

MOMENTA PHARMACEUTICALS INC
Form 424B5
December 06, 2018

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Filed Pursuant to Rule 424(b)(5)
Registration No. 333-209813

The information in this preliminary prospectus supplement and the accompanying prospectus, relating to an effective registration statement under the Securities Act of 1933, as amended, is not complete and may be changed. This preliminary prospectus supplement and the accompanying prospectus are not an offer to sell nor do they seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to Completion. Dated December 6, 2018.

PRELIMINARY PROSPECTUS SUPPLEMENT
(To the Prospectus dated February 29, 2016)

\$150,000,000

Momenta Pharmaceuticals, Inc.

Common Stock

We are offering \$150,000,000 of shares of our common stock to be sold in this offering.

Our common stock is listed on The Nasdaq Global Select Market under the symbol "MNTA." The last reported sale price of our common stock on December 4, 2018 was \$11.17 per share.

See "Risk Factors" on page S-5 of this prospectus supplement and on page 3 of the accompanying prospectus to read about factors you should consider before buying shares of our common stock.

Neither the Securities and Exchange Commission nor any other regulatory body has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

| | Per Share | Total |
|--------------------------------------|-----------|-------|
| Initial price to public | \$ | \$ |
| Underwriting discount ⁽¹⁾ | \$ | \$ |
| Proceeds, before expenses, to us | \$ | \$ |

(1) See "Underwriting" beginning on page S-12 for additional information regarding underwriting compensation.

The underwriter has the option to purchase up to an additional \$22,500,000 of shares from us at the initial price to public less the underwriting discount.

The underwriter expects to deliver the shares against payment in New York, New York on _____, 2018.

Goldman Sachs & Co. LLC

Prospectus Supplement dated _____, 2018.

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We have not authorized anyone to provide any information or to make any representations other than those contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or in any free writing prospectuses we have prepared. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus supplement is an offer to sell only the shares offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus supplement and the accompanying prospectus is current only as of its respective date.

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus relate to the offering of our common stock. Before buying any of the common stock that we are offering, we urge you to carefully read this prospectus supplement and the accompanying prospectus, together with the information incorporated by reference as described under the heading "Where You Can Find More Information; Incorporation by Reference" in this prospectus supplement. These documents contain important information that you should consider when making your investment decision.

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 the SEC, as a "well-known seasoned issuer" as defined in Rule 405 under the Securities Act of 1933, as amended, or the Securities Act, using a "shelf" registration process and consists of two parts. The first part is this prospectus supplement, which describes the terms of this offering of common stock and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. The second part, the accompanying prospectus dated February 29, 2016, including the documents incorporated by reference therein, provides more general information. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. 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 or in any document incorporated by reference that was filed with the SEC before the date of this prospectus supplement, on the other hand, you should rely on the information in this prospectus supplement. If any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

You should rely only on the information contained in or incorporated by reference in this prospectus supplement, the accompanying prospectus and any free writing prospectus that we have authorized for use in connection with this offering. We have not, and the underwriter has not, authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and the underwriter is not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. The distribution of this prospectus supplement and the offering of shares of our common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement must inform themselves about, and observe any restrictions relating to, the offering of shares of our common stock and the distribution of this prospectus supplement outside the United States. This prospectus supplement does not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation. You should assume that the information appearing in this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering is accurate only as of the date of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering in their entirety before making an investment decision.

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Unless otherwise indicated, information contained in this prospectus supplement, the accompanying prospectus or the documents incorporated by reference, concerning our industry and the markets in which we operate, including our general expectations and market position, market opportunity and market share, is based on information from our own management estimates and research, as well as from industry and general publications, and research, surveys and studies conducted by third parties. Management estimates are derived from publicly available information, our knowledge of our industry and assumptions based on such information and knowledge, which we believe to be reasonable. In addition, assumptions and estimates of our and our industry's future performance are necessarily subject to a high degree of uncertainty and risk due to a variety of important factors, including those described in "Risk Factors" in this prospectus supplement, the accompanying prospectus and in our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2018, which are incorporated by reference into this prospectus supplement. These and other important factors could cause our future performance to differ materially from our assumptions and estimates. See "Special Note Regarding Forward-Looking Statements."

MOMENTA and our logo are two of our trademarks that are used in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference. This prospectus supplement, the accompanying prospectus and the documents incorporated by reference also include trademarks, tradenames and service marks that are the property of other organizations. Solely for convenience, trademarks and tradenames referred to in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference appear without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or that the applicable owner will not assert its rights, to these trademarks and tradenames.

When we refer to "Momenta," "we," "our," "us" and the "Company" in this prospectus supplement and the accompanying prospectus, we mean Momenta Pharmaceuticals, Inc. and its subsidiaries, unless otherwise specified.

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PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights certain information about us, this offering and selected information contained elsewhere in or incorporated by reference into this prospectus supplement or the accompanying prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our common stock. For a more complete understanding of our Company and this offering, we encourage you to read and consider carefully the more detailed information in this prospectus supplement and the accompanying prospectus, including the information incorporated by reference in this prospectus supplement and the accompanying prospectus, and the information included in any free writing prospectus that we have authorized for use in connection with this offering, including the information under the heading "Risk Factors" in this prospectus supplement on page S-5, the financial statements and related notes, and the other information that we incorporate by reference into this prospectus supplement, including the section "Risk Factors" in our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2018.

The Company

We are a biotechnology company with a validated scientific platform focused on discovering and developing novel therapeutics to treat rare, immune-mediated diseases.

Novel Therapeutics Our Approach to Autoimmune Diseases

Many autoimmune diseases are characterized by the formation of autoantibodies that bind self-antigens to form immune complexes. These immune complexes can recruit and activate immune cells leading to tissue inflammation and damage. However, few therapeutic agents exist that interfere directly with these autoantibodies or immune complex-immune cell activation processes. The most commonly used treatments for autoantibody-driven disease are systemic immunosuppressants, which do not specifically target disease pathogenesis and which carry significant safety risks such as opportunistic infection and cancer. In addition to these treatments, intravenous immunoglobulin, or IVIg, a therapeutic drug product that contains pooled, human immunoglobulin G, or IgG, antibodies purified from blood plasma may be used to treat several inflammatory diseases, including idiopathic thrombocytopenic purpura, or ITP, chronic inflammatory demyelinating polyneuropathy, and multifocal motor neuropathy.

We are developing therapeutics for autoimmune diseases with a focus on rare immune-mediated disorders. There are approximately 45 rare autoimmune disorders driven by autoantibodies, and we estimate there are one to two million patients in the United States with these rare disorders. Initially we have applied our complex systems analysis and biological protein engineering platforms to develop an improved IVIg. We utilized our proprietary sialylation technology, a method to add sialic acid to protein, to create M254, a high potency alternative to IVIg that we believe improves upon the limitations of that therapeutic approach. By gaining a deeper understanding of IVIg and immune complex driven autoimmune diseases, we have designed two novel recombinant therapeutic candidates, M281 and M230, to leverage what we believe are key biologies associated with autoimmune diseases. The discovery of these candidates is based on our analysis of the role of the Fc region of IgG autoantibodies in maintaining persistence in circulation and in mediating tissue damage and inflammation in rare autoimmune diseases. The design of these agents is based on our expertise in biological protein engineering and proprietary Fc multimerization technology. We believe our novel product candidates could be capable of treating a large number of immune-mediated disorders driven by autoantibodies, immune complexes, and Fc receptor biology.

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M281 Anti-FcRn Product Candidate

We plan to commence a Phase 2 proof-of-concept clinical trial for M281 in generalized myasthenia gravis, or gMG, in the fourth quarter of 2018 and a Phase 2 open-label extension clinical trial in early 2019. We estimate that there are approximately 65,000 patients in the United States with myasthenia gravis.

We also plan to commence a Phase 2 proof-of-concept clinical trial for M281 in hemolytic disease of the fetus and newborn in the fourth quarter of 2018. We estimate there are approximately 10,000 to 20,000 patients in the United States with maternal fetal disorders.

M254 hsIVIg Product Candidate

For M254, we plan to commence a Phase 1/2 proof-of-concept clinical trial in ITP in early 2019, pending regulatory feedback. We estimate the market for IVIg products to be more than \$8 billion in 2018 and expect the market to grow by six to eight percent per year through 2022.

Late Stage Biosimilar Product Candidates

M923 Biosimilar HUMIRA® (adalimumab) Product Candidate

HUMIRA is a monoclonal antibody that can bind to a substance in the body known as tumor necrosis factor, or TNF, thereby inhibiting the known effect of TNF as a potent mediator of inflammation. HUMIRA is indicated for the treatment of patients with rheumatoid arthritis, Crohn's disease, ulcerative colitis and psoriasis, among other diseases. HUMIRA is the largest selling therapeutic in the world. HUMIRA is marketed globally by AbbVie Inc., or AbbVie. We expect that U.S. market formation for biosimilar versions of HUMIRA will likely be in the 2022-2023 time frame, subject to marketing approval, patent considerations and litigation timelines.

