impact our business.

The ability of the FDA to review and approve new products can be affected by a variety of factors, including changes in the administration, changes in the agency leadership, agency reorganization, mass layoffs, budget cuts, lapse in government appropriations, and other initiatives implemented by the Department of Government Efficiency, changes in government budget and funding levels, ability to hire and retain key personnel and accept the payment of user fees, and statutory, regulatory, and policy changes, and other events that may otherwise affect the FDA's ability to perform routine functions. Average review times at the agency have fluctuated in recent years as a result. In addition, government funding of the SEC, and other government agencies on which our operations may rely, including those that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable.

To the extent the FDA's normal operations are disrupted or delayed, for example, due to executive orders and other policies promulgated by the administration, travel restrictions, public health or geopolitical issues, staffing shortages or layoffs, government shutdown, or changes in funding, the FDA may not be able to complete the necessary inspections or provide feedback in a timely manner during our clinical development or review period. If any such delays or disruptions were to occur, it could significantly impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions, which could have a material adverse effect on our business. Further, future government shutdowns or delays could impact our ability to access the public markets and obtain necessary capital in order to properly capitalize and continue our operations.

We may attempt to secure approval from the FDA or comparable foreign regulatory authorities through the use of accelerated approval pathways. If we are unable to obtain such approval, we may be required to conduct additional nonclinical studies or clinical trials beyond those that we contemplate, which could increase the expense of obtaining, and delay the receipt of, necessary marketing approvals. Even if we receive accelerated approval from the FDA, if our confirmatory trials do not verify clinical benefit, or if we do not comply with rigorous postmarketing requirements, the FDA may seek to withdraw accelerated approval.

We may seek an accelerated approval for one or more of our drug candidates. Under the accelerated approval program, the FDA may grant accelerated approval to a product candidate designed to treat a serious or life-threatening condition that provides meaningful therapeutic benefit over available therapies upon a determination that the product candidate has an effect on a surrogate endpoint or intermediate clinical endpoint that is reasonably likely to predict clinical benefit. The FDA considers a clinical benefit to be a positive therapeutic effect that is clinically meaningful in the context of a given disease, such as irreversible morbidity or mortality. For the purposes of accelerated approval, a surrogate endpoint is a marker, such as a laboratory measurement or other measure that is thought to predict clinical benefit, but is not itself a measure of clinical benefit. An intermediate clinical endpoint is a clinical endpoint that can be measured earlier than an effect on irreversible morbidity or mortality that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit. The accelerated approval pathway may be used in cases in which the advantage of a new drug over available therapy may not be a direct therapeutic advantage, but is a clinically important improvement from a patient and public health perspective. If granted, accelerated approval is usually contingent on the sponsor's agreement to conduct, in a diligent manner, additional post-approval confirmatory

studies to verify and describe the drug's clinical benefit. If such post-approval studies fail to confirm the drug's clinical benefit, the FDA may withdraw its approval of the drug.

Prior to seeking accelerated approval for any of our drug candidates, we intend to seek feedback from the FDA and will otherwise evaluate our ability to seek and receive accelerated approval. There can be no assurance that after our evaluation of the feedback and other factors we will decide to pursue or submit an NDA for accelerated approval or any other form of expedited development, review or approval. Similarly, there can be no assurance that after subsequent FDA feedback we will continue to pursue or apply for accelerated approval or any other form of expedited development, review or approval, even if we initially decide to do so. Furthermore, if we decide to submit an application for accelerated approval or receive an expedited regulatory designation (e.g., breakthrough therapy designation) for our drug candidates, there can be no assurance that such submission or application will be accepted or that any expedited development, review or approval will be granted on a timely basis, or at all. The FDA or other comparable foreign regulatory authorities could also require us to conduct further studies prior to considering our application or granting approval of any type. A failure to obtain accelerated approval or any other form of expedited development, review or approval for our drug candidates would result in a longer time period to commercialization of such drug candidate, could increase the cost of development of such drug candidate and could harm our competitive position in the marketplace.

Further, to the extent the FDA materially changes its policies or regulatory requirements with respect to the accelerated approval program or its internal review process for such program, our clinical development plans and regulatory approval under such program could be materially impacted or delayed. On December 29, 2022, the Consolidated Appropriations Act, 2023, including the Food and Drug Omnibus Reform Act("FDORA") was signed into law. FDORA made several changes to the FDA's authorities and its regulatory framework, including, among other changes, reforms to the accelerated approval pathway, such as requiring the FDA to specify conditions for post-approval study requirements and setting forth procedures for the FDA to withdraw a product on an expedited basis for non-compliance with post-approval requirements. In January 2025, the Office of Inspector General("OIG") raised concerns with FDA's accelerated approval of three of the 24 drugs review by OIG. It is unclear how this OIG report, future policy changes, changes in the leadership of FDA, and new FDA regulations, including those that may be implemented under the current administration, will impact NDAs and our clinical development programs.

We may face difficulties from changes to current regulations and future legislation. Healthcare legislative measures aimed at reducing healthcare costs may have a material adverse effect on our business and results of operations.

The United States and many foreign jurisdictions have enacted or proposed legislative and regulatory changes affecting the healthcare system that could prevent or delay marketing approval of our drug candidates or any future drug candidates, restrict or regulate post-approval activities and affect our ability to profitably sell a drug product for which we obtain marketing approval. Changes in regulations, statutes or the interpretation of existing regulations could impact our business in the future by requiring, for example:

- changes to our manufacturing arrangements;
- additions or modifications to drug product labeling;
- the recall or discontinuation of our drug products; or
- additional record-keeping requirements. If any such changes were to be imposed, they could adversely affect the operation of our business.

In the United States, there have been and continue to be a number of legislative initiatives to contain healthcare costs. For example, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively, ACA, was passed, which substantially changed the way healthcare is financed by both governmental and private insurers, and significantly impacted the U.S. pharmaceutical industry. The ACA contained provisions that may reduce the profitability of drug products through increased rebates for drugs reimbursed by Medicaid programs, extension of Medicaid rebates to Medicaid managed care plans, mandatory discounts for certain Medicare Part D beneficiaries and annual fees based on pharmaceutical companies' share of sales to federal health care programs. The Medicaid Drug Rebate Program requires pharmaceutical

manufacturers to enter into and have in effect a national rebate agreement with the U.S. Department of Health and Human Services Secretary ("HHS Secretary"), as a condition for states to receive federal matching funds for the manufacturer's outpatient drugs furnished to Medicaid patients. The ACA made several changes to the Medicaid Drug Rebate Program, including increasing the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program, extending the rebate program to individuals enrolled in Medicaid managed care organizations. The ACA also established annual fees and taxes on manufacturers of certain branded prescription drugs, and created a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 70% (increased pursuant to the Bipartisan Budget Act of 2018, effective as of 2019) point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D. In December 2020, CMS issued a final rule implementing significant manufacturer price reporting changes under the Medicaid Drug Rebate Program, including regulations that affect manufacturer-sponsored patient assistance programs subject to pharmacy benefit manager accumulator programs and Best Price reporting related to certain value-based purchasing arrangements. Under the American Rescue Plan Act of 2021, effective January 1, 2024, the statutory cap on Medicaid Drug Rebate Program rebates that manufacturers pay to state Medicaid programs will be eliminated. Elimination of this cap may require pharmaceutical manufacturers to pay more in rebates than it receives on the sale of products, which could have a material impact on our business.

As discussed above, since its enactment, there have been judicial and Congressional challenges to certain aspects of the ACA. On January 28, 2021, President Biden issued an executive order to initiate a special enrollment period for purposes of obtaining health insurance coverage through the ACA marketplace, which also instructs certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare. In June 2021, the United States Supreme Court held that Texas and other challengers had no legal standing to challenge the ACA, dismissing the case without specifically ruling on the constitutionality of the ACA. Further, on August 16, 2022, President Biden signed the IRA into law, which among other things, extends enhanced subsidies for individuals purchasing health insurance coverage in ACA marketplaces through plan year 2025. The IRA also eliminates the "donut hole" under the Medicare Part D program beginning in 2025 by significantly lowering the beneficiary maximum out-of-pocket cost through a newly established manufacturer discount program. It is possible that the ACA will be subject to judicial or Congressional challenges in the future. It is unclear how additional challenges and healthcare reform measures of the current administration will impact the ACA. Complying with any new legislation and regulatory requirements could be time-intensive and expensive, resulting in a material adverse effect on our business.

The Bipartisan Budget Act of 2018 also amended the ACA, effective January 1, 2019, by increasing the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D and closing the coverage gap in most Medicare drug plans, commonly referred to as the "donut hole." CMS published a final rule permitting further collections and payments to and from certain ACA qualified health plans and health insurance issuers under the ACA risk adjustment program in response to the outcome of federal district court litigation regarding the method CMS uses to determine this risk adjustment. In addition, CMS has published a final rule to give states greater flexibility, starting in 2020, in setting benchmarks for insurers in the individual and small group marketplaces, which may have the effect of relaxing the essential health benefits required under the ACA for plans sold through such marketplaces. The American Taxpayer Relief Act of 2012("ATRA"), among other things, reduced Medicare payments to several providers, including hospitals, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. Other legislative changes include aggregate reductions to Medicare payments to providers of up to 2% per fiscal year pursuant to the Budget Control Act of 2011, which began in 2013 and will remain in effect through 2032 with the exception of a temporary suspension implemented under various COVID-19 relief legislation.

There has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. Specifically, there have been several recent U.S. Congressional inquiries and proposed federal and state legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under Medicare, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drugs. For example, in July 2021, the Biden administration released an executive order, "Promoting Competition in the American Economy," with multiple provisions aimed at increasing competition for prescription drugs. In August 2022, Congress passed the IRA, which includes prescription drug provisions that have significant implications for the pharmaceutical industry and Medicare

beneficiaries, including allowing the federal government to negotiate a maximum fair price for certain high-priced single source Medicare drugs, imposing penalties and excise tax for manufacturers that fail to comply with the drug price negotiation requirements, requiring inflation rebates for all Medicare Part B and Part D drugs, with limited exceptions, if their drug prices increase faster than inflation, and redesigning Medicare Part D to reduce out-of-pocket prescription drug costs for beneficiaries, among other changes. Further, the Biden administration released an additional executive order on October 14, 2022, directing the U.S. Department of Health and Human Services, or HHS, to submit a report within ninety (90) days on how the Center for Medicare and Medicaid Innovation can be further leveraged to test new models for lowering drug costs for Medicare and Medicaid beneficiaries. Various industry stakeholders, including pharmaceutical companies, the U.S. Chamber of Commerce, the National Infusion Center Association, the Global Colon Cancer Association, and the Pharmaceutical Research and Manufacturers of America, have initiated lawsuits against the federal government asserting that the price negotiation provisions of IRA are unconstitutional. Further, the current administration has issued executive orders focused on decreasing prescription drug prices, including directing the Secretary of Health and Human Services to establish a mechanism through which American patients can buy drugs directly from manufacturers who sell at a most-favored-nation price and directing the U.S. Trade Representative and Secretary of Commerce to take action to ensure foreign countries are not engaged in practices that purposefully and unfairly undercut market prices and drive price hikes in the United States. In September and October 2025, the government announced agreements with major pharmaceutical companies to bring American drug prices in line with the lowest paid by other developed nations, requiring the company to offer medicines at a deep discount off the list price when selling directly to American patients. Such agreements and other government measures that use most-favored-nation pricing targets for prescription drugs, including the use of international pricing reference to set drug prices in the United States, or increases generic and biosimilar drug entry sooner than expected, can have a material adverse effect on our industry, ability to set adequate pricing for new drugs to recover R&D costs, ability to attract potential investors and potential buyers in the future. We cannot predict the full impact of the executive orders focused on reducing prescription drug prices or increasing domestic drug manufacturing capacity, or other measures that may be implemented by the current administration related to drug pricing, drug supply chain and manufacturing in the United States. The impact of ongoing and future judicial challenges as well as other legislative, executive, and administrative actions and any future healthcare measures and agency rules implemented by the current administration on us and the pharmaceutical industry as a whole is unclear. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability, or commercialize our drug candidates if approved.

Current and future CMS coverage restrictions on classes of drugs that encompass our drug candidates could have a material adverse impact on our ability to commercialize our drug candidates, if approved, generate revenue and attain profitability. It is unclear how future CMS coverage decisions and policies will impact our business.

At the state level, individual states are increasingly aggressive in passing legislation and implementing regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. In addition, regional health care authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other health care programs. These measures could reduce the ultimate demand for our drug products, once approved, or put pressure on our drug product pricing. A number of states are considering or have recently enacted state drug price transparency and reporting laws that could substantially increase our compliance burdens and expose us to greater liability under such state laws once we begin commercialization after obtaining regulatory approval for any of our drug products. Further, FDA has authorized the state of Florida to develop Section 804 Importation Programs to import certain prescription drugs from Canada for a limited period to help reduce drug costs, provided that Florida's Agency for Health Care Administration meets the requirements set forth by the FDA. Other states may follow Florida. We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our drug candidates or additional pricing pressures.

Our revenue prospects could be affected by changes in healthcare spending and policy in the United States and abroad. We operate in a highly regulated industry and new laws, regulations or judicial decisions, or new interpretations of existing laws, regulations or decisions, related to healthcare availability, the method of delivery or payment for healthcare products and services could negatively impact our business, operations and financial condition.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, federal and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare. We cannot predict the initiatives that may be adopted in the future, including repeal, replacement or significant revisions to the ACA. The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of healthcare or impose price controls may adversely affect:

- the demand for our drug candidates, if we obtain regulatory approval;
- our ability to set a price that we believe is fair for our drug products;
- our ability to obtain coverage and reimbursement approval for a drug product;
- our ability to generate revenue and achieve or maintain profitability;
- the level of taxes that we are required to pay; and
- the availability of capital.

Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors, which may adversely affect our future profitability.

We expect that other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for any approved drug product. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability or commercialize our drug candidates. Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for biotechnology products. We cannot be sure to what extent the trajectory of these legislative and regulatory proposals will be implemented by the federal and state governments, whether additional legislative changes will be enacted, whether FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of our drug candidates, if any, may be. In addition, increased scrutiny by Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us to more stringent product labeling and post-marketing testing and other requirements.

Our relationships with healthcare professionals, clinical investigators, CROs and third party payors in connection with our current and future business activities, and our participation in the federal health care programs and acceptance of federal grant funding, such as funding from the NIH, may be subject to federal and state healthcare fraud and abuse laws, false claims laws, transparency laws, government price reporting, and health information privacy and security laws, which could expose us to, among other things, criminal sanctions, civil penalties, contractual damages, exclusion from governmental healthcare programs, reputational harm, administrative burdens and diminished profits and future earnings.

Healthcare providers and third-party payors play a primary role in the recommendation and prescription of any drug candidates for which we obtain marketing approval. Our current and future arrangements with healthcare professionals, clinical investigators, CROs, third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute our drug products for which we obtain marketing approval. Similarly, our participation in the federal health care programs and acceptance of federal grant funding from the NIH may subject us to federal false claims laws, civil penalties and assessments, criminal prosecution, and other administrative, civil, and criminal remedies.

