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PROSPECTUS SUPPLEMENT
(To Prospectus dated May 12, 2021)

1,436.0688 Shares of Series D Convertible Preferred Stock
1,436.0688 Shares of Series E Convertible Preferred Stock
(and 17,950,860 Shares of Common Stock issuable upon the conversion of such Preferred stock)

Allena Pharmaceuticals, Inc.

We are offering up to 1,436.0688 shares of our Series D Convertible Preferred Stock, par value $0.001 per share and stated value of $1,000 per share, and 1,436.0688 shares of our Series E Convertible Preferred Stock, par value $0.001 per share and stated value of $1,000 per share (together with the Series D Convertible Preferred Stock, the "Preferred Stock"), to an investor pursuant to this prospectus supplement, the accompanying prospectus and a securities purchase agreement dated as of May 3, 2022, by and between us and the investor signatory thereto (the "Securities Purchase Agreement"). The Series D Convertible Preferred Stock is convertible into an aggregate of 8,975,430 shares of common stock at an initial conversion price of $0.16 per share at any time after the date of issuance. The Series E Convertible Preferred Stock is convertible into an aggregate of 8,975,430 shares of common stock at an initial conversion price of $0.16 per share at any time after the date of issuance. We are also registering an aggregate of up to 17,950,860 shares of our common stock issuable upon the conversion of the Preferred Stock (the "Shares," and collectively with the Preferred Stock, the "Securities").

In a concurrent private placement, we are also selling to such investor unregistered warrants (the "Warrants") to purchase up to an aggregate of 22,438,575 shares of our common stock, at an exercise price of $0.1694 per share. The Warrants will be exercisable on the date that is six months after the date of issuance and will have a term of 5 years from the initial exercise date. The Warrants and the shares of our common stock issuable upon the exercise of the Warrants (the "Warrant Shares") are being offered pursuant to the exemptions provided in Section 4(a)(2) under the Securities Act of 1933, as amended (the "Securities Act") and Regulation D promulgated thereunder, and are not being offered pursuant to this prospectus supplement and the accompanying prospectus. There is no established public trading market for the Warrants and we do not expect a market to develop. In addition, we do not intend to list the Warrants on the Nasdaq Capital Market (the "Nasdaq"), any other national securities exchange or any other nationally recognized trading system.

We have engaged H.C. Wainwright & Co., LLC (the "Placement Agent" or "Wainwright"), as our exclusive placement agent in connection with this offering. The Placement Agent has no obligation to buy any of the securities from us or to arrange for the purchase or sale of any specific number or dollar amount of securities. We have agreed to pay the Placement Agent the fees set forth in the table below. We will also issue warrants to purchase up to 1,256,561 shares of our common stock (the "Placement Agent Warrants"), to the Placement Agent, or its designees, as part of the compensation payable to the Placement Agent. See "*Plan of Distribution*" beginning on page S-16 of this prospectus supplement for more information regarding these arrangements.

Our common stock is listed on the Nasdaq under the symbol "ALNA." There is no established public trading market for the Preferred Stock being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply for listing the Preferred Stock on Nasdaq or any national securities exchange or other trading market. Without an active market, the liquidity of the Preferred Stock will be limited.

The last reported sale price of our common stock on May 3, 2022 was $0.1693 per share.

The aggregate market value of our common stock held by non-affiliates as of May 3, 2022 pursuant to General Instruction I.B.6 of Form S-3 is $44,860,143, which was calculated based on 88,656,409 shares of our common

stock outstanding held by non-affiliates and at a price of $0.5060 per share, the closing price of our common stock on March 9, 2022. As of the date hereof, we have not offered or sold any securities pursuant to General Instruction I.B.6 of Form S-3 during the prior 12 calendar month period that ends on and includes the date hereof.

We are an "emerging growth company" as defined by the Jumpstart Our Business Startups Act of 2012 and, as such, we are eligible for reduced public company reporting requirements.

You should read this prospectus supplement and the accompanying prospectus and the documents incorporated by reference in this prospectus supplement carefully before you invest.

Investing in our securities involves a high degree of risk. See "*Risk Factors*" beginning on page S-7 of this prospectus supplement, page 2 of the accompanying prospectus and under similar headings in the documents incorporated by reference into this prospectus supplement and the accompanying prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement is truthful or complete. Any representation to the contrary is a criminal offense.

	Per Share	Total
Series D Convertible Preferred Stock offering price	$ 1,000.00	$ 1,436,068.80
Series E Convertible Preferred Stock offering price	$ 1,000.00	$ 1,436,068.80
Placement Agent fees (1)	70.00	201,049.63
Proceeds, before expenses, to us	$ 930.00	$ 2,671,087.97

(1) We have agreed to pay the Placement Agent: (i) an aggregate cash placement fee equal to 7.0% of the gross proceeds of this offering, (ii) a cash management fee equal to 1.0% of the gross proceeds raised in this offering, (iii) $25,000 non-accountable expense allowance and (iv) to reimburse the Placement Agent for certain expenses in connection with the offering and up to $60,000 for fees and expenses of legal counsel and other out-of-pocket expenses. See "*Plan of Distribution*" beginning on page S-16 for more information regarding the Placement Agent's compensation.

Delivery of the shares of the Preferred Stock being offered pursuant to this prospectus supplement and the accompanying prospectus is expected to be made on or about May 4, 2022.

H.C. Wainwright & Co.

The date of this prospectus supplement is May 3, 2022.

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Prospectus Supplement

Prospectus

ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus form part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission, or SEC, utilizing a "shelf" registration process. This document contains two parts. The first part consists of this prospectus supplement, which provides you with specific information about this offering. The second part, the accompanying prospectus, provides more general information, some of which may not apply to this offering. Generally, when we refer only to the "prospectus supplement," we are referring to both parts combined. This prospectus supplement may add, update or change information contained in the accompanying prospectus. You should read both this prospectus supplement and the accompanying prospectus, together with the documents incorporated by reference and the additional information described under the heading "*Where You Can Find More Information*" in this prospectus supplement and the accompanying prospectus before making an investment decision.

To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus, on the other hand, the information contained in this prospectus supplement shall control. If any statement in this prospectus supplement conflicts with any statement in a document that has been incorporated herein by reference, then you should consider only the statement in the more recent document. You should assume that the information contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference is accurate only as of their respective dates.

We have not authorized, and the Placement Agent has not authorized, any person to provide you with any information or to make any representation other than as contained in this prospectus supplement or in the accompanying prospectus and the information incorporated by reference herein and therein. We do not take any responsibility for, and can provide no assurance as to the reliability of, any information that others may provide you. The information appearing or incorporated by reference in this prospectus supplement and the accompanying prospectus is accurate only as of the date of this prospectus supplement or the date of the document in which incorporated information appears unless otherwise noted in such documents. Our business, financial condition, results of operations and prospects may have changed since those dates.

The distribution of this prospectus supplement and the accompanying prospectus and the offering of the Securities in certain jurisdictions may be restricted by law. We are not making an offer of the Securities in any jurisdiction where the offer is not permitted. Persons who come into possession of this prospectus supplement and the accompanying prospectus should inform themselves about and observe any such restrictions. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer or solicitation by anyone in any jurisdiction in which such offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so or to any person to whom it is unlawful to make such offer or solicitation.

Unless the context otherwise indicates, references in this prospectus to "Allena", "we", "our", "us" and "the Company" refer, collectively, to Allena Pharmaceuticals, Inc. and its subsidiaries.

We own various U.S. federal trademark registrations and applications, and unregistered trademarks and service marks, including "Allena Pharmaceuticals," URIROX-1, URIROX-2 and our corporate logo. All trademarks or trade names referred to in this prospectus are the property of their respective owners. Solely for convenience, the trademarks and trade names in this prospectus may be referred to without the ® and ™ symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend our use or display of other companies' trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and the base prospectus and the documents incorporated by reference in this prospectus supplement include forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act") that relate to future events or our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to differ materially from any future results, levels of activity, performance or achievements expressed or implied by these forward-looking statements. Words such as, but not limited to, "believe," "expect," "anticipate," "estimate," "intend," "may," "plan," "potential," "predict," "project," "targets," "likely," "will," "would," "could," "should," "continue," and similar expressions or phrases, or the negative of those expressions or phrases, are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Although we believe that we have a reasonable basis for each forward-looking statement contained in this prospectus supplement and incorporated by reference in this prospectus supplement, we caution you that these statements are based on our projections of the future that are subject to known and unknown risks and uncertainties and other factors that may cause our actual results, level of activity, performance or achievements expressed or implied by these forward-looking statements, to differ. The sections in our periodic reports, including our Annual Report on Form 10-K for the fiscal year ended December 31, 2021, entitled "*Business*," "*Risk Factors*," and "*Management's Discussion and Analysis of Financial Condition and Results of Operations*," as well as other sections in this prospectus supplement and the documents or reports incorporated by reference in this prospectus supplement, discuss some of the factors that could contribute to these differences. These forward-looking statements include, among other things, statements about:

- our estimates and expectations regarding our capital requirements, cash and expense levels, liquidity sources and our need for additional financing and our ability to continue as a going concern;
- our ability to fund our operating expenses and capital requirements beyond the next several weeks;
- our ability to consummate a strategic or financing transaction, including a possible partnership for ALLN-346;
- in the event we are unable to obtain sufficient funds to continue our operations, our ability to obtain an in-court or out-of-court restructuring of our liabilities;
- our ability to enroll a sufficient number of patients (including as a result of any delays arising from the global outbreak of the coronavirus, or the COVID-19 coronavirus) and the ability of subjects in our clinical trials to adhere to the protocol, including capsule and dietary regimen and urinary collection requirements;
- the therapeutic benefits, effectiveness and safety of ALLN-346 and our future product candidates;
- our ability to receive regulatory approval for our product candidates in the United States, Europe and other geographies;
- our expected regulatory approval pathway, and our ability to obtain, on satisfactory terms or at all, the financing required to support operations, development, clinical trials, and commercialization of products;
- our reliance on third parties for the planning, conduct and monitoring of clinical trials and for the manufacture of clinical drug supplies and drug product;
- potential changes in regulatory requirements, and delays or negative outcomes from the regulatory approval process;
- our estimates of the size and characteristics of the markets that may be addressed by ALLN-346
- the market acceptance of ALLN-346 or any future product candidates that are approved for marketing in the United States or other countries;

- our ability to successfully commercialize ALLN-346 and any future product candidates with a targeted sales force;
- the safety and efficacy of therapeutics marketed by our competitors that are targeted to indications which our product candidates have been developed to treat;
- the impact of natural disasters, global pandemics (including the recent outbreak of a novel strain of the COVID-19 coronavirus), labor disputes, political unrest in the U.S. and abroad, lack of raw material supply, issues with facilities and equipment or other forms of disruption to business operations at our manufacturing facilities;
- our ability to utilize our proprietary technological approach to develop and commercialize ALLN-346 and future product candidates;
- potential collaborators to license and commercialize ALLN-346 and any future product candidates, if approved, or any products for which we receive regulatory approval in the future outside of the United States;
- our heavy dependence on licensed intellectual property, including our ability to source and maintain licenses from third-party owners;
- our ability to protect our intellectual property and operate our business without infringing upon the intellectual property rights of others;
- our ability to attract, retain and motivate key personnel; and
- our ability to generate revenue and become profitable.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important cautionary statements in this prospectus supplement and the base prospectus and in the documents incorporated by reference herein, particularly in the "*Risk Factors*" section, that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. For a summary of such factors, please refer to the section entitled "*Risk Factors*" in this prospectus supplement and the base prospectus, as updated and supplemented by the discussion of risks and uncertainties under "*Risk Factors*" contained in any supplements to this prospectus supplement and the base prospectus and in our most recent annual report on Form 10-K, as revised or supplemented by our subsequent quarterly reports on Form 10-Q or our current reports on Form 8-K, as well as any amendments thereto, as filed with the SEC and which are incorporated herein by reference. The information contained in this document is believed to be current as of the date of this document. We do not intend to update any of the forward-looking statements after the date of this document to conform these statements to actual results or to changes in our expectations, except as required by law.

In light of these assumptions, risks and uncertainties, the results and events discussed in the forward-looking statements contained in this prospectus supplement and the base prospectus or in any document incorporated herein by reference might not occur. Investors are cautioned not to place undue reliance on the forward-looking statements, which speak only as of the date of this prospectus supplement or the date of the document incorporated by reference in this prospectus supplement. We are not under any obligation, and we expressly disclaim any obligation, to update or alter any forward-looking statements, whether as a result of new information, future events or otherwise. All subsequent forward-looking statements attributable to us or to any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights information contained in other parts of this prospectus supplement and the accompanying prospectus and in the documents we incorporate by reference. Because it is only a summary, it does not contain all of the information that you should consider before investing in our securities and it is qualified in its entirety by, and should be read in conjunction with, the more detailed information appearing elsewhere in this prospectus supplement, the accompanying prospectus, any applicable free writing prospectus and the documents incorporated by reference herein and therein. You should read all such documents carefully, especially the risk factors and our consolidated financial statements and the related notes included or incorporated by reference herein or therein, before deciding to buy our securities.

Overview

We are a biopharmaceutical company dedicated to developing and commercializing first-in-class, oral enzyme therapeutics to treat patients with rare and severe metabolic and kidney disorders. We are focused on metabolic disorders that result in excess accumulation of certain metabolites that can stimulate inflammation, damage the kidney, and potentially lead to chronic kidney disease and end-stage renal disease. We believe our proprietary know-how in enzyme technology allows for the design, development, formulation, and scalable manufacturing of non-absorbed and stable enzymes delivered orally and in sufficient doses for activity in the gastrointestinal tract. This approach enables us to develop enzyme therapies that degrade metabolites within the GI tract, which reduces potentially toxic metabolite levels in the blood and urine, and in turn, diminishes the disease burden including on the kidney over time.

Company Information

We were incorporated under the laws of the State of Delaware and commenced business operations in 2011. Our principal executive offices are located at One Newton Executive Park, Suite 202, Newton, MA 02462 and our telephone number is (617) 467-4577. Our website address is www.allenapharma.com. The information contained on our website, or that can be accessed through our website, is not a part of this prospectus supplement and is not incorporated by reference into this prospectus supplement. You should not rely on any such information in deciding whether to purchase our common stock.

We are an “emerging growth company” as defined in the Jumpstart Our Business Startups Act of 2012. We will remain an emerging growth company until the earlier of: (i) the last day of the fiscal year (a) following the fifth anniversary of the completion of the IPO, (b) in which we have total annual gross revenue of at least $1.07 billion, or (c) in which we are deemed to be a large accelerated filer, which means the market value of our Common Stock that is held by non-affiliates exceeds $700.0 million as of the prior June 30th, and (ii) the date on which we have issued more than $1.0 billion in non-convertible debt during the prior three-year period.

Special Meeting of the Stockholders

Promptly after the closing of this offering, we will call a special meeting of our stockholders to seek approval of a reverse stock split of our common stock. We have declared a record date of the close of business on May 4, 2022 for the special meeting. Approval of the reverse stock split will require the affirmative vote of a majority in voting power of the outstanding shares of capital stock entitled to vote on the reverse stock split proposal. The holders of our common stock on the record date have the right to cast one vote per share of common stock on the reverse stock split proposal. The shares of Series D Convertible Preferred Stock purchased in this offering are expected to be outstanding on the record date and entitled vote at the special meeting, and will be entitled to vote on an as-converted basis (whether or not such conversion shares are then convertible and disregarding any limitations on conversion) (however, in only this instance, the Series D Convertible Preferred Stock will be

considered to convert at the Minimum Price (as defined in Nasdaq Listing Rule 5635(d)) immediately preceding the execution and delivery of the Securities Purchase Agreement, or $0.1693 per share) on the reverse stock split proposal, or any proposal to adjourn any meeting of stockholders called for the purpose of voting on the reverse stock split proposal. The shares of Series E Convertible Preferred Stock purchased in this offering are expected to be outstanding on the record date and entitled to vote at the special meeting, and will be entitled to 1,000,000 votes per share on the reverse stock split proposal, or any proposal to adjourn any meeting of stockholders called for the purpose of voting on the reverse stock split proposal; provided that, in each case, such votes must be counted in the same proportion as the aggregate shares of Common Stock and Series D Convertible Preferred Stock voted on the proposal.