We are developing M923 as a biosimilar of HUMIRA. Based on our global licensing agreements with AbbVie, and subject to approval by health regulatory authorities, we may launch M923 in the United States as early as November 20, 2023 and in the European Union upon approval. We have decided to delay the filing of a biologics license application for M923 with the U.S. Food and Drug Administration, previously expected in the fourth quarter of 2018, which we believe will not impact the timing of potential U.S. market entry. We also intend to submit a marketing authorization application for M923 with the European Medicines Agency. We are working on identifying a commercialization partner for M923.

M710 Biosimilar EYLEA® (aflibercept) Product Candidate

M710 is being developed in collaboration with Mylan N.V., or Mylan. Subject to development, marketing approval and patent considerations, we expect U.S. market formation for biosimilar versions of EYLEA to occur in the 2023 time frame. We have elected to terminate our collaboration agreement with Mylan with respect to the development of five of our other biosimilar programs, including M834, a proposed biosimilar to ORENCIA®, in order to focus solely on the continued development of M710. On November 19, 2018, we delivered a formal notice of this partial termination to Mylan, as provided in the collaboration agreement.

Our Research Platform

Our approach to drug discovery is focused on identifying unmet medical need in rare immune-related disorders, defining the biology that drives that unmet medical need in order to identify relevant targets, and then using our proprietary biologic protein engineering technologies to design relevant novel product candidates.

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Through this we have identified, optimized and are now developing our novel drug candidates: M281, M254 and M230 (the last of which is out-licensed to our partner CSL, a wholly owned indirect subsidiary of CSL Limited). We utilize a suite of research technologies to support the discovery of novel product candidates, including a disease analysis platform where we assess complex human genomic data sets to identify potential disease-modifying targets, and a range of drug design technologies to design the optimal therapeutic agent to modulate those targets. These technologies include not only antibody design and engineering, but also Fc multimerization and in vitro sialylation technology. We believe our sialylation technology can generate several novel product candidates that represent recombinant alternatives to marketed plasma-purified replacement therapies. Additionally, we have leveraged our Fc multimerization technology to identify potential novel product candidates which we believe may improve the immune system's elimination of tumor and other pathologic cells. We believe our Fc multimerization technology can be applied to discover multiple potential product candidates.

Corporate Information

We filed our certificate of incorporation with the Secretary of State of Delaware on May 17, 2001.

Our principal executive offices are located at 301 Binney Street, Cambridge, Massachusetts 02142, and our telephone number is (617) 491-9700. Our website address is *www.momentapharma.com*. The information contained in, or accessible through, our website, should not be considered a part of this prospectus supplement or the accompanying prospectus.

Capital Stock

As of November 30, 2018, there were 78,608,151 shares of our common stock outstanding held by approximately 20 holders of record. The actual number of stockholders is greater than this number of record holders, and includes stockholders who are beneficial owners, but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include stockholders whose shares may be held in trust by other entities.

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THE OFFERING

| | |
|--|---|
| Common stock offered by us | \$150,000,000 of shares. |
| Common stock to be outstanding immediately after this offering | 92,036,978 shares, based upon an assumed public offering price of \$11.17 per share, the last reported sale price of our common stock on The Nasdaq Global Select Market on December 4, 2018 (or 94,051,302 shares if the underwriter exercises its option to purchase additional shares in full). |
| Underwriter's option | The underwriter has a 30-day option to purchase up to \$22,500,000 of additional shares of our common stock. |
| Use of proceeds | We intend to use the net proceeds of this offering for the development of our pipeline of product candidates and for general corporate purposes, including working capital. Please see "Use of Proceeds" on page S-10 of this prospectus supplement. |
| Risk factors | See "Risk Factors" beginning on page S-5 of this prospectus supplement, in the accompanying prospectus and in the documents incorporated by reference into this prospectus supplement and the accompanying prospectus for a discussion of factors that you should read and consider before investing in our common stock. |
| Nasdaq Global Select Market symbol | "MNTA" |

The number of shares of our common stock to be outstanding after this offering is based on 78,608,151 shares of our common stock outstanding as of November 30, 2018 and excludes:

5,076,249 shares of common stock issuable upon the exercise of outstanding options, having a weighted average exercise price of \$15.24 per share;

904,675 shares of common stock issuable upon vesting of restricted stock units; and

an aggregate of 8,259,767 additional shares of our common stock reserved for future issuance under our stock incentive plans.

Unless otherwise indicated, this prospectus supplement reflects and assumes the following:

no exercise of the outstanding options or vesting of the restricted stock units described above; and

no exercise by the underwriter of its option to purchase additional shares of our common stock.

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RISK FACTORS

Investing in our common stock involves a high degree of risk. Before investing in our common stock, you should consider carefully the risks described below, together with the other information contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein or therein, including the risks and uncertainties discussed under "Risk Factors" in our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2018, which are incorporated by reference into this prospectus supplement. If any of the risks incorporated by reference or set forth below occur, our business, financial condition, results of operations and future growth prospects could be materially and adversely affected. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment. Please also read carefully the section below titled "Special Note Regarding Forward-Looking Statements."

Risks Related to Our Common Stock and this Offering

We have broad discretion in the use of the net proceeds from this offering.

Our management will have broad discretion in the application of the net proceeds from this offering and could spend the net proceeds in ways with which you may not agree. Accordingly, you will be relying on the judgment of our management with regard to the use of the net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the net proceeds are being used appropriately. It is possible that the net proceeds will be invested or otherwise used in a way that does not yield a favorable, or any, return for the Company.

Purchasers of shares of our common stock in this offering will experience immediate and substantial dilution in the book value of their investment.

The public offering price of our common stock in this offering may exceed the net tangible book value per share of our common stock before giving effect to this offering. Accordingly, based upon an assumed public offering price of \$11.17 per share, the last reported sale price of our common stock on The Nasdaq Global Select Market on December 4, 2018, if you purchase shares of our common stock in this offering, you will incur immediate substantial dilution of approximately \$6.88 per share, representing the difference between the assumed public offering price and our as-adjusted net tangible book value as of September 30, 2018, after giving effect to this offering. Furthermore, if outstanding options are exercised, you could experience further dilution. For a further description of the dilution that you will experience immediately after this offering, see the section in this prospectus supplement entitled "Dilution."

You may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into our common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering. As of November 30, 2018, 8,259,767 shares of common stock were reserved for future issuance under our stock incentive plans. As of that date, there were also options outstanding to purchase 5,076,249 shares of our common stock, and 904,675 shares of our common stock issuable upon vesting of restricted stock units. You will incur additional dilution upon the grant of any shares under our stock incentive

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plans, upon exercise of any outstanding or subsequently issued stock options or upon vesting of any outstanding or subsequently issued restricted stock units.

Future sales of our common stock in the public market, or the perception that such sales could occur, could cause our stock price to fall.

Sales of a substantial number of shares of our common stock in the public market, or the perception that these sales might occur, could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities. After this offering, we will have 92,036,978 shares of common stock outstanding, based on 78,608,151 shares of common stock outstanding as of November 30, 2018 and 13,428,827 shares being sold in this offering, based upon an assumed public offering price of \$11.17 per share, the last reported sale price of our common stock on The Nasdaq Global Select Market on December 4, 2018. Of these shares, approximately 765,894 shares are subject to a contractual lock-up with the underwriter but may be sold beginning on the date that is 90 days after the date of the prospectus supplement. The underwriter may release stockholders from their lock-up agreements at any time and without notice, which would allow for earlier sales of shares in the public market. Any of our remaining shares, including the shares sold in this offering, may be freely sold in the public market at any time without restriction under the Securities Act, except for any shares held by our "affiliates," as that term is defined in Rule 144 under the Securities Act, or Rule 144, and subject in some cases to compliance with the requirements of Rule 144, including the volume limitations and manner of sale requirements. In addition, shares of common stock issuable upon exercise of outstanding options and shares reserved for future issuance under our stock incentive plans will become eligible for sale in the public market upon issuance, to the extent permitted by applicable vesting requirements and subject to the lock-up agreements describe above and, in some cases, to compliance with the requirements of Rule 144.

We cannot predict the effect that future sales of our common stock would have on the market price of our common stock.

Because we do not anticipate paying any cash dividends on our capital stock in the foreseeable future, capital appreciation, if any, of our common stock will be the sole source of gain for our stockholders.