The laws that may affect our ability to operate include, but are not limited to:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, receiving, offering or paying any remuneration (including any kickback, bribe, or rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce, or in return for, either the referral of an individual, or the purchase, lease, order or recommendation of any good, facility, item or service for which payment may be made, in whole or in part, under a federal healthcare program, such as the Medicare and Medicaid programs. A person or entity does not need to have actual knowledge of the

statute or specific intent to violate it in order to have committed a violation. Violations are subject to civil and criminal fines and penalties for each violation, plus up to three times the remuneration involved, imprisonment, and exclusion from government healthcare programs. In addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the False Claims Act("FCA"). There are a number of statutory exceptions and regulatory safe harbors protecting some common activities from prosecution, but the exceptions and safe harbors are drawn narrowly and require strict compliance in order to offer protection.

- federal civil and criminal false claims laws, including the FCA, which can be enforced through civil "qui tam" or "whistleblower" actions, and civil monetary penalty laws, impose criminal and civil penalties against individuals or entities for, among other things, knowingly presenting, or causing to be presented, claims for payment or approval from Medicare, Medicaid, or other federal health care programs that are false or fraudulent; knowingly making or causing a false statement material to a false or fraudulent claim or an obligation to pay money to the federal government; or knowingly concealing or knowingly and improperly avoiding or decreasing such an obligation. Manufacturers can be held liable under the FCA even when they do not submit claims directly to government payors if they are deemed to "cause" the submission of false or fraudulent claims. The FCA also permits a private individual acting as a "whistleblower" to bring actions on behalf of the federal government alleging violations of the FCA and to share in any monetary recovery. When an entity is determined to have violated the federal civil FCA, the government may impose civil fines and penalties for each false claim, plus treble damages, and exclude the entity from participation in Medicare, Medicaid and other federal healthcare programs. Under the FCA, a "claim" also includes any request (including grant request) or demand for money or property made to the United States or to a contractor, recipient, if the Federal government provides or will reimburse any portion of the funds claimed. "Funds" include money that the NIH awards as part of research grants. Even if a federal grant is not awarded, the grant applicant may be subject to FCA liability if the information contained in or submitted as part of a grant application, including its certifications and assurances, is found to be false, fictitious, or fraudulent.
- the federal Health Insurance Portability and Accountability Act of 1996 ("HIPAA") which created new federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or obtain, by means of false or fraudulent pretenses, representations, or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (e.g., public or private) and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false statements in connection with the delivery of, or payment for, healthcare benefits, items or services relating to healthcare matters. Similar to the federal Anti-Kickback Statute, a person or entity can be found guilty of violating HIPAA without actual knowledge of the statute or specific intent to violate it.
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 ("HITECH"), and their respective implementing regulations, which impose requirements on certain covered healthcare providers, health plans, and healthcare clearinghouses as well as their respective business associates and their subcontractors that perform services for them that involve the use, or disclosure of, individually identifiable health information, relating to the privacy, security and transmission of individually identifiable health information without appropriate authorization. HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorneys' fees and costs associated with pursuing federal civil actions.
- the federal Physician Payments Sunshine Act, created under the ACA and its implementing regulations, which require manufacturers of drugs, devices, biologicals and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to CMS information related to payments or other transfers of value made to covered recipients, including physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors), certain non-physician healthcare professionals (such as physician assistants and nurse

practitioners, among others), and teaching hospitals, as well as information regarding ownership and investment interests held by physicians and their immediate family members.

- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers.
- analogous state and foreign laws and regulations, such as state and foreign anti-kickback, false claims, consumer protection and unfair competition laws which may apply to pharmaceutical business practices, including but not limited to, research, distribution, sales and marketing arrangements as well as submitting claims involving healthcare items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government that otherwise restricts payments that may be made to healthcare providers and other potential referral sources; state laws that require drug manufacturers to file reports with states regarding pricing and marketing information, such as the tracking and reporting of gifts, compensations and other remuneration and items of value provided to healthcare professionals and entities; state and local laws requiring the registration of pharmaceutical sales representatives; and state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts.

Because of the breadth of these laws and the narrowness of available statutory exceptions and regulatory safe harbors, it is possible that some of our business activities, including our advisory board arrangements with physicians, some of whom receive stock or stock options as compensation for services provided, and any sales and marketing activities after a drug candidate has been approved for marketing in the United States, could be subject to legal challenge and enforcement actions. If our operations are found to be in violation of any of the federal and state laws described above or any other governmental regulations that apply to us, we may be subject to significant civil, criminal, and administrative penalties, including, without limitation, damages, fines, disgorgement, imprisonment, exclusion from participation in government healthcare programs, additional reporting obligations and oversight if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

Our employees, independent contractors, consultants, commercial collaborators, principal investigators, CROs, suppliers and vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements.

We are exposed to the risk that our employees, independent contractors, consultants, commercial collaborators, principal investigators, CROs, suppliers and vendors may engage in misconduct or other improper activities. Misconduct by these parties could include failures to comply with FDA regulations, provide accurate information to the FDA, comply with federal and state health care fraud and abuse laws and regulations, accurately report financial information or data or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the health care industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Misconduct by these parties could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. It is not always possible to identify and deter misconduct by these parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of significant penalties, including civil, criminal and administrative penalties, damages, fines, disgorgement, imprisonment, exclusion from participation in government funded healthcare programs, such as Medicare and Medicaid, integrity oversight and reporting obligations, contractual damages, reputational harm, diminished profits and future earnings and the curtailment or restructuring of our operations.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on the success of our business.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and biological and radioactive materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties. Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological, hazardous or radioactive materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or commercialization efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

We are subject to certain U.S. and foreign anti-corruption, anti-money laundering, export control, sanctions, and other trade laws and regulations. We can face serious consequences for violations.

Among other matters, U.S. and foreign anti-corruption, anti-money laundering, export control, sanctions, and other trade laws and regulations, which are collectively referred to as Trade Laws, prohibit companies and their employees, agents, clinical research organizations, legal counsel, accountants, consultants, contractors, and other partners from authorizing, promising, offering, providing, soliciting, or receiving directly or indirectly, corrupt or improper payments or anything else of value to or from recipients in the public or private sector. Violations of trade laws can result in substantial criminal fines and civil penalties, imprisonment, the loss of trade privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm, and other consequences. We have direct or indirect interactions with officials and employees of government agencies or government-affiliated hospitals, universities, and other organizations. We also expect our non-U.S. activities to increase in time. We plan to engage third parties for clinical trials or to obtain necessary permits, licenses, patent registrations, and other regulatory approvals and we can be held liable for the corrupt or other illegal activities of our personnel, agents, or partners, even if we do not explicitly authorize or have prior knowledge of such activities.

Risks Related to Our Reliance on Third Parties

We may use strategic collaborations, licensing arrangements or partnerships to accelerate the development and maximize the commercial potential of our programs, and we may not realize the benefits of such collaborations, arrangements or partnerships.

We own or in-license worldwide intellectual property rights to our drug candidates, including ATH-1105 and lasofoxifene. We have in the past and, where appropriate in the future, may use strategic collaborations, licensing arrangements or partnerships to accelerate the development and maximize the commercial potential of our programs. Any of these relationships may require us to incur non-recurring and other charges, increase our near and long-term expenditures, issue securities that dilute our existing stockholders or disrupt our management and business.

We face significant competition in seeking appropriate strategic partners and the negotiation process is time-consuming and complex. Moreover, we may not be successful in our efforts to establish a strategic partnership or other alternative arrangements for our drug candidates because they may be deemed to be at too early of a stage of development for collaborative effort and third parties may not view our drug candidates as having the requisite potential to demonstrate safety and efficacy and obtain marketing approval.

If and when we seek to enter into collaborations, we may not be able to negotiate collaborations on a timely basis, on acceptable terms, or at all. If we are unable to do so, we may have to curtail the development of a drug candidate, reduce or delay its development program or one or more of our other development programs, delay its

potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all. If we do not have sufficient funds, we may not be able to further develop our drug candidates or bring them to market and generate product revenue.

Even if we are successful in entering into collaborations involving our drug candidates, these relationships are subject to numerous risks, which may include the following:

- collaborators have significant discretion in determining the efforts and resources that they will apply to a collaboration;
- collaborators may not pursue development and commercialization of our drug candidates or may elect not to continue or renew development or commercialization of our drug candidates based on clinical trial results, changes in their strategic focus due to the acquisition of competitive products, availability of funding or other external factors, such as a business combination that diverts resources or creates competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial, stop a clinical trial, abandon a drug candidate, repeat or conduct new clinical trials or require a new formulation of a drug candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our drug candidates;
- a collaborator with marketing and distribution rights to one or more drug products may not commit sufficient resources to their marketing and distribution;
- collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;
- disputes may arise between us and a collaborator that cause the delay or termination of the research, development or commercialization of our drug candidates, or that result in costly litigation or arbitration that diverts management attention and resources;
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable drug candidates; and
- collaborators may own or co-own intellectual property covering our drug products that results from our collaborating with them, and in such cases, we would not have the exclusive right to commercialize such intellectual property.

As a result, if we enter into additional strategic collaborations, licensing arrangements or partnerships, we may not be able to realize the benefit of such transactions if we are unable to successfully integrate them with our existing operations and company culture, which could delay our timelines or otherwise adversely affect our business. We also cannot be certain that, following a strategic collaboration, licensing arrangement or partnership, we will achieve the revenue or specific net income that justifies such transaction. Any delays in entering into new strategic collaborations, licensing arrangements or partnerships related to our drug candidates could delay the development and commercialization of our drug candidates in certain geographies for certain indications, which would harm our business prospects, financial condition and results of operations.

If we engage in future acquisitions or strategic partnerships, this may increase our capital requirements, dilute our stockholders, cause us to incur debt or assume contingent liabilities, and subject us to other risks.

We have in the past in-licensed product candidates, including lasofoxifene, and from time to time, we may evaluate future acquisition opportunities and strategic transactions and partnerships, including licensing or acquiring

complementary products, intellectual property rights, technologies or businesses. Any acquisition, license, or strategic partnership or potential acquisition or strategic partnership entails and may entail numerous risks, including:

- increased operating expenses and cash requirements;
- the assumption of additional indebtedness or contingent liabilities;
- the issuance of our equity securities;
- assimilation of operations, intellectual property and products of an acquired company, including difficulties associated with integrating new personnel;
- the diversion of our management's attention from our existing programs and initiatives in pursuing such a strategic merger or acquisition;
- retention of key employees, the loss of key personnel and uncertainties in our ability to maintain key business relationships;
- risks and uncertainties associated with the other party to such a transaction, including the prospects of that party and their existing products or product candidates and marketing approvals; and
- our inability to generate revenue from acquired technology or products sufficient to meet our objectives in undertaking the acquisition or even to offset the associated acquisition and maintenance costs.

In connection with our in-license of lasofoxifene, we issued dilutive securities, assumed certain payment obligations, and incurred significant transaction expenses. Such obligations and expenses could increase in the future as we integrate this product candidate into our operations and as we progress their development. In addition, if we undertake acquisitions or pursue partnerships in the future, we may issue dilutive securities, assume or incur debt obligations, incur large one-time expenses and acquire intangible assets that could result in significant future amortization expense.

We rely on third parties to conduct our nonclinical studies and clinical trials. If these third parties do not properly and successfully carry out their contractual duties or meet expected deadlines, we may not be able to obtain regulatory approval of or commercialize our drug candidates.

We utilize and depend upon independent investigators and collaborators, such as medical institutions, CROs, CMOs, and strategic partners to conduct and support our nonclinical studies and clinical trials under agreements with us.

We expect to have to negotiate budgets and contracts with CROs, clinical trial sites and CMOs and we may not be able to do so on favorable terms, which may result in delays to our development timelines and increased costs. We will rely heavily on these third parties over the course of our nonclinical studies and clinical trials, and we control only certain aspects of their activities. As a result, we will have less direct control over the conduct, timing and completion of these nonclinical studies and clinical trials and the management of data developed through nonclinical studies and clinical trials than would be the case if we were relying entirely upon our own staff. Nevertheless, we are responsible for ensuring that each of our studies is conducted in accordance with applicable protocol, legal and regulatory requirements and scientific standards, and our reliance on third parties does not relieve us of our regulatory responsibilities. We and these third parties are required to comply with GCPs, which are regulations and guidelines enforced by the FDA and comparable foreign regulatory authorities for drug candidates in clinical development. Regulatory authorities enforce these GCPs through periodic inspections of clinical trial sponsors, principal investigators and clinical trial sites. If we or any of these third parties fail to comply with applicable GCP regulations, the clinical data generated in our clinical trials may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. In particular, protocol deviations or non-compliance with GCP requirements, or other data integrity reasons, can cause us or the FDA or other regulatory authorities to exclude data from non-compliant sites or investigators, which may cause the trial to be underpowered to meet the endpoints. We cannot assure you that, upon inspection, such regulatory authorities will determine that any of our clinical trials comply with the GCP regulations. In addition, our clinical trials must be conducted with pharmaceutical drug product produced under cGMP regulations and will require a large number of test patients. Our failure or any failure by these third parties to comply with these regulations or to recruit

a sufficient number of patients may require us to repeat clinical trials, which would delay the regulatory approval process. Moreover, our business may be implicated if any of these third parties violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

Any third parties conducting our clinical trials are not and will not be our employees and, except for remedies available to us under our agreements with such third parties, we cannot control whether or not they devote sufficient time and resources to our ongoing, clinical and non-clinical drug candidates. These third parties may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other drug development activities, which could affect their performance on our behalf. If these third parties do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to complete development of, obtain regulatory approval of or successfully commercialize our drug candidates. As a result, our financial results and the commercial prospects for our drug candidates would be harmed, our costs could increase and our ability to generate revenue could be delayed. As a result of our in-license of lasofoxifene, we are working with a number of third parties involved in the development of those product candidates with whom we do not have a prior relationship. Our new relationships with these parties are subject to the risks described above and we will need to develop a strong working relationship with these parties in the near-term to help drive the clinical development of lasofoxifene in a timely manner and we may not be successful in these efforts.

Switching or adding third parties to conduct our nonclinical studies and clinical trials involves substantial cost and requires extensive management time and focus. In addition, there is a natural transition period when a new third party commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines.

We contract with third parties for the manufacture of our drug candidates for nonclinical studies and our clinical trials, and expect to continue to do so for additional clinical trials and ultimately for commercialization. This reliance on third parties increases the risk that we will not have sufficient quantities of our drug candidates or drugs or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

We do not currently have the infrastructure or internal capability to manufacture supplies of our drug candidates for use in development and commercialization. We rely, and expect to continue to rely, on third-party manufacturers for the production of our drug candidates for nonclinical studies and clinical trials under the guidance of members of our organization. We do not have long-term supply agreements. Furthermore, the raw materials for our drug candidates are sourced, in some cases, from a single-source supplier and sometimes involve long lead times from order to receipt of the materials. If we were to experience an unexpected loss of supply of any of our drug candidates or any of our future drug candidates for any reason, whether as a result of manufacturing, supply or storage issues or otherwise, we could experience delays, disruptions, suspensions or terminations of, or be required to restart or repeat, any pending or ongoing clinical trials. We expect to continue to rely on third-party manufacturers for the commercial supply of any of our drug candidates for which we obtain marketing approval. We may be unable to maintain or establish required agreements with third-party manufacturers or to do so on acceptable terms. Even if we are able to establish agreements with third-party manufacturers, reliance on third-party manufacturers entails additional risks, including:

- the failure of the third party to manufacture our drug candidates according to our schedule, or at all, including if our third-party contractors give greater priority to the supply of other products over our drug candidates or otherwise do not satisfactorily perform according to the terms of the agreements between us and them;
- the reduction or termination of production or deliveries by suppliers, or the raising of prices or renegotiation of terms;
- the termination or nonrenewal of arrangements or agreements by our third-party contractors at a time that is costly or inconvenient for us;
- the breach by the third-party contractors of our agreements with them;

- the failure of third-party contractors to comply with applicable regulatory requirements;
- the failure of the third party to manufacture our drug candidates according to our specifications;
- the mislabeling of clinical supplies, potentially resulting in the wrong dose amounts being supplied or active drug or placebo not being properly identified;
- clinical supplies not being delivered to clinical sites on time, leading to clinical trial interruptions, or of drug supplies not being distributed to commercial vendors in a timely manner, resulting in lost sales; and
- the misappropriation of our proprietary information, including our trade secrets and know-how.