SUMMARY OF THE OFFERING

Series D Convertible Preferred Stock offered	1,436.0688 shares of Series D Convertible Preferred Stock, which will be convertible into 8,975,430 shares of common stock at any time after the date of issuance.
Series E Convertible Preferred Stock offered	1,436.0688 shares of Series E Convertible Preferred Stock, which will be convertible into 8,975,430 shares of common stock at any time after the date of issuance.
Common stock outstanding before the offering	89,774,309 shares
Common stock to be outstanding after this offering (1)	107,725,169 (assuming conversion of all of the shares of Series D Convertible Preferred Stock and Series E Convertible Preferred Stock).
Use of Proceeds	We expect to receive net proceeds of approximately $2.3 million from this offering, after deducting the estimated offering expenses payable by us, including the Placement Agent fees. We intend to use the net proceeds from this offering for working capital purposes which may include repayment of debt. See "*Use of Proceeds*."
Nasdaq Capital Market symbol	Our common stock is listed on Nasdaq under the symbol "ALNA." There is no established public trading market for the Preferred Stock being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply for listing the Preferred Stock on any national securities exchange or other trading market. Without an active market, the liquidity of the Preferred Stock will be limited.
Risk Factors	Investing in our securities involves a high degree of risk. See "*Risk Factors*" of this prospectus supplement and the similarly titled sections in the documents incorporated by reference into this prospectus supplement before buying shares of our securities.
Concurrent private placement	In a concurrent private placement, we are also selling to the purchaser Warrants to purchase 22,438,575 shares of our common stock. The Warrants will be exercisable six months after the date of issuance at an exercise price of $0.1694 per share and will expire five years after the initial exercise date. The Warrants and the shares of our common stock issuable upon the exercise of the Warrants, are not being offered pursuant to this prospectus supplement and the accompanying prospectus and are being offered pursuant to the exemption provided

in Section 4(a)(2) under the Securities Act and Rule 506(b) promulgated thereunder. See "*Private Placement Transaction*." Pursuant to the Securities Purchase Agreement dated as of May 3, 2022, by and among the Company and the investor signatory thereto, we will use commercially reasonable efforts to cause a registration statement providing for the resale by holders of shares of our common stock issuable upon the exercise of the Warrants, to become effective within 180 days following the closing date, and to keep such registration statement effective until such time as no holder owns any Warrants or Warrant Shares issuable upon exercise thereof

(1) The number of shares of our common stock to be outstanding immediately after this offering is based on 89,774,309 shares of our common stock outstanding as of April 25, 2022, and excludes as of such date:

- 6,765,837 shares of common stock issuable upon the exercise of stock options outstanding as of December 31, 2021 with a weighted average exercise price of $2.81 per share;
- 10,687,912 shares of common stock issuable upon the exercise warrants outstanding as of December 31, 2021 with a weighted average exercise price of $1.26 per share;
- 798,476 shares of Common Stock reserved for future issuance under our 2017 Stock Option and Incentive Plan, or the 2017 Plan, as of December 31, 2021;
- 3,318,776 additional shares of Common Stock reserved for future issuance automatically added on January 1, 2022 to the pool of authorized shares available for issuance under the 2017 Plan;
- 306,527 shares of common stock reserved for future issuance under our 2017 Employee Stock Purchase Plan, or the 2017 ESPP, as of December 31, 2021;
- 808,000 shares of Common Stock reserved for future issuance under our 2021 Inducement Equity Plan, or the 2021 Plan, as of December 31, 2021;
- 22,438,575 shares of common stock issuable upon the exercise of the Warrants to be issued to the investor of the Preferred Stock in the concurrent private placement; and
- 1,256,561 shares of common stock issuable upon the exercise of the Placement Agent Warrants to be issued to the Placement Agent at an exercise price of $0.20 per share.

Except as otherwise indicated, all information in this prospectus supplement assumes no exercise of the outstanding stock options or warrants described above.

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the risks and uncertainties described below and discussed under the section entitled "Risk Factors" contained in our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 31, 2022 and our Amendment No. 1 on Form 10-K/A, filed with the SEC on April 29, 2022, which is incorporated by reference in this prospectus supplement, together with all of the other information contained in, or incorporated by reference, in this prospectus supplement and the accompanying prospectus, before purchasing any of our securities. These risks and uncertainties are not the only ones facing us. Additional risks and uncertainties that we are unaware of, or that we currently deem immaterial, also may become important factors that affect us. If any of these risks actually occur, our business, financial condition, results of operations and future prospects could be materially and adversely affected. In that case, the trading price of our common stock could decline, and you may lose some or all of your investment.

Risks Related to Our Financial Position and Need for Additional Capital

We have identified conditions and events that raise substantial doubt about our ability to continue operations in the near-term. We may need to seek an in-court or out-of-court restructuring of our liabilities.

We may be forced to amend, delay, limit, reduce or terminate the scope of our development program for ALLN-346 and/or limit or cease our operations if we are unable to obtain additional funding. As of March 31, 2022, we had cash and cash equivalents totaling $8.9 million. We do not believe that our cash and cash equivalents as of March 31, 2022, together with the expected net proceeds from this offering, will enable us to fund our operating expenses and capital requirements beyond the next several weeks. We will need to raise additional capital to continue as a going concern. Of note, because of our limited cash resources and the recent termination of our Phase 3 clinical trial of reloxaliase, we have had discussions with our senior lender, Pontifax, regarding the potential repayment of our outstanding borrowing under our loan agreement with Pontifax. In March 2022, we made voluntary repayments of $2.0 million and $3.0 million, reducing the loan balance to $5.0 million. Our loan agreement with Pontifax contains a provision for the acceleration of the principal balance under certain conditions. We have therefore classified the Pontifax loan balance as a current liability on our balance sheet. We are likewise in discussions with the contract research organization that conducted our reloxaliase clinical trial and is currently conducting our clinical trial for ALLN-346 about our inability to repay outstanding obligations due to them, which discussions may lead to the contract research organization ceasing further work on ALLN-346. The failure to obtain sufficient additional funds on commercially acceptable terms to fund our operations and satisfy our obligations to creditors may have a material adverse effect on our business, results of operations and financial condition and jeopardize our ability to continue operations in the near-term. We will likely need to consider additional cost reduction strategies, which may include, among others, amending, delaying, limiting, reducing, or terminating the development program for ALLN-346, and we may need to seek an in-court or out-of-court restructuring of our liabilities. In the event of such future restructuring activities, holders of the company's preferred stock, common stock and other securities will likely suffer a total loss of their investment.

Risks Relating to this Offering

You will experience immediate and substantial dilution in the net tangible book value per share of the common stock you purchase.

Since the effective price per share of common stock issuable upon conversion of the Preferred Stock is substantially higher than the net tangible book value per share of our common stock outstanding prior to this offering, you will suffer immediate and substantial dilution in the net tangible book value of the common stock issuable upon the conversion of the Preferred Stock issued in this offering.

The Preferred Stock is not listed for trading on any exchange, so the ability to trade the shares of Preferred Stock is limited.

There is no established public trading market for the Preferred Stock being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply for listing the Preferred Stock on any national securities exchange or other trading market. Without an active market, the liquidity of the Preferred Stock will be limited.

The issuance of shares with supermajority voting rights could be viewed negatively by our common stock holders.

We are making an offer to sell shares of our Series D Convertible Preferred Stock and Series E Convertible Preferred Stock because our common stock is currently trading below $1.00 per share. The Series E Convertible Preferred Stock has "supermajority" voting rights in that the holders of Series E Convertible Preferred Stock will be able to vote the shares of Series E Convertible Preferred Stock with the common stock and the Series D Convertible Preferred Stock, as a single class, equal to 1,000,000 votes per share on the reverse stock split proposal and any proposal to adjourn any meeting of stockholders called for the purpose of voting on the reverse stock split proposal. We have been provided with a period until August 22, 2022, or the compliance period, in which to regain compliance pursuant to Nasdaq Listing Rule 5550(a)(2). In order to regain compliance with Nasdaq's minimum bid price requirement, our common stock must maintain a minimum closing bid price of $1.00 for at least ten consecutive business days during the compliance period. See "*—We could lose our listing on the Nasdaq Capital Market if the closing bid price of our common stock does not return to above $1.00 for ten consecutive days during the 180 days ending August 22, 2022. The loss of the Nasdaq listing would make our common stock significantly less liquid and would affect its value.*" We are offering the Series E Convertible Preferred Stock with supermajority voting rights to increase the likelihood that we would obtain sufficient participation by shareholders at the meeting in a vote on the reverse stock split proposal.

The issuance of shares with supermajority voting rights could be viewed negatively by holders of our common stock and make it more difficult for us to successfully effect the reverse stock split. Supermajority voting rights are an option approved by Nasdaq in only limited circumstances. We cannot be certain that, even with the supermajority voting rights of the Preferred Stock, that the stockholders will approve the reverse stock split proposal. If the reverse stock split proposal is not approved, our common stock may be subject to delisting by Nasdaq, as described above.

A substantial number of shares of common stock may be sold in the market following this offering, which may depress the market price for our common stock.

Following this offering, a large number of shares of our common stock issuable upon the conversion of the Preferred Stock sold in this offering may be sold in the market, which may depress the market price of our common stock. Sales of a substantial number of shares of our common stock in the public market following this offering could cause the market price of our common stock to decline. A substantial majority of the outstanding shares of our common stock are, and the shares of common stock issuable upon conversion of the Preferred Stock will be, freely tradable without restriction or further registration under the Securities Act, unless owned or purchased by our "affiliates" as that term is defined in Rule 144 under the Securities Act.

We will have broad discretion in how we use the net proceeds of this offering. We may not use these proceeds effectively, which could affect our results of operations and cause our stock price to decline.

We will have considerable discretion in the application of the net proceeds of this offering, including for any of the purposes described in the section entitled "*Use of Proceeds*." We intend to use the net proceeds from this offering for working capital purposes which may include repayment of debt. As a result, investors will be relying upon management's judgment with only limited information about our specific intentions for the use of the

balance of the net proceeds of this offering. We may use the net proceeds for purposes that do not yield a significant return or any return at all for our stockholders. In addition, pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or that loses value.

This offering is being conducted on a "best efforts" basis.

The placement agent is offering the securities on a "best efforts" basis, and the placement agent is under no obligation to purchase any shares for its own account. The placement agent is not required to sell any specific number or dollar amount of our securities in this offering but will use its reasonable best efforts to sell the securities offered in this prospectus supplement. As a "best efforts" offering, there can be no assurance that the offering contemplated hereby will ultimately be consummated.

If we sell shares of our common stock in future financings, stockholders may experience immediate dilution and, as a result, our stock price may decline.

We may from time to time issue shares of common stock at a discount from the current market price of our common stock. As a result, our stockholders would experience immediate dilution upon the purchase of any shares of our common stock sold at such discount. In addition, as opportunities present themselves, we may enter into financings or similar arrangements in the future, including the issuance of debt securities, other preferred stock or common stock. If we issue common stock or securities convertible or exercisable into common stock, our common stockholders would experience additional dilution and, as a result, our stock price may decline.

An active trading market for our common stock may not be sustained.

Although our common stock is listed on the Nasdaq, the market for our common stock has demonstrated varying levels of trading activity. Furthermore, the current level of trading may not be sustained in the future. The lack of an active market for our common stock may impair investors' ability to sell their shares at the time they wish to sell them or at a price that they consider reasonable, may reduce the fair market value of their shares and may impair our ability to raise capital to continue to fund operations by selling shares and may impair our ability to acquire additional intellectual property assets by using our shares as consideration.

Our stock price may be subject to substantial volatility, and stockholders may lose all or a substantial part of their investment.

Our common stock currently trades on the Nasdaq. There is limited public float, and trading volume historically has been low and sporadic. As a result, the market price for our common stock may not necessarily be a reliable indicator of our fair market value. The price at which our common stock trades may fluctuate as a result of a number of factors, including the number of shares available for sale in the market, quarterly variations in our operating results, actual or anticipated announcements of new releases by us or competitors, the gain or loss of significant customers, changes in the estimates of our operating performance, market conditions in our industry and the economy as a whole.

We could lose our listing on the Nasdaq Capital Market if the closing bid price of our common stock does not return to above $1.00 for ten consecutive days during the 180 days ending August 22, 2022. The loss of the Nasdaq listing would make our common stock significantly less liquid and would affect its value.

As initially disclosed on the Current Report on Form 8-K filed on August 27, 2021 with the SEC, we received written notification from Nasdaq notifying us that it had failed to comply with Nasdaq Listing Rule 5550(a)(2) (the "Minimum Bid Price Requirement") because the bid price for our common stock for 30 consecutive business days prior to such date had closed below the minimum $1.00 per share requirement for continued listing. Nasdaq initially granted us 180 calendar days, or until February 21, 2022, to regain compliance with the Minimum Bid Price Requirement.

As subsequently reported on a Form 8-K filed with the SEC on February 25, 2022, on February 24, 2022, Nasdaq granted us an additional 180 calendar days, or until August 22, 2022 (the "Extension Period"), to regain compliance with the Minimum Bid Requirement. The extension had no immediate effect on the listing or trading of the common stock on the Nasdaq Capital Market. If, at any time before August 22, 2022, the bid price of our common stock closes at or above $1.00 per share for a minimum of 10 consecutive business days, Nasdaq will provide written notification that we have achieved compliance with the Rule. If compliance with the Rule cannot be demonstrated by August 22, 2022, Nasdaq will provide written notification that our common stock will be delisted. At that time, we may appeal Nasdaq's determination to a Hearings Panel. There can be no assurance that we will regain compliance with the Minimum Bid Price Requirement during the 180-day extension period.

Upon delisting from the Nasdaq Capital Market, our stock would be traded over-the-counter inter-dealer quotation system, more commonly known as the OTC. OTC transactions involve risks in addition to those associated with transactions in securities traded on the securities exchanges, such as the Nasdaq Capital Market (together, "Exchange-listed Stocks"). Many OTC stocks trade less frequently and in smaller volumes than Exchange-listed Stocks. Accordingly, our stock would be less liquid than it would be otherwise. Also, the values of OTC stocks are often more volatile than Exchange-listed Stocks. Additionally, institutional investors are usually prohibited from investing in OTC stocks, and it might be more challenging to raise capital when needed.

We will continue to monitor the closing bid price of its common stock and seek to regain compliance with the Minimum Bid Price Requirement within the allotted compliance period; however, there can be no assurance that we will regain compliance with the Minimum Bid Requirement or that if we do appeal a subsequent delisting determination, that such appeal would be successful.

Our intended Reverse Stock Split might not be successful in maintaining our Nasdaq listing.

Promptly after the closing of this offering, we will call a special meeting of our stockholders to seek approval of a reverse stock split of our common stock. We have declared a record date of the close of business on May 4, 2022 for the special meeting. Approval of the reverse stock split will require the affirmative vote of a majority in voting power of the outstanding shares of capital stock entitled to vote on the reverse stock split proposal. The holders of our common stock on the record date have the right to cast one vote per share of common stock on the reverse stock split proposal. The shares of Series D Convertible Preferred Stock purchased in this offering are expected to be outstanding on the record date and entitled vote at the special meeting, and will be entitled to vote on an as-converted basis (whether or not such conversion shares are then convertible and disregarding any limitations on conversion) (however, in only this instance, the Series D Convertible Preferred Stock will be considered to convert at the Minimum Price (as defined in Nasdaq Listing Rule 5635(d)) immediately preceding the execution and delivery of the Securities Purchase Agreement, or $0.1693 per share) on the reverse stock split proposal, or any proposal to adjourn any meeting of stockholders called for the purpose of voting on the reverse stock split proposal. The shares of Series E Convertible Preferred Stock purchased in this offering are expected to be outstanding on the record date and entitled to vote at the special meeting, and will be entitled to 1,000,000 votes per share on the reverse stock split proposal, or any proposal to adjourn any meeting of stockholders called for the purpose of voting on the reverse stock split proposal; provided that, in each case, such votes must be counted in the same proportion as the aggregate shares of common stock and Series D Convertible Preferred Stock voted on the proposal. As an example, if the holders of 50.5% of the outstanding common stock and Series D Convertible Preferred Stock voted at the meeting are voted in favor of a proposal for the reverse split amendment, the company can count 50.5% of the votes cast by the holders of the Series E Convertible Preferred Stock as votes in favor of the reverse split amendment. However, there be no assurances that we will be able to achieve a majority of votes in favor of the reverse stock split proposal. If we are unable to implement the reverse stock split, we might be delisted from Nasdaq.