We have never declared or paid any cash dividends on our capital stock. We currently intend to retain all of our future earnings, if any, for use in the operation of our business. In addition, the terms of any future debt agreements may preclude us from paying dividends. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for our stockholders for the foreseeable future.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus, the documents we have filed with the SEC that are incorporated by reference and any free writing prospectus that we have authorized for use in connection with this offering may contain "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, or the Exchange Act. These statements relate to future events or to our future operating or financial performance and involve known and unknown risks, uncertainties and other important factors which may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Forward-looking statements may include, but are not limited to, statements about:

our strategic plan, including estimated cost savings and our decision to focus our resources on the development of our novel drug candidates for immune-mediated diseases;

our expectations regarding the development and utility of our products and product candidates;

development timelines for our products, including next steps for our M281, M254, M230, M923 and M710 programs;

development, manufacture and commercialization of our products and product candidates;

our collaboration with Mylan;

efforts to seek and manage relationships with collaboration partners, including without limitation for our biosimilar and novel therapeutic programs;

the timing and progress of clinical trials and the availability of results;

the emerging safety profile of any of our product candidates;

the scope, progress, timing, results and costs of researching and developing our product candidates and conducting preclinical and clinical trials;

the timing of launch of products and product candidates;

market share and product revenues of our products and product candidates, including GLATOPA and Enoxaparin Sodium Injection;

the timing, merits, strategy, impact and outcome of, and decisions regarding, legal proceedings;

the timing or success of biosimilar market formation or biosimilar product-related patent litigation;

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collaboration revenues and research and development revenues;

manufacturing;

timing of regulatory filings, reviews and approvals;

the sufficiency of our current capital resources and projected milestone payments and product revenues for future operations;

our future financial position, including but not limited to our future operating losses or our potential future profitability;

our future expenses, the composition and mix of our cash, cash equivalents and marketable securities, our future revenues and our future liabilities;

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our funding transactions and our intended uses of proceeds thereof;

product candidate development costs;

receipt of contingent milestone payments;

accounting policies, estimates and judgments;

our estimates regarding the fair value of our investment portfolio;

the market risk of our cash equivalents, marketable securities and derivative, foreign currency and other financial instruments;

rights, obligations, terms, conditions and allocation of responsibilities and decision making under our existing or potential future collaboration agreements;

the regulatory pathway for orphan drugs, biosimilars or any other of our product candidates;

our strategy, including but not limited to our regulatory strategy and scientific approach;

the importance of key customer distribution arrangements;

market potential and acceptance of our products and product candidates;

future capital requirements;

reliance on our collaboration partners and other third parties;

the competitive landscape;

changes in, impact of and compliance with laws, rules and regulations;

product reimbursement policies and trends;

pricing of pharmaceutical products, including our products and product candidates;

our stock price;

our intellectual property strategy and position;

sufficiency of insurance;

attracting and retaining qualified personnel;

our internal controls and procedures;

acquisitions or investments in companies, products and technologies;

entering into collaboration and/or license arrangements;

marketing plans;

planned operating and capital expenditures;

the terms and conditions of our facility leases or any potential changes thereto;

materials used in our research and development;

dilution;

royalty rates;

vesting of equity awards;

our estimates regarding our capital requirements and our need for additional funding; and

the use of proceeds from this offering.

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In some cases, you can identify forward-looking statements by terms such as "anticipate," "approach," "believe," "can," "contemplate," "continue," "could," "ensure," "estimate," "expect," "goal," "intend," "likely," "may," "might," "objective," "opportunity," "plan," "potential", "predict," "project," "pursue," "seek," "schedule," "should," "strategy," "target," "typically," "will," "would," and other similar words or expressions, or the negative of these words or similar words or expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss many of these risks in greater detail under the heading "Risk Factors" on page S-5 of this prospectus supplement and in our SEC filings. Also, these forward-looking statements represent our estimates and assumptions only as of the date of the document containing the applicable statement.

You should read this prospectus supplement, the accompanying prospectus, the documents we have filed with the SEC that are incorporated by reference and any free writing prospectus that we have authorized for use in connection with this offering completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements.

You should rely only on the information contained, or incorporated by reference, in this prospectus supplement, the accompanying prospectus and any free writing prospectus that we have authorized for use in connection with this offering. Neither we nor the underwriter have authorized anyone to provide you with different information. The common stock offered under this prospectus supplement and the accompanying prospectus is not being offered in any state where the offer is not permitted. You should not assume that the information contained in this prospectus supplement or the accompanying prospectus is accurate as of any date other than the date on the front of this prospectus supplement or the accompanying prospectus, as applicable, or that any information incorporated by reference into this prospectus supplement or the accompanying prospectus is accurate as of any date other than the date of the document so incorporated by reference. Unless required by law, we undertake no obligation to update or revise any forward-looking statements to reflect new information or future events or developments. Thus, you should not assume that our silence over time means that actual events are bearing out as expressed or implied in such forward-looking statements.

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USE OF PROCEEDS

We estimate that the net proceeds from this offering will be approximately \$141.7 million (or approximately \$163.0 million if the underwriter exercises its option to purchase additional shares in full), after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We intend to use the net proceeds from this offering for the development of our pipeline of product candidates and for general corporate purposes, including working capital. Pending our application of the net proceeds as described above, we intend to temporarily invest the proceeds in short term, interest-bearing instruments.

DIVIDEND POLICY

We have never declared or paid any cash dividends on our common stock. We anticipate that, in the foreseeable future, we will continue to retain any earnings for use in the operation of our business and will not pay any cash dividends.

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If you invest in our common stock in this offering, your ownership interest will be immediately diluted to the extent of the difference between the public offering price per share and the as-adjusted net tangible book value per share of our common stock after giving effect to this offering.

As of September 30, 2018, we had a net tangible book value of \$251.9 million, or \$3.21 per share of common stock. Our net tangible book value per share represents total tangible assets less total liabilities, divided by the number of shares of common stock outstanding at September 30, 2018.

After giving effect to the issuance and sale by us of 13,428,827 shares of common stock in this offering at an assumed public offering price of \$11.17 per share, the last reported sale price of our common stock on The Nasdaq Global Select Market on December 4, 2018, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our as-adjusted net tangible book value as of September 30, 2018 would have been approximately \$393.7 million, or approximately \$4.29 per share of common stock. This amount represents an immediate increase in the net tangible book value of approximately \$1.08 per share to our existing stockholders and immediate dilution of approximately \$6.88 per share to new investors purchasing shares of common stock in this offering.

Dilution per share to new investors is determined by subtracting as-adjusted net tangible book value per share after giving effect to this offering from the public offering price per share paid by new investors. The following table illustrates this dilution on a per share basis:

| | | | |
|--|----|------|-------|
| Assumed public offering price per share | | \$ | 11.17 |
| Net tangible book value per share as of September 30, 2018 | \$ | 3.21 | |
| Increase in net tangible book value per share attributable to this offering | | 1.08 | |
| As-adjusted net tangible book value per share after giving effect to this offering | | 4.29 | |
| Dilution per share to new investors participating in this offering | \$ | 6.88 | |

The information above assumes that the underwriter does not exercise its option to purchase an additional \$22,500,000 of shares of common stock. If the underwriter exercises its option in full, our as-adjusted net tangible book value per share at September 30, 2018, after giving effect to this offering, would have been approximately \$4.42 per share, based upon an assumed public offering price of \$11.17 per share, the last reported sale price of our common stock on The Nasdaq Global Select Market on December 4, 2018, and the dilution to investors in this offering would have been approximately \$6.75 per share.

The above discussion and table are based on 78,379,881 shares of our common stock outstanding as of September 30, 2018 and exclude:

5,295,062 shares of common stock issuable upon the exercise of outstanding options, having a weighted average exercise price of \$15.19 per share;

1,206,780 shares of common stock issuable upon vesting of restricted stock units; and

an aggregate of 7,838,661 additional shares of our common stock reserved for future issuance under our stock incentive plans.

To the extent any of these outstanding options are exercised or these restricted stock units vest, there may be further dilution to new investors.

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The information discussed above is illustrative only and will change based on the actual public offering price and other terms of this offering determined at pricing.

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We and Goldman Sachs & Co. LLC have entered into an underwriting agreement with respect to the shares being offered. Subject to certain conditions, Goldman Sachs & Co. LLC has agreed to purchase \$150,000,000 of shares of our common stock.

The underwriter is committed to take and pay for all of the shares being offered, if any are taken, other than the shares covered by the option described below unless and until this option is exercised.

The underwriter has an option to buy up to an additional \$22,500,000 of shares from us. It may exercise that option for 30 days.

The following table shows the per share and total underwriting discounts and commissions to be paid to the underwriter by us. Such amounts are shown assuming both no exercise and full exercise of the underwriter's option to purchase \$22,500,000 of additional shares.

Paid by Us

| | No Exercise | Full Exercise |
|-----------|----------------|------------------|
| Per Share | \$ | \$ |
| Total | \$ | \$ |

Shares sold by the underwriter to the public will initially be offered at the initial public offering price set forth on the cover of this prospectus supplement. Any shares sold by the underwriter to securities dealers may be sold at a discount of up to \$ per share from the initial public offering price. After the initial offering of the shares, the underwriter may change the offering price and the other selling terms. The offering of the shares by the underwriter is subject to receipt and acceptance and subject to the underwriter's right to reject any order in whole or in part.