We do not have complete control over all aspects of the manufacturing process of, and are dependent on, our contract manufacturing partners for compliance with cGMP regulations for manufacturing both active drug substances and finished drug products. Third-party manufacturers may not be able to comply with cGMP regulations or similar regulatory requirements outside of the United States. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or others, they will not be able to secure or maintain marketing approval for their manufacturing facilities. In addition, we do not have control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our drug candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain marketing approval for or market our drug candidates, if approved. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of drug candidates or drugs, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our drug candidates or drugs and harm our business and results of operations. Our current and anticipated future dependence upon others for the manufacture of our drug candidates or drugs may adversely affect our future profit margins and our ability to commercialize any drug candidates that receive marketing approval on a timely and competitive basis.

In addition, there is currently significant uncertainty about the future relationship between the United States and various other countries, most significantly China, with respect to trade policies, treaties, tariffs, taxes, and other limitations on cross-border operations. For example, in 2024, legislative proposals were passed in the House of Representatives and referred to the Senate that would have limited the extension of certain specific types of government contracts or renewals, loans, or grants, to companies that may do business with select Chinese biotechnology equipment or service providers. Others in Congress have advocated for the use of existing executive branch authorities to limit certain Chinese service providers' ability to engage in business in the U.S. Although we do not currently use equipment or services produced or provided by such Chinese biotechnology companies, such changes in applicable trade policy may result in us being unable to obtain or use necessary equipment or services, may limit our ability to seek foreign regulatory approvals for our drug candidates, or may cause significant industry-wide supply delays or capacity limitations that could materially disrupt our operations, supply chain, and ability to produce, sell and distribute our drug candidates.

In a recent example of a change in policy that may impact our reliance on foreign third parties, the U.S. government instituted a new set of rules, effective April 8, 2025, that prohibit or restrict transactions involving certain types and amounts of sensitive data – including, e.g., certain genomic data, human biosamples, personal health data, etc., even when de-identified – between U.S. persons and foreign persons associated with specific countries of concern, including China. These new rules require U.S. businesses to seek assurances from all foreign parties with which they share sensitive data (under certain types of agreements) that those parties will not further share that data with parties in countries of concern. This change in trade policy may impact our collection of data for non-clinical and clinical trials and sharing of that data and other data with foreign third parties, and may lead to the potential impacts on our operations, supply chain, and ability to produce, sell and distribute our drug candidates mentioned above.

Furthermore, the U.S. government has made and continues to make significant additional changes in U.S. trade policy and may continue to take future actions that could negatively impact U.S. trade. We cannot predict whether any proposed legislation will be enacted, what executive actions may implicate these kinds of service relationships,

or what other actions may ultimately be taken with respect to trade relations between the United States and China or other countries, including countries which the U.S. government has identified as a foreign adversary that poses national security risks to the United States.

Relatedly, the United States has recently enacted and proposed to enact significant new tariffs on a number of countries. President Trump has directed various federal agencies to further evaluate key aspects of U.S. trade policy and there has been ongoing discussion and commentary regarding potential significant changes to U.S. trade policies, treaties and tariffs. There continues to exist significant uncertainty about the future relationship between the U.S. and other countries with respect to such trade policies, treaties and tariffs. These developments, or the perception that any of them could occur, have caused and may continue to cause significant volatility in global financial markets and may have a material adverse effect on global economic conditions, and may significantly reduce global trade and, in particular, trade between the impacted nations and the U.S. Any of these factors could depress economic activity and restrict our access to third party services. In addition, we rely on third parties located outside of the United States to source and manufacture our drug candidates. To the extent their business is impacted by global market or economic volatility, the cost and supply of our drug candidates could be materially and adversely affected.

We cannot predict what products and services may be subject to such actions or what actions may be taken by the other countries in retaliation, any of which may materially and adversely affect our business, financial condition, results of operations, and cash flows.

Our manufacturing process needs to comply with FDA regulations relating to the quality and reliability of such processes. Any failure to comply with relevant regulations could result in delays in or termination of our clinical programs and suspension or withdrawal of any regulatory approvals.

In order to commercially produce our drug products either at our own facility or at a third party's facility, we will need to comply with the FDA's cGMP regulations and guidelines. We may encounter difficulties in achieving quality control and quality assurance and may experience shortages in qualified personnel. We are subject to inspections by the FDA and comparable foreign regulatory authorities to confirm compliance with applicable regulatory requirements. Any failure to follow cGMP or other regulatory requirements or delay, interruption or other issues that arise in the manufacture, fill-finish, packaging, or storage of our precision medicines as a result of a failure of our facilities or the facilities or operations of third parties to comply with regulatory requirements or pass any regulatory authority inspection could significantly impair our ability to develop and commercialize our drug candidates, including leading to significant delays in the availability of our precision medicines for our clinical trials or the termination of or suspension of a clinical trial, or the delay or prevention of a filing or approval of marketing applications for our drug candidates. Significant non-compliance could also result in the imposition of sanctions, including warning or untitled letters, fines, injunctions, civil penalties, failure of regulatory authorities to grant marketing approvals for our drug candidates, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of products, operating restrictions and criminal prosecutions, any of which could damage our reputation and our business.

If our third-party manufacturers use hazardous materials in a manner that causes injury or violates applicable law, we may be liable for damages.

Our research and development activities involve the controlled use of potentially hazardous substances, including chemical materials, by our third-party manufacturers. Our manufacturers are subject to federal, state and local laws and regulations in the United States governing the use, manufacture, storage, handling and disposal of medical and hazardous materials. Although we believe that our manufacturers' procedures for using, handling, storing and disposing of these materials comply with legally prescribed standards, we cannot completely eliminate the risk of contamination or injury resulting from medical or hazardous materials. As a result of any such contamination or injury, we may incur liability or local, city, state or federal authorities may curtail the use of these materials and interrupt our business operations. In the event of an accident, we could be held liable for damages or penalized with fines, and the liability could exceed our resources. We do not have any insurance for liabilities arising from medical or hazardous materials. Compliance with applicable environmental laws and regulations is expensive, and current or future environmental regulations may impair our research, development and production efforts, which could harm our business, prospects, financial condition or results of operations.

Risks Related to Our Ability to Commercialize our Drug Products

Even if approved, our drug candidates may not achieve adequate market acceptance among physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

Even if our drug candidates receive regulatory approval, they may not gain adequate market acceptance among physicians, patients, healthcare payors and others in the medical community. The degree of market acceptance or reimbursement of any of our approved drug candidates will depend on a number of factors, including:

- the efficacy and safety profile as demonstrated in clinical trials compared to alternative treatments;
- the timing of market introduction of the drug candidate as well as competitive products;
- the clinical indications for which the drug candidate is approved;
- the extent of physician acceptance of FDA-approved therapies for target indications;
- restrictions on the use of our drug candidates, such as boxed warnings or contraindications in labeling, or a REMS, if any, which may not be required of alternative treatments and competitor products;
- the potential and perceived advantages of our drug candidates over alternative treatments;
- the cost of treatment in relation to alternative treatments;
- pricing and the availability of coverage and adequate reimbursement by third-party payors, including government authorities;
- the availability of the approved drug candidate for use as a combination therapy;
- relative convenience and ease of administration;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- the effectiveness of sales and marketing efforts;
- unfavorable publicity relating to our drug products or drug candidates or similar approved products or product candidates in development by third parties; and
- the approval of other new therapies for the same indications.

If any of our drug candidates are approved but do not achieve an adequate level of acceptance by physicians, hospitals, healthcare payors and patients, we may not generate or derive sufficient revenue from such drug candidates and our financial results could be negatively impacted.

We have never commercialized a drug candidate before and may lack the necessary expertise, personnel and resources to successfully commercialize any drug products on our own or together with suitable collaborators.

We have never commercialized a drug candidate. We may license certain rights with respect to our drug candidates to collaborators, and, if so, we will rely on the assistance and guidance of those collaborators. For drug candidates for which we retain commercialization rights and marketing approval, we will have to develop our own sales, marketing and supply organization or outsource these activities to a third party.

Factors that may affect our ability to commercialize our drug candidates, if approved, on our own include recruiting and retaining adequate numbers of effective sales and marketing personnel, developing adequate educational and marketing programs to increase public acceptance of our approved drug candidates, ensuring regulatory compliance of our company, employees and third parties under applicable healthcare laws, and other unforeseen costs associated with creating an independent sales and marketing organization. Developing a sales and marketing organization will be expensive and time-consuming and could delay the launch of our drug candidates upon approval. We may not be able to build an effective sales and marketing organization. If we are unable to build our own distribution and marketing capabilities or to find suitable partners for the commercialization of our drug candidates, we may not generate revenues from them or be able to reach or sustain profitability.

If the market opportunity for any drug candidate that we develop is smaller than we believe, our revenue may be adversely affected and our business may suffer.

Certain of our drug candidates (currently ATH-1105) are being developed as treatments for various CNS and PNS disorder indications, and lasofoxifene is being developed as a treatment for breast cancer. The addressable patient populations that may benefit from treatment with our drug candidates, if approved, are based on our estimates. These estimates, which have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations and market research, may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of the relevant disorders. Any regulatory approval of our drug candidates would be limited to the therapeutic indications examined in our clinical trials and as determined by the FDA, which would not permit us to market our drug products for any other therapeutic indications not expressly approved by the FDA. Additionally, the potentially addressable patient population for our drug candidates may not ultimately be amenable to treatment with our drug candidates. Even if we receive regulatory approval for any of our drug candidates, such approval could be conditioned upon label restrictions that materially limit the addressable patient population. Our market opportunity may also be limited by future competitor treatments that enter the market. If any of our estimates prove to be inaccurate, the market opportunity for any drug candidate that we or our strategic partners develop could be significantly diminished and have an adverse material impact on our business.

If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of our drug candidates.

We face an inherent risk of product liability as a result of the planned clinical testing of our drug candidates and will face an even greater risk if we commercialize any drug products. For example, we may be sued if our drug candidates cause or are perceived to cause injury or are found to be otherwise unsuitable during clinical testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability or a breach of warranties. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our drug candidates. Even successful defense would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for our drug candidates or drug products that we may develop;
- injury to our reputation;
- withdrawal of clinical trial participants;
- initiation of investigations by regulators;
- costs to defend the related litigation;
- diversion of management's time and our resources;
- substantial monetary awards to clinical trial participants or patients;
- drug product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue;
- exhaustion of any available insurance and our capital resources;
- the inability to commercialize any drug candidate; and
- a decline in our share price.

Failure to obtain or retain sufficient product liability insurance at an acceptable cost to protect against potential product liability claims could prevent or inhibit the commercialization of drug products we develop, alone or with corporate collaborators. Although we have clinical trial insurance, our insurance policies also have various exclusions, and we may be subject to a product liability claim for which we have no coverage. We may have to pay any amounts awarded by a court or negotiated in a settlement that exceed our coverage limitations or that are not covered by our insurance, and we may not have, or be able to obtain, sufficient capital to pay such amounts. Even if our agreements

with any future corporate collaborators entitle us to indemnification against losses, such indemnification may not be available or adequate should any claim arise.

Patients with cancer and other diseases targeted by lasofoxifene and our product candidates are often already in severe and advanced stages of disease and have both known and unknown significant pre-existing and potentially life-threatening health risks. During the course of treatment, patients may suffer adverse events, including death, for reasons that may be related to lasofoxifene or our product candidates. Such events could subject us to costly litigation, require us to pay substantial amounts of money to injured patients, delay, negatively impact or end the opportunity to receive or maintain regulatory approval to market lasofoxifene or our product candidates, or require us or our strategic partners to suspend or abandon commercialization efforts. Even in circumstances in which we do not believe that an adverse event is related to lasofoxifene or our product candidates, the investigation into the circumstance may be time-consuming or inconclusive, and may result in reputational harm. These investigations may interrupt our sales efforts, delay our regulatory approval process in other countries, or impact and limit the type of regulatory approvals lasofoxifene or our product candidates receive or maintain. As a result of these factors, a product liability claim, even if successfully defended, could have a material adverse effect on our business, financial condition or results of operations.

The insurance coverage and reimbursement status of newly approved products is uncertain. Our drug candidates may become subject to unfavorable pricing regulations, third-party coverage and reimbursement practices, or healthcare reform initiatives, which would harm our business. Failure to obtain or maintain adequate coverage and reimbursement for new or current drug products could limit our ability to market those drug products and decrease our ability to generate revenue.

The regulations that govern marketing approvals, pricing, coverage and reimbursement for new drugs vary widely from country to country. In the United States, recently enacted legislation may significantly change the approval requirements in ways that could involve additional costs and cause delays in obtaining approvals. Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we might obtain marketing approval for a drug product in a particular country, but then be subject to price regulations that delay our commercial launch of the drug product, possibly for lengthy time periods, and negatively impact the revenue we are able to generate from the sale of the drug product in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more drug candidates, even if any drug candidates we may develop obtain marketing approval.

In the United States and markets in other countries, patients generally rely on third-party payors to reimburse all or part of the costs associated with their treatment. Adequate coverage and reimbursement from governmental healthcare programs, such as Medicare and Medicaid, and commercial payors is critical to new product acceptance. Our ability to successfully commercialize our drug candidates will depend in part on the extent to which coverage and adequate reimbursement for these drug products and related treatments will be available from government health administration authorities, private health insurers and other organizations. Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels. The availability of coverage and extent of reimbursement by governmental and private payors is essential for most patients to be able to afford treatments such as gene therapy products. Sales of these or other future drug candidates that we may identify will depend substantially, both domestically and abroad, on the extent to which the costs of our drug candidates will be paid by health maintenance, managed care, pharmacy benefit and similar healthcare management organizations, or reimbursed by government health administration authorities, private health coverage insurers and other third-party payors. If coverage and adequate reimbursement is not available, or is available only to limited levels, we may not be able to successfully commercialize our drug candidates. Even if coverage is provided, the approved reimbursement amount may not be high enough to allow us to establish or maintain pricing sufficient to realize a sufficient return on our investment. Reimbursement by a third-party payor may depend upon a number of factors, including, but not limited to, the third-party payor's determination that use of a product is:

- a covered benefit under its health plan;

- safe, effective and medically necessary;
- appropriate for the specific patient;
- cost-effective; and
- neither experimental nor investigational.