If our common stock becomes subject to the penny stock rules, it may be more difficult to sell our common stock.

The SEC has adopted rules that regulate broker-dealer practices in connection with transactions in penny stocks. Penny stocks are generally equity securities with a price of less than $5.00 (other than securities registered on certain national securities exchanges or authorized for quotation on certain automated quotation systems, provided that current price and volume information with respect to transactions in such securities is provided by the exchange or system). The OTC Bulletin Board does not meet such requirements and if the price of our common stock is less than $5.00 and our common stock is no longer listed on a national securities exchange such as Nasdaq, our stock may be deemed a penny stock. The penny stock rules require a broker-dealer, at least two business days prior to a transaction in a penny stock not otherwise exempt from those rules, to deliver to the customer a standardized risk disclosure document containing specified information and to obtain from the customer a signed and date acknowledgment of receipt of that document. In addition, the penny stock rules require that prior to effecting any transaction in a penny stock not otherwise exempt from those rules, a broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive: (i) the purchaser's written acknowledgment of the receipt of a risk disclosure statement; (ii) a written agreement to transactions involving penny stocks; and (iii) a signed and dated copy of a written suitability statement. These disclosure requirements may have the effect of reducing the trading activity in the secondary market for our common stock, and therefore stockholders may have difficulty selling their shares.

Because we do not anticipate paying any cash dividends on our common stock in the foreseeable future, capital appreciation on the common stock that will be issued to you upon the conversion of the Preferred Stock will be your sole source of gain with respect to the common stock.

We have never paid or declared any cash dividends on our common stock. We currently intend to retain earnings, if any, to finance the growth and development of our business and we do not anticipate paying any cash dividends in the foreseeable future. As a result, only appreciation of the price of our common stock will provide a return to our stockholders with respect to the common stock.

The number of shares of our preferred stock available for future issuance or sale and the issuance of additional preferred stock senior to the Series D Convertible Preferred Stock and Series E Convertible Preferred Stock could dilute the interests of the holders of the Preferred Stock.

We cannot predict whether future issuances or sales of our preferred stock will decrease the per share value of our Preferred Stock. Our Board may classify and re-classify shares of unissued capital stock by setting or changing the preferences, conversion or other rights, voting powers and restrictions, limitations as to dividends, qualifications and terms and conditions of the redemption of such stock, subject to the rights of the holders of Preferred Stock to consent to any such classification or reclassification of such capital stock into any class or series of capital stock ranking senior to the Preferred Stock with respect to the payment of dividends or the distribution of assets upon our liquidation, our dissolution or the winding up of our affairs. The issuance of additional shares of other classes or series of preferred stock senior to the Preferred Stock could have the effect of diluting the interests of holders of the Preferred Stock.

If our common stock is delisted, your ability to transfer or sell your shares of the Preferred Stock may be limited and the value of the Preferred Stock will be materially adversely affected.

The Preferred Stock does not contain provisions that protect you if our common stock is delisted. Since the Preferred Stock has no stated maturity date, you may be forced to hold your shares of the Preferred Stock and receive dividends on the stock when, as and if authorized by our Board and declared by us. In addition, if our common stock is delisted, your ability to transfer or sell your shares of the Preferred Stock or underlying common stock may be limited and the value of the Securities will be materially adversely affected.

USE OF PROCEEDS

We expect to receive net proceeds of approximately $2.3 million from this offering, after deducting estimated offering expenses payable by us, including the Placement Agent fees. We intend to use the net proceeds from this offering for working capital purposes which may include repayment of debt, specifically payments under our loan agreement with Pontifax.

Amounts outstanding under our loan agreement with Pontifax have a fixed interest rate of 9.0% per annum. Upon the expiration of the interest only period on September 29, 2022, amounts borrowed are to be repaid over eight equal quarterly payments of principal and interest. At our option, we may prepay all or part of the outstanding borrowings at any time without any prepayment premium or penalty. In March 2022, we made voluntary repayments of $2.0 million and $3.0 million, reducing the loan balance under this agreement to $5.0 million. Our loan agreement with Pontifax contains a provision for the acceleration of the principal balance under certain conditions. We have therefore classified the Pontifax loan balance as a current liability on our balance sheet.

These expected uses represent our intentions based upon our current plans and business conditions, which could change in the future as our plans and business conditions evolve. The amounts and timing of our actual expenditures may vary significantly depending on numerous factors. As a result, our management will have broad discretion in the application of the net proceeds from this offering, and the investors will be relying on the judgment of our management regarding the application of the net proceeds from this offering. Pending application of the net proceeds as described above, we intend to invest the net proceeds of this offering in short-term, investment-grade, interest-bearing securities.

DIVIDEND POLICY

We have never declared or paid any cash dividends on our common stock and do not expect to pay any cash dividends for the foreseeable future. We intend to use future earnings, if any, in the operation and expansion of our business. Any future determination relating to our dividend policy will be made at the discretion of our Board, based on our financial condition, results of operations, contractual restrictions, capital requirements, business properties, restrictions imposed by applicable law and other factors our Board may deem relevant.

DESCRIPTION OF SECURITIES WE ARE OFFERING

We are offering shares of our Series D Convertible Preferred Stock, Series E Convertible Preferred Stock and the common stock issuable upon the conversion of such preferred stock. The following description of our Series D Convertible Preferred Stock and Series E Convertible Preferred Stock summarizes the material terms and provisions thereof.

Series D Convertible Preferred Stock

We are offering up to 1,436.0688 shares of its Series D Convertible Preferred Stock in this offering, with a stated value of $1,000 per share. The following are the principal terms of the Series D Convertible Preferred Stock:

Dividends

The holders of Series D Convertible Preferred Stock will be entitled to dividends, on an as-if converted basis, equal to and in the same form as dividends actually paid on shares of common stock, when and if actually paid.

Voting Rights

The share of Series D Convertible Preferred Stock has no voting rights, except the right to vote, with the holders of Common Stock, as a single class, with each share of Series D Convertible Preferred Stock entitled to vote on

an as-converted basis (whether or not such conversion shares are then convertible and disregarding any limitations on conversion) (however, in only this instance, the Series D Convertible Preferred Stock will be considered to convert at the Minimum Price (as defined in Nasdaq Listing Rule 5635(d)) immediately preceding the execution and delivery of the Purchase Agreement, or $0.1693 per share) on any resolution presented to stockholders for the purpose of obtaining approval of a proposed amendment to our Amended and Restated Certificate of Incorporation, as amended, to effect a reverse split of the outstanding shares of the Common Stock at a ratio to be determined and any proposal to adjourn any meeting of stockholders called for the purpose of voting on the reverse split amendment.

Otherwise, as long as any shares of Series D Convertible Preferred Stock are outstanding, the holders of the Series D Convertible Preferred Stock will be entitled to approve, by a majority vote of the then outstanding shares of Series D Convertible Preferred Stock if we seek to (a) amend, alter or repeal adversely the powers, preferences or rights of the Series D Convertible Preferred Stock or alter or amend the Certificate of Designation governing the Series D Convertible Preferred Stock, (b) amend the our Certificate of Incorporation or other charter documents in a manner adverse to rights, preferences or powers of the Series D Convertible Preferred Stock, (c) increase the number of authorized shares of Series D Convertible Preferred Stock, or (d) enter into any agreement with respect to any of the foregoing.

Liquidation

Upon any liquidation, dissolution or winding-up of the company, whether voluntary or involuntary, or a Liquidation, the then holders of the Series D Convertible Preferred Stock shall be entitled to receive out of the assets, whether capital or surplus, of the company the same amount that a holder of common stock would receive if the Series D Convertible Preferred Stock were fully converted (disregarding for such purposes any conversion limitations hereunder) to common stock which amounts shall be paid *pari passu* with all holders of common stock.

Conversion

The Series D Convertible Preferred Stock is convertible into common stock at any time after the date of issuance. The conversion rate, subject to adjustment as set forth in the Certificate of Designation governing the Series D Convertible Preferred Stock, is determined by dividing the stated value of the Series D Convertible Preferred Stock by $0.16, or the Conversion Price. The Conversion Price can be adjusted as set forth in the Certificate of Designation governing the Series D Convertible Preferred Stock for stock dividends and stock splits or the occurrence of a fundamental transaction. Upon conversion the shares of Series D Convertible Preferred Stock shall resume the status of authorized but unissued shares of preferred stock of the company.

Optional Conversion

The Series D Convertible Preferred Stock can be converted at the option of the holder at any time and from time to time after the date of issuance.

Beneficial Ownership Limitation

The Series D Convertible Preferred Stock cannot be converted to common stock if the holder and its affiliates would beneficially own more than 4.99% or 9.99% at the election of the holder of the outstanding common stock. However, any holder may increase or decrease such percentage to any other percentage not in excess of 9.99% upon notice to us, provided that any increase in this limitation will not be effective until 61 days after such notice from the holder to us and such increase or decrease will apply only to the holder providing such notice.

Preemptive Rights

No holders of Series D Convertible Preferred Stock will, as holders of Series D Convertible Preferred Stock, have any preemptive rights to purchase or subscribe for our common stock or any of our other securities.

Redemption

The shares of Series D Preferred Stock are not redeemable by the Company.

Trading Market

There is no established trading market for any of the Series D Convertible Preferred Stock, and we do not expect a market to develop. We do not intend to apply for a listing for any of the Series D Convertible Preferred Stock on any securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the Series D Convertible Preferred Stock will be limited.

Series E Convertible Preferred Stock

We are offering up to 1,436.0688 shares of its Series E Convertible Preferred Stock in this offering, with a stated value of $1,000 per share. The following are the principal terms of the Series E Convertible Preferred Stock:

Dividends

The holders of Series E Convertible Preferred Stock will be entitled to dividends, on an as-if converted basis, equal to and in the same form as dividends actually paid on shares of common stock, when and if actually paid.

Voting Rights

The Series E Convertible Preferred Stock has no voting rights, except the right to vote, with the holders of Common Stock, as a single class, with each share of Series E Convertible Preferred Stock entitled to 1,000,000 votes per share on any resolution presented to stockholders for the purpose of obtaining approval of the reverse split amendment and any proposal to adjourn any meeting of stockholders called for the purpose of voting on the reverse split amendment; provided, that in each case such votes must be counted by the company in the same proportion as the aggregate shares of Common Stock and Series D Convertible Preferred Stock voted on the reverse split amendment. As an example, if the holders of 50.5% of the outstanding Common Stock and Series D Convertible Preferred Stock voted at the meeting are voted in favor of a proposal for the reverse split amendment, the company can count 50.5% of the votes cast by the holders of the Series E Convertible Preferred Stock as votes in favor of the reverse split amendment.

Otherwise, as long as any shares of Series E Convertible Preferred Stock are outstanding, the holders of the Series E Convertible Preferred Stock will be entitled to approve, by a majority vote of the then outstanding shares of Series E Convertible Preferred Stock if we seek to (a) amend, alter or repeal adversely the powers, preferences or rights of the Series E Convertible Preferred Stock or alter or amend the Certificate of Designation governing the Series E Convertible Preferred Stock, (b) amend our Certificate of Incorporation or other charter documents in a manner adverse to rights, preferences or powers of the Series E Convertible Preferred Stock, (c) increase the number of authorized shares of Series E Convertible Preferred Stock, or (d) enter into any agreement with respect to any of the foregoing.

Liquidation

Upon any liquidation, dissolution or winding-up of the company, whether voluntary or involuntary, or a Liquidation, the then holders of the Series E Convertible Preferred Stock shall be entitled to receive out of the assets, whether capital or surplus, of the company the same amount that a holder of common stock would receive if the Series E Convertible Preferred Stock were fully converted (disregarding for such purposes any conversion limitations hereunder) to common stock which amounts shall be paid *pari passu* with all holders of common stock.

Conversion

The Series E Convertible Preferred Stock is convertible into common stock after the date of issuance. The conversion rate, subject to adjustment as set forth in the Certificate of Designation governing the Series E Convertible Preferred Stock, is determined by dividing the stated value of the Series E Convertible Preferred Stock by $0.16, or the Conversion Price. The Conversion Price can be adjusted as set forth in the Certificate of Designation governing the Series E Convertible Preferred Stock for stock dividends and stock splits or the occurrence of a fundamental transaction. Upon conversion the shares of Series E Convertible Preferred Stock shall resume the status of authorized but unissued shares of preferred stock of the company.

Beneficial Ownership Limitation

The Series E Convertible Preferred Stock cannot be converted to common stock if the holder and its affiliates would beneficially own more than 4.99% or 9.99% at the election of the holder of the outstanding common stock. However, any holder may increase or decrease such percentage to any other percentage not in excess of 9.99% upon notice to us, provided that any increase in this limitation will not be effective until 61 days after such notice from the holder to us and such increase or decrease will apply only to the holder providing such notice.

Preemptive Rights

No holders of Series E Convertible Preferred Stock will, as holders of Series E Convertible Preferred Stock, have any preemptive rights to purchase or subscribe for our common stock or any of our other securities.

Redemption

The shares of Series E Preferred Stock are not redeemable by the Company.

Trading Market

There is no established trading market for any of the Series E Convertible Preferred Stock, and we do not expect a market to develop. We do not intend to apply for a listing for any of the Series E Convertible Preferred Stock on any securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the Series E Convertible Preferred Stock will be limited.

PRIVATE PLACEMENT TRANSACTION

In a concurrent private placement, we are selling to the purchaser of our Preferred Stock in this offering, warrants to purchase 22,438,575 shares of our common stock.

The Warrants and the shares of our common stock issuable upon the exercise of the Warrants are not being registered under the Securities Act, are not being offered pursuant to this prospectus supplement and the accompanying prospectus and are being offered pursuant to the exemption provided in Section 4(a)(2) under the Securities Act and Rule 506(b) promulgated thereunder. Accordingly, a purchaser of the Warrants, may only sell shares of common stock issued upon exercise of the Warrants being sold to them in the concurrent private placement, pursuant to an effective registration statement under the Securities Act covering the resale of those shares, an exemption under Rule 144 under the Securities Act or another applicable exemption under the Securities Act.

Each Warrant will be exercisable six months after the date of issuance at an exercise price of $0.1694 per share, subject to adjustment, and will remain exercisable for five years from the initial exercise date, but not thereafter. A holder of Warrants will not have the right to exercise any portion of its Warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or, at the election of a holder prior to the date of issuance,

9.99%) of the number of shares of our common stock outstanding immediately after giving effect to such exercise; provided, however, that upon notice to the Company, the holder may increase or decrease such beneficial ownership limitation, provided that in no event shall such beneficial ownership limitation exceed 9.99% and any increase in the beneficial ownership limitation will not be effective until 61 days following notice of such increase from the holder to us. In addition, the holders of the Warrants will have the right to participate in any rights offering or distribution of assets together with the holders of our common stock on an as-exercised basis.

The exercise price and number of the shares of our common stock issuable upon the exercise of the Warrants will be subject to adjustment for stock splits, reverse splits, and similar capital transactions, as described in the Warrants. The Warrants will be exercisable on a "cashless" basis in certain circumstances.