We have agreed that we will not, without the prior written consent of Goldman Sachs & Co. LLC, during the period beginning from the date of this prospectus supplement and continuing to and including the date 90 days after the date hereof, or the Company Lock-up Period, (i) offer, sell, contract to sell, pledge, grant any option to purchase, make any short sale or otherwise transfer or dispose of, directly or indirectly, or file with the SEC a registration statement under the Securities Act relating to, any securities of the Company that are substantially similar to our common stock, including but not limited to any options or warrants to purchase shares of our common stock, or any securities that are convertible into or exchangeable for, or that represent the right to receive, our common stock or any such substantially similar securities (other than registration statements on Form S-8 relating to securities granted or to be granted pursuant to the terms of our equity incentive plans or employee stock purchase plans disclosed in the registration statement to which this prospectus supplement relates), or publicly disclose the intention to make any offer, sale, pledge, disposition or filing, or (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of any shares of our common stock or any such other securities (regardless of whether any of the transactions described in clause (i) or (ii) above are to be settled by delivery of shares of our common stock, or such other securities, in cash or otherwise), other than (a) the shares to be sold in this offering, (b) the grant of stock options or other equity-based awards not exercisable during the Company Lock-up Period pursuant to our equity incentive plans, (c) the issuance of securities pursuant to the exercise or vesting of such options or other equity-based awards pursuant to our equity incentive plans, (d) the issuance of securities pursuant to employee stock purchase plans, (e) the issuance of securities upon the conversion or exchange of convertible or exchangeable securities or the vesting of restricted stock outstanding as of the date of this prospectus supplement, (f) issuances of our

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common stock or securities exercisable for, convertible into or exchangeable for shares of common stock in connection with any acquisition, collaboration, licensing, partnership or other joint venture or strategic transaction involving the Company; provided that in the case of clause (f), that such issuances shall not be greater than 5% of the total outstanding shares of common stock immediately following the completion of this offering and the Company shall cause recipients of such securities to execute and deliver a lock-up agreement, on or prior to the issuance of such securities, with respect to the shares transferred or (g) issuances of common stock or securities exercisable for, convertible into or exchangeable for common stock in connection with a commercial debt financing.

Our directors and executive officers have entered into lock-up agreements with the underwriter prior to the commencement of this offering pursuant to which each of these persons, during the period beginning from the date of the commencement of this offering and continuing to and including the date 90 days after the date of this prospectus supplement, or the D&O Lock-up Period, may not, without the prior written consent of Goldman Sachs & Co. LLC, (i) offer, sell, contract to sell, pledge, grant any option to purchase, make any short sale or otherwise dispose of any shares of our common stock, or any options or warrants to purchase any shares of our common stock, or any securities convertible into, exchangeable for or that represent the right to receive shares of our common stock, whether now owned or hereinafter acquired, owned directly by the director or officer (including holding as a custodian) or with respect to which the director or officer has beneficial ownership within the rules and regulations of the SEC, or collectively, the Lock-up Shares, or publicly announce the intention to do any of the foregoing, (ii) engage in any hedging or other transaction which is designed to or which reasonably could be expected to lead to or result in a sale or disposition of the Lock-up Shares even if such shares would be disposed of by someone other than the director or officer, including any short sale or any purchase, sale or grant of any right (including without limitation any put or call option) with respect to the Lock-up Shares or with respect to any security that includes, relates to, or derives any significant part of its value from such shares, or (iii) make any demand for or exercise any right with respect to the registration of any shares of our common stock or any security exercisable for, convertible into or exchangeable for our common stock. These agreements are subject to certain exceptions, including direct or indirect sales, transfers, tenders or other dispositions of the Lock-up Shares (a) as a *bona fide* gift or gifts or by testate succession or intestate distribution, (b) to any trust for the direct or indirect benefit of the director or officer or the immediate family of the director or officer, provided that any such transfer shall not involve a disposition for value, (c) to any corporation, partnership or other person or entity that is controlled by or under common control with, the director or officer, (d) with respect to acquisitions in open market transactions after the date of this offering, (e) pursuant to any contractual arrangement described in this prospectus supplement (or in any documents incorporated by reference into this prospectus supplement) existing on the date hereof that provides for the repurchase of the Lock-up Shares by us in connection with the termination of the director or officer's employment or other service relationship with us or the director or officer's failure to meet certain conditions set out upon receipt of such Lock-up Shares, or (f) solely to cover withholding tax obligations in connection with the exercise of any option or warrant (including, in each case, by way of "net" or "cashless" exercise) or the vesting of any awards issued pursuant to our equity incentive plans and any transfer to us for the payment of taxes as a result of the vesting or exercise of any option, warrant, or awards issued pursuant to our equity incentive plans, whether by means of a "net settlement" or otherwise, provided that any such shares of our common stock received by the director or officer shall be subject to the terms of the lock-up agreement.

In the case of any transfer under clause (a) of a *bona fide* gifts or gifts or clause (b), each transferee, recipient or distributee must execute and deliver to the representatives a lock-up agreement. In addition, in the case of any transfer pursuant to clauses (a), (b), (c), (d), or (f) in the preceding paragraph, no filing by any party under the Exchange Act reporting a reduction in

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beneficial ownership shall be made in connection with such transfer, other than (i) a filing on a Form 5 made after the expiration of the D&O Lock-up Period or (ii) solely with respect to any transfer pursuant to clause (f), a filing on a Form 4 that reports such disposition under the transaction code "F" with an explanatory footnote describing the reason for such filing.

In addition, the director or officer may (x) (A) exercise any stock option granted pursuant to our equity incentive plans, provided that such stock option would otherwise expire during the D&O Lock-up Period and that the restrictions and exceptions described in the lock-up agreement shall apply to any shares of common stock issued to the director or officer upon such exercise and (B) sell or transfer a portion of the director or officer's Lock-up Shares or any shares of common stock issued in connection with an exercise of a stock option solely to pay the exercise price, through "cashless" surrender or otherwise, of such exercise, (y) establish a contract, instruction or plan that satisfies the requirements of Rule 10b5-1 under the Exchange Act for the transfer of common stock or other securities, or a Plan, provided that such Plan does not provide for any transfers of common stock during the D&O Lock-up Period, (z) transfer shares of common stock under a Plan in effect prior to the date of the lock-up agreement, provided that no amendments or other modifications are made to such Plan (except amendments or modifications which would reduce the number of shares transferred under such Plan), (aa) transfer shares of common stock from an existing Plan to a new Plan in substantially the same form in order to reduce the number of shares of common stock subject to the existing Plan, (bb) transfer common stock to a new Plan, and (cc) transfer shares of our common stock or securities convertible into or exercisable or exchangeable for our common stock in connection with a *bona fide* third party tender offer, merger, consolidation or other similar transaction made to all holders of our common stock involving a change of control of the Company (including, without limitation, the entering into any lock-up, voting or similar agreement pursuant to which the director or officer may agree to transfer, sell, tender or otherwise dispose of our common stock or other securities in connection with such transaction, or vote any common stock or other such securities in favor of any such transaction) to a person or group of affiliated persons (other than an underwriter pursuant to this offering) if, after such transfer, such person or group of affiliated persons would hold more than 50% of our outstanding voting securities (or the voting securities of the surviving entity). The transfer of shares and establishment of Plans pursuant to clauses (x) through (bb) are subject to certain limitations or requirements regarding filings under the Exchange Act and public announcements.

Our common stock is publicly traded on The Nasdaq Global Select Market under the symbol "MNTA".

In connection with the offering, the underwriter may purchase and sell shares of common stock in the open market. These transactions may include short sales, stabilizing transactions and purchases to cover positions created by short sales. Short sales involve the sale by the underwriter of a greater number of shares than it is required to purchase in the offering, and a short position represents the amount of such sales that have not been covered by subsequent purchases. A "covered short position" is a short position that is not greater than the amount of additional shares for which the underwriter's option described above may be exercised. The underwriter may cover any covered short position by either exercising its option to purchase additional shares or purchasing shares in the open market. In determining the source of shares to cover the covered short position, the underwriter will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which it may purchase additional shares pursuant to the option described above. "Naked" short sales are any short sales that create a short position greater than the amount of additional shares for which the option described above may be exercised. The underwriter must cover any such naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriter is concerned that there may be downward pressure on the price of the common stock in the open market after

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pricing that could adversely affect investors who purchase in the offering. Stabilizing transactions consist of various bids for or purchases of common stock made by the underwriter in the open market prior to the completion of the offering.

The underwriter may also impose a penalty bid. Penalty bids permit the underwriter to reclaim a selling concession from a broker/dealer when the common stock originally sold by the broker/dealer is purchased in a stabilizing or covering transaction to cover short positions.

Purchases to cover a short position and stabilizing transactions, as well as other purchases by the underwriter for its own account, may have the effect of preventing or retarding a decline in the market price of our common stock, and together with the imposition of the penalty bid, may stabilize, maintain or otherwise affect the market price of our common stock. As a result, the price of our common stock may be higher than the price that otherwise might exist in the open market. The underwriter is not required to engage in these activities and may end any of these activities at any time. These transactions may be effected on The Nasdaq Global Select Market, in the over-the-counter market or otherwise.