A primary trend in the U.S. healthcare industry and elsewhere is cost containment. Government authorities and third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. In many countries, the prices of medical products are subject to varying price control mechanisms as part of national health systems. In general, the prices of medicines under such systems are substantially lower than in the United States. Other countries allow companies to fix their own prices for medicines, but monitor and control company profits. Additional foreign price controls or other changes in pricing regulation could restrict the amount that we are able to charge for our drug candidates. Accordingly, in markets outside the United States, the reimbursement for products may be reduced compared with the United States and may be insufficient to generate commercially reasonable revenue and profits.

There is also significant uncertainty related to the insurance coverage and reimbursement of newly approved products and coverage may be more limited than the purposes for which the medicine is approved by the FDA or comparable foreign regulatory authorities. In the United States, the principal decisions about reimbursement for new medicines are typically made by CMS, an agency within HHS. CMS decides whether and to what extent a new medicine will be covered and reimbursed under Medicare and private payors tend to follow CMS to a substantial degree. No uniform policy of coverage and reimbursement for products exists among third-party payors and coverage and reimbursement levels for products can differ significantly from payor to payor. As a result, the coverage determination process is often a time consuming and costly process that may require us to provide scientific and clinical support for the use of our drug products to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. It is difficult to predict what CMS will decide with respect to reimbursement for fundamentally novel products such as ours. Reimbursement agencies in Europe may be more conservative than CMS. Moreover, eligibility for reimbursement does not imply that any drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale, and distribution. Interim reimbursement levels for new drugs, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Reimbursement rates may vary according to the use of the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Our inability to promptly obtain coverage and profitable payment rates from both government-funded and private payors for any approved drug products we may develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize drug candidates, and our overall financial condition.

Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. Our inability to promptly obtain coverage and profitable reimbursement rates third-party payors for any approved drug products that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize drug products and our overall financial condition.

Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. We cannot be sure that reimbursement will be available for any drug candidate that we commercialize and, if reimbursement is available, the level of reimbursement. Reimbursement may impact the demand for, or the price of, any drug candidate for which we obtain marketing approval. In order to obtain reimbursement, physicians may need to show that patients have superior treatment outcomes with our drug products compared to standard of care drugs, including lower-priced generic versions of standard of care drugs. We expect to experience pricing pressures in connection with the sale of any of our drug candidates due to the trend toward managed healthcare, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and surgical procedures and other treatments, has become very intense. As a result, increasingly high barriers are being erected to the entry of new products.

A variety of risks associated with marketing our drug candidates internationally may materially adversely affect our business.

We plan to eventually seek regulatory approval of our drug candidates outside of the United States and, accordingly, we expect that we will be subject to additional risks related to operating in foreign countries if we obtain the necessary approvals, including:

- differing regulatory requirements in foreign countries, such as the lack of pathways for accelerated drug approval, may result in foreign regulatory approvals taking longer and being more costly than obtaining approval in the United States;
- foreign regulatory authorities may disagree with the design, implementation or results of our clinical trials or our interpretation of data from nonclinical studies or clinical trials;
- approval policies or regulations of foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval;
- impact of health epidemics on our ability to produce our drug candidates and conduct clinical trials in foreign countries;
- unexpected changes in U.S. or non-U.S. tariffs, trade barriers, price and exchange controls and other regulatory requirements, including any changes that nations may impose as a result of political tensions;
- economic weakness, including inflation, or political instability in particular foreign economies and markets;
- compliance with legal requirements applicable to privacy, data protection, information security and other matters;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- foreign taxes, including withholding of payroll taxes;
- foreign currency fluctuations, which could result in increased operating expenses and reduced revenue, and other obligations incident to doing business in another country;
- difficulties staffing and managing foreign operations;
- complexities associated with managing multiple payor reimbursement regimes and government payors in foreign countries;
- workforce uncertainty in countries where labor unrest is more common than in the United States;
- potential liability under the Foreign Corrupt Practices Act of 1977 or comparable foreign regulations;
- challenges enforcing our contractual and intellectual property rights, especially in those foreign countries that do not respect and protect intellectual property rights to the same extent as the United States;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad; and
- business interruptions resulting from geo-political actions, including war and terrorism.

These and other risks associated with international operations may materially adversely affect our ability to attain or maintain profitable operations.

Risks Related to Our Intellectual Property

Our success depends on our ability to protect our intellectual property and our proprietary technologies.

Our commercial success depends in part on our ability to obtain and maintain patent protection and trade secret protection for our drug candidates, proprietary technologies and their uses as well as our ability to operate without infringing upon the proprietary rights of others. We generally seek to protect our proprietary position by filing patent applications in the United States and abroad related to our drug candidates, proprietary technologies and their uses

that are important to our business. We may also seek to protect our proprietary position by acquiring or in-licensing relevant issued patents or pending applications from third parties.

Pending patent applications cannot be enforced against third parties practicing the technology claimed in such applications unless, and until, patents issue from such applications, and then only to the extent the issued claims cover the technology. There can be no assurance that our patent applications or the patent applications of any current or future licensors will result in additional patents being issued or that issued patents will afford sufficient protection against competitors with similar technology, nor can there be any assurance that the patents issued will not be infringed, designed around, found unenforceable or invalidated by third parties.

Even issued patents may later be found invalid or unenforceable or may be modified or revoked in proceedings instituted by third parties or the patent owner before various patent offices or in courts. Thus, the degree of future protection for our and any current or future licensors' proprietary rights is uncertain. Only limited protection may be available and may not adequately protect our rights or permit us to gain or keep any competitive advantage. These uncertainties or limitations in our ability to properly protect the intellectual property rights relating to our drug candidates could have a material adverse effect on our financial condition and results of operations.

We cannot be certain that the claims in our pending patent applications or those of any current or future licensors will be considered patentable by the United States Patent and Trademark Office("USPTO"), courts in the United States or by the patent offices and courts in foreign countries, nor can we be certain that the claims in our owned or in-licensed patents will not be found invalid or unenforceable if challenged.

The patent application process is subject to numerous risks and uncertainties, and there can be no assurance that we or any of our potential future collaborators will be successful in protecting our drug candidates by obtaining and defending patents. These risks and uncertainties include the following:

- the USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process, the noncompliance with which can result in abandonment or lapse of a patent or patent application, and partial or complete loss of patent rights in the relevant jurisdiction;
- patent applications may not result in any patents being issued;
- patents and patent applications may be challenged, invalidated, modified, revoked, circumvented, found to be unenforceable or otherwise may not provide any competitive advantage;
- changes to patent laws in the United States or in other countries may limit the ability to obtain, defend or enforce patents, or may apply retroactively to affect the term or scope of patents;
- our competitors, many of whom have substantially greater resources than we do and many of whom have made significant investments in competing technologies, may seek or may have already obtained patents that will limit, interfere with or eliminate our ability to make, use and sell our potential drug candidates;
- there may be significant pressure on the U.S. government and international governmental bodies to limit the scope or term of patent protection both inside and outside the United States for disease treatments that prove successful, as a matter of public policy regarding worldwide health concerns; and
- countries other than the United States may have patent laws less favorable to patentees than those upheld by U.S. courts, allowing foreign competitors a better opportunity to create, develop and market competing product candidates.

The patent prosecution process is also expensive and time-consuming, and we and any current or future licensors may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner or in all jurisdictions where protection may be commercially advantageous. It is also possible that we or any current or future licensors will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection.

In addition, although we enter into non-disclosure and confidentiality agreements with parties who have access to patentable aspects of our research and development output, such as our employees, outside scientific collaborators, CROs, third-party manufacturers, consultants, advisors and other third parties, any of these parties may breach such agreements and disclose such output before a patent application is filed. Certain of these parties may also be subject to public information disclosure statutes and could determine to disclose patentable aspects of our research and development output pursuant to a request thereunder, notwithstanding the existence of a non-disclosure and confidentiality agreement. Any of these actions could jeopardize our ability to seek patent protection.

Given the amount of time required for the development, testing and regulatory review of new drug candidates, patents protecting such candidates or their use might expire before or shortly after such candidates are commercialized. As a result, our intellectual property may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

If the scope of any patent protection we obtain is not sufficiently broad or the term is not sufficiently long, or if we lose any of our patent protection, our ability to prevent our competitors from commercializing similar or identical product candidates would be adversely affected.

The patent position of biopharmaceutical companies generally is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. As a result, the issuance, scope, term, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications and those of any current or future licensors may not result in patents being issued which protect our drug candidates or their use or which effectively prevent others from commercializing competitive product candidates.

Moreover, the coverage claimed in a patent application can be significantly reduced before the patent is issued, and its scope can be reinterpreted after issuance. Even if patent applications we own or in-license currently or in the future issues as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors or other third parties from competing with us, or otherwise provide us with any competitive advantage. Any patents that we own or in-license may be challenged or circumvented by third parties or may be narrowed, invalidated or rendered unenforceable as a result of challenges by third parties. Consequently, we do not know whether our drug candidates will be protectable or remain protected by valid and enforceable patents. Our competitors or other third parties may be able to circumvent our patents or the patents of any current or future licensors by developing similar or alternative technologies or products in a non-infringing manner which could materially adversely affect our business, financial condition, results of operations and prospects.

The issuance of a patent is not conclusive as to its inventorship, scope, term, validity, or enforceability, and our patents or the patents of any current or future licensors may be challenged in the courts or patent offices in the United States and abroad. We may be subject to a third-party pre-issuance submission of prior art to the USPTO, or become involved in opposition, derivation, revocation, reexamination, post-grant review("PGR"), and inter partes review("IPR"), or other similar proceedings challenging our patent rights. An adverse determination in any such submission, proceeding or litigation could reduce the scope or term of, or invalidate or render unenforceable, our patent rights, allow third parties to commercialize our drug candidates and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights.

Moreover, our patents or the patents of any current or future licensors may become subject to post-grant challenge proceedings, such as oppositions in a foreign patent office, that challenge our claim of priority of invention, scope, validity or patentability with respect to our patents and patent applications and those of any current or future licensors.

For example, third parties may challenge the validity or enforceability of our current or future in-licensed patents and patent applications. The outcome following legal assertions of invalidity and unenforceability is unpredictable. Such challenges may result in loss of patent rights, loss of exclusivity or in patent claims being narrowed, invalidated or held unenforceable, which could limit our ability to stop others from using or commercializing similar technology and drug products not covered by our issued patents. Such proceedings also may result in substantial cost and require significant time from our scientists and management, even if the eventual outcome is favorable to us. In addition, if the breadth or strength of protection provided by our current or future in-licensed patents and patent applications is threatened, regardless of the outcome, it could dissuade companies from collaborating with us to license, develop, or

commercialize current or future drug candidates. Further, these proceedings could have a material adverse effect on our business, results of operations and financial condition.

Even though we own patents and patent applications covering our small molecule drug candidates, our patents and any future patents we obtain may not effectively prevent others from developing or commercializing products similar to our drug candidates. Third parties may seek to cast doubt on the validity and enforceability of our owned patents or patent applications. Such events may result in substantial cost and require significant time from our scientists and management, and could dissuade companies from collaborating with us to license, develop, or commercialize current or future drug candidates, even if the eventual outcome is favorable to us.

Intellectual property rights do not necessarily address all potential threats to our competitive advantage.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations, and may not adequately protect our business or permit us to maintain our competitive advantage. For example:

- others may be able to develop products that are similar to our drug candidates but that are not covered by the claims of the patents that we own or license;
- we or any current or future licensors or collaborators might not have been the first to make the inventions covered by the issued patents or patent application that we own or license;
- we or any current or future licensors or collaborators might not have been the first to file patent applications covering certain of our or their inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- it is possible that the pending patent applications we own or license will not lead to issued patents;
- issued patents that we own or license may be held invalid or unenforceable, as a result of legal challenges by our competitors;
- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may not develop additional proprietary technologies that are patentable;
- the patents of others may have an adverse effect on our business; and
- we may choose not to file a patent application in order to maintain certain trade secrets or know-how, and a third party may subsequently file a patent application covering such intellectual property.

Should any of these events occur, it could significantly harm our business, results of operations and prospects.

Our commercial success depends significantly on our ability to operate without infringing the patents and other proprietary rights of third parties. Claims by third parties that we infringe their proprietary rights may result in liability for damages or prevent or delay our developmental and commercialization efforts.

Our commercial success depends in part on avoiding infringement of the patents and proprietary rights of third parties. However, our research, development and commercialization activities may be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. Other entities may have or obtain patents or proprietary rights that could limit our ability to make, use, sell, offer for sale or import our drug candidates and drug products that may be approved in the future, or impair our competitive position. There is a substantial amount of litigation and other legal actions, both within and outside the United States, involving patent and other intellectual property rights in the biopharmaceutical industry, including patent infringement lawsuits, reexaminations, IPR proceedings and PGR proceedings and oppositions before the USPTO and/or corresponding foreign patent offices. Numerous third-party U.S. and foreign issued patents and pending patent applications exist in the fields in which we are developing drug candidates. There may be third-party patents or patent applications with

claims to compositions, materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our drug candidates.

As the biopharmaceutical industry expands and more patents are issued, the risk increases that our drug candidates may be subject to claims of infringement of the patent rights of third parties. Because patent applications are maintained as confidential for a certain period of time, until the relevant application is published, we may be unaware of third-party patents or patent applications that may be infringed by commercialization of any of our drug candidates, and we cannot be certain that we were the first to file a patent application related to a drug candidate, its use, or our technology. Moreover, because patent applications can take many years to issue, there may be currently-pending patent applications that may later result in issued patents that our drug candidates or their use may infringe. In addition, identification of third-party patent rights that may be relevant to our technology is difficult because patent searching is imperfect due to differences in terminology among patents, incomplete databases and the difficulty in assessing the meaning of patent claims. There is also no assurance that there is not prior art of which we are aware, but which we do not believe is relevant to our business, which may, nonetheless, ultimately be found to limit our ability to make, use, sell, offer for sale or import our drug candidates that may be approved in the future, or impair our competitive position. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes upon these patents. Any defense to claims of patent infringement asserted by third parties would be time consuming and could:

- result in costly litigation that may cause negative publicity;
- divert the time and attention of our technical personnel and management;
- cause development delays;
- prevent us from commercializing any of our drug candidates until the asserted patent expires or is held finally invalid or not infringed in a court of law;
- require us to develop non-infringing technology, which may not be possible on a cost-effective basis;
- subject us to significant liability to third parties; or
- require us to enter into royalty or licensing agreements, which may not be available on commercially reasonable terms, or at all, or which might be non-exclusive, which could result in our competitors gaining access to the same technology.

Although no third party has asserted a claim of patent infringement against us as of the date of this report, others may hold proprietary rights that could prevent our drug candidates from being marketed. Any patent-related legal action against us claiming damages and seeking to enjoin commercial activities relating to our drug candidates, treatment indications, or processes could subject us to significant liability for damages, including treble damages if we were determined to willfully infringe, and require us to obtain a license to manufacture or market our drug candidates. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion for management and other personnel. We cannot predict whether we would prevail in any such actions or that any license required under any of these patents would be made available on commercially acceptable terms, if at all. Moreover, even if we or a future strategic partner were able to obtain a license, the rights may be nonexclusive, which could result in our competitors gaining access to the same intellectual property. In addition, we cannot be certain that we could redesign our drug candidates, our treatment indications, or processes to avoid infringement, if necessary. Accordingly, an adverse determination in a judicial or administrative proceeding, or the failure to obtain necessary licenses, could prevent us from developing and commercializing our drug candidates, which could harm our business, financial condition and operating results. In addition, intellectual property litigation, regardless of its outcome, may cause negative publicity and could prohibit us from marketing or otherwise commercializing our drug candidates and technology.