If a fundamental transaction occurs, then the successor entity will succeed to, and be substituted for us, and may exercise every right and power that we may exercise and will assume all of our obligations under the purchase warrants with the same effect as if such successor entity had been named in the purchase warrant itself. If holders of shares of our common stock are given a 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 to the consideration it receives upon any exercise of the purchase warrant following such fundamental transaction. In addition, in certain circumstances, upon a fundamental transaction, the holder will have the right to require us to repurchase its Warrants at its fair value using the Black Scholes option pricing formula; provided, however, that, if the fundamental transaction is not within our control, including not approved by our Board, then the holder shall only be entitled to receive the same type or form of consideration (and in the same proportion), at the Black Scholes value per share of common stock in the fundamental transaction for each share of common stock underlying the Warrants, that is being offered and paid to the holders of our common stock in connection with the fundamental transaction, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of common stock are given the choice to receive from among alternative forms of consideration in connection with the fundamental transaction.

Pursuant to the Securities Purchase Agreement dated as of May 3, 2022, by and among the Company and the investor signatory thereto, we will use commercially reasonable efforts to cause a registration statement providing for the resale by holders of shares of our common stock issuable upon the exercise of the Warrants to become effective within 180 days following the closing date, and to keep such registration statement effective until such time as no holder owns any Warrants or Warrant Shares issuable upon exercise thereof.

PLAN OF DISTRIBUTION

We engaged the Placement Agent to act as our exclusive placement agent to solicit offers to purchase the shares of our Preferred Stock offered by this prospectus supplement and the accompanying prospectus. The Placement Agent has no commitment to buy any of the securities, is not selling such securities, nor is it required to arrange for the purchase and sale of any specific number or dollar amount of such securities, other than to use its "reasonable best efforts" to arrange for the sale of such securities by us. Therefore, we may not sell all of the shares of our Preferred Stock being offered. The terms of this offering were subject to market conditions and negotiations between us, Wainwright and prospective investors. Wainwright will have no authority to bind us by virtue of the engagement letter. We have entered into a securities purchase agreement directly with an institutional investor in connection with this offering who have agreed to purchase the shares of Preferred Stock in this offering. We will only sell to investors who have entered into securities purchase agreements.

We have agreed to indemnify the Placement Agent against specified liabilities relating to or arising out of the agent's activities as Placement Agent, including liabilities under the Securities Act.

Delivery of the shares of Series D Convertible Preferred Stock and Series E Convertible Preferred Stock offered hereby is expected to occur on or about May 4, 2022, subject to satisfaction of certain customary closing conditions.

Fees and Expenses

We have agreed to pay the Placement Agent (i) an aggregate cash placement fee equal to 7.0% of the gross proceeds, (ii) a cash management fee equal to 1.0% of the gross proceeds raised in this offering, (iii) $25,000 non-accountable expense allowance and (iv) to reimburse the Placement Agent for certain expenses in connection with the offering and up to $60,000 for fees and expenses of legal counsel and other reasonable and customary out-of-pocket expenses. We estimate the total expenses of this offering paid or payable by us will be approximately $600,000. After deducting the fees due to the Placement Agent and our estimated expenses in connection with this offering, we expect the net proceeds from this offering will be approximately $2.3 million.

The following table shows the per share and total cash placement fees we will pay to the Placement Agent in connection with the sale of the shares of our Preferred Stock pursuant to this prospectus supplement and the accompanying prospectus.

	Per Share	Total
Series D Convertible Preferred Stock offering price	$ 1,000.00	$ 1,436,068.80
Series E Convertible Preferred Stock offering price	$ 1,000.00	$ 1,436,068.80
Placement Agent Fees (7.0%)	$ 70.00	$ 201,049.63
Proceeds, before expenses, to us	$ 930.00	$ 2,671,087.97

Placement Agent Warrants

In addition, we have agreed to issue to the Placement Agent, at the closing of this offering, warrants to purchase 1,256,561 shares of our common stock, equal to 7.0% of the shares common stock underlying the Preferred Stock sold in this offering, at an exercise price of $0.20 per share (representing 125% of the conversion price of the Preferred Stock). The Placement Agent Warrants and the shares of our common stock issuable upon exercise thereof are not being registered hereby. The Placement Agent Warrants will be exercisable six months following the date of issuance and will expire on the fifth anniversary of the commencement of sales of this offering.

Tail

We have also agreed to pay the Placement Agent a tail fee equal to the cash and warrant compensation in this offering, if any investor, who was contacted or introduced to the Company by Placement Agent during the term of its engagement, provides us with capital in any public or private offering or other financing or capital raising transaction, with the exception of ATM offerings, during the 12 month period following the date of the engagement letter.

Right of First Refusal

In addition, we have granted a right of first refusal to the Placement Agent pursuant to which it has the right to act as the sole book-running manager, sole underwriter, or sole placement agent, as applicable, if we or our subsidiaries raise capital through a public or private offering (excluding all at-the-market facilities) of equity or equity-linked securities using an underwriter or placement agent at any time prior to the six-month anniversary of the closing of this offering.

Regulation M

The Placement Agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act and any fees received by it and any profit realized on the sale of the securities by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. The Placement Agent will be required to comply with the requirements of the Securities Act and the Exchange Act including,

without limitation, Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of our securities by the Placement Agent. Under these rules and regulations, the Placement Agent may not (i) engage in any stabilization activity in connection with our securities; and (ii) bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until they have completed their participation in the distribution.

Other Relationships

From time to time, the Placement Agent may provide in the future various advisory, investment and commercial banking and other services to us in the ordinary course of business, for which they may receive customary fees and commissions. Wainwright has served as the underwriter in connection with a public offering we consummated on December 4, 2020, in connection with a public offering we consummated on July 30, 2020, and as exclusive placement agent in connection with our registered direct offerings that were completed on June 5, 2020, and on July 16, 2021, for which it received compensation in each of the offerings. However, except as disclosed in this prospectus, we have no present arrangements with the Placement Agent for any further services.

Listing of Common Stock

Our common stock is listed on the Nasdaq Capital Market under the symbol "ALNA." The last reported sale price of our common stock on May 3, 2022 was $0.1693 per share.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2021, as amended, as set forth in their report (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements), which is incorporated herein by reference. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

LEGAL MATTERS

The validity of the securities being offered in this offering will be passed upon for us by Goodwin Procter LLP, Boston, Massachusetts. Haynes and Boone, LLP, New York, New York is acting as counsel to the Placement Agent in connection with this offering.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the securities offered by this prospectus supplement and the accompanying prospectus. This prospectus supplement, filed as part of the registration statement, does not contain all the information set forth in the registration statement and its exhibits and schedules, portions of which have been omitted as permitted by the rules and regulations of the SEC. For further information about us, we refer you to the registration statement and to its exhibits and schedules.

We are subject to the information requirements of the Exchange Act and, in accordance therewith, file annual, quarterly and special reports, proxy statements and other information with the SEC. These documents also may be accessed through the SEC's electronic data gathering, analysis and retrieval system, or EDGAR, via electronic means, including the SEC's home page on the Internet (www.sec.gov). You may also inspect the registration statement and this prospectus supplement and the accompanying prospectus on this website.

We have the authority to designate and issue more than one class or series of stock having various preferences, conversion and other rights, voting powers, restrictions, limitations as to dividends, qualifications, and terms and conditions of redemption. We will furnish a full statement of the relative rights and preferences of each class or series of our stock which has been so designated and any restrictions on the ownership or transfer of our stock to any shareholder upon request and without charge. Written requests for such copies should be directed Investor Relations Department, Allena Pharmaceuticals, Inc., One Newton Executive Park, Suite 202, Newton, MA 02462. Our website is located at www.allenapharma.com. Information contained on our website is not incorporated by reference into this prospectus supplement, and, except for the documents incorporated by reference as noted below, you should not consider any information on, or that can be accessed from, our website as part of this prospectus supplement or the accompanying prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

We are "incorporating by reference" specific documents that we file with the SEC, which means that we can disclose important information to you by referring you to those documents that are considered part of this prospectus supplement and the accompanying prospectus. Information that we file subsequently with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below, and any documents that we file with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, after the date of this prospectus supplement until the termination of the offering of all of the securities registered pursuant to the registration statement of which the accompanying prospectus is a part (excluding any portions of such documents that have been "furnished" but not "filed" for purposes of the Exchange Act):

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2021 filed with the SEC on March 31, 2022, as amended by our Amendment No. 1 on Form 10-K/A, filed with the SEC on April 29, 2022;
- our Current Reports on Form 8-K filed with the SEC on January 4, 2022, February 2, 2022, February 25, 2022, and March 18, 2022;
- the description of our common stock contained in our Form 8-A (File No: 001-38739) filed with the SEC on October 30, 2017, as updated by Exhibit 4.9 to our Annual Report on Form 10-K for the fiscal year ended December 31, 2021 filed with the SEC on March 31, 2022, and including any amendments or reports filed for purposes of updating such descriptions; and
- all documents filed by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, after the date of this prospectus supplement and before termination of this offering. We are not, however, incorporating by reference any documents or portions thereof, whether specifically listed above or filed in the future, that are not deemed "filed" with the SEC or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or certain exhibits furnished pursuant to Item 9.01 of Form 8-K.

You may request, orally or in writing, a copy of these documents, which will be provided to you at no cost, by contacting Allena Pharmaceuticals, Inc., One Newton Executive Park, Suite 202, Newton, MA 02462 ; Attention: Investor Relations. The Investor Relations Department can be reached via telephone at is (617) 467-4577.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this prospectus supplement and the accompanying prospectus to the extent that a statement contained herein or therein, in any other subsequently filed document that also is or is deemed to be incorporated by reference herein and in any accompanying prospectus supplement, modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified and superseded, to constitute a part of this prospectus supplement.

Any statement made in this prospectus supplement and the accompanying prospectus concerning the contents of any contract, agreement or other document is only a summary of the actual contract, agreement or other document. If we have filed or incorporated by reference any contract, agreement or other document as an exhibit to the registration statement, you should read the exhibit for a more complete understanding of the document or matter involved. Each statement regarding a contract, agreement or other document is qualified by reference to the actual document.

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PROSPECTUS

$200,000,000

Common Stock
Preferred Stock
Debt Securities
Warrants
Units

We may from time to time issue, in one or more series or classes, up to $200,000,000 in aggregate principal amount of our common stock, preferred stock, debt securities, warrants and/or units, in any combination, together or separately, in one or more offerings, in amounts, at prices and on the terms that we will determine at the time of the offering and which will be set forth in a prospectus supplement and any related free writing prospectus.

We may offer these securities separately or together in units. Each time we sell securities described herein, we will provide prospective investors with a supplement to this prospectus that will specify the terms of the securities being offered. We may sell these securities to or through underwriters and also to other purchasers or through agents. We will set forth the names of any underwriters or agents, and any fees, conversions, or discount arrangements, in the accompanying prospectus supplement. We may not sell any securities under this prospectus without delivery of the applicable prospectus supplement.

You should read this document and any prospectus supplement or amendment carefully before you invest in our securities.

Our common stock is listed on The Nasdaq Global Select Market under the symbol "ALNA." On May 3, 2021, the closing price for our common stock, as reported on The Nasdaq Global Select Market, was $1.28 per share. Our principal executive offices are located at One Newton Executive Park, Suite 202, Newton, Massachusetts 02462.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading "Risk Factors" contained in this prospectus beginning on page 2 and any applicable prospectus supplement, and under similar headings in the other documents that are incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this Prospectus is May 12, 2021.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a "shelf" registration process. Under this shelf registration process, we may from time to time sell any combination of the securities described in this prospectus in one or more offerings for an aggregate initial offering price of up to $200,000,000.

This prospectus provides you with a general description of the securities we may offer. Each time we sell securities described herein, we will provide one or more prospectus supplements that will contain specific information about the terms of the offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and the accompanying prospectus supplement together with the additional information described under the heading "Where You Can Find More Information" and "Incorporation By Reference".

You should rely only on the information contained in or incorporated by reference in this prospectus, any accompanying prospectus supplement or in any related free writing prospectus filed by us with the SEC. We have not authorized anyone to provide you with different information.

This prospectus does not constitute an offer to sell or the solicitation of an offer to buy any securities or an offer to sell or the solicitation of an offer to buy such securities in any circumstances in which such offer or solicitation is unlawful. You should assume that the information appearing in this prospectus, any prospectus supplement, the documents incorporated by reference and any related free writing prospectus is accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed materially since those dates.

THIS PROSPECTUS MAY NOT BE USED TO OFFER AND SELL SECURITIES UNLESS IT IS ACCOMPANIED BY AN ADDITIONAL PROSPECTUS OR A PROSPECTUS SUPPLEMENT.

Unless the context otherwise indicates, references in this prospectus, and any accompanying prospectus, to "Allena", "we", "our", "us" and "the Company" refer, collectively, to Allena Pharmaceuticals, Inc. and its subsidiaries.

We own various U.S. federal trademark registrations and applications, and unregistered trademarks and service marks, including "Allena Pharmaceuticals," "URIROX-1," "URIROX-2" and our corporate logo. All trademarks or trade names referred to in this prospectus, and any accompanying prospectus supplement, are the property of their respective owners. Solely for convenience, the trademarks and trade names in this prospectus, and the accompanying prospectus supplement, may be referred to without the ® and ™ symbols, but such references should not be construed as an indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend our use or display of other companies' trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

RISK FACTORS

Investing in our securities involves a high degree of risk. You should carefully consider the risks described in the documents incorporated by reference in this prospectus and any prospectus supplement, as well as other information we include or incorporate by reference into this prospectus and any applicable prospectus supplement, before making an investment decision. Our business, financial condition or results of operations could be materially adversely affected by the materialization of any of these risks. The trading price of our securities could decline due to the materialization of any of these risks, and you may lose all or part of your investment. This prospectus and the documents incorporated herein by reference also contain forward-looking statements that involve risks and uncertainties. Actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks described in the documents incorporated herein by reference, including (i) our Annual Report on Form 10-K for the fiscal year ended December 31, 2020, which is on file with the SEC and is incorporated herein by reference, as updated by our subsequent annual, quarterly and other reports and documents that are incorporated by reference into this prospectus and (ii) other documents we file with the SEC that are deemed incorporated by reference into this prospectus.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents that we incorporate by reference, contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. Any statements about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and may be forward-looking. These statements are often, but are not always, made through the use of words or phrases such as "anticipate," "believe," "contemplate," "continue," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "seek," "should," "target," "will," "would," and similar expressions, or the negative of these terms, or similar expressions. Accordingly, these statements involve estimates, assumptions and uncertainties which could cause actual results to differ materially from those expressed in them. Any forward-looking statements are qualified in their entirety by reference to the factors discussed throughout this prospectus, and in particular those factors referenced in the section "Risk Factors."

This prospectus contains forward-looking statements that are based on our management's belief and assumptions and on information currently available to our management. These statements relate to future events or our future financial performance, and involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from any future results, levels of activity, performance or achievements expressed or implied by these forward-looking statements. Forward-looking statements include, but are not limited to, statements about:

- our estimates and expectations regarding our capital requirements, cash and expense levels, liquidity sources and our need for additional financing;
- the design and conduct of our planned Phase 3 clinical program of reloxaliase (formerly ALLN-177) in enteric hyperoxaluria;
- our ability to utilize the accelerated approval regulatory pathway for reloxaliase, including the timing of any Biologic License Application, or BLA, submission utilizing the accelerated approval regulatory pathway;
- the number, designs, results and timing of our clinical trials, including our pivotal Phase 3 program for reloxaliase, and preclinical studies and the timing of the availability of data from these trials and studies;
- our ability to enroll a sufficient number of patients (including as a result of any delays arising from the global outbreak of the coronavirus, or the COVID-19 coronavirus) and the ability of subjects in our clinical trials to adhere to the protocol, including capsule and dietary regimen and urinary collection requirements;
- the therapeutic benefits, effectiveness and safety of reloxaliase, ALLN-346 and any future product candidates we may develop;
- our ability to receive regulatory approval for our product candidates in the United States, Europe and other geographies;
- our expected regulatory approval pathway, and our ability to obtain, on satisfactory terms or at all, the financing required to support operations, development, clinical trials, and commercialization of products;
- our reliance on third parties for the planning, conduct and monitoring of clinical trials and for the manufacture of clinical drug supplies and drug product;
- potential changes in regulatory requirements, and delays or negative outcomes from the regulatory approval process;
- our estimates of the size and characteristics of the markets that may be addressed by reloxaliase and ALLN-346;

- the market acceptance of reloxaliase, ALLN-346 or any future product candidates that are approved for marketing in the United States or other countries;
- our ability to successfully commercialize reloxaliase with a targeted sales force;
- the safety and efficacy of therapeutics marketed by our competitors that are targeted to indications which our product candidates have been developed to treat;
- the impact of natural disasters, global pandemics (including the recent outbreak of a novel strain of the COVID-19 coronavirus), labor disputes, lack of raw material supply, issues with facilities and equipment or other forms of disruption to business operations at our manufacturing facilities; and
- our ability to utilize our proprietary technological approach to develop and commercialize ALLN-346 and any future product candidates we may develop.