We estimate that our share of the total expenses of the offering, excluding underwriting discounts and commissions, will be approximately \$400,000.

We have agreed to indemnify the underwriter against certain liabilities, including liabilities under the Securities Act.

The underwriter and its affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making, brokerage and other financial and non-financial activities and services. The underwriter and its affiliates have provided, and may in the future provide, a variety of these services to the Company and to persons and entities with relationships with the Company, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriter and its affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively trade securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities and/or instruments of the Company (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with the Company. The underwriter and its affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

Selling Restrictions

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of our common shares may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of our common shares may be made at any time under the following exemptions under the Prospectus Directive:

- (a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;

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(b) to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), subject to obtaining the prior consent of the underwriter for any such offer; or

(c) in any other circumstances falling within Article 3(2) of the Prospectus Directive,

provided that no such offer or shares of our common stock shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to public" in relation to our common shares in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and our common shares to be offered so as to enable an investor to decide to purchase our common shares, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression "Prospectus Directive" means Directive 2003/71/EC (as amended), including by Directive 2010/73/EU and includes any relevant implementing measure in the Relevant Member State.

This European Economic Area selling restriction is in addition to any other selling restrictions set out below.

United Kingdom

In the United Kingdom, this prospectus is only addressed to and directed as qualified investors who are (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"); or (ii) high net worth entities and other persons to whom it may lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as "relevant persons"). Any investment or investment activity to which this prospectus relates is available only to relevant persons and will only be engaged with relevant persons. Any person who is not a relevant person should not act or rely on this prospectus or any of its contents.

Canada

The securities may be sold in Canada only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions, and Ongoing Registrant Obligations. Any resale of the securities must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus supplement (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for more information about these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriter is not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

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Hong Kong

The shares may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong) ("Companies (Winding Up and Miscellaneous Provisions) Ordinance") or which do not constitute an invitation to the public within the meaning of the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) ("Securities and Futures Ordinance"), or (ii) to "professional investors" as defined in the Securities and Futures Ordinance and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance, and no advertisement, invitation or document relating to the shares may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" in Hong Kong as defined in the Securities and Futures Ordinance and any rules made thereunder.

Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares may not be circulated or distributed, nor may the shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor (as defined under Section 4A of the Securities and Futures Act, Chapter 289 of Singapore (the "SFA")) under Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to conditions set forth in the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor, the securities (as defined in Section 239(1) of the SFA) of that corporation shall not be transferable for 6 months after that corporation has acquired the shares under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer in that corporation's securities pursuant to Section 275(1A) of the SFA, (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore ("Regulation 32").

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is a trust (where the trustee is not an accredited investor (as defined in Section 4A of the SFA)) whose sole purpose is to hold investments and each beneficiary of the trust is an accredited investor, the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferable for 6 months after that trust has acquired the shares under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer that is made on

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terms that such rights or interest are acquired at a consideration of not less than S\$200,000 (or its equivalent in a foreign currency) for each transaction (whether such amount is to be paid for in cash or by exchange of securities or other assets), (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32.

Japan

The securities have not been and will not be registered under the Financial Instruments and Exchange Act of Japan (Act No. 25 of 1948, as amended), or the FIEA. The securities may not be offered or sold, directly or indirectly, in Japan or to or for the benefit of any resident of Japan (including any person resident in Japan or any corporation or other entity organized under the laws of Japan) or to others for reoffering or resale, directly or indirectly, in Japan or to or for the benefit of any resident of Japan, except pursuant to an exemption from the registration requirements of the FIEA and otherwise in compliance with any relevant laws and regulations of Japan.

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MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES TO NON-U.S. HOLDERS

The following discussion is a summary of the material U.S. federal income tax consequences to Non-U.S. Holders (as defined below) of the purchase, ownership and disposition of the shares of common stock to be issued pursuant to this offering, but does not purport to be a complete analysis of all potential tax effects. The effects of other U.S. federal tax laws, such as estate and gift tax laws, and any applicable state, local or foreign tax laws are not discussed. This discussion is based on the Internal Revenue Code of 1986, as amended, or the Code, Treasury Regulations promulgated thereunder, judicial decisions, and published rulings and administrative pronouncements of the U.S. Internal Revenue Service, or IRS, in effect as of the date of this offering. These authorities may change or be subject to differing interpretations. Any such change or differing interpretation may be applied retroactively in a manner that could adversely affect a holder of our common stock. We have not sought and do not currently intend to seek any rulings from the IRS regarding the matters discussed below. There can be no assurance the IRS or a court will not take a contrary position regarding the tax consequences of the purchase, ownership and disposition of our common stock.

This discussion is limited to Non-U.S. Holders that hold our common stock as a "capital asset" within the meaning of Section 1221 of the Code (property held for investment). This discussion does not address all U.S. federal income tax consequences relevant to a Non-U.S. Holder's particular circumstances, including the impact of the alternative minimum tax or the unearned income Medicare contribution tax. In addition, it does not address consequences relevant to Non-U.S. Holders subject to particular rules, including, without limitation:

U.S. expatriates and certain former citizens or long-term residents of the United States;

persons holding our common stock as part of a hedge, straddle or other risk reduction strategy or as part of a conversion transaction or other integrated investment;

banks, insurance companies, and other financial institutions;

brokers, dealers or traders in securities or currencies;

"controlled foreign corporations," "passive foreign investment companies," and corporations that accumulate earnings to avoid U.S. federal income tax;

partnerships or other entities or arrangements treated as partnerships for U.S. federal income tax purposes (and investors therein);

tax-exempt organizations or governmental organizations;

persons deemed to sell our common stock under the constructive sale provisions of the Code;

persons for whom our common stock constitutes "qualified small business stock" within the meaning of Section 1202 of the Code;

persons subject to special tax accounting rules as a result of any item of gross income with respect to our common stock being taken into account in an "applicable financial statement" (as defined in the Code)

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persons who hold or receive our common stock pursuant to the exercise of any employee stock option or otherwise as compensation; and

tax-qualified retirement plans.

If a partnership (or other entity treated as a partnership for U.S. federal income tax purposes) holds our common stock, the tax treatment of a partner in the partnership will depend on the status

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of the partner, the activities of the partnership and certain determinations made at the partner level. Accordingly, partnerships holding our common stock and the partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

THIS DISCUSSION IS FOR INFORMATION PURPOSES ONLY AND IS NOT INTENDED AS LEGAL OR TAX ADVICE. INVESTORS SHOULD CONSULT THEIR TAX ADVISORS WITH RESPECT TO THE APPLICATION OF THE U.S. FEDERAL INCOME TAX LAWS TO THEIR PARTICULAR SITUATIONS AS WELL AS ANY TAX CONSEQUENCES OF THE PURCHASE, OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK ARISING UNDER THE U.S. FEDERAL ESTATE OR GIFT TAX LAWS OR UNDER THE LAWS OF ANY STATE, LOCAL OR NON-U.S. TAXING JURISDICTION OR UNDER ANY APPLICABLE INCOME TAX TREATY.

Definition of a Non-U.S. Holder

For purposes of this discussion, a "Non-U.S. Holder" is a beneficial owner of our common stock that is neither a "U.S. person" nor an entity treated as a partnership for U.S. federal income tax purposes. A U.S. person is any person that, for U.S. federal income tax purposes, is:

an individual who is a citizen or resident of the United States;

a corporation (or other entity treated as a corporation for U.S. federal income tax purposes) created or organized under the laws of the United States, any state thereof, or the District of Columbia;

an estate, the income of which is subject to U.S. federal income tax regardless of its source; or

a trust that (1) is subject to the primary supervision of a U.S. court and the control of one or more United States persons (within the meaning of Section 7701(a)(30) of the Code), or (2) has made a valid election under applicable Treasury Regulations to continue to be treated as a United States person.

Distributions

As described in the section entitled "Dividend Policy," we do not anticipate declaring or paying dividends to holders of our common stock in the foreseeable future. However, if we do make distributions on our common stock, such distributions of cash or property on our common stock will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Amounts not treated as dividends for U.S. federal income tax purposes will constitute a return of capital and first be applied against and reduce a Non-U.S. Holder's adjusted tax basis in our common stock, but not below zero. Any excess will be treated as capital gain and will be treated as described below in the section relating to the sale or disposition of our common stock. Because we may not know the extent to which a distribution is a dividend for U.S. federal income tax purposes at the time it is made, for purposes of the withholding rules discussed below we or the applicable withholding agent may treat the entire distribution as a dividend.

Subject to the discussion below on backup withholding and foreign accounts, dividends paid to a Non-U.S. Holder of our common stock that are not effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States will be subject to U.S. federal withholding tax at a rate of 30% of the gross amount of the dividends (or such lower rate specified by an applicable income tax treaty).