Parties making claims against us may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or administrative proceedings, there is a risk that some of our confidential information could be compromised by disclosure. In addition, any uncertainties resulting from the initiation and continuation of any litigation could have material adverse effect on our ability to raise additional

funds or otherwise have a material adverse effect on our business, results of operations, financial condition and prospects.

We may not be successful in obtaining or maintaining necessary rights to our drug candidates through acquisitions and in-licenses.

Because our development programs may in the future require the use of proprietary rights held by third parties, the growth of our business may depend in part on our ability to acquire, in-license, or use these third-party proprietary rights. We may be unable to acquire or in-license any compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify as necessary for our drug candidates. The licensing and acquisition of third-party intellectual property rights is a competitive area, and a number of more established companies may pursue strategies to license or acquire third-party intellectual property rights that we may consider attractive or necessary. These established companies may have a competitive advantage over us due to their size, capital resources and greater clinical development and commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. We also may be unable to license or acquire third-party intellectual property rights on terms that would allow us to make an appropriate return on our investment or at all. If we are unable to successfully obtain rights to required third-party intellectual property, or if we are unable to maintain the existing intellectual property rights we have, we may have to abandon development of the relevant program or drug candidate, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

We may be involved in lawsuits to protect or enforce our patents or any current or future licensors' patents, which could be expensive, time consuming and unsuccessful. Further, our issued patents or any current or future licensors' patents could be found invalid or unenforceable if challenged in court.

Competitors may infringe our intellectual property rights. To prevent infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in a patent infringement proceeding, a court may decide that a patent we own or in-license is not valid, is unenforceable, or is not infringed. If we or any of our potential future collaborators were to initiate legal proceedings against a third party to enforce a patent directed at one of our drug candidates or their method of use, the defendant could counterclaim that our patent or the patent of any current or future licensors is invalid or unenforceable in whole or in part. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge include an alleged failure to meet any of several statutory requirements, including allegations of a lack of novelty, obviousness, lack of sufficient written description, non-enablement, or obviousness-type double patenting. Grounds for an unenforceability assertion could include an allegation that someone connected with prosecution of the patent application misrepresented or fraudulently withheld relevant information from the USPTO or made a misleading statement during prosecution.

Third parties may also raise similar invalidity claims before the USPTO or patent offices abroad, even outside the context of litigation. Such mechanisms include re-examination, PGR, IPR, derivation proceedings, and equivalent proceedings in foreign jurisdictions (e.g., opposition proceedings). Such proceedings could result in the revocation of, cancellation of, or amendment to our patents or any current or future licensors' patents in such a way that they no longer cover our technology or any drug candidates that we may develop. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to a validity claim, for example, we cannot be certain that there is no invalidating prior art of which we and the patent examiner were unaware during prosecution. If a third party were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our technology or any drug candidates that we may develop. Such a loss of patent protection would have a material adverse impact on our business, financial condition, results of operations and prospects.

The outcome following legal assertions of invalidity or unenforceability is unpredictable, and prior art could render our patents or any current or future licensors' patents invalid. There is no assurance that all potentially relevant prior art relating to our patents and patents applications or the patents and patent applications of any current or future licensors has been found. There is also no assurance that there is not prior art of which we are aware, but which we do not believe affects the validity or enforceability of a claim in our patents and patent applications or the patents and patent applications of any current or future licensors, which may, nonetheless, ultimately be found to affect the validity or enforceability of a claim. Additionally, a finding that issued claims lack sufficient written description or are not enabled could render our patent or any current or future licensors' patent invalid. A finding that issued claims are obvious under the standard for obviousness-type double patenting could result in a shortened term for our patent or any current or future licensors' patent, or render our patent or any current or future licensors' patent invalid.

If a third party were to prevail on a legal assertion of invalidity or unenforceability, we may lose at least part, and perhaps all, of the patent protection on such drug candidate. In addition, if the breadth or strength of protection provided by our patents and patent applications or the patents and patent applications of any current or future licensors is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future drug candidates. Such a loss of patent protection would have a material adverse impact on our business.

Even if resolved in our favor, litigation or other legal proceedings relating to our intellectual property rights may cause us to incur significant expenses, and could distract our management and other personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. We may not have sufficient financial or other resources to conduct such litigation or proceedings adequately. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could compromise our ability to compete in the marketplace.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or other legal proceedings relating to our intellectual property rights, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation or other proceedings. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of our common stock.

In addition, the issuance of a patent does not give us the right to practice the patented invention. Third parties may have blocking patents that could prevent us from marketing our own patented drug product and practicing our own patented technology.

Intellectual property litigation or legal proceedings may lead to unfavorable publicity that harms our reputation and causes the market price of our common stock to decline.

During the course of any intellectual property litigation or legal proceeding, there could be public announcements of the initiation of the litigation or legal proceeding as well as results of hearings, rulings on motions, and other interim proceedings. If securities analysts or investors regard these announcements as negative, the perceived value of our existing drug candidates, programs or intellectual property could be diminished. Accordingly, the market price of shares of our common stock may decline. Such announcements could also harm our reputation or the market for our future drug products, which could have a material adverse effect on our business.

Derivation proceedings may be necessary to determine priority of inventions, and an unfavorable outcome may require us to cease using the related technology or to attempt to license rights from the prevailing party.

Derivation proceedings provoked by third parties or brought by us or declared by the USPTO may be necessary to determine the priority of inventions with respect to our patents or patent applications or those of any current or future licensors or of third parties. An unfavorable outcome could require us to cease using the related technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does

not offer us a license on commercially reasonable terms. Our defense of derivation proceedings may fail and, even if successful, may result in substantial costs and distract our management and other personnel. In addition, the uncertainties associated with such proceedings could have a material adverse effect on our ability to raise the funds necessary to continue our clinical trials, continue our research programs, license necessary technology from third parties or enter into development or manufacturing partnerships that would help us bring our drug candidates to market.

Patent reform legislation could increase the uncertainties and costs surrounding the prosecution of our patent applications or those of any current or future licensors and the enforcement or defense of our issued patents or those of any current or future licensors.

On September 16, 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications are prosecuted and may also affect patent litigation. In particular, under the Leahy-Smith Act, the United States transitioned in March 2013 to a "first inventor to file" system in which, assuming that other requirements of patentability are met, the first inventor to file a patent application will be entitled to the patent regardless of whether a third party was first to invent the claimed invention. A third party that filed a patent application in the USPTO after March 2013 but before us could therefore be awarded a patent covering an invention of ours or our current or future licensors even if we or our current or future licensors had made the invention before it was made by such third party. This requires us to be cognizant going forward of the time from invention to filing of a patent application. Furthermore, our ability to obtain and maintain valid and enforceable patents depends on whether the differences between our technology and the prior art allow our technology to be patentable over the prior art. Since patent applications in the United States and most other countries are confidential for a period of time after filing or until issuance, we may not be certain that we or any current or future licensors are the first to either (1) file any patent application related to our drug candidates, their use, or our technology or (2) invent any of the inventions claimed in the patents or patent applications.

The Leahy-Smith Act also included a number of significant changes that affect the way patent applications are prosecuted and also may affect patent litigation. These include allowing third-party submission of printed publications to the USPTO during patent prosecution and additional procedures to attack the validity or enforceability of a patent by USPTO-administered post-grant proceedings, including PGR, IPR, and derivation proceedings. An adverse determination in any such submission or proceeding could reduce the scope or enforceability of, or invalidate, our patent rights, which could adversely affect our competitive position.

Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in United States federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims or those of our current or future licensors that would not have been invalidated if first challenged by the third party in a district court action. Thus, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications or those of any current or future licensors and the enforcement or defense of our issued patents or those of any current or future licensors, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Changes in U.S. patent law, or laws in other countries, could diminish the value of patents in general, thereby impairing our ability to protect our drug candidates.

As is the case with other biopharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biopharmaceutical industry involve a high degree of technological and legal complexity. Therefore, obtaining and enforcing biopharmaceutical patents is costly, time consuming and inherently uncertain. Changes in either the patent laws or in the interpretations of patent laws in the United States and other countries may diminish the value of our intellectual property and may increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents. We cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party

patents. In addition, Congress or other foreign legislative bodies may pass patent reform legislation that is unfavorable to us.

For example, the U.S. Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by the U.S. Congress, the U.S. federal courts, the USPTO, or similar authorities in foreign jurisdictions, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patent and the patents we might obtain or license in the future. As an example, European patent applications now provide the option, upon grant of a patent, of becoming a Unitary Patent, which is subject to the jurisdiction of the Unitary Patent Court ("UPC"), in member states that have acceded to and ratified the EU Patent Package. The option of a Unitary Patent is a significant change in European patent practice. As the UPC is a new court system, there is no precedent for the court, increasing the uncertainty of any litigation in the UPC. European patents granted on applications we file may be subject to loss or revocation via the UPC, which could have a material adverse effect on our business and our ability to commercialize or license our technology and products. Moreover, the controlling laws and regulations of the UPC will develop over time and may adversely affect our ability to enforce or defend the validity of any European patents obtained. We have opted out of the UPC with respect to our European patents to date, and we may decide to opt out of the UPC with respect to any pending or future published European patent applications or patents. If certain formalities and requirements are not met, however, such European patents and patent applications could be challenged for non-compliance and brought under the jurisdiction of the UPC. We cannot be certain that future European patents and patent applications will avoid falling under the jurisdiction of the UPC, even if we decide to opt out of the UPC.

We may be subject to claims challenging the inventorship or ownership of our patents and other intellectual property.

We may also be subject to claims that former employees or other third parties have an ownership interest in our patents or other intellectual property. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and distraction to management and other employees.

Patent terms may be inadequate to protect our competitive position on our drug candidates for an adequate amount of time.

Patents have a limited lifespan. In the United States, if all maintenance fees are timely paid, the natural expiration of a patent is generally 20 years from its earliest U.S. non-provisional filing date. Various extensions may be available, but the life of a patent, and the protection it affords, is limited. Even if patents covering our drug candidates or their use are obtained, once the patent life has expired, we may be open to competition from competitive products, including generic versions of our drug products. Given the amount of time required for the development, testing and regulatory review of new drug candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our patent portfolio may not provide us with sufficient rights to exclude others from commercializing drug products similar or identical to ours.

If we do not obtain patent term extension for our drug candidates, our business may be materially harmed.

Depending upon the timing, duration and specifics of FDA marketing approval of our drug candidates, one or more of our U.S. patents or those of any current or future licensors may be eligible for limited patent term restoration under the Drug Price Competition and Patent Term Restoration Act of 1984("Hatch-Waxman Amendments"). The Hatch-Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. A maximum of one patent may be extended per FDA approved product as compensation for the patent term lost during clinical trials and the FDA regulatory review process. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only those claims covering such approved drug product, a method for using it or a method

for manufacturing it may be extended. Patent term extension may also be available in certain foreign countries upon regulatory approval of our drug candidates, although the requirements and terms of such extensions vary country-by-country. However, we may not be granted an extension because of, for example, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. If we are unable to obtain patent term extension or restoration or the term of any such extension is less than we request, our competitors may obtain approval of competing products or launch generic versions of our drug products following our patent expiration, and our revenue could be reduced, possibly materially. Further, if this occurs, our competitors may take advantage of our investment in development and clinical trials by referencing our clinical and nonclinical data and launch their drug product earlier than might otherwise be the case.

We will not be able to protect our intellectual property rights throughout the world.

We own and in-license patents and pending patent applications in the United States and in jurisdictions outside of the United States. However, filing, prosecuting and defending patents in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States may be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we will not be able to prevent third parties from practicing our inventions in all countries outside the United States or from selling or importing drug products made using our inventions in and into the United States or other jurisdictions. Competitors may use our inventions in jurisdictions where we have not obtained patent protection to develop their own drug products and, further, may export otherwise infringing drug products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These drug products may compete with our drug candidates, and our patents, the patents of any current or future licensors, or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of many foreign countries do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the infringement of our patents or any current or future licensors' patents or marketing of competing drug products in violation of our proprietary rights. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents or the patents of any current or future licensors at risk of being invalidated or interpreted narrowly and our patent applications or the patent applications of any current or future licensors at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Many countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In addition, many countries limit the enforceability of patents against government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of such patents. If we are forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired, and our business, financial condition, results of operations and prospects may be adversely affected.

Geopolitical actions could increase the uncertainties and costs surrounding the prosecution or maintenance of our patent applications or those of any current or future licensors and the maintenance, enforcement or defense of our issued patents or those of any current or future licensors. For example, the United States and foreign government actions related to Russia's invasion of Ukraine may limit or prevent filing, prosecution and maintenance of patent applications in Russia. Government actions may also prevent maintenance of issued patents in Russia. These actions could result in abandonment or lapse of our patents or patent applications, resulting in partial or complete loss of patent rights in Russia. If such an event were to occur, it could have a material adverse effect on our business. In addition, a decree was adopted by the Russian government in March 2022, allowing Russian companies and individuals to exploit inventions owned by patentees that have citizenship or nationality in, are registered in, or have a predominately primary place of business or profit-making activities in the United States and other countries that Russia has deemed unfriendly without consent or compensation. Consequently, we would not be able to prevent third

parties from practicing our inventions in Russia or from selling or importing products made using our inventions in and into Russia. Accordingly, our competitive position may be impaired, and our business, financial condition, results of operations and prospects may be adversely affected.

Obtaining and maintaining our patent protection depends on compliance with various procedural, documentary, fee payment, and other requirements imposed by regulations and governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents or applications will be due to the USPTO and various foreign patent offices at various points over the lifetime of our patents or applications and those of any current or future licensors. We have systems in place to remind us to pay these fees, and we rely on our outside patent annuity service to pay these fees when due. Additionally, the USPTO and various foreign patent offices require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. We employ reputable law firms and other professionals to help us comply, and in many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with rules applicable to the particular jurisdiction. However, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. If such an event were to occur, it could have a material adverse effect on our business.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

We intend to use registered or unregistered trademarks or trade names to brand and market ourselves and our drug products. Our trademarks or trade names may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition among potential partners or customers in our markets of interest, and it may be difficult and costly to register, maintain or protect our rights to these trademarks and trade names in jurisdictions in and outside of the United States. At times, competitors may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion. In addition, there could be potential trade name or trademark infringement claims brought by owners of other registered trademarks or trademarks that incorporate variations of our registered or unregistered trademarks or trade names. Over the long term, if we are unable to establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively, and our business may be adversely affected. Our efforts to enforce or protect our proprietary rights related to trademarks, trade names, domain names, copyrights or other intellectual property may be ineffective and could result in substantial costs and diversion of resources and could adversely affect our financial condition or results of operations.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.

In addition, we rely on the protection of our trade secrets, including unpatented know-how, technology and other proprietary information to maintain our competitive position. Although we have taken steps to protect our trade secrets and unpatented know-how, including entering into confidentiality agreements with third parties, and confidential information and inventions agreements with our employees, consultants and advisors, we cannot provide any assurances that all such agreements have been duly executed, and any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party improperly disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets.