These forward-looking statements are neither promises nor guarantees of future performance due to a variety of risks and uncertainties, many of which are beyond our control, which could cause actual results to differ materially from those indicated by these forward-looking statements, including, without limitation, the risks more fully discussed in the "Risk Factors" section in this prospectus, and the risk factors and cautionary statements described in other documents that we file from time to time with the SEC, specifically under "Item 1A. Risk Factors" and elsewhere in our most recent Annual Report on Form 10-K for the period ended December 31, 2020, as updated by our subsequent annual, quarterly and other reports and documents that are incorporated by reference into this prospectus.

Given these uncertainties, readers should not place undue reliance on our forward-looking statements. These forward-looking statements speak only as of the date on which the statements were made and are not guarantees of future performance. Except as may be required by applicable law, we do not undertake to update any forward-looking statements after the date of this prospectus or the respective dates of documents incorporated by reference herein or therein that include forward-looking statements.

THE COMPANY

We are a late-stage, clinical biopharmaceutical company dedicated to developing and commercializing first-in-class, oral enzyme therapeutics to treat patients with rare and severe metabolic and kidney disorders. We are focused on metabolic disorders that result in excess accumulation of certain metabolites that can cause kidney stones, damage the kidney, and potentially lead to chronic kidney disease, or CKD, and end-stage renal disease, or ESRD. Our lead product candidate, reloxaliase, is a first-in-class oral enzyme therapeutic that we are developing for the treatment of enteric hyperoxaluria, a metabolic disorder characterized by markedly elevated urinary oxalate, or UOx, levels and commonly associated with kidney stones, CKD and ESRD. We have conducted a robust clinical development program of reloxaliase, including three Phase 2 clinical trials and the first of two planned Phase 3 clinical trials, which demonstrated significant reductions of UOx excretion in patients with enteric hyperoxaluria. In addition, we are developing ALLN-346 for the treatment of gout, a metabolic disorder characterized by markedly elevated plasma levels of uric acid, which can lead to arthritis affecting multiple joints, as well as kidney damage due to the deposition of urate crystals.

Reloxaliase, a crystalline formulation of the enzyme oxalate decarboxylase, has been designed to specifically degrade oxalate within the gastrointestinal (GI) tract, limiting systemic absorption of oxalate into the bloodstream. Oxalate is endogenously produced as an end product of normal cellular metabolism and is also absorbed through the GI tract from a typical diet. Humans lack the innate capacity to digest oxalate and primarily depend on renal excretion to eliminate it from the body. Although oxalate has no identified biological function, it is known to damage the kidney when present in excess amounts, a condition called hyperoxaluria. Hyperoxaluria is characterized by significantly elevated oxalate levels in the urine, or UOx excretion, due to either overproduction of oxalate by the liver from a genetic defect, called primary hyperoxaluria, or from over absorption of oxalate from the diet, called secondary hyperoxaluria. Secondary hyperoxaluria is further characterized either as enteric, resulting from a chronic underlying GI disorder associated with malabsorption, such as bariatric surgery complications or Crohn's disease, which predisposes patients to excess oxalate absorption, or idiopathic, meaning the underlying cause is unknown. Enteric hyperoxaluria is the more severe type of secondary hyperoxaluria and our initial target indication for the development of reloxaliase.

The first clinical manifestation of hyperoxaluria is often a kidney stone. Patients with severe hyperoxaluria may have recurrent kidney stones or experience infrequent or no kidney stones, yet still develop CKD and ESRD. Systemic oxalosis is an ultra-rare, potentially fatal condition that results from the progression of primary or enteric hyperoxaluria. Excess oxalate that cannot be eliminated by the kidneys begins to accumulate in tissues throughout the body, including the blood, bones, joints, eyes, heart and kidneys. The deposition of oxalate crystals can increase the risk of kidney inflammation, fibrosis, and progressive kidney failure. This damage to the kidney further reduces the kidney's ability to eliminate oxalate, causing a vicious cycle that can accelerate the loss of kidney function. To prevent or limit systemic oxalosis, patients who develop ESRD secondary to hyperoxaluria require hemodialysis as frequently as six or seven times per week, with or without supplemental peritoneal dialysis, while awaiting kidney transplantation. We estimate that there are approximately 200,000 to 250,000 patients in the United States with enteric hyperoxaluria and kidney stones. There are no FDA approved therapies for enteric hyperoxaluria, and to our knowledge, reloxaliase is the most advanced clinical development candidate for this indication.

To support a potential accelerated approval strategy, we designed two multicenter, global, randomized, double-blind, placebo-controlled studies to evaluate the safety and efficacy of reloxaliase in patients with enteric hyperoxaluria. Our first study, URIROX-1, for which the treatment period was four weeks, was designed to evaluate the ability of reloxaliase to reduce urinary oxalate excretion over this timeframe, but was not designed to evaluate the long-term ability of reloxaliase to improve clinical outcomes. Our second study, URIROX-2, for which the targeted treatment period is at least two years, was designed to evaluate both the ability of reloxaliase to reduce urinary oxalate excretion and the longer-term ability of reloxaliase to improve clinical outcomes.

The FDA has advised us that it agrees with our strategy to obtain accelerated approval for reloxaliase, whereby reloxaliase could potentially be approved based upon UOx data from the completed URIROX-1 study and from the URIROX-2 study after patients had received treatment for a minimum of six months. The analyses for a potential Biologic License Application, or BLA, filing will be conducted sequentially, starting with estimation of the conditional probability of achieving the primary long-term endpoint of kidney stone disease progression, followed by the remaining analyses that include assessment of the efficacy of reloxaliase in reducing UOx in the one month primary and six month secondary endpoints, evaluation of safety, and confirmation of the relationship between UOx and KS events. The clinical elements of the planned BLA filing will include the aforementioned data package from URIROX-2; the results from URIROX-1, also conducted in the initial target population of enteric hyperoxaluria; and the results from Phase 1 and Phase 2 trials of reloxaliase, which included subjects with other types of hyperoxalurias. The data generated from the URIROX-1 and URIROX-2 trials could thus potentially form the basis of an accelerated approval of reloxaliase using reduction in UOx as a surrogate endpoint, with the final results from the URIROX-2 trial used to confirm clinical benefit post-approval.

We initiated URIROX-1 in March 2018 as the largest randomized, controlled trial of a novel therapeutic ever conducted in patients with enteric hyperoxaluria up until that time. In November 2019, we reported that the primary endpoint in the URIROX-1 study had been met, with a mean reduction of 22.6% in average 24-hour UOx excretion measured during Weeks 1-4 for patients treated with reloxaliase, compared to a mean reduction of 9.7% in the placebo group (least square, or LS, mean treatment difference of -14.3%, p=0.004). Reloxaliase was well tolerated, with 114 of 115 patients completing the study. There were no adverse events leading to treatment discontinuation in the reloxaliase group. Additionally, data from URIROX-1 highlighted the increased risk of kidney stone disease associated with elevated UOx levels.

We initiated URIROX-2 during the fourth quarter of 2018. The trial was initially designed to enroll 400 patients with 24-hour UOx excretion greater than or equal to 50 mg/day and a history of kidney stones, and will include patients with both normal kidney function and reduced kidney function up to Stage 3 chronic kidney disease (estimated glomerular filtration rate, or eGFR, greater than or equal to 30 mL/min/1.73 m2). Following review of data from the completed URIROX-1 study, which enrolled essentially the same patient population as URIROX-2, including the high rate of on-study kidney stone events and the UOx results, we determined that the study could be expected to remain adequately powered with 200 patients. Consequently, we announced that we reached agreement with the FDA on a streamlined design for URIROX-2 in February 2020.

The primary efficacy endpoint of URIROX-2 is the percent change from baseline in 24-hour UOx excretion during Weeks 1-4, which is the same primary endpoint as that in URIROX-1. Secondary endpoints in URIROX-2 include the percent change from baseline in 24-hour UOx excretion during Weeks 16-24 and the proportion of subjects with a 20% or greater reduction from baseline in 24-hour UOx excretion during Weeks 1-4. The primary long-term efficacy endpoint to confirm clinical benefit is kidney stone disease progression, defined as a composite of either symptomatic kidney stone events or finding of new or enlarged kidney stones using imaging, over a minimum treatment period of two years. Secondary long-term efficacy endpoints to confirm clinical benefit include change in eGFR from baseline and resource utilization for the management of kidney stone disease, including emergency room visits, hospitalizations or procedures.

URIROX-2 incorporates adaptive design elements that could, if necessary, allow for increasing the sample size and/or duration of treatment at two points during the study. An interim analysis will be conducted when 130 subjects have reached six months of treatment. At this time, the first sample size reassessment, or SSR, based on total accrued kidney stone disease progression, will be performed. Additionally, a sponsor-blinded estimation of the conditional probability of achieving the study's primary and secondary UOx percent change from baseline endpoints will also be conducted. The second SSR, also based on total accrued kidney stone disease progression, will be conducted when 200 subjects, the planned study enrollment, have reached six months of treatment. Provided that a sufficiently high conditional probability of achieving the long-term clinical endpoint is observed, the remainder of the analyses to support a BLA filing will also be conducted at this time.

During the first half of 2020, we paused initiation of new clinical trial sites and expansion into additional geographies due to the ongoing engagement with the FDA on the streamlined redesign of the trial and the company's financial constraints. The trial was re-launched in the summer of 2020 following agreement with the FDA on the redesign of the study and progress in raising additional equity capital. The execution and enrollment of the trial have been adversely affected by the COVID-19 pandemic. However, recent progress has been encouraging, with site initiations, screening, and enrollment increasing during the first three months of 2021. As a result, we currently expect to report the results of the interim analysis in the second or third quarter of 2022, and to report topline data to support a potential BLA submission in the fourth quarter of 2022 or the first quarter of 2023. The FDA has advised us that it agrees that, if positive, biomarker data on 24-hour UOx excretion in URIROX-1 and URIROX-2 would be used for a BLA submission for reloxaliase using the accelerated approval regulatory pathway. For the long-term follow-up phase of the trial, patients would continue in URIROX-2 for a minimum treatment period of two years to confirm clinical benefit post-approval, as indicated by the degree of kidney stone disease and assessments of renal function.

In addition to our Phase 3 program of reloxaliase for enteric hyperoxaluria, we also evaluated reloxaliase in Study 206, a Phase 2 basket trial in adults and adolescents with primary hyperoxaluria or enteric hyperoxaluria with advanced CKD and hyperoxalemia, or increased plasma oxalate (POx) levels, which we initiated in March 2018. We reported interim data from this study in June 2019 and topline data in November 2019. Based on the substantial reductions from baseline to Weeks 4-12 in both UOx and POx observed in patients with enteric hyperoxaluria and advanced CKD, we obtained feedback from the FDA regarding potential expedited approval pathways for reloxaliase in this patient population. The FDA recognized that the high oxalate burden in these patients represents a serious, life-threatening condition, which is a requirement for considering an expedited approval pathway. However, the FDA advised us that reloxaliase would not currently qualify for breakthrough designation in this patient population because POx has never been used as an endpoint for regulatory approval and because Study 206 was not placebo-controlled. In this setting, and given our current financial resources, we remain focused on executing URIROX-2 and plan to evaluate potential clinical development of reloxaliase in patients with enteric hyperoxaluria and advanced CKD in the future.

We have designed our second product candidate, ALLN-346, an orally administered, novel, urate degrading enzyme, for patients with hyperuricemia and gout in the setting of advanced CKD. Hyperuricemia, or elevated levels of uric acid in the blood, results from overproduction or insufficient excretion of urate, or often a combination of the two. Humans lack urate oxidase, an enzyme that degrades uric acid in a wide range of other organisms, including animals, plants, bacteria and fungi. Hyperuricemia is the major predisposing condition for gout, a disease that most commonly manifests with acute flares of arthritis, and can also lead to chronic arthritis and joint damage and palpable deposits of urate crystals in the skin. Hyperuricemia can also lead to increased uric acid excretion in the urine and subsequently to kidney stone formation and kidney damage, also known as urate nephropathy. In addition, hyperuricemia has been linked to hypertension, CKD, glucose intolerance, dyslipidemia, insulin resistance, obesity and cardiovascular disease.

We engineered ALLN-346 to degrade urate in the GI tract and, in turn, reduce the urate burden on the kidney and lower the risk of urate-related complications. ALLN-346 is targeted to lower serum uric acid in patients with CKD, who have decreased kidney function and diminished capacity for urinary excretion of uric acid. Patients with CKD who have hyperuricemia and gout are often not optimally managed due to limitations of available therapies, including decreased tolerability, dose restrictions, drug-drug interactions, contraindications and increased risk for long-term morbidity and mortality. An estimated 375,000 patients in the United States have refractory gout and CKD. We have conducted two preclinical proof-of-concept studies that support the potential of ALLN-346 as an oral therapy for the treatment of hyperuricemia in patients with gout and associated CKD. We presented the data from the first study in a urate-oxidase knock-out mouse model at the American College of Rheumatology meeting in October 2018 and the data from the second study in a pig model with acute hyperuricemia at the American College of Rheumatology meeting in October 2019.

Following FDA clearance of the IND for ALLN-346, we initiated a double-blind, placebo-controlled, Phase 1 single ascending dose (SAD) clinical trial in 24 healthy volunteers during July 2020. Groups of eight study participants were randomized 3:1 to ALLN-346 or matching placebo in three sequential cohorts dosed orally with three, six, or 12 capsules in one day. Each capsule of ALLN-346 contained a target dose of 90 mg of enzyme, equivalent to 2,250 units. In November 2020, we reported that ALLN-346 was well-tolerated with no clinically significant safety signals and no dose-limiting toxicities observed in any cohort up to the highest administered dose. In addition, assay of serum samples by ELISA immunoassay demonstrated that ALLN-346 was not absorbed systemically, supporting that its mechanism of action appears to be restricted to the GI tract. We recently initiated a Phase 1b multiple ascending dose (MAD) clinical trial in healthy volunteers with initial results expected in the third quarter of 2021, and, subject to feedback from the FDA, we expect to initiate a Phase 2a program in patients with hyperuricemia and CKD in the third quarter of 2021, with initial results expected in the fourth quarter of 2021.

We were incorporated under the laws of the State of Delaware and commenced business operations in 2011. Our principal executive offices are located at One Newton Executive Park, Suite 202, Newton, MA 02462 and our telephone number is (617) 467-4577. Our website address is www.allenapharma.com. The information contained on our website, or that can be accessed through our website, is not a part of this prospectus and is not incorporated by reference into this prospectus.

We are an “emerging growth company” as defined in the Jumpstart Our Business Startups Act of 2012. We will remain an emerging growth company until the earlier of: (i) the last day of the fiscal year (a) following the fifth anniversary of the completion of the IPO, (b) in which we have total annual gross revenue of at least $1.07 billion, or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds $700.0 million as of the prior June 30th, and (ii) the date on which we have issued more than $1.0 billion in non-convertible debt during the prior three-year period.