Non-U.S. Holders will be entitled to a reduction in or an exemption from withholding on dividends as a result of either (a) an applicable income tax treaty or (b) the Non-U.S. Holder

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holding our common stock in connection with the conduct of a trade or business within the United States and dividends being effectively connected with that trade or business. To claim such a reduction in or exemption from withholding, the Non-U.S. Holder must provide the applicable withholding agent with a properly executed (a) IRS Form W-8BEN or W-8BEN-E (or other applicable documentation) claiming an exemption from or reduction of the withholding tax under the benefit of an income tax treaty between the United States and the country in which the Non-U.S. Holder resides or is established, or (b) IRS Form W-8ECI stating that the dividends are not subject to withholding tax because they are effectively connected with the conduct by the Non-U.S. Holder of a trade or business within the United States, as may be applicable. These certifications must be provided to the applicable withholding agent prior to the payment of dividends and must be updated periodically. Non-U.S. Holders that do not timely provide the applicable withholding agent with the required certification, but that qualify for a reduced rate under an applicable income tax treaty, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS.

If dividends paid to a Non-U.S. Holder are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment in the United States to which such dividends are attributable), then, although exempt from U.S. federal withholding tax (provided the Non-U.S. Holder provides appropriate certification, as described above), the Non-U.S. Holder will be subject to U.S. federal income tax on such dividends on a net income basis at the regular graduated U.S. federal income tax rates. In addition, a Non-U.S. Holder that is a corporation may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on its effectively connected earnings and profits for the taxable year that are attributable to such dividends, as adjusted for certain items. Non-U.S. Holders should consult their tax advisors regarding their entitlement to benefits under any applicable income tax treaty.

Sale or Other Disposition of Common Stock

Subject to the discussions below on backup withholding and foreign accounts, a Non-U.S. Holder will not be subject to U.S. federal income tax on any gain realized upon the sale or other disposition of our common stock unless:

the gain is effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment in the United States to which such gain is attributable);

the Non-U.S. Holder is a nonresident alien individual present in the United States for 183 days or more during the taxable year of the disposition and certain other requirements are met; or

our common stock constitute U.S. real property interests, or USRPIs, by reason of our status as a U.S. real property holding corporation, or USRPHC, for U.S. federal income tax purposes.

Gain described in the first bullet point above will generally be subject to U.S. federal income tax on a net income basis at the regular graduated U.S. federal income tax rates. A Non-U.S. Holder that is a foreign corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items.

A Non-U.S. Holder described in the second bullet point above will be subject to U.S. federal income tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on

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any gain derived from the disposition, which may be offset by certain U.S. source capital losses of the Non-U.S. Holder (even though the individual is not considered a resident of the United States) provided the Non-U.S. Holder has timely filed U.S. federal income tax returns with respect to such losses.

With respect to the third bullet point above, we believe we are not currently and do not anticipate becoming a USRPHC. Because the determination of whether we are a USRPHC depends on the fair market value of our USRPIs relative to the fair market value of our other business assets and our non-U.S. real property interests, however, there can be no assurance we are not a USRPHC or will not become one in the future. Even if we are or were to become a USRPHC, gain arising from the sale or other taxable disposition by a Non-U.S. Holder of our common stock will not be subject to U.S. federal income tax if our common stock is "regularly traded," as defined by applicable Treasury Regulations, on an established securities market, and such Non-U.S. Holder owned, actually and constructively, 5% or less of our common stock throughout the shorter of the five-year period ending on the date of the sale or other taxable disposition or the Non-U.S. Holder's holding period.

Non-U.S. Holders should consult their tax advisors regarding potentially applicable income tax treaties that may provide for different rules.

Information Reporting and Backup Withholding

Subject to the discussion below on foreign accounts, a Non-U.S. Holder will not be subject to backup withholding with respect to distributions on our common stock we make to the Non-U.S. Holder, provided the applicable withholding agent does not have actual knowledge or reason to know such holder is a United States person and the holder certifies its non-U.S. status, such as by providing a valid IRS Form W-8BEN, W-8BEN-E or W-8ECI, or other applicable certification. However, information returns generally will be filed with the IRS in connection with any distributions (including deemed distributions) made on our common stock to the Non-U.S. Holder, regardless of whether any tax was actually withheld. Copies of these information returns may also be made available under the provisions of a specific treaty or agreement to the tax authorities of the country in which the Non-U.S. Holder resides or is established.

Information reporting and backup withholding may apply to the proceeds of a sale or other taxable disposition of our common stock within the United States, and information reporting may (although backup withholding generally will not) apply to the proceeds of a sale or other taxable disposition of our common stock outside the United States conducted through certain U.S.-related financial intermediaries, in each case, unless the beneficial owner certifies under penalty of perjury that it is a Non-U.S. Holder on IRS Form W-8BEN or W-8BEN-E, or other applicable form (and the payor does not have actual knowledge or reason to know that the beneficial owner is a U.S. person) or such owner otherwise establishes an exemption. Proceeds of a disposition of our common stock conducted through a non-U.S. office of a non-U.S. broker generally will not be subject to backup withholding or information reporting.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a Non-U.S. Holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

Additional Withholding Tax on Payments Made to Foreign Accounts

Withholding taxes may be imposed under the Foreign Account Tax Compliance Act, or FATCA, on certain types of payments made to non-U.S. financial institutions and certain other non-U.S. entities. Specifically, a 30% withholding tax may be imposed on dividends (including deemed dividends) paid on our common stock, or gross proceeds from the sale or other disposition of our

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common stock paid to a "foreign financial institution" or a "non-financial foreign entity" (each as defined in the Code), unless (1) the foreign financial institution undertakes certain diligence and reporting obligations, (2) the non-financial foreign entity either certifies it does not have any "substantial United States owners" (as defined in the Code) or furnishes identifying information regarding each substantial United States owner, or (3) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence and reporting requirements in (1) above, it must enter into an agreement with the U.S. Department of the Treasury requiring, among other things, that it undertake to identify accounts held by certain "specified United States persons" or "United States-owned foreign entities" (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on certain payments to non-compliant foreign financial institutions and certain other account holders. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules.

Under the applicable Treasury Regulations and administrative guidance, withholding under FATCA generally applies to payments of dividends (including deemed dividends) paid on our common stock, and will apply to payments of gross proceeds from the sale or other disposition of common stock on or after January 1, 2019. Because we may not know the extent to which a distribution is a dividend for U.S. federal income tax purposes at the time it is made, for purposes of these withholding rules we or the applicable withholding agent may treat the entire distribution as a dividend. Prospective investors should consult their tax advisors regarding the potential application of these withholding provisions.

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LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Latham & Watkins LLP. Certain legal matters relating to this offering will be passed upon for the underwriter by Ropes & Gray LLP.

EXPERTS

The consolidated financial statements of Momenta Pharmaceuticals, Inc. appearing in Momenta Pharmaceuticals, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2017 and the effectiveness of Momenta Pharmaceuticals, Inc.'s internal control over financial reporting as of December 31, 2017 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

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WHERE YOU CAN FIND MORE INFORMATION; INCORPORATION BY REFERENCE

Available Information

We file reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information about issuers, such as us, who file electronically with the SEC. The address of that website is <http://www.sec.gov>.

Our website address is www.momentapharma.com. The information contained in, or accessible through, our website, however, should not be considered a part of this prospectus supplement.

This prospectus supplement and the accompanying prospectus are part of a registration statement that we filed with the SEC and do not contain all of the information in the registration statement. The full registration statement may be obtained from the SEC or from us, as provided below. Other documents establishing the terms of the offered securities are or may be filed as exhibits to the registration statement. Statements in this prospectus supplement or the accompanying prospectus about these documents are summaries, and each such statement is qualified in all respects by reference to the document to which it refers. You should refer to the actual documents for a more complete description of the relevant matters.

Incorporation by Reference

The SEC's rules allow us to "incorporate by reference" information into this prospectus supplement and the accompanying prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus supplement and the accompanying prospectus, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus supplement and the accompanying prospectus to the extent that a statement contained in this prospectus supplement or the accompanying prospectus, or in a subsequently filed document incorporated herein by reference, modifies or supersedes that statement.

We incorporate by reference our documents listed below and any future filings made by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act in this prospectus supplement and the accompanying prospectus between the date of this prospectus supplement and the termination of the offering of the securities described in this prospectus supplement. We are not, however, incorporating by reference any documents or portions thereof, whether specifically listed below or filed in the future, that are not deemed "filed" with the SEC, including our Compensation Committee report and performance graph or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K.

We incorporate by reference the following information or documents that we have filed with the SEC:

Our Annual Report on Form 10-K for the fiscal year ended December 31, 2017, filed with the SEC on February 26, 2018.

Our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2018, filed with the SEC on May 9, 2018.

Our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2018, filed with the SEC on August 9, 2018.

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Our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2018, filed with the SEC on November 7, 2018.