Moreover, third parties may still obtain this information or may come upon this or similar information independently, and we would have no right to prevent them from using that technology or information to compete with us. If any of these events occurs or if we otherwise lose protection for our trade secrets, the value of this information may be greatly reduced, and our competitive position would be harmed. If we do not apply for patent protection prior to such publication or if we cannot otherwise maintain the confidentiality of our proprietary

technology and other confidential information, then our ability to obtain patent protection or to protect our trade secret information may be jeopardized.

We may be subject to claims that we or our employees have wrongfully used or disclosed alleged confidential information or trade secrets of third parties.

We have entered into and may enter in the future into non-disclosure and confidentiality agreements to protect the proprietary positions of third parties, such as outside scientific collaborators, CROs, third-party manufacturers, consultants, advisors, potential partners, lessees of shared multi-company property and other third parties. We may become subject to litigation where a third party asserts that we or our employees inadvertently or otherwise breached the agreements and used or disclosed their trade secrets or other information proprietary to the third parties. Defense of such matters, regardless of their merit, could involve substantial litigation expense and be a substantial diversion of employee resources from our business. We cannot predict whether we would prevail in any such actions. Moreover, intellectual property litigation, regardless of its outcome, may cause negative publicity and could prohibit us from marketing or otherwise commercializing our drug candidates. Failure to defend against any such claim could subject us to significant liability for monetary damages or prevent or delay our developmental and commercialization efforts, which could adversely affect our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to our management team and other employees.

Parties making claims against us may be able to sustain the costs of complex intellectual property litigation more effectively than we can because they have substantially greater resources. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure. In addition, any uncertainties resulting from the initiation and continuation of any litigation could have material adverse effect on our ability to raise additional funds or otherwise have a material adverse effect on our business, operating results, financial condition and prospects.

We may be subject to claims that we have wrongfully hired an employee from a competitor or that we or our employees have wrongfully used or disclosed alleged confidential information or trade secrets of their former employers.

As is common in the biopharmaceutical industry, in addition to our employees, we engage the services of consultants to assist us in the development of our drug candidates. Many of these consultants, and many of our employees, were previously employed at, or may have previously provided or may be currently providing consulting services to, other biopharmaceutical companies including our competitors or potential competitors. We may become subject to claims that we, our employees or a consultant inadvertently or otherwise used or disclosed trade secrets or other information proprietary to their former employers or their former or current clients. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel, which could adversely affect our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to our management team and other employees.

Our rights to develop and commercialize our drug candidates may be subject, in part, to the terms and conditions of licenses granted to us by others.

We have entered into license agreements with third parties and we may enter into additional license agreements in the future with others to advance our research and development or allow commercialization of drug candidates. These and other licenses may not provide exclusive rights to use such intellectual property and other rights in all relevant fields of use and in all territories in which we may wish to develop or commercialize our drug candidates in the future. Further, these and other licenses may also include certain restrictions or obligations that limit our ability to engage with third parties, including potential restrictions on sublicensing or outsourcing certain activities.

In addition, subject to the terms of any such license agreements, we may not have the right to control the preparation, filing, prosecution, maintenance, enforcement, and defense of patents and patent applications covering our drug candidates that we license from third parties. In such an event, we cannot be certain that these patents and patent applications will be prepared, filed, prosecuted, maintained, enforced, and defended in a manner consistent with the best interests of our business. If any of our current or future licensors fail to prosecute, maintain, enforce, and

defend such patents, or lose rights to those patents or patent applications, the rights we have licensed may be reduced or eliminated, and our right to develop and commercialize any of our drug candidates that are subject of such licensed rights could be adversely affected.

Our licensors and any future licensors may have relied on third party consultants or collaborators or on funds from third parties such that our licensors are not the sole and exclusive owners of the patents we in-license. If it is later determined that third parties own the rights to our in-licensed patents, or if other third parties have ownership rights to our in-licensed patents, such third parties may be able to license such patents to our competitors, and our competitors could market drug products similar or identical to our drug candidates. This could have a material adverse effect on our competitive position, business, financial condition, results of operations, and prospects.

It is possible that we may be unable to obtain additional licenses at a reasonable cost or on reasonable terms, if at all. Even if we are able to obtain a license, it may be non-exclusive, thereby giving our competitors access to the same rights licensed to us. In that event, we may be required to expend significant time and resources to redesign our drug candidates, or the methods for manufacturing them or to develop or license replacement technology, all of which may not be feasible on a technical or commercial basis. If we are unable to do so, we may be unable to develop or commercialize the affected drug candidates, which could harm our business, financial condition, results of operations, and prospects significantly. We cannot provide any assurances that third party patents do not exist which might be enforced against our current manufacturing methods, drug candidates, methods of use, or future methods or drug candidates resulting in either an injunction prohibiting our manufacture or future sales, or, with respect to our future sales, an obligation on our part to pay royalties or other forms of compensation to third parties, which could be significant.

If we fail to comply with our obligations in the agreements under which we license intellectual property rights or other rights from third parties or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business.

Disputes may arise between us and our current or future licensors regarding intellectual property and other rights subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- whether and the extent to which our drug candidates infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- our right to sublicense to third parties;
- our diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- our right to transfer or assign the license;
- the inventorship and ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners; and
- the priority of invention of patented technology.

In addition, the agreements under which we license intellectual property or other rights from third parties are complex, and certain provisions in such agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or other rights, or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations, and prospects. Moreover, if disputes over intellectual property or other rights that we have licensed prevent or impair our ability to maintain our current licensing arrangements on commercially acceptable terms, we may be unable to successfully develop and commercialize the affected drug candidates, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

In spite of our best efforts, our licensors might conclude that we have materially breached our license agreements and might therefore terminate the license agreements, thereby removing our ability to develop and commercialize

drug candidates covered by these license agreements. If these in-licenses are terminated, or if the underlying patents fail to provide the intended exclusivity, competitors would have the freedom to seek regulatory approval of, and to market, drug products identical to ours. This could have a material adverse effect on our competitive position, business, financial condition, results of operations, and prospects.

The patent protection and patent prosecution for some of our drug candidates may be dependent on third parties.

While we normally seek to obtain the right to control prosecution, maintenance and enforcement of the patent applications and patents relating to our drug candidates and their use, there may be times when the filing and prosecution activities for patent applications and patents relating to our drug candidates are controlled by licensors or collaboration partners. If a licensor or collaboration partner fails to prosecute, maintain and enforce such patents and patent applications in a manner consistent with the best interests of our business, including by payment of all applicable fees for patent applications and patents covering our drug candidates, we could lose our rights to the intellectual property or our exclusivity with respect to those rights, our ability to develop and commercialize those drug candidates may be adversely affected and we may not be able to prevent competitors from making, using and selling drug products similar or identical to our drug candidates. In addition, even where we have the right to control patent prosecution of patents and patent applications we have licensed to and from third parties, we may still be adversely affected or prejudiced by actions or inactions of our licensees, our licensors and their counsel that took place prior to the date upon which we assumed control over patent prosecution.

Intellectual property discovered or developed through government funded programs may be subject to federal regulations such as "march-in" rights, certain reporting requirements and a manufacturing preference for U.S.-based companies. Compliance with such regulations may limit our exclusive rights and limit our ability to contract with non-U.S. manufacturers, which could adversely affect our ability to successfully develop and commercialize our drug products.

Pursuant to the Bayh-Dole Act of 1980("the Bayh-Dole Act"), the U.S. government may have certain rights in any invention developed or reduced to practice with government funding. We have in the past discovered, developed, acquired, or licensed new intellectual property that has been generated through the use of U.S. government funding or grants in which the U.S. government may have certain rights pursuant to the Bayh-Dole Act, and we may do so in the future. These U.S. government rights include a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose. In addition, the U.S. government has the right, under certain limited circumstances, to require us to grant exclusive, partially exclusive, or non-exclusive licenses to any of these inventions to a third party if it determines that: (1) adequate steps have not been taken to commercialize the invention; (2) government action is necessary to meet public health or safety needs; or (3) government action is necessary to meet requirements for public use under federal regulations (also referred to as "march-in rights"). Such "march-in" rights would apply to new subject matter arising from the use of such government funding or grants and would not extend to pre-existing subject matter or subject matter arising from funds unrelated to the government funding or grants. If the U.S. government exercises its march-in rights in our intellectual property rights that are generated through the use of U.S. government funding or grants, we could be required to license or sublicense intellectual property discovered or developed by us or that we license on terms unfavorable to us, and there can be no assurance that we would receive compensation from the U.S. government for the exercise of such rights. The U.S. government also has the right to take title to these inventions if the grant recipient fails to disclose the invention to the government or fails to file an application to register the intellectual property within specified time limits. Intellectual property generated under a government funded program is also subject to certain reporting requirements, compliance with which may require us to expend substantial resources. Should any of these events occur, it could significantly harm our business, results of operations and prospects. In addition, the Bayh-Dole Act requires that, in certain circumstances, any products embodying intellectual property generated with the use of U.S. government funds or produced through the use of any such intellectual property be manufactured substantially in the United States. This preference for U.S. industry may be waived by the federal agency that provided the funding if the owner or assignee of the intellectual property can show that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. This preference for U.S. industry may limit our ability to contract with non-U.S. product manufacturers for products covered by such intellectual property, which could adversely affect our ability

to successfully develop and commercialize our drug products and have a material adverse effect on our business, financial condition, results of operations, and prospects.

Risks Related to Cybersecurity

We are dependent on networks, infrastructure and data, which exposes us to data security risks, including security failures or breaches of our systems or those used by our CROs or other contractors or consultants. We are dependent upon our own or third-party information technology systems, infrastructure and data, including mobile technologies, to operate our business. The multitude and complexity of our computer systems may fail or suffer security breaches.

As discussed in the section titled "Part 1, Item 1.C—Cybersecurity" in our Annual Report on Form 10-K filed with the SEC on February 27, 2025, we have implemented various processes and policies for identifying, assessing, and managing material risks from cybersecurity threats. However, despite the implementation of such safeguards and security measures, our internal computer systems and those of our CROs and other contractors and consultants may nevertheless be vulnerable to damage from computer viruses and unauthorized access. Likewise, data privacy or security incidents or breaches by employees or others may pose a risk that sensitive data, including our intellectual property, trade secrets or personal information of our employees, patients, customers or other business partners may be exposed to unauthorized persons or to the public or may otherwise be misused. Cyberattacks, malicious internet-based activity, online and offline fraud, and other similar activities threaten the confidentiality, integrity, and availability of our personal, sensitive, confidential or proprietary information and information technology systems, and those of the third parties upon which we rely. For example, in April 2023, CRO Evotec SE faced a cybersecurity attack that temporarily disrupted its systems and operations. Such threats are prevalent and continue to rise, are increasingly difficult to detect, and come from a variety of sources, including traditional computer "hackers," threat actors, "hacktivists," organized criminal threat actors, personnel (such as through theft or misuse), sophisticated nation states, and nation-state-supported actors. Some actors now engage and are expected to continue to engage in cyber-attacks, including without limitation nation-state actors for geopolitical reasons and in conjunction with military conflicts and defense activities. During times of war and other major conflicts, we, the third parties upon which we rely, may be vulnerable to a heightened risk of these attacks, including retaliatory cyber-attacks, that could materially disrupt our systems and operations, supply chain, and ability to produce, sell and distribute our goods and services.

We and the third parties upon which we rely may be subject to a variety of evolving threats, including but not limited to social-engineering attacks (including through phishing attacks), malicious code (such as viruses and worms), malware (including as a result of advanced persistent threat intrusions), denial-of-service attacks (such as credential stuffing), credential harvesting, personnel misconduct or error, ransomware attacks, supply-chain attacks, software bugs, server malfunctions, software or hardware failures, loss of data or other information technology assets, adware, telecommunications failures, earthquakes, fires, floods, and other similar threats. Increases in remote work impacting how our employees work and access our systems could lead to additional opportunities for bad actors to launch cyberattacks or for employees to cause inadvertent security risks or incidents and may amplify the impacts of any security breach or incident. Future or past business transactions (such as acquisitions or integrations) could expose us to additional cybersecurity risks and vulnerabilities, as our systems could be negatively affected by vulnerabilities present in acquired or integrated entities' systems and technologies.

We may rely on third-party service providers and technologies to operate critical business systems to process sensitive information and other company data in a variety of contexts. We may also rely on third-party service providers to provide certain products or services, or otherwise to operate our business. Our ability to monitor these third parties' information security practices is limited, and these third parties may not have adequate information security measures in place. Security incidents or other interruptions suffered by our third-party service providers could cause us to experience adverse consequences. While we may be entitled to damages if our third-party service providers fail to satisfy their privacy- or security-related obligations to us, any award may be insufficient to cover our damages, or we may be unable to recover such award. In addition, supply-chain attacks have increased in frequency and severity, and we cannot guarantee that third parties' infrastructure in our supply chain or our third-party partners' supply chains have not been compromised.

Our business partners face similar risks, and any security breach of, or security incident impacting, their systems or that they otherwise suffer could adversely affect our security posture. A security breach or incident or privacy violation that leads to loss of or unauthorized use, disclosure or modification of, or access to trade secrets, company

resources, personal, sensitive, confidential or proprietary information, including protected health information or other patient information, or that prevents access to patient information, as well as the perception that any of the foregoing has occurred, could harm our reputation, compel us to comply with federal or state breach notification laws and foreign law equivalents, subject us to mandatory corrective action, cause us to provide other notification or take other steps in response to such breach or violation, require us to verify the correctness of database contents and otherwise subject us to litigation, claims, investigations, penalties or other liability under laws and regulations, any of which could disrupt our business or result in increased costs or loss of revenue or company resources. Moreover, the prevalent use of mobile devices that access confidential information, increase the risk of security breaches and incidents.

Despite efforts to create security barriers to the above-described threats, it is impossible for us to entirely mitigate these risks. To date, we have not experienced any material impact to our business, financial position or results of operations resulting from cyberattacks or other information security incidents such as phishing, social engineering, ransomware or malware attacks; however, because of the frequently changing attack techniques, along with the increased volume and sophistication of such attacks, our business, financial position or results of operations could be adversely impacted in the future. We may be unable to anticipate or prevent techniques used to obtain unauthorized access or to compromise our systems because they change frequently and are generally not detected until after an incident has occurred. If a compromise or other security breach or incident were to occur and cause the loss or corruption of data or interruptions in our operations, it could result in a material disruption of our development programs and our business operations. For example, the loss, unavailability, or corruption of clinical trial data from completed, ongoing or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Any disruption or security breach or incident resulting in loss or unavailability of, or damage to, our data or systems, or inappropriate use, disclosure or modification of personal, sensitive, confidential or proprietary information, could result in us incurring liability and in delays to further development and commercialization of our drug candidates could be delayed. While we have invested, and continue to invest, in the protection of our data and information technology infrastructure, there can be no assurance that our efforts will prevent service interruptions, or prevent or identify vulnerabilities or security breaches or incidents, that could adversely affect our business and operations or result in the loss, unavailability, or corruption of, or inappropriate access to or use of, critical or sensitive information or company resources. Any such interruptions, breaches or incidents, or the perception any have occurred, could result in financial, legal, business or reputational harm to us. In addition, our liability insurance may not be sufficient in type or amount to cover us against claims related to security breaches, cyberattacks and other privacy and security breaches or incidents.