USE OF PROCEEDS

We intend to use the net proceeds from the sale of any securities offered under this prospectus primarily to fund activities relating to the advancement of our product candidates, and for other general corporate purposes (unless otherwise indicated in the applicable prospectus supplement), including, but not limited to, research and development costs, potential strategic acquisitions of complementary businesses, services or technologies, expansion of our technology infrastructure and capabilities, working capital and capital expenditures.

We may temporarily invest the net proceeds in a variety of capital preservation instruments, including investment grade, interest bearing instruments and U.S. government securities, until they are used for their stated purpose. We have not determined the amount of net proceeds to be used specifically for such purposes. As a result, management will retain broad discretion over the allocation of net proceeds.

SECURITIES WE MAY OFFER

This prospectus contains summary descriptions of the securities we may offer from time to time. These summary descriptions are not meant to be complete descriptions of each security. The particular terms of any security will be described in the applicable prospectus supplement. This prospectus provides you with a general description of the securities we may offer. Each time we sell securities described herein, we will provide prospective investors with a supplement to this prospectus that will contain specific information about the terms of that offering, including the specific amounts, prices and terms of the securities offered.

We may sell the securities to or through underwriters, dealers or agents, directly to purchasers or through a combination of any of these methods of sale or as otherwise set forth below under “Plan of Distribution.” We, as well as any agents acting on our behalf, reserve the sole right to accept and to reject in whole or in part any proposed purchase of securities. Any prospectus supplement will set forth the names of any underwriters, dealers, agents or other entities involved in the sale of securities described in that prospectus supplement and any applicable fee, commission or discount arrangements with them.

DESCRIPTION OF CAPITAL STOCK

The following description of our common stock and preferred stock, together with the additional information we include in any applicable prospectus supplements, summarizes the material terms and provisions of the common stock and preferred stock that we may offer under this prospectus. The following description of our capital stock does not purport to be complete and is subject to, and qualified in its entirety by, our Amended and Restated Certificate of Incorporation and our Amended and Restated Bylaws, which are exhibits to the registration statement of which this prospectus forms a part, and by applicable law. We refer in this section to our Amended and Restated Certificate of Incorporation as our "certificate of incorporation", and we refer to our Amended and Restated Bylaws as our "bylaws." The terms of our common stock and preferred stock may also be affected by Delaware law.

Authorized Capital Stock

Our authorized capital stock consists of 125,000,000 shares of common stock, par value $0.001 per share, and 5,000,000 shares of preferred stock, par value $0.001 per share, all of which shares of preferred stock are undesignated.

As of May 3, 2021, 57,612,529 shares of our common stock were outstanding and held by approximately 17 stockholders of record.

Common Stock

The holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of the stockholders. The holders of our common stock do not have any cumulative voting rights. Holders of our common stock are entitled to receive ratably any dividends declared by the board of directors out of funds legally available for that purpose, subject to any preferential dividend rights of any outstanding preferred stock. Our common stock has no preemptive rights, conversion rights or other subscription rights or redemption or sinking fund provisions.

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in all assets remaining after payment of all debts and other liabilities and any liquidation preference of any outstanding preferred stock. The shares to be issued by us will be, when issued and paid for, validly issued, fully paid and non-assessable.

Listing

Our common stock is listed on The Nasdaq Global Select Market under the symbol "ALNA." On May 3, 2021, the closing price for our common stock, as reported on The Nasdaq Global Select Market, was $1.28 per share.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

Preferred Stock

Undesignated Preferred Stock

Our board of directors has the authority, without further action by our stockholders, to issue up to 5,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges, and restrictions thereof. No shares of preferred stock are outstanding, and we have no present plans to issue any shares of preferred stock.

The purpose of authorizing our board of directors to issue preferred stock in one or more series and determine the number of shares in the series and its rights and preferences is to eliminate delays associated with a shareholder vote on specific issuances. Examples of rights and preferences that the board of directors may fix are:

- dividend rights;
- dividend rates;
- conversion rights;
- voting rights;
- terms of redemption; and
- liquidation preferences.

The existence of authorized but unissued shares of preferred stock may enable our board of directors to render more difficult or to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise. For example, if in the due exercise of its fiduciary obligations, our board of directors were to determine that a takeover proposal is not in the best interests of us or our stockholders, our board of directors could cause shares of preferred stock to be issued without stockholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer, stockholder or stockholder group. The rights of holders of our common stock described above will be subject to, and may be adversely affected by, the rights of any preferred stock that we may designate and issue in the future. The issuance of shares of preferred stock could decrease the amount of earnings and assets available for distribution to holders of shares of common stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring or preventing a change in control of us.

Additional Series of Preferred Stock

We will incorporate by reference as an exhibit to the registration statement, which includes this prospectus, the form of any certificate of designation that describes the terms of the series of preferred stock we are offering. This description and the applicable prospectus supplement will include:

- the title and stated value;
- the number of shares authorized;
- the liquidation preference per share;
- the purchase price;
- the dividend rate, period and payment date, and method of calculation for dividends;
- whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;
- the procedures for any auction and remarketing, if any;
- the provisions for a sinking fund, if any;
- the provisions for redemption or repurchase, if applicable, and any restrictions on our ability to exercise those redemption and repurchase rights;
- any listing of the preferred stock on any securities exchange or market;
- whether the preferred stock will be convertible into our common stock, and, if applicable, the conversion price, or how it will be calculated, and the conversion period;

- whether the preferred stock will be exchangeable into debt securities, and, if applicable, the exchange price, or how it will be calculated, and the exchange period;
- voting rights, if any, of the preferred stock;
- preemptive rights, if any;
- restrictions on transfer, sale or other assignment, if any;
- whether interests in the preferred stock will be represented by depositary shares;
- a discussion of any material United States federal income tax considerations applicable to the preferred stock;
- the relative ranking and preferences of the preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs;
- any limitations on issuance of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs; and
- any other specific terms, preferences, rights or limitations of, or restrictions on, the preferred stock.

When we issue shares of preferred stock under this prospectus, the shares will fully be paid and nonassessable and will not have, or be subject to, any preemptive or similar rights.

Registration Rights

Holders of our Registrable Securities, as defined in our second amended and restated investors' rights agreement, or the Investor Rights Agreement, are entitled to rights with respect to the registration of these shares under the Securities Act as hereinafter described. These rights are provided under the terms of the Investor Rights Agreement, and include demand registration rights, short-form registration rights and piggyback registration rights. All fees, costs and expenses of underwritten registrations will be borne by us and all selling expenses, including underwriting discounts and selling commissions, will be borne by the holders of the shares being registered.

Demand Registration Rights

Certain holders of our Registrable Securities, are entitled to demand registration rights. Under the terms of the Investor Rights Agreement, we are required, upon the written request of holders of at least 60% of the Registrable Securities, or a lesser percent if the anticipated net proceeds of the offering would exceed $15 million, to effect the registration of the Registrable Securities, subject to certain exceptions. We are required to effect only one registration pursuant to this provision of the Investor Rights Agreement.

Form S-3 Registration Rights

Certain holders of our Registrable Securities are also entitled to short form registration rights. If we are eligible to file a registration statement on Form S-3, upon the written request of holders of at least 40% of the Registrable Securities to register shares with an anticipated aggregate offering price of at least $2,000,000, we will be required to use our commercially reasonable efforts to effect a registration of such shares, subject to certain exceptions.

We are required to effect up to two registrations in any twelve month period pursuant to this provision of the Investor Rights Agreement.

Piggyback Registration Rights

Certain holders of our Registrable Securities are entitled to piggyback registration rights. If we propose to register any of our securities, either for our own account or for the account of other security holders, the holders of these shares are entitled to include their shares in the registration. Subject to certain exceptions, the managing underwriter may limit the number of shares included in the underwritten offering if it concludes that marketing factors require such a limitation.

Indemnification

The Investor Rights Agreement contains customary cross-indemnification provisions, under which we are obligated to indemnify holders of our Registrable Securities in the event of material misstatements or omissions in the registration statement attributable to us, and they are obligated to indemnify us for material misstatements or omissions attributable to them.

Expiration of Registration Rights

The registration rights granted under the Investor Rights Agreement will terminate on the earliest of (i) a deemed liquidation event, as defined in the Investor Rights Agreement, and (ii) the fifth anniversary of the closing of the IPO.

Anti-Takeover Effects of Our Certificate of Incorporation and Our Bylaws

Our certificate of incorporation and bylaws contain certain provisions that are intended to enhance the likelihood of continuity and stability in the composition of the board of directors and which may have the effect of delaying, deferring or preventing a future takeover or change in control of the company unless such takeover or change in control is approved by the board of directors.

These provisions include:

Classified Board

Our certificate of incorporation provides that our board of directors is divided into three classes of directors, with the classes as nearly equal in number as possible. As a result, approximately one-third of our board of directors will be elected each year. The classification of directors has the effect of making it more difficult for stockholders to change the composition of our board. Our certificate of incorporation provides that, subject to any rights of holders of preferred stock to elect additional directors under specified circumstances, the number of directors will be fixed exclusively pursuant to a resolution adopted by our board of directors. As of May 3, 2021, our board of directors had nine members.

Action by Written Consent; Special Meetings of Stockholders

Our certificate of incorporation provides that stockholder action can be taken only at an annual or special meeting of stockholders and cannot be taken by written consent in lieu of a meeting. Our certificate of incorporation and bylaws provide that, except as otherwise required by law, special meetings of the stockholders can be called only by or at the direction of the board of directors pursuant to a resolution adopted by a majority of the total number of directors. Stockholders are not permitted to call a special meeting or to require the board of directors to call a special meeting.

Removal of Directors

Our certificate of incorporation provides that our directors may be removed only for cause by the affirmative vote of at least 75% of the votes that all our stockholders would be entitled to cast in an annual election of

directors, voting together as a single class, at a meeting of the stockholders called for that purpose. This requirement of a supermajority vote to remove directors could enable a minority of our stockholders to prevent a change in the composition of our board.

Advance Notice Procedures

Our bylaws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to the board of directors. Stockholders at an annual meeting will only be able to consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of the board of directors or by a stockholder who was a stockholder of record on the record date for the meeting, who is entitled to vote at the meeting and who has given our secretary timely written notice, in proper form, of the stockholder's intention to bring that business before the meeting. Although the bylaws do not give the board of directors the power to approve or disapprove stockholder nominations of candidates or proposals regarding other business to be conducted at a special or annual meeting, the bylaws may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed or may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect its own slate of directors or otherwise attempting to obtain control of the company.

Super Majority Approval Requirements

The Delaware General Corporation Law generally provides that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or bylaws, unless either a corporation's certificate of incorporation or bylaws requires a greater percentage. A majority vote of our board of directors or the affirmative vote of holders of at least 75% of the total votes of the outstanding shares of our capital stock entitled to vote with respect thereto, voting together as a single class, will be required to amend, alter, change or repeal the bylaws. In addition, the affirmative vote of the holders of at least 75% of the total votes of the outstanding shares of our capital stock entitled to vote with respect thereto, voting together as a single class, will be required to amend, alter, change or repeal, or to adopt any provisions inconsistent with, any of the provisions in our certificate of incorporation relating to amendments to our certificate of incorporation and bylaws. This requirement of a supermajority vote to approve amendments to our bylaws and certificate of incorporation could enable a minority of our stockholders to exercise veto power over any such amendments.

Authorized but Unissued Shares

Our authorized but unissued shares of common stock and preferred stock are available for future issuance without stockholder approval. These additional shares may be utilized for a variety of corporate purposes, including future public offerings to raise additional capital and corporate acquisitions. The existence of authorized but unissued shares of common stock and preferred stock could render more difficult or discourage an attempt to obtain control of a majority of our common stock by means of a proxy contest, tender offer, merger or otherwise.

Exclusive Jurisdiction of Certain Actions

Our certificate of incorporation and bylaws provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for any state law claim for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, our certificate of incorporation or our bylaws, or (iv) any action asserting a claim against us governed by the internal affairs doctrine; provided, however, that this Delaware forum provision does not apply to any actions arising under the Securities Act or the Exchange Act. Although we believe this provision benefits us by providing increased consistency in the application of Delaware law in the types of lawsuits to which it applies, the

provision may impose additional litigation costs on stockholders in pursuing such claims, particularly if the stockholders do not reside in or near the State of Delaware. Additionally, the provision may limit our stockholders' ability to bring a claim in a judicial forum that they find favorable for disputes with us or our directors, officers or employees, which may discourage the filing of such lawsuits. The Court of Chancery of the State of Delaware may also reach different judgment or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments may be more or less favorable to us than our stockholders. The enforceability of similar exclusive forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could rule that this provision in our certificate of incorporation is inapplicable or unenforceable.

Section 203 of the Delaware General Corporation Law

We are subject to the provisions of Section 203 of the Delaware General Corporation Law, or Section 203. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. A "business combination" includes, among other things, a merger, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. An "interested stockholder" is a person who, together with affiliates and associates, owns, or did own within three years prior to the determination of interested stockholder status, 15% or more of the corporation's voting stock.

Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions: before the stockholder became interested, the board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder; upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, shares owned by persons who are directors and also officers, and employee stock plans, in some instances; or at or after the time the stockholder became interested, the business combination was approved by the board of directors of the corporation and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

A Delaware corporation may "opt out" of these provisions with an express provision in its original certificate of incorporation or an express provision in its certificate of incorporation or bylaws resulting from a stockholders' amendment approved by at least a majority of the outstanding voting shares. We have not opted out of these provisions. As a result, mergers or other takeover or change in control attempts of us may be discouraged or prevented.

DESCRIPTION OF DEBT SECURITIES

We may offer debt securities which may be senior or subordinated. We refer to senior debt securities and subordinated debt securities collectively as debt securities. Each series of debt securities may have different terms. The following description summarizes the general terms and provisions of the debt securities. We will describe the specific terms of the debt securities and the extent, if any, to which the general provisions summarized below apply to any series of debt securities in the prospectus supplement relating to the series and any applicable free writing prospectus that we authorize to be delivered.

We may issue senior debt securities from time to time, in one or more series under a senior indenture to be entered into between us and a senior trustee to be named in a prospectus supplement, which we refer to as the senior trustee. We may issue subordinated debt securities from time to time, in one or more series, under a subordinated indenture to be entered into between us and a subordinated trustee to be named in a prospectus supplement, which we refer to as the subordinated trustee. The forms of senior indenture and subordinated indenture are filed as exhibits to the registration statement of which this prospectus forms a part. Together, the senior indenture and the subordinated indenture are referred to as the indentures and, together, the senior trustee and the subordinated trustee are referred to as the trustees. This prospectus briefly outlines some of the provisions of the indentures. The following summary of the material provisions of the indentures is qualified in its entirety by the provisions of the indentures, including definitions of certain terms used in the indentures. Wherever we refer to particular sections or defined terms of the indentures, those sections or defined terms are incorporated by reference in this prospectus or the applicable prospectus supplement. You should review the indentures that are filed as exhibits to the registration statement of which this prospectus forms a part for additional information. As used in this prospectus, the term “debt securities” includes the debt securities being offered by this prospectus and all other debt securities issued by us under the indentures.

General

The indentures:

- do not limit the amount of debt securities that we may issue;
- allow us to issue debt securities in one or more series;
- do not require us to issue all of the debt securities of a series at the same time; and
- allow us to reopen a series to issue additional debt securities without the consent of the holders of the debt securities of such series.

Unless otherwise provided in the applicable prospectus supplement, the senior debt securities will be unsubordinated obligations and will rank equally with all of our other unsecured and unsubordinated indebtedness. Payments on the subordinated debt securities will be subordinated to the prior payment in full of all of our senior indebtedness, as described under “- Subordination” and in the applicable prospectus supplement.

Each indenture provides that we may, but need not, designate more than one trustee under an indenture. Any trustee under an indenture may resign or be removed and a successor trustee may be appointed to act with respect to the series of debt securities administered by the resigning or removed trustee. If two or more persons are acting as trustee with respect to different series of debt securities, each trustee shall be a trustee of a trust under the applicable indenture separate and apart from the trust administered by any other trustee. Except as otherwise indicated in this prospectus, any action described in this prospectus to be taken by each trustee may be taken by each trustee with respect to, and only with respect to, the one or more series of debt securities for which it is trustee under the applicable indenture.