Our Definitive Proxy Statement on Schedule 14A, filed with the SEC on April 27, 2018.

Our Current Reports on Form 8-K filed with the SEC on February 13, 2018, May 8, 2018, June 21, 2018, June 28, 2018, June 29, 2018, August 6, 2018, October 1, 2018 and December 6, 2018, and our Current Report on Form 8-K/A, filed with the SEC on October 23, 2018, which amends our Current Report on Form 8-K filed with the SEC on October 1, 2018.

The description of our common stock contained in our Registration Statement on Form 8-A, filed with the SEC on June 14, 2004, and any amendment or report filed with the SEC for the purpose of updating such description.

You may request a free copy of any of the documents incorporated by reference into this prospectus supplement or the accompanying prospectus (other than exhibits, unless they are specifically incorporated by reference in those documents) by writing or telephoning us at the following address:

Momenta Pharmaceuticals, Inc.
301 Binney Street
Cambridge, Massachusetts 02142
Attention: Alejandra Carvajal, Chief Legal Officer, General Counsel and Secretary
(617) 491-9700

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PROSPECTUS

Momenta Pharmaceuticals, Inc.

**Common Stock
Preferred Stock
Debt Securities
Warrants**

Common Stock Offered by the Selling Securityholders

We or selling securityholders may offer and sell the securities identified above from time to time in one or more offerings. This prospectus provides you with a general description of the securities.

Each time we or any of the selling securityholders offer and sell securities, we or such selling securityholders will provide a supplement to this prospectus that contains specific information about the offering and, if applicable, the selling securityholders, as well as the amounts, prices and terms of the securities. The supplement may also add, update or change information contained in this prospectus with respect to that offering. You should carefully read this prospectus and the applicable prospectus supplement before you invest in any of our securities.

We may offer and sell the securities described in this prospectus and any prospectus supplement to or through one or more underwriters, dealers and agents, or directly to purchasers, or through a combination of these methods. In addition, the selling securityholders may offer and sell shares of our common stock from time to time, together or separately. If any underwriters, dealers or agents are involved in the sale of any of the securities, their names and any applicable purchase price, fee, commission or discount arrangement between or among them will be set forth, or will be calculable from the information set forth, in the applicable prospectus supplement. See the sections of this prospectus entitled "About this Prospectus" and "Plan of Distribution" for more information. No securities may be sold without delivery of this prospectus and the applicable prospectus supplement describing the method and terms of the offering of such securities.

INVESTING IN OUR SECURITIES INVOLVES RISKS. SEE THE "RISK FACTORS" ON PAGE 3 OF THIS PROSPECTUS AND ANY SIMILAR SECTION CONTAINED IN THE APPLICABLE PROSPECTUS SUPPLEMENT CONCERNING FACTORS YOU SHOULD CONSIDER BEFORE INVESTING IN OUR SECURITIES.

Our common stock is listed on the Nasdaq Global Market under the symbol "MNTA." On February 26, 2016, the last reported sale price of our common stock on the Nasdaq Global Market was \$9.26 per share.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is February 29, 2016.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission, or the SEC, as a "well-known seasoned issuer" as defined in Rule 405 under the Securities Act of 1933, as amended, using a "shelf" registration process. By using a shelf registration statement, we may sell securities from time to time and in one or more offerings, and the selling securityholders to be named in a supplement to this prospectus may sell common stock from time to time in one or more offerings, as described in this prospectus. Each time that we or the selling securityholders offer and sell securities, we or the selling securityholders will provide a prospectus supplement to this prospectus that contains specific information about the securities being offered and sold and the specific terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus with respect to that offering. If there is any inconsistency between the information in this prospectus and the applicable prospectus supplement, you should rely on the prospectus supplement. Before purchasing any securities, you should carefully read both this prospectus and the applicable prospectus supplement, together with the additional information described under the heading "Where You Can Find More Information; Incorporation by Reference."

Neither we nor the selling securityholders have authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We and the selling securityholders will not make an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus and the applicable prospectus supplement to this prospectus is accurate as of the date on its respective cover, and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, unless we indicate otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates.

When we refer to "Momenta," "we," "our," "us" and the "Company" in this prospectus, we mean Momenta Pharmaceuticals, Inc. and its subsidiary, unless otherwise specified. When we refer to "you," we mean the holders of the applicable series of securities.

Our logo, trademarks and service marks are the property of Momenta. Other trademarks or service marks appearing in this prospectus are the property of their respective holders.

WHERE YOU CAN FIND MORE INFORMATION; INCORPORATION BY REFERENCE

Available Information

We file reports, proxy statements and other information with the SEC. Information filed with the SEC by us can be inspected and copied at the Public Reference Room maintained by the SEC at 100 F Street, N.E., Washington, D.C. 20549. You may also obtain copies of this information by mail from the Public Reference Room of the SEC at prescribed rates. Further information on the operation of the SEC's Public Reference Room in Washington, D.C. can be obtained by calling the SEC at 1-800-SEC-0330. The SEC also maintains a web site that contains reports, proxy and information statements and other information about issuers, such as us, who file electronically with the SEC. The address of that website is <http://www.sec.gov>.

Our web site address is www.momentapharma.com. The information on our web site, however, is not, and should not be deemed to be, a part of this prospectus.

This prospectus and any prospectus supplement are part of a registration statement that we filed with the SEC and do not contain all of the information in the registration statement. The full registration statement may be obtained from the SEC or us, as provided below. Forms of the indenture and other documents establishing the terms of the offered securities are or may be filed as exhibits to the registration statement. Statements in this prospectus or any prospectus supplement about these documents are summaries and each statement is qualified in all respects by reference to the document

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to which it refers. You should refer to the actual documents for a more complete description of the relevant matters. You may inspect a copy of the registration statement at the SEC's Public Reference Room in Washington, D.C. or through the SEC's website, as provided above.

Incorporation by Reference

The SEC's rules allow us to "incorporate by reference" information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus modifies or replaces that statement.

We incorporate by reference our documents listed below and any future filings made by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, which we refer to as the "Exchange Act" in this prospectus, between the date of this prospectus and the termination of the offering of the securities described in this prospectus. We are not, however, incorporating by reference any documents or portions thereof, whether specifically listed below or filed in the future, that are not deemed "filed" with the SEC, including our Compensation Committee report and performance graph or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K.

This prospectus and any accompanying prospectus supplement incorporate by reference the documents set forth below that have previously been filed with the SEC:

Our Annual Report on Form 10-K for the year ended December 31, 2015, filed with the SEC on February 26, 2016.

Our Current Reports on Form 8-K filed with the SEC on January 5, 2016 and January 8, 2016.

The description of our Common Stock contained in our Registration Statement on Form 8-A, dated June 14, 2004, filed with the SEC on June 14, 2004 and any amendment or report filed with the SEC for the purpose of updating the description.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of this offering, but excluding any information furnished to, rather than filed with, the SEC, will also be incorporated by reference into this prospectus and deemed to be part of this prospectus from the date of the filing of such reports and documents.

You may request a free copy of any of the documents incorporated by reference in this prospectus (other than exhibits, unless they are specifically incorporated by reference in the documents) by writing or telephoning us at the following address:

Momenta Pharmaceuticals, Inc.
675 West Kendall Street
Cambridge, Massachusetts 02142
Attention: Bruce A. Leicher, Corporate Secretary
(617) 491-9700

Exhibits to the filings will not be sent, however, unless those exhibits have specifically been incorporated by reference in this prospectus and any accompanying prospectus supplement.

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THE COMPANY

We are a biotechnology company focused on developing generic versions of complex drugs, biosimilars and novel therapeutics for oncology and autoimmune disease. We were originally founded to develop novel therapeutics by applying our innovative sugar sequencing technology. We expanded our focus, applying our analytic technology and expertise to develop complex generics and biosimilars, seeking to take advantage of the abbreviated development and regulatory pathways available to these types of products in an effort to minimize time-to-market and secure near-term product revenues. Our first product, a generic version of Lovenox® (enoxaparin sodium injection), was approved by the United States Food and Drug Administration in July 2010. Our product was the only generic version of Lovenox on the market until September 2011, during which time we recognized product revenues of over \$340 million. In addition to our generic version of Lovenox, which continues to be marketed in the United States, we currently are developing a generic version of Copaxone® (glatiramer acetate); a portfolio of biosimilar candidates, including a biosimilar of HUMIRA® (adalimumab) and a biosimilar of ORENCIA® (abatacept); a novel oncology product candidate, necuparanib; and several novel product candidates targeting autoimmune disease.

Our approach to drug discovery and development is built around a complex systems analysis platform that we use to obtain a detailed understanding of complex chemical and biologic systems, design product candidates, evaluate the biological function of products and product candidates, and develop reliable and scalable manufacturing processes. We believe our complex systems analysis platform gives us a competitive advantage in developing complex generics, biosimilars and novel therapeutics. Further, the analytic tools and methods, models and data sets, the knowledge and insights developed in one area further expand the platform and can direct, inform and advance efforts in other areas. In selecting our current development programs and in the evaluation of any potentially new programs, we look for those opportunities where we believe we can best leverage our platform to realize a competitive advantage to bring new medicines to patients and create value for our stockholders.