Our contracts may not contain limitations of liability, and even where they do, there can be no assurance that limitations of liability in our contracts are sufficient to protect us from liabilities, damages, or claims related to our data privacy and security obligations. We cannot be sure that our insurance coverage will be adequate or sufficient to protect us from or to mitigate liabilities arising out of our privacy and security practices, that such coverage will continue to be available on commercially reasonable terms or at all, or that such coverage will pay future claims.

Data collection is governed by restrictive regulations governing the use, processing and cross-border transfer of personal information.

As we conduct our clinical trials and continue to enroll patients in our current and future clinical trials, we may be subject to additional restrictions relating to privacy, data protection and data security. The collection, use, storage, disclosure, transfer, or other processing of personal data, including personal health data, regarding individuals in the European Economic Area("EEA"), is subject to the EU General Data Protection Regulation("GDPR"). The GDPR is wide-ranging in scope and imposes numerous requirements on companies that process personal data, including requirements relating to processing health and other sensitive data, obtaining consent of the individuals to whom the personal data relates, providing information to individuals regarding data processing activities, implementing safeguards to protect the security and confidentiality of personal data, providing notification of data breaches, and taking certain measures when engaging third-party processors. The GDPR also imposes strict rules on the transfer of personal data to countries outside the EEA, including the United States, and permits data protection authorities to impose large penalties for violations of the GDPR, including potential fines of up to €20 million or 4% of annual global revenues, whichever is greater. The GDPR also confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies, and obtain compensation for damages resulting from violations of the GDPR. In addition, the GDPR includes restrictions on cross-border data transfers. Certain aspects of cross-border data transfers under the GDPR are subject to uncertainty, including as the

result of legal proceedings in the EU. For example, in 2020, the Court of Justice for the EU invalidated the EU-U.S. Privacy Shield and imposed additional obligations in connection with the use of standard contractual clauses approved by the EU Commission. The United Kingdom("UK"), also made amendments to its data protection regime on June 19, 2025, in the UK Data (Use and Access) Act("DUAA") which may impact the European Commission's decision that the UK provides an adequate level of data protection and that generally permits personal data transfers from the EEA to the UK. This decision must be renewed in 2025. The European Commission has proposed to renew the United Kingdom's adequacy decision after assessing the DUAA, but additional procedural steps remain, creating some uncertainty regarding such decision. These and other developments with respect to cross-border data transfers may increase the complexity of transferring personal data across borders and may require us to review and amend our mechanisms relating to cross-border data transfer.

Further, the exit of the UK from the EU has created uncertainty regarding data protection regulation in the UK. The UK has implemented legislation similar to the GDPR, referred to as the UK GDPR, which provides for fines of up to the greater of up to the greater of £17.5 million or 4% of global turnover, and made targeted amendments to it in the UK Data (Use and Access) Act 2025. The GDPR and UK GDPR have increased our responsibility and liability in relation to personal data that we process where subject to these regimes, and we may be required to put in place or modify policies and measures to ensure compliance with the GDPR, including as implemented by individual countries, and the UK GDPR, each of which may require us to modify our policies and procedures and engage in additional contractual negotiations, and which may cause us to incur liabilities, expenses, costs, and operational losses. Compliance with the GDPR and UK GDPR will be a rigorous and time-intensive process that may increase our cost of doing business or require us to change our business practices, and despite our efforts, there is a risk that we may be subject to fines and penalties, litigation, and reputational harm in connection with our activities in the EEA and the UK.

In addition, in the United States, federal, state, and local governments have enacted numerous data privacy and security laws, including data breach notification laws, personal data privacy laws, consumer protection laws (e.g., Section 5 of the Federal Trade Commission Act), and other similar laws (e.g., wiretapping laws). California has enacted the California Consumer Privacy Act("CCPA"), which creates new individual privacy rights for California consumers (as defined in the law) and places increased privacy and security obligations on entities handling personal data of consumers or households. The CCPA requires covered companies to provide new disclosure to consumers about such companies' data collection, use and sharing practices, provide such consumers new ways to opt-out of certain sales or transfers of personal information, and provide consumers with additional causes of action. The California Privacy Rights Act of 2020 (CPRA), which became operative January 1, 2023, expands the CCPA's requirements, including applying to personal information of business representatives and employees and establishing a new regulatory agency to implement and enforce the law. Although the CCPA exempts some data processed in the context of clinical trials, the CCPA and CPRA may increase compliance costs and potential liability with respect to other personal data we maintain about California residents. Additionally, numerous other states have proposed or enacted laws addressing privacy and security, including Washington's My Health, My Data Act, and several laws imposing obligations similar to those of the CCPA. The U.S. Department of Justice also has issued rules regarding certain bulk sensitive personal data transfers. The U.S. federal government also is contemplating federal privacy legislation. The CCPA, CPRA, and other evolving legislation relating to privacy, data protection, and information security may impact our business activities and exemplify the vulnerability of our business to the evolving regulatory environment related to personal data and protected health information.

We may also be bound by contractual obligations related to data privacy and security, and our efforts to comply with such obligations may not be successful. For example, certain privacy laws, such as the GDPR and the CCPA/CPRA, require us to impose specific contractual restrictions on our service providers, and we may also be subject to use and disclosure limitations in our contracts with providers who share information with us for clinical trials. Additionally, we may publish privacy policies, marketing materials and other statements, such as compliance with certain certifications or self-regulatory principles, regarding data privacy and security. If these policies, materials, or statements are found to be deficient, lacking in transparency, deceptive, unfair, or misrepresentative of our practices, we may be subject to investigation, enforcement actions by regulators or other adverse consequences.

Obligations related to data privacy and security are quickly changing, becoming increasingly stringent, and creating regulatory uncertainty. Additionally, these obligations may be subject to differing applications and interpretations, which may be inconsistent or conflict among jurisdictions. Preparing for and complying with these

obligations requires us to devote significant resources. These obligations may necessitate changes to our business model, information technologies, systems, and practices and to those of any third parties that process personal data on our behalf. We may at times fail (or be perceived to have failed) in our efforts to comply with our data privacy and security obligations. Moreover, despite our efforts, our personnel or third parties on whom we rely may fail to comply with such obligations, which could negatively impact our business operations.

Compliance with U.S. and international data protection laws and regulations could require us to take on more onerous obligations in our contracts, restrict our ability to collect, use and disclose data, or in some cases, impact our ability to operate in certain jurisdictions. Any actual or alleged failure to comply with U.S. or international laws and regulations relating to privacy, data protection, and information security could result in governmental investigations, proceedings and enforcement actions (which could result in civil or criminal penalties), private litigation or adverse publicity, harm to our reputation, and could negatively affect our operating results and business. Moreover, clinical trial subjects about whom we or our potential collaborators obtain information, as well as the providers who share this information with us, may contractually limit our ability to use and disclose the information or impose other obligations or restrictions in connection with our use, retention, and other processing of information, and we may otherwise face contractual restrictions applicable to our use, retention, and other processing of information. Claims that we have violated individuals' privacy rights, failed to comply with laws relating to privacy, data protection, or information security, or breached our contractual obligations, even if we are not found liable, could be expensive and time consuming to defend and could result in adverse publicity that could harm our business.

Risks Related to Ownership of Our Common Stock

Our reverse stock split to regain compliance with the Nasdaq Capital Market Minimum Bid Requirement may not result in a lasting proportional increase in the per share price of our common stock and may decrease the liquidity of our common stock. Nasdaq Listing Rule 5450(a)(1) requires listed securities to maintain the Minimum Bid Requirement, and Nasdaq Listing Rule 5810(c)(3)(A) provides that a failure to meet the Minimum Bid Requirement exists if the deficiency continues for a period of 30 consecutive business days. On October 16, 2024, we received written notice from the Listing Qualifications Department of Nasdaq notifying us that, based on the closing bid price of our common stock for the previous 30 consecutive business days, we did not comply with the Minimum Bid Requirement for continued listing on The Nasdaq Global Market, and that we had until April 14, 2025 to regain such compliance. On April 15, 2025, we received a letter from Nasdaq approving the transfer of the listing of the Company's common stock from the Nasdaq Global Select Market to the Nasdaq Capital Market, granting an additional 180-day grace period, or until October 13, 2025, to regain compliance with the Minimum Bid Requirement. To regain compliance, our Board of Directors and stockholders approved a 1-for-10 reverse stock split. Although we have regained compliance with the Nasdaq's listing standards, the long-term effect of the reverse stock split, if any, on the market price for our common stock cannot be accurately predicted. Since the effective date of the reverse stock split on September 17, 2025, the trading price of our common stock increased. From time to time it has traded below the proportionately-adjusted closing price on September 17, 2025. Because some investors may view a reverse stock split negatively, any such decrease may be the result, at least in part, of the reverse stock split. Further, the liquidity of the shares of our common stock may be affected adversely by the reverse stock split given the reduced number of shares that are outstanding following the reverse stock split.

We do not know whether an active market for our common stock will be sustained, and, as a result, it may be difficult for you to sell your shares of our common stock.

If an active market for our common stock is not sustained, it may be difficult for you to sell your shares of common stock at an attractive price or at all. We cannot predict the prices at which our common stock will trade. It is possible that in one or more future periods our results of operations and progression of our drug product pipeline may not meet the expectations of public market analysts and investors, and, as a result of these and other factors, the price of our common stock may fall.

The market price of our common stock has been and may continue to be volatile, which could result in substantial losses for investors.

The market price of our common stock may be volatile. As a result, you may not be able to sell your common stock at or above the price that you paid for such shares. Some of the factors that may cause the market price of our common stock to fluctuate include:

- results of nonclinical studies and clinical trials;
- the success of existing or new competitive products or technologies;
- the timing and results of clinical trials for our current drug candidates and any future drug candidates that we may develop;
- commencement or termination of collaborations for our drug candidates;
- failure or discontinuation of any of our drug candidates;
- results of nonclinical studies, clinical trials or regulatory approvals of drug candidates of our competitors, or announcements about new research programs or drug candidates of our competitors;
- investor reactions to other companies' drug development results, including product failures or negative responses from regulatory authorities;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- negative press coverage;
- the potential commencement of any litigation and/or governmental investigations;
- the level of expenses related to any of our research programs, drug candidates that we may develop;
- the results of our efforts to develop additional drug candidates or drug products;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- announcement or expectation of additional financing efforts, including, but not limited to, under our ATM offering;
- sales of our common stock by us, our insiders, or other stockholders;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in estimates or recommendations by securities analysts, if any, that cover our stock;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- volatility with the banking system;
- the potential impact of health epidemics on our business;
- direct or indirect impacts on our business, our suppliers and other third parties and our clinical sites as a result of geopolitical events, including the Russia-Ukraine war;
- changes in regulations and customs, tariffs or trade barriers, or the perception that any such changes could occur;
- general economic, industry, and market conditions; and
- the other factors described in this "Risk Factors" section.

In recent years, the stock market in general, and the market for pharmaceutical and biotechnology companies in particular, has experienced significant price and volume fluctuations that have often been unrelated or disproportionate to changes in the operating performance of the companies whose stock is experiencing those price and volume fluctuations. Broad market and industry factors may seriously affect the market price of our common stock, regardless of our actual operating performance. Following periods of such volatility in the market price of a company's securities, securities class action litigation has often been brought against that company. Because of the potential volatility of our stock price, we may become the target of securities litigation in the future. Securities litigation could result in substantial costs and divert management's attention and resources from our business.

Future sales, or the perception of future sales, of a substantial amount of our common stock could depress the trading price of our common stock.

Our stock price could decline as a result of sales of a large number of shares of our common stock or the perception that these sales could occur. These sales, or the possibility that these sales may occur, also might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate.

For example, in connection with our December 2025 private placement and our in-license of lasofoxifene, we entered into registration rights agreements with various parties that require us to prepare and file resale registration statements upon request, which when filed and declared effective by the SEC will permit the resale by such stockholders of approximately 5.4 million shares of our common stock as well as approximately 58.6 million shares of common stock issuable upon the exercise of prefunded warrants and warrants. We have in the past and may again in the future issue shares of our common stock to strategic partners in connection with license agreements, as we did in December 2025 in connection with our in-license of lasofoxifene.

We also register the offer and sale of all shares of common stock that we may issue under our equity incentive plans. Once we register the offer and sale of shares for the holders of registration rights and option holders, they can be freely sold in the public market upon issuance, subject to any related lock-up agreements or applicable securities laws. Our equity incentive plan also includes an evergreen provision, pursuant to which the share reserve used to make equity grants under such plan automatically increases on the first day of each calendar year unless our board of directors takes action to prevent the increase prior to such date. We believe this evergreen provision is an important feature of our equity incentive plan as it enables us to hire and retain key contributors to our business. As we look to expand the size of our organization to advance the development of our product candidates, including ATH-1105 and lasofoxifene, our existing share reserve and evergreen provision under our current equity incentive plans may be insufficient to support our growth plans and we expect that we may need to consider amendments to such equity incentive plans or adoption of new equity incentive plans to provide additional flexibility for our hiring and retention plans. Any increase to the share reserves for our equity incentive plans in the future would further dilute existing stockholders.

Our executive officers and directors may enter into Rule 10b5-1 trading plans in the future. Under a Rule 10b5-1 trading plan, a broker executes trades pursuant to parameters established by the employee, director, or officer when entering into the plan, without further direction from the employee, officer, or director.

In addition, in the future, we may issue additional shares of common stock or other equity or debt securities convertible into common stock in connection with a financing, acquisition, litigation settlement, employee arrangements or otherwise. Any such future issuance, including any additional issuances pursuant to our "at-the-market" equity offering sales agreement with Cantor, could result in substantial dilution to our existing stockholders and could cause our stock price to decline.

We and certain of our directors and executive officers have previously been, and may in the future be, named as defendants in lawsuits that could result in substantial costs and divert management's attention.

We and certain of our executive officers and directors have in the past been and may in the future be named as defendants in lawsuits concerning our business. Such litigation has caused, and may in the future cause, our management and board of directors to divert time and attention to the litigation and could adversely impact our reputation and further divert management and our board of directors' attention and resources from other priorities,

including the execution of our operating plan and strategies that are important to our ability to grow our business and advance our drug candidates, any of which could have a material adverse effect on our business. In addition, resolution of litigation in a manner adverse to us and for which we incur substantial costs or damages not covered by our directors' and officers' liability insurance would have a material adverse effect on our financial condition and business.

Actions by activist stockholders have in the past been, and may in the future be, disruptive and could cause uncertainty about the strategic direction of our business.

Our business could be negatively affected as a result of stockholder activism, which could be disruptive and cause uncertainty about the strategic direction of our business. For example, in February 2022, an activist stockholder announced his intention to nominate himself and one other candidate for election to our board of directors at our 2022 annual meeting of stockholders. While this proxy contest was unsuccessful, stockholder activism could recur and have an adverse effect on our business, results of operations, and financial condition. For example, at times our market capitalization has been less than the aggregate value of our cash, cash equivalents and investments. Other biotechnology companies in this situation have received proposals from shareholder activists to liquidate and return capital to investors.