The prospectus supplement for each offering will provide the following terms, where applicable:

- the title of the debt securities and whether they are senior or subordinated;

- any limit upon the aggregate principal amount of the debt securities of that series;
- the date or dates on which the principal of the debt securities of the series is payable;
- the price at which the debt securities will be issued, expressed as a percentage of the principal and, if other than the principal amount thereof, the portion of the principal amount thereof payable upon declaration of acceleration of the maturity thereof or, if applicable, the portion of the principal amount of such debt securities that is convertible into another security of ours or the method by which any such portion shall be determined;
- the rate or rates at which the debt securities of the series shall bear interest or the manner of calculation of such rate or rates, if any;
- the date or dates from which interest will accrue, the interest payment dates on which such interest will be payable or the manner of determination of such interest payment dates, the place(s) of payment, and the record date for the determination of holders to whom interest is payable on any such interest payment dates or the manner of determination of such record dates;
- the right, if any, to extend the interest payment periods and the duration of such extension;
- the period or periods within which, the price or prices at which and the terms and conditions upon which debt securities of the series may be redeemed, converted or exchanged, in whole or in part;
- our obligation, if any, to redeem or purchase debt securities of the series pursuant to any sinking fund, mandatory redemption, or analogous provisions (including payments made in cash in satisfaction of future sinking fund obligations) or at the option of a holder thereof and the period or periods within which, the price or prices at which, and the terms and conditions upon which, debt securities of the series shall be redeemed or purchased, in whole or in part, pursuant to such obligation;
- the form of the debt securities of the series including the form of the Certificate of Authentication for such series;
- if other than minimum denominations of one thousand U.S. dollars ($1,000) or any integral multiple of $1,000 thereof, the denominations in which the debt securities of the series shall be issuable;
- whether the debt securities of the series shall be issued in whole or in part in the form of a global debt security or global debt securities; the terms and conditions, if any, upon which such global debt security or global debt securities may be exchanged in whole or in part for other individual debt securities; and the depositary for such global debt security or global debt securities;
- whether the debt securities will be convertible into or exchangeable for common stock or other securities of ours or any other Person and, if so, the terms and conditions upon which such debt securities will be so convertible or exchangeable, including the conversion or exchange price, as applicable, or how it will be calculated and may be adjusted, any mandatory or optional (at our option or the holders' option) conversion or exchange features, and the applicable conversion or exchange period;
- any additional or alternative events of default to those set forth in the indenture;
- any additional or alternative covenants to those set forth in the indenture;
- the currency or currencies including composite currencies, in which payment of the principal of (and premium, if any) and interest, if any, on such debt securities shall be payable (if other than the currency of the United States of America), which unless otherwise specified shall be the currency of the United States of America as at the time of payment is legal tender for payment of public or private debts;
- if the principal of (and premium, if any), or interest,, if any, on such debt securities is to be payable, at our election or at the election of any holder thereof, in a coin or currency other than that in which such debt securities are stated to be payable, then the period or periods within which, and the terms and conditions upon which, such election may be made;

- whether interest will be payable in cash or additional debt securities at our or the holders' option and the terms and conditions upon which the election may be made;
- the terms and conditions, if any, upon which we will pay amounts in addition to the stated interest, premium, if any and principal amounts of the debt securities of the series to any holder that is not a "United States person" for federal tax purposes;
- additional or alternative provisions, if any, related to defeasance and discharge of the offered debt securities than those set forth in the indenture;
- the applicability of any guarantees;
- any restrictions on transfer, sale or assignment of the debt securities of the series; and
- any other terms of the debt securities (which may supplement, modify or delete any provision of the indenture insofar as it applies to such series).

We may issue debt securities that provide for less than the entire principal amount thereof to be payable upon declaration of acceleration of the maturity of the debt securities. We refer to any such debt securities throughout this prospectus as "original issue discount securities."

We will provide you with more information in the applicable prospectus supplement regarding any deletions, modifications, or additions to the events of default or covenants that are described below, including any addition of a covenant or other provision providing event risk or similar protection.

Payment

Unless otherwise provided in the applicable prospectus supplement, the principal of, and any premium or make-whole amount, and interest on, any series of the debt securities will be payable by mailing a check to the address of the person entitled to it as it appears in the applicable register for the debt securities or by wire transfer of funds to that person at an account maintained within the United States.

All monies that we pay to a paying agent or a trustee for the payment of the principal of, and any premium, or interest on, any debt security will be repaid to us if unclaimed at the end of two years after the obligation underlying payment becomes due and payable. After funds have been returned to us, the holder of the debt security may look only to us for payment, without payment of interest for the period which we hold the funds.

Merger, Consolidation or Sale of Assets

The indentures provide that we may, without the consent of the holders of any outstanding debt securities, (i) consolidate with, (ii) sell, lease or convey all or substantially all of our assets to, or (iii) merge with or into, any other entity provided that:

- either we are the continuing entity, or the successor entity, if other than us, assumes the obligations (a) to pay the principal of, and any premium, and interest on, all of the debt securities and (b) to duly perform and observe all of the covenants and conditions contained in the applicable indenture; and in the event the debt securities are convertible into or exchangeable for common stock or other securities of ours, such successor entity will, by such supplemental indenture, make provision so that the holders of debt securities of that series shall thereafter be entitled to receive upon conversion or exchange of such debt securities the number of securities or property to which a holder of the number of common stock or other securities of ours deliverable upon conversion or exchange of those debt securities would have been entitled had such conversion or exchange occurred immediately prior to such consolidation, merger, sale, conveyance, transfer or other disposition; and
- an officers' certificate and legal opinion covering such conditions are delivered to each applicable trustee.

Events of Default, Notice and Waiver

Unless the applicable prospectus supplement states otherwise, when we refer to "events of default" as defined in the indentures with respect to any series of debt securities, we mean:

- default in the payment of any installment of interest on any debt security of such series continuing for 90 days unless such date has been extended or deferred;
- default in the payment of principal of, or any premium on, any debt security of such series when due and payable unless such date has been extended or deferred;
- default in the performance or breach of any covenant or warranty in the debt securities or in the indenture by us continuing for 90 days after written notice described below;
- bankruptcy, insolvency or reorganization, or court appointment of a receiver, liquidator or trustee of us; and
- any other event of default provided with respect to a particular series of debt securities.

If an event of default (other than an event of default described in the fourth bullet point above) occurs and is continuing with respect to debt securities of any series outstanding, then the applicable trustee or the holders of 25% or more in principal amount of the debt securities of that series will have the right to declare the principal amount of, and accrued interest on, all the debt securities of that series to be due and payable. If an event of default described in the fourth bullet point above occurs, the principal amount of, and accrued interest on, all the debt securities of that series will automatically become and will be immediately due and payable without any declaration or other act on the part of the trustee or the holders of the debt securities. However, at any time after such a declaration of acceleration has been made, but before a judgment or decree for payment of the money due has been obtained by the applicable trustee, the holders of at least a majority in principal amount of outstanding debt securities of such series or of all debt securities then outstanding under the applicable indenture may rescind and annul such declaration and its consequences if:

- we have deposited with the applicable trustee all required payments of the principal, any premium, interest and, to the extent permitted by law, interest on overdue installment of interest, plus applicable fees, expenses, disbursements and advances of the applicable trustee; and
- all events of default, other than the non-payment of accelerated principal, or a specified portion thereof, and any premium, have been cured or waived.

The indentures provide that holders of debt securities of any series may not institute any proceedings, judicial or otherwise, with respect to such indenture or for any remedy under the indenture, unless the trustee fails to act for a period of 90 days after the trustee has received a written request to institute proceedings in respect of an event of default from the holders of 25% or more in principal amount of the outstanding debt securities of such series, as well as an offer of indemnity reasonably satisfactory to the trustee. However, this provision will not prevent any holder of debt securities from instituting suit for the enforcement of payment of the principal of, and any premium, and interest on, such debt securities at the respective due dates thereof.

The indentures provide that, subject to provisions in each indenture relating to its duties in the case of a default, a trustee has no obligation to exercise any of its rights or powers at the request or direction of any holders of any series of debt securities then outstanding under the indenture, unless the holders have offered to the trustee reasonable security or indemnity. The holders of at least a majority in principal amount of the outstanding debt securities of any series or of all debt securities then outstanding under an indenture shall have the right to direct the time, method and place of conducting any proceeding for any remedy available to the applicable trustee, or of exercising any trust or power conferred upon such trustee. However, a trustee may refuse to follow any direction which:

- is in conflict with any law or the applicable indenture;

- may involve the trustee in personal liability; or
- may be unduly prejudicial to the holders of debt securities of the series not joining the proceeding.

Within 120 days after the close of each fiscal year, we will be required to deliver to each trustee a certificate, signed by one of our several specified officers, stating whether or not that officer has knowledge of any default under the applicable indenture. If the officer has knowledge of any default, the notice must specify the nature and status of the default.

Modification of the Indentures

Subject to certain exceptions, the indentures may be amended with the consent of the holders of a majority in aggregate principal amount of the outstanding debt securities of all series affected by such amendment (including consents obtained in connection with a tender offer or exchange for the debt securities of such series).

We and the applicable trustee may make modifications and amendments of an indenture without the consent of any holder of debt securities for any of the following purposes:

- to cure any ambiguity, defect, or inconsistency in the applicable indenture or in the Securities of any series;
- to comply with the covenant described above under "- Merger, Consolidation or Sale of Assets";
- to provide for uncertificated debt securities in addition to or in place of certificated debt securities;
- to add events of default for the benefit of the holders of all or any series of debt securities;
- to add the covenants, restrictions, conditions or provisions relating to us for the benefit of the holders of all or any series of debt securities (and if such covenants, restrictions, conditions or provisions are to be for the benefit of less than all series of debt securities, stating that such covenants, restrictions, conditions or provisions are expressly being included solely for the benefit of such series), to make the occurrence, or the occurrence and the continuance, of a default in any such additional covenants, restrictions, conditions or provisions an event of default, or to surrender any right or power in the applicable indenture conferred upon us;
- to add to, delete from, or revise the conditions, limitations, and restrictions on the authorized amount, terms, or purposes of issue, authentication, and delivery of debt securities, as set forth in the applicable indenture;
- to make any change that does not adversely affect the rights of any holder of notes under the applicable indenture in any material respect;
- to provide for the issuance of and establish the form and terms and conditions of the debt securities of any series as provided in the applicable indenture, to establish the form of any certifications required to be furnished pursuant to the terms of the applicable indenture or any series of debt securities under the applicable indenture, or to add to the rights of the holders of any series of debt securities;
- to evidence and provide for the acceptance of appointment under the applicable indenture by a successor trustee or to appoint a separate trustee with respect to any series;
- to comply with any requirements of the SEC or any successor in connection with the qualification of the indenture under the Trust Indenture Act of 1939, as amended, or the Trust Indenture Act; or
- to conform the applicable indenture to this "- Description of Debt Securities" or any other similarly titled section in any prospectus supplement or other offering document relating to a series of debt securities.

Subordination

Payment by us of the principal of, premium, if any, and interest on any series of subordinated debt securities issued under the subordinated indenture will be subordinated to the extent set forth in an indenture supplemental to the subordinated indenture relating to such series.

Discharge, Defeasance and Covenant Defeasance

Unless otherwise provided in the applicable prospectus supplement, the indentures allow us to discharge our obligations to holders of any series of debt securities issued under any indenture when:

- either (i) all securities of such series have already been delivered to the applicable trustee for cancellation; or (ii) all securities of such series have not already been delivered to the applicable trustee for cancellation but (a) have become due and payable, (b) will become due and payable within one year, or (c) if redeemable at our option, are to be redeemed within one year, and we have irrevocably deposited with the applicable trustee, in trust, funds in such currency or currencies, or governmental obligations in an amount sufficient to pay the entire indebtedness on such debt securities in respect of principal and any premium, and interest to the date of such deposit if such debt securities have become due and payable or, if they have not, to the stated maturity or redemption date;
- we have paid or caused to be paid all other sums payable.

Unless otherwise provided in the applicable prospectus supplement, the indentures provide that, upon our irrevocable deposit with the applicable trustee, in trust, of an amount, in such currency or currencies in which such debt securities are payable at stated maturity, or government obligations, or both, applicable to such debt securities, which through the scheduled payment of principal and interest in accordance with their terms will provide money in an amount sufficient to pay the principal of, and any premium or make-whole amount, and interest on, such debt securities, and any mandatory sinking fund or analogous payments thereon, on the scheduled due dates therefor, the issuing company shall be released from its obligations with respect to such debt securities under the applicable indenture or, if provided in the applicable prospectus supplement, its obligations with respect to any other covenant, and any omission to comply with such obligations shall not constitute an event of default with respect to such debt securities.

The applicable prospectus supplement may further describe the provisions, if any, permitting such defeasance or covenant defeasance, including any modifications to the provisions described above, with respect to the debt securities of or within a particular series.

Conversion Rights

The terms and conditions, if any, upon which the debt securities are convertible into common stock or other securities of ours will be set forth in the applicable prospectus supplement. The terms will include whether the debt securities are convertible into shares of common stock or other securities of ours, the conversion price, or manner of calculation thereof, the conversion period, provisions as to whether conversion will be at the issuing company's option or the option of the holders, the events requiring an adjustment of the conversion price and provisions affecting conversion in the event of the redemption of the debt securities and any restrictions on conversion.

Governing Law

The indentures and the debt securities will be governed by and construed in accordance with the laws of the State of New York, except to the extent that the Trust Indenture Act is applicable.

DESCRIPTION OF WARRANTS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the warrants that we may offer under this prospectus and the related warrant agreements and warrant certificates. While the terms summarized below will apply generally to any warrants that we may offer, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. If we indicate in the prospectus supplement, the terms of any warrants offered under that prospectus supplement may differ from the terms described below. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement, which includes this prospectus.

General

We may issue warrants for the purchase of common stock, preferred stock and/or debt securities in one or more series. We may issue warrants independently or together with common stock, preferred stock and/or debt securities, and the warrants may be attached to or separate from these securities.

We will evidence each series of warrants by warrant certificates that we will issue under a separate warrant agreement. We will enter into the warrant agreement with a warrant agent. We will indicate the name and address of the warrant agent in the applicable prospectus supplement relating to a particular series of warrants.

We will describe in the applicable prospectus supplement the terms of the series of warrants, including:

- the offering price and aggregate number of warrants offered;
- the currency for which the warrants may be purchased;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;
- if applicable, the date on and after which the warrants and the related securities will be separately transferable;
- in the case of warrants to purchase debt securities, the principal amount of debt securities purchasable upon exercise of one warrant and the price at, and currency in which, this principal amount of debt securities may be purchased upon such exercise;
- in the case of warrants to purchase common stock or preferred stock, the number of shares of common stock or preferred stock, as the case may be, purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;
- the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreement and the warrants;
- the terms of any rights to redeem or call the warrants;
- any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;
- the periods during which, and places at which, the warrants are exercisable;
- the manner of exercise;
- the dates on which the right to exercise the warrants will commence and expire;
- the manner in which the warrant agreement and warrants may be modified;
- federal income tax consequences of holding or exercising the warrants;

- the amount of warrants outstanding;
- the terms of the securities issuable upon exercise of the warrants; and
- any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

DESCRIPTION OF UNITS

We may issue units comprised of shares of common stock, shares of preferred stock, debt securities and warrants in any combination. We may issue units in such amounts and in as many distinct series as we wish. This section outlines certain provisions of the units that we may issue. If we issue units, they will be issued under one or more unit agreements to be entered into between us and a bank or other financial institution, as unit agent. The information described in this section may not be complete in all respects and is qualified entirely by reference to the unit agreement with respect to the units of any particular series. The specific terms of any series of units offered will be described in the applicable prospectus supplement. If so described in a particular supplement, the specific terms of any series of units may differ from the general description of terms presented below. We urge you to read any prospectus supplement related to any series of units we may offer, as well as the complete unit agreement and unit certificate that contain the terms of the units. If we issue units, forms of unit agreements and unit certificates relating to such units will be incorporated by reference as exhibits to the registration statement, which includes this prospectus.