We strive to maintain constructive communications with our stockholders and welcome their views and opinions with the goal of enhancing value for all stockholders. However, a proxy contest or other activist behaviors could have an adverse effect on us because:

- responding to actions by activist stockholders can disrupt our operations, is costly and time-consuming, and diverts the attention of our board of directors and senior management team from the pursuit of business strategies, each of which could adversely affect our results of operations and financial condition;
- perceived uncertainties as to our future direction as a result of changes to the composition of our board of directors may lead to the perception of a change in the direction of our business, as well as instability or lack of continuity, all of which may be exploited by our competitors, may result in the loss of potential business opportunities, may cause concern for those enrolling in our clinical trials, and make it more difficult to attract and retain qualified personnel and business partners;
- actions by activist stockholders may interfere with any efforts that we undertake in the future to raise capital;
- actions by activist stockholders could cause significant fluctuations in our stock price based on temporary or speculative market perceptions or other factors that do not necessarily reflect the underlying fundamentals and prospects of our business; and
- if individuals are elected to our board of directors with a specific agenda as a result of a proxy contest, it may adversely affect our ability to effectively implement our business strategy and to create additional value for our stockholders.

Even if a proxy contest or other activist efforts are not successful, the increased costs that we would bear and the distraction of our board of directors and senior management could negatively impact our business, although we cannot predict with certainty the extent of such negative impacts.

A significant portion of our total outstanding shares may be sold into the market in the near future, which could cause the market price of our common stock to decline significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares of common stock intend to sell shares, could reduce the market price of our common stock. In addition, shares issued upon the exercise of stock options outstanding under our equity incentive plans or pursuant to future awards granted under those plans will become available-for-sale in the public market to the extent permitted by the provisions of applicable vesting schedules, any applicable market standoff and lock-up agreements, and Rule 144 and Rule 701 under the Securities Act.

We also register shares of common stock that we may issue under our equity compensation plans. Once we register these shares, they can be freely sold in the public market upon issuance and once vested, subject to volume limitations applicable to affiliates. If any of these additional shares are sold, or if it is perceived that they will be sold, in the public market, the market price of our common stock could decline.

Our directors, executive officers and significant stockholders collectively own a substantial percentage of our common stock, which could limit your ability to affect the outcome of key transactions, including a change of control.

Our directors, executive officers, significant holders of our outstanding common stock and their respective affiliates collectively beneficially own a substantial amount of our outstanding common stock as of September 30, 2025, and we expect them to continue owning a substantial amount of our outstanding common stock following the issuance of the shares of common stock and prefunded warrants in connection with our December 2025 announced business development transactions and private placement. As a result, these stockholders, if they act together, will be able to influence our management and affairs and all matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions. This concentration of ownership may have the effect of delaying or preventing a change in control of our company and might affect the market price of our common stock.

We are an "emerging growth company", a "smaller reporting company" and a "non-accelerated filer", and the reduced disclosure requirements available to us may make our common stock less attractive to investors.

We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, as well as a "smaller reporting company" and a "non-accelerated filer." For so long as we remain an emerging growth company or smaller reporting company, we are permitted and plan to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies or smaller reporting companies. These exemptions include, reduced disclosure obligations regarding executive compensation, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We will lose our status as an emerging growth company on December 31, 2025; however, we qualify as a smaller reporting company and we will remain a smaller reporting company so long as, as of June 30 of the preceding year, (i) the market value of our common shares held by non-affiliates, or our public float, is less than $250 million; or (ii) we have annual revenues less than $100 million and either we have no public float or our public float is less than $700 million. In addition, so long as we qualify as a non-accelerated filer, we are not required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002 (the "Sarbanes-Oxley Act"). As a result, the information we provide stockholders will be different than the information that is available with respect to other public companies. We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock, and our stock price may be more volatile.

Failure to build and maintain our finance infrastructure and improve our accounting systems and controls could impair our ability to comply with the financial reporting and internal controls requirements for publicly traded companies.

As a public company, we operate in an increasingly demanding regulatory environment, which requires us to comply with the Sarbanes-Oxley Act, the regulations of The Nasdaq Capital Market, the rules and regulations of the SEC, expanded disclosure requirements, accelerated reporting requirements and more complex accounting rules. Company responsibilities required by the Sarbanes-Oxley Act include establishing corporate oversight and adequate internal control over financial reporting and disclosure controls and procedures. Effective internal controls are necessary for us to produce reliable financial reports and are important to help prevent financial fraud. We must perform system and process evaluation and testing of our internal controls over financial reporting to allow management to report on the effectiveness of our internal controls over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. We may experience difficulty in meeting these reporting requirements in the future.

The process of building and maintaining our accounting and financial functions and infrastructure has required and will continue to require significant additional professional fees, internal costs and management efforts. Any disruptions or difficulties in implementing or using such a system could adversely affect our controls and harm our

business. Moreover, such disruption or difficulties could result in unanticipated costs and diversion of management attention. In addition, we may discover weaknesses in our system of internal financial and accounting controls and procedures that could result in a material misstatement of our financial statements. Our internal control over financial reporting will not prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud will be detected.

If we are not able to comply with the requirements of Section 404 of the Sarbanes-Oxley Act in a timely manner, or if we are unable to maintain proper and effective internal controls, we may not be able to produce timely and accurate financial statements. If we cannot provide reliable financial reports or prevent fraud, our business and results of operations could be harmed, investors could lose confidence in our reported financial information and we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities.

Anti-takeover provisions in our charter documents and under Delaware or Washington law could make an acquisition of us difficult, limit attempts by our stockholders to replace or remove our current management and limit our stock price.

Provisions of our amended and restated certificate of incorporation and amended and restated bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our common stock. Among other things, the amended and restated certificate of incorporation and amended and restated bylaws:

- permit the board of directors to issue up to 100,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate;
- provide that the authorized number of directors may be changed only by resolution of the board of directors;
- provide that all vacancies, including newly-created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide the board of directors into three classes;
- provide that a director may only be removed from the board of directors by the stockholders for cause;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and may not be taken by written consent;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and meet specific requirements as to the form and content of a stockholder's notice;
- prevent cumulative voting rights (therefore allowing the holders of a plurality of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- provide that special meetings of our stockholders may be called only by the chairman of the board, our chief executive officer or by the board of directors; and
- provide that stockholders are permitted to amend the bylaws only upon receiving at least two-thirds of the total votes entitled to be cast by holders of all outstanding shares then entitled to vote generally in the election of directors, voting together as a single class.

In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with any "interested" stockholder for a period of three years following the date on which the stockholder became an "interested" stockholder. Likewise, because our principal executive offices are

located in Washington, the anti-takeover provisions of the Washington Business Corporation Act may apply to us under certain circumstances now or in the future. These provisions prohibit a "target corporation" from engaging in any of a broad range of business combinations with any stockholder constituting an "acquiring person" for a period of five years following the date on which the stockholder became an "acquiring person."

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware and the federal district courts of the United States are the exclusive forums for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, another state court in Delaware or the federal district court for the District of Delaware) will be the exclusive forum for any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising under the Delaware General Corporation Law, our certificate of incorporation or our amended and restated bylaws; any action to interpret, apply, enforce or determine the validity of our certificate of incorporation or our amended and restated bylaws; and any action asserting a claim against us that is governed by the internal affairs doctrine. This provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act or any other claim for which the U.S. federal courts have exclusive jurisdiction.

Our amended and restated bylaws further provide that the federal district courts of the United States will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. The enforceability of similar exclusive federal forum provisions in other companies' organizational documents has been challenged in legal proceedings, and while the Delaware Supreme Court has ruled that this type of exclusive federal forum provision is facially valid under Delaware law, there is uncertainty as to whether other courts would enforce such provisions and that investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder.

These exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find either exclusive forum provision in our amended and restated bylaws to be inapplicable or unenforceable in an action, we may incur further significant additional costs associated with resolving such action in other jurisdictions, all of which could have a material adverse effect on our business, financial condition, and results of operations.

General Risk Factors

The loss of any of our key personnel could significantly harm our business, results of operations and competitive position.

In order to compete, we must attract, retain, and motivate executives and other key employees. Hiring and retaining qualified executives, scientists, technical and legal and accounting staff are critical to our business, and competition for experienced employees in our industry can be high. We expect to hire a significant number of such employees in the near term as we pursue the clinical development of lasofoxifene, and as we continue to develop ATH-1105. The loss of one or more of these key employees, or our inability to hire additional key personnel when needed, could have a material adverse effect on our business and prospects.

In addition, the organizational restructuring we undertook in September 2024 that significantly reduced our workforce, including the departure of our chief business officer and chief financial officer and our chief operating officer and chief development officer, may negatively impact employee morale for those who are not directly impacted, which may increase employee attrition and hurt future recruiting efforts, hindering our ability to achieve our key priorities. Any failure to achieve the expected benefits from the reduction in workforce could adversely affect our stock price, financial condition and ability to achieve our key priorities, as well as lead to litigation.

Our advisors and consultants are classified as independent contractors, and we can face consequences if it is determined that they are misclassified as such.

There is often uncertainty in the application of worker classification laws, and consequently there is risk to us that our independent contractors could be deemed to be misclassified under applicable law. The tests governing whether a service provider is an independent contractor or an employee are typically highly fact sensitive and can vary by governing law. Laws and regulations that govern the status and misclassification of independent contractors are also subject to divergent interpretations by various authorities, which can create uncertainty and unpredictability. A misclassification determination or allegation creates potential exposure for us, including but not limited to monetary exposure arising from or relating to failure to withhold and remit taxes, unpaid wages, and wage and hour laws and requirements (such as those pertaining to minimum wage and overtime); claims for employee benefits, social security, workers' compensation and unemployment; claims of discrimination, harassment, and retaliation under civil rights laws; claims under laws pertaining to unionizing, collective bargaining, and other concerted activity; and other claims, charges, or other proceedings under laws and regulations applicable to employers and employees, including risks relating to allegations of joint employer liability. Such claims could result in monetary damages (including but not limited to wage-based damages or restitution, compensatory damages, liquidated damages, and punitive damages), interest, fines, penalties, costs, fees (including but not limited to attorneys' fees), criminal and other liability, assessment, or settlement. Such an allegation, claim, adverse determination, including but not limited to with respect to advisors and consultants that provide services to us could also harm our brand and reputation, which could adversely impact our business.

If securities analysts do not publish research or reports about our business or if they publish negative evaluations of our stock, the price of our stock could decline.

The trading market for our common stock will rely in part on the research and reports that industry or financial analysts publish about us or our business. If no or few analysts commence coverage of us, the trading price of our stock could decrease. Even if we do obtain analyst coverage, if one or more of the analysts covering our business downgrade their evaluations of our stock, the price of our stock could decline. If one or more of these analysts cease to cover our stock, we could lose visibility in the market for our stock, which in turn could cause our stock price to decline.

We will continue to incur increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives and corporate governance practices.

As a public company, and particularly after we are no longer an emerging growth company or smaller reporting company, we will incur significant legal, accounting, and other expenses that we did not incur as a private company. The Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of The Nasdaq Capital Market, and other applicable securities rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. We have hired, and expect that we will continue to need to hire, additional accounting, finance, and other personnel in connection with our efforts to comply with the requirements of being a public company, and our management and other personnel will need to devote a substantial amount of time towards maintaining compliance with these requirements. These requirements will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect that the rules and regulations applicable to us as a public company may make it more difficult and more expensive for us to obtain director and officer liability insurance, which could make it more difficult for us to attract and retain qualified members of our board of directors. We continue to evaluate and monitor these rules and regulations and cannot predict or estimate the amount of additional costs we may incur or the timing of such costs. These rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

If we are unable to maintain effective internal controls, our business, financial position and results of operations could be adversely affected.

As a public company, we are subject to reporting and other obligations under the Exchange Act, including the requirements of Section 404 of the Sarbanes-Oxley Act, which require annual management assessments of the effectiveness of our internal control over financial reporting.

The rules governing the standards that must be met for management to determine that our internal control over financial reporting is effective are complex and require significant documentation, testing and possible remediation to meet the detailed standards under the rules. During the course of our testing, our management may identify material weaknesses or deficiencies which may not be remedied in time to meet the deadline imposed by the Sarbanes-Oxley Act. These reporting and other obligations place significant demands on our management and administrative and operational resources, including accounting resources.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States. Any failure to maintain effective internal controls could have an adverse effect on our business, financial position and results of operations.

The potential effects of health epidemics could adversely impact our business, including our nonclinical studies and clinical trials.

Our business could in the future be adversely impacted by the effects of possible health epidemics and other outbreaks which could cause disruptions that could severely impact our business, nonclinical studies and clinical trials. Such disruptions may include:

- delays or difficulties in enrolling and retaining patients in our clinical trials;
- difficulties interpreting data from our clinical trials due to the possible effects of such diseases on cognition of the subjects enrolled in our clinical trials;
- delays or difficulties in clinical site initiation, including difficulties in recruiting clinical site investigators and clinical site staff;
- diversion of healthcare resources away from the conduct of clinical trials, including the diversion of hospitals serving as our clinical trial sites and hospital staff supporting the conduct of our clinical trials;
- interruption of key clinical trial activities, such as clinical trial site data monitoring, due to limitations on travel imposed or recommended by federal or state governments, employers and others or interruption of clinical trial subject visits and study procedures (such as endoscopies that are deemed non-essential), which may impact the integrity of subject data and clinical study endpoints;
- interruption or delays in the operations of the FDA or other regulatory authorities, which may impact review and approval timelines;
- interruption of, or delays in receiving, supplies of our drug candidates from our contract manufacturing organizations due to staffing shortages, production slowdowns or stoppages and disruptions in delivery systems;
- interruptions in nonclinical studies due to restricted or limited operations at our laboratory facility;
- limitations on employee resources that would otherwise be focused on the conduct of our nonclinical studies and clinical trials, including because of sickness of employees or their families or the desire of employees to avoid contact with large groups of people;
- interruptions, difficulties or delays arising in our existing operations and company culture as a result of some or all of our employees working remotely;
- interruption or delays to our sourced discovery and clinical activities; and

- changes in clinical site procedures and requirements as well as regulatory requirements for conducting clinical trials during the pandemic.

The trading prices for shares of biopharmaceutical companies have in the past been and could in the future be highly volatile as a result of health epidemics, and the trading prices for shares of our common stock could also experience high volatility. In the event of an emergence of new disease outbreaks or a resurgence of COVID-19, we could face difficulties raising capital through sales of our common stock or such sales may be on unfavorable terms. In addition, a recession, depression or other sustained adverse market event resulting from a health epidemic, could materially and adversely affect our business and the value of our common stock.

The ultimate impact of a possible health epidemic or other outbreak, including a resurgence of COVID-19, on our business operations is highly uncertain and subject to change and will depend on future developments, which cannot be accurately predicted. In addition, our business could be significantly adversely affected by other business disruptions to us or our third-party providers that could seriously harm our potential future revenue and financial condition and increase our costs and expenses. Our operations, and those of our CROs, commercial manufacturing organizations("CMOs"), and other contractors, consultants, and third parties could be subject to other global pandemics, earthquakes, power shortages, telecommunications failures, water shortages, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics and other natural or man-made disasters or business interruptions, for which we are predominantly self-insured. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses. We rely on third-party manufacturers to produce and process our drug candidates. Our ability to obtain clinical supplies of our drug candidates could be disrupted if the operations of these suppliers are affected by a man-made or natural disaster or other business interruption.