Each unit that we may issue will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date. The applicable prospectus supplement may describe:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions of the governing unit agreement;
- the price or prices at which such units will be issued;
- the applicable United States federal income tax considerations relating to the units;
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units; and
- any other terms of the units and of the securities comprising the units.

The provisions described in this section, as well as those described under “Description of Capital Stock,” “Description of Debt Securities” and “Description of Warrants” will apply to the securities included in each unit, to the extent relevant and as may be updated in any prospectus supplements.

Issuance in Series

We may issue units in such amounts and in as many distinct series as we wish. This section summarizes terms of the units that apply generally to all series. Most of the financial and other specific terms of a particular series of units will be described in the applicable prospectus supplement.

Unit Agreements

We will issue the units under one or more unit agreements to be entered into between us and a bank or other financial institution, as unit agent. We may add, replace or terminate unit agents from time to time. We will identify the unit agreement under which each series of units will be issued and the unit agent under that agreement in the applicable prospectus supplement.

The following provisions will generally apply to all unit agreements unless otherwise stated in the applicable prospectus supplement:

Modification without Consent

We and the applicable unit agent may amend any unit or unit agreement without the consent of any holder:

- to cure any ambiguity, including modifying any provisions of the governing unit agreement that differ from those described below;
- to correct or supplement any defective or inconsistent provision; or
- to make any other change that we believe is necessary or desirable and will not adversely affect the interests of the affected holders in any material respect.

We do not need any approval to make changes that affect only units to be issued after the changes take effect. We may also make changes that do not adversely affect a particular unit in any material respect, even if they adversely affect other units in a material respect. In those cases, we do not need to obtain the approval of the holder of the unaffected unit; we need only obtain any required approvals from the holders of the affected units.

Modification with Consent

We may not amend any particular unit or a unit agreement with respect to any particular unit unless we obtain the consent of the holder of that unit, if the amendment would:

- impair any right of the holder to exercise or enforce any right under a security included in the unit if the terms of that security require the consent of the holder to any changes that would impair the exercise or enforcement of that right; or
- reduce the percentage of outstanding units or any series or class the consent of whose holders is required to amend that series or class, or the applicable unit agreement with respect to that series or class, as described below.

Any other change to a particular unit agreement and the units issued under that agreement would require the following approval:

- If the change affects only the units of a particular series issued under that agreement, the change must be approved by the holders of a majority of the outstanding units of that series; or
- If the change affects the units of more than one series issued under that agreement, it must be approved by the holders of a majority of all outstanding units of all series affected by the change, with the units of all the affected series voting together as one class for this purpose.

These provisions regarding changes with majority approval also apply to changes affecting any securities issued under a unit agreement, as the governing document.

In each case, the required approval must be given by written consent.

Unit Agreements Will Not Be Qualified under Trust Indenture Act

No unit agreement will be qualified as an indenture, and no unit agent will be required to qualify as a trustee, under the Trust Indenture Act. Therefore, holders of units issued under unit agreements will not have the protections of the Trust Indenture Act with respect to their units.

Mergers and Similar Transactions Permitted; No Restrictive Covenants or Events of Default

The unit agreements will not restrict our ability to merge or consolidate with, or sell our assets to, another corporation or other entity or to engage in any other transactions. If at any time we merge or consolidate with, or sell our assets substantially as an entirety to, another corporation or other entity, the successor entity will succeed to and assume our obligations under the unit agreements. We will then be relieved of any further obligation under these agreements.

The unit agreements will not include any restrictions on our ability to put liens on our assets, nor will they restrict our ability to sell our assets. The unit agreements also will not provide for any events of default or remedies upon the occurrence of any events of default.

Governing Law

The unit agreements and the units will be governed by Delaware law.

Form, Exchange and Transfer

Unless the accompanying prospectus supplement states otherwise, we will issue each unit in global — i.e., book-entry — form only. Units in book-entry form will be represented by a global security registered in the name of a depositary, which will be the holder of all the units represented by the global security. Those who own beneficial interests in a unit will do so through participants in the depositary's system, and the rights of these indirect owners will be governed solely by the applicable procedures of the depositary and its participants. We will describe book-entry securities, and other terms regarding the issuance and registration of the units in the applicable prospectus supplement.

Unless the accompanying prospectus supplement states otherwise, each unit and all securities comprising the unit will be issued in the same form.

If we issue any units in registered, non-global form, the following will apply to them.

The units will be issued in the denominations stated in the applicable prospectus supplement. Holders may exchange their units for units of smaller denominations or combined into fewer units of larger denominations, as long as the total amount is not changed.

- Holders may exchange or transfer their units at the office of the unit agent. Holders may also replace lost, stolen, destroyed or mutilated units at that office. We may appoint another entity to perform these functions or perform them ourselves.
- Holders will not be required to pay a service charge to transfer or exchange their units, but they may be required to pay for any tax or other governmental charge associated with the transfer or exchange. The transfer or exchange, and any replacement, will be made only if our transfer agent is satisfied with the holder's proof of legal ownership. The transfer agent may also require an indemnity before replacing any units.
- If we have the right to redeem, accelerate or settle any units before their maturity, and we exercise our right as to less than all those units or other securities, we may block the exchange or transfer of those units during the period beginning 15 days before the day we mail the notice of exercise and ending on the day of that mailing, in order to freeze the list of holders to prepare the mailing. We may also refuse to register transfers of or exchange any unit selected for early settlement, except that we will continue to permit transfers and exchanges of the unsettled portion of any unit being partially settled. We may also block the transfer or exchange of any unit in this manner if the unit includes securities that are or may be selected for early settlement.

Only the depositary will be entitled to transfer or exchange a unit in global form, since it will be the sole holder of the unit.

Payments and Notices

In making payments and giving notices with respect to our units, we will follow the procedures as described in the applicable prospectus supplement.

PLAN OF DISTRIBUTION

We may sell the securities offered through this prospectus and any accompanying prospectus supplement, if required, in any of the following ways:

- through underwriters;
- through dealers;
- through agents;
- directly to purchasers; or
- through a combination of any of these methods or any other method permitted by law.

In addition, we may issue the securities as a dividend or distribution or in a subscription rights offering to our existing security holders.

We may directly solicit offers to purchase securities, or agents may be designated to solicit such offers. In the prospectus supplement relating to such offering, we will name any agent that could be viewed as an underwriter under the Securities Act and describe any commissions that we must pay to any such agent. Any such agent will be acting on a best efforts basis for the period of its appointment or, if indicated in the applicable prospectus supplement, on a firm commitment basis. This prospectus may be used in connection with any offering of our securities through any of these methods or other methods described in the applicable prospectus supplement.

The distribution of the securities may be effected from time to time in one or more transactions:

- at a fixed price, or prices, which may be changed from time to time;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

Each prospectus supplement will describe the method of distribution of the securities and any applicable restrictions.

The prospectus supplement with respect to the securities of a particular series will describe the terms of the offering of the securities, including the following:

- the name of the agent or any underwriters;
- the public offering or purchase price;
- any discounts and commissions to be allowed or paid to the agent or underwriters;
- all other items constituting underwriting compensation;
- any discounts and commissions to be allowed or paid to dealers; and
- any exchanges on which the securities will be listed.

If any underwriters or agents are used in the sale of the securities in respect of which this prospectus is delivered, we will enter into an underwriting agreement, sales agreement or other agreement with them at the time of sale to them, and we will set forth in the prospectus supplement relating to such offering the names of the underwriters or agents and the terms of the related agreement with them.

In connection with the offering of securities, we may grant to the underwriters an option to purchase additional securities with an additional underwriting commission, as may be set forth in the accompanying prospectus supplement. If we grant any such option, the terms of such option will be set forth in the prospectus supplement for such securities.

If a dealer is used in the sale of the securities in respect of which the prospectus is delivered, we will sell such securities to the dealer, as principal. The dealer, who may be deemed to be an "underwriter" as that term is defined in the Securities Act, may then resell such securities to the public at varying prices to be determined by such dealer at the time of resale.

If we offer securities in a subscription rights offering to our existing security holders, we may enter into a standby underwriting agreement with dealers, acting as standby underwriters. We may pay the standby underwriters a commitment fee for the securities they commit to purchase on a standby basis. If we do not enter into a standby underwriting arrangement, we may retain a dealer-manager to manage a subscription rights offering for us.

Agents, underwriters, dealers and other persons may be entitled under agreements which they may enter into with us to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, and may be customers of, engage in transactions with or perform services for us in the ordinary course of business.

If so indicated in the applicable prospectus supplement, we will authorize underwriters or other persons acting as our agents to solicit offers by certain institutions to purchase securities from us pursuant to delayed delivery contracts providing for payment and delivery on the date stated in the prospectus supplement. Each contract will be for an amount not less than, and the aggregate amount of securities sold pursuant to such contracts shall not be less nor more than, the respective amounts stated in the prospectus supplement. Institutions with whom the contracts, when authorized, may be made include commercial and savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions and other institutions, but shall in all cases be subject to our approval. Delayed delivery contracts will not be subject to any conditions except that:

- the purchase by an institution of the securities covered under that contract shall not at the time of delivery be prohibited under the laws of the jurisdiction to which that institution is subject; and
- if the securities are also being sold to underwriters acting as principals for their own account, the underwriters shall have purchased such securities not sold for delayed delivery. The underwriters and other persons acting as our agents will not have any responsibility in respect of the validity or performance of delayed delivery contracts.

Offered securities may also be offered and sold, if so indicated in the prospectus supplement, in connection with a remarketing upon their purchase, in accordance with a redemption or repayment pursuant to their terms, or otherwise, by one or more remarketing firms, acting as principals for their own accounts or as agents for us. Any remarketing firm will be identified and the terms of its agreement, if any, with us and its compensation will be described in the applicable prospectus supplement. Remarketing firms may be deemed to be underwriters in connection with their remarketing of offered securities.

Certain agents, underwriters and dealers, and their associates and affiliates, may be customers of, have borrowing relationships with, engage in other transactions with, or perform services, including investment banking services, for us or one or more of our respective affiliates in the ordinary course of business.

In order to facilitate the offering of the securities, any underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the securities or any other securities the prices of which may be used to determine payments on such securities. Specifically, any underwriters may overallot in connection with the offering, creating a short position for their own accounts. In addition, to cover overallotments or to stabilize the price of the securities or of any such other securities, the underwriters may bid for, and purchase, the securities or

any such other securities in the open market. Finally, in any offering of the securities through a syndicate of underwriters, the underwriting syndicate may reclaim selling concessions allowed to an underwriter or a dealer for distributing the securities in the offering if the syndicate repurchases previously distributed securities in transactions to cover syndicate short positions, in stabilization transactions or otherwise. Any of these activities may stabilize or maintain the market price of the securities above independent market levels. Any such underwriters are not required to engage in these activities and may end any of these activities at any time.

We may engage in at the market offerings into an existing trading market in accordance with Rule 415(a)(4) under the Securities Act. In addition, we may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement so indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including in short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of stock, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of stock. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be named in the applicable prospectus supplement (or a post-effective amendment). In addition, we may otherwise loan or pledge securities to a financial institution or other third party that in turn may sell the securities short using this prospectus and an applicable prospectus supplement. Such financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. The applicable prospectus supplement may provide that the original issue date for your securities may be more than two scheduled business days after the trade date for your securities. Accordingly, in such a case, if you wish to trade securities on any date prior to the second business day before the original issue date for your securities, you will be required, by virtue of the fact that your securities initially are expected to settle in more than two scheduled business days after the trade date for your securities, to make alternative settlement arrangements to prevent a failed settlement.

The securities may be new issues of securities and may have no established trading market. The securities may or may not be listed on a national securities exchange. We can make no assurance as to the liquidity of or the existence of trading markets for any of the securities.

The specific terms of any lock-up provisions in respect of any given offering will be described in the applicable prospectus supplement.

The underwriters, dealers and agents may engage in transactions with us, or perform services for us, in the ordinary course of business for which they receive compensation.

The anticipated date of delivery of offered securities will be set forth in the applicable prospectus supplement relating to each offer.

LEGAL MATTERS

Certain legal matters in connection with this offering will be passed upon for us by Goodwin Procter LLP, Boston, Massachusetts. Any underwriters will also be advised about the validity of the securities and other legal matters by their own counsel, which will be named in the applicable prospectus supplement.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2020, as set forth in their report (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements), which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the information requirements of the Exchange Act and, in accordance therewith, file annual, quarterly and special reports, proxy statements and other information with the SEC. These documents also may be accessed through the SEC's electronic data gathering, analysis and retrieval system, or EDGAR, via electronic means, including the SEC's home page on the Internet (www.sec.gov). You may also inspect the registration statement and this prospectus on this website.

We have the authority to designate and issue more than one class or series of stock having various preferences, conversion and other rights, voting powers, restrictions, limitations as to dividends, qualifications, and terms and conditions of redemption. We will furnish a full statement of the relative rights and preferences of each class or series of our stock which has been so designated and any restrictions on the ownership or transfer of our stock to any shareholder upon request and without charge. Written requests for such copies should be directed Investor Relations Department, Allena Pharmaceuticals, Inc., One Newton Executive Park, Suite 202, Newton, MA 02462. Our website is located at www.allenapharma.com. Information contained on our website is not incorporated by reference into this prospectus, and, except for the documents incorporated by reference as noted below, you should not consider any information on, or that can be accessed from, our website as part of this prospectus or any accompanying prospectus supplement.

INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference the information and reports we file with it, which means that we can disclose important information to you by referring you to these documents. The information incorporated by reference is an important part of this prospectus, and information that we file after the date hereof with the SEC will automatically update and supersede the information already incorporated by reference. We are incorporating by reference the documents listed below, which we have already filed with the SEC, and any future filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, except as to any portion of any future report or document that is not deemed filed under such provisions, after the date of this prospectus and prior to the termination of this offering:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2020, filed with the SEC on March 11, 2021;

- our Definitive Proxy Statement on Schedule 14A (other than information furnished rather than filed), filed with the SEC on April 22, 2021;
- our Current Reports on Form 8-K filed with the SEC on January 28, 2021, February 2, 2021, March 5, 2021, March 30, 2021, April 2, 2021 and April 7, 2021; and
- the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on October 30, 2017, including any amendments or reports filed for the purposes of updating this description.

Pursuant to Rule 412 under the Securities Act, any statement contained in a document incorporated or deemed to be incorporated by reference into this prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus modifies or supersedes the statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

Upon request, we will provide, without charge, to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, a copy of the documents incorporated by reference into this prospectus but not delivered with the prospectus. You may request a copy of these filings, and any exhibits we have specifically incorporated by reference as an exhibit in this prospectus, at no cost by writing us at the following address: Investor Relations Department, Allena Pharmaceuticals, Inc., One Newton Executive Park, Suite 202, Newton, MA 02462. These filings may also be obtained through our website located at www.allenapharma.com. The reference to our website is intended to be an inactive textual reference and, except for the documents incorporated by reference as noted above, the information on, or accessible through, our website is not intended to be part of this prospectus.

You should rely only on the information incorporated by reference or provided in this prospectus and the applicable accompanying prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus or in the documents incorporated by reference is accurate as of any date other than the date on the front of this prospectus or those documents.

We advise that there have been no material changes in our affairs that have occurred since the end of the latest fiscal period for which audited financial statements were included in the latest Form 10-K and that have not been described in a Form 10-Q or Form 8-K filed under the Exchange Act.

1,436.0688 Shares of Series D Convertible Preferred Stock
1,436.0688 Shares of Series E Convertible Preferred Stock
(and 17,950,860 Shares of Common Stock issuable upon the conversion of such Preferred stock)

Allena Pharmaceuticals, Inc.

PROSPECTUS SUPPLEMENT

H.C. Wainwright & Co.

May 3, 2022