We filed our certificate of incorporation with the Secretary of State of Delaware on May 17, 2001.

Our principal executive offices are located at 675 West Kendall Street, Cambridge, Massachusetts 02142, and our telephone number is (617) 491-9700.

RISK FACTORS

Investment in any securities offered pursuant to this prospectus and the applicable prospectus supplement involves risks. You should carefully consider the risk factors incorporated by reference to our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q or Current Reports on Form 8-K we file after the date of this prospectus, and all other information contained or incorporated by reference into this prospectus, as updated by our subsequent filings under the Exchange Act, and the risk factors and other information contained in the applicable prospectus supplement before acquiring any of such securities. The occurrence of any of these risks might cause you to lose all or part of your investment in the offered securities.

USE OF PROCEEDS

We intend to use the net proceeds from the sale of the securities as set forth in the applicable prospectus supplement. We will not receive any of the proceeds from the sale of common stock being offered by any selling securityholders unless otherwise indicated in the applicable prospectus supplement.

Table of Contents**RATIO OF EARNINGS TO FIXED CHARGES**

The following table sets forth our ratio of earnings to fixed charges for each of the periods indicated. You should read this table in conjunction with the consolidated financial statements and notes incorporated by reference in this prospectus.

| | Fiscal Year Ended | | | | |
|-------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | December 31, 2015 | December 31, 2014 | December 31, 2013 | December 31, 2012 | December 31, 2011 |
| Ratios of earnings to fixed charges | | | | | 339x |

For purposes of calculating the ratios above, earnings consist of pre-tax loss from continuing operations plus fixed charges. Fixed charges include interest expense on indebtedness and an estimate of interest expense within rental expense.

We did not record earnings for the years ended December 31, 2012, 2013, 2014 and 2015. Accordingly, our earnings were insufficient to cover fixed charges in such periods, and we are unable to disclose a ratio of earnings to fixed charges for such periods. Due to our losses for the years ended December 31, 2012, 2013, 2014 and 2015, the ratio of earnings to fixed charges was less than 1x. We would have needed to generate additional earnings of \$58,648,000, \$108,408,000, \$98,600,000 and \$83,313,000, respectively, to achieve a coverage ratio of earnings to fixed charges of 1x in those periods.

Our ratios of earnings to combined fixed charges and preferred stock dividends for the periods indicated above are the same as our ratios of earnings to fixed charges set forth above because we had no shares of preferred stock outstanding during the periods indicated and currently have no shares of preferred stock outstanding.

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DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock is not complete and may not contain all the information you should consider before investing in our capital stock. This description is summarized from, and qualified in its entirety by reference to, our certificate of incorporation, which has been publicly filed with the SEC. See "Where You Can Find More Information; Incorporation by Reference."

Our authorized capital stock consists of:

100,000,000 shares of common stock, \$0.0001 par value; and

5,000,000 shares of preferred stock, \$0.01 par value.

Common Stock

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. Accordingly, holders of a majority of the shares of common stock entitled to vote in any election of directors may elect all of the directors standing for election. Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of outstanding preferred stock.

In the event of our liquidation, dissolution or winding up, the holders of our common stock are entitled to receive proportionately our net assets available after the payment of all debts and other liabilities and subject to the prior rights of any outstanding preferred stock. Holders of our common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of common stock are subject to and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Co.

Preferred Stock

Under the terms of our certificate of incorporation, our board of directors is authorized to direct us to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences of each series of preferred stock. We have designated one series of preferred stock. See " Series A Preferred Stock" below.

The purpose of authorizing our board of directors to issue preferred stock and determine its rights and preferences is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions, future financings and other corporate purposes, could have the effect of making it more difficult for a third party to acquire, or could discourage a third party from seeking to acquire, a majority of our outstanding voting stock.

The preferred stock of each series will rank senior to the common stock and the Series A Junior Participating Preferred Stock in priority of payment of dividends and in the distribution of assets in the event of our liquidation, dissolution or winding up, to the extent of the preferential amounts to which the preferred stock of the respective series will be entitled. Upon issuance, the shares of preferred stock will be fully paid and nonassessable, which means that its holders will have paid their purchase price in full and we may not require them to pay additional funds.

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Series A Preferred Stock

On October 31, 2005, in connection with the adoption of a rights plan, which has subsequently expired, our board of directors designated 100,000 shares of preferred stock as Series A Junior Participating Preferred Stock, \$0.01 par value per share, or Series A preferred stock, as set forth in the Certificate of Designations of Series A Junior Participating Preferred Stock filed with the Secretary of State of the State of Delaware on November 8, 2005.

Anti-Takeover Effects of Delaware Law and Our Charter and By-Laws

We are subject to Section 203 of the General Corporation Law of the State of Delaware. Subject to certain exceptions, Section 203 prevents a publicly-held Delaware corporation from engaging in a "business combination" with any "interested stockholder" for three years following the date that the person became an interested stockholder, unless the interested stockholder attained such status with the approval of our board of directors or unless the business combination is approved in a prescribed manner. A "business combination" includes, among other things, a merger or consolidation involving us, and the interested stockholder and the sale of more than 10% of our assets. In general, an "interested stockholder" is any entity or person beneficially owning 15% or more of our outstanding voting stock and any entity or person affiliated with or controlling or controlled by such entity or person.

Our certificate of incorporation provides that the directors elected may be removed only for cause and only by the affirmative vote of the holders of at least 75% of the votes which all our stockholders would be entitled to cast in any annual election of directors. Under our certificate of incorporation, any vacancy or newly created directorships on the board of directors can be filled only by vote of a majority of our directors then in office. The limitations on the ability of our stockholders to remove directors and fill vacancies could make it more difficult for a third party to acquire, or discourage a third party from seeking to acquire, control of our company.

Our certificate of incorporation provides that any action required or permitted to be taken by our stockholders at an annual meeting or special meeting of stockholders may only be taken if it is properly brought before such meeting and may not be taken by written action in lieu of a meeting. Our certificate of incorporation and our by-laws also provide that, except as otherwise required by law, special meetings of the stockholders can only be called by our chief executive officer, president, our chairman of the board, or a majority of our board of directors. In addition, our by-laws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of stockholders, including proposed nominations of candidates for election to our board of directors. Stockholders at an annual meeting may only consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our board of directors or by a stockholder of record on the record date for the meeting, who is entitled to vote at the meeting and who has delivered timely written notice in proper form to our secretary of the stockholder's intention to bring such business before the meeting. These provisions could have the effect of delaying stockholder actions that are favored by the holders of a majority of our outstanding voting securities until the next stockholder meeting.

The General Corporation Law of the State of Delaware provides generally 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 by-laws, unless a corporation's certificate of incorporation or by-laws, as the case may be, requires a greater percentage. Our by-laws may be amended or repealed by a majority vote of our board of directors or by the affirmative vote of the holders of at least 75% of the votes which all our stockholders would be entitled to cast in any annual election of directors.

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DESCRIPTION OF DEBT SECURITIES

The following description, together with the additional information we include in any applicable prospectus supplement, summarizes certain general terms and provisions of the debt securities that we may offer under this prospectus. When we offer to sell a particular series of debt securities, we will describe the specific terms of the series in a supplement to this prospectus. We will also indicate in the supplement to what extent the general terms and provisions described in this prospectus apply to a particular series of debt securities.

We may issue debt securities either separately, or together with, or upon the conversion or exercise of or in exchange for, other securities described in this prospectus. Debt securities may be our senior, senior subordinated or subordinated obligations and, unless otherwise specified in a supplement to this prospectus, the debt securities will be our direct, unsecured obligations and may be issued in one or more series.

The debt securities will be issued under an indenture between us and Wilmington Trust, National Association, as trustee. We have summarized select portions of the indenture below. The summary is not complete. The form of the indenture has been filed as an exhibit to the registration statement and you should read the indenture for provisions that may be important to you. In the summary below, we have included references to the section numbers of the indenture so that you can easily locate these provisions. Capitalized terms used in the summary and not defined herein have the meanings specified in the indenture.

As used in this section only, "Momenta," "we," "our" or "us" refer to Momenta Pharmaceuticals, Inc. excluding our subsidiary, unless expressly stated or the context otherwise requires.

General

The terms of each series of debt securities will be established by or pursuant to a resolution of our board of directors and set forth or determined in the manner provided in a resolution of our board of directors, in an officer's certificate or by a supplemental indenture. (Section 2.2) The particular terms of each series of debt securities will be described in a prospectus supplement relating to such series (including any pricing supplement or term sheet).

We can issue an unlimited amount of debt securities under the indenture that may be in one or more series with the same or various maturities, at par, at a premium, or at a discount. (Section 2.1) We will set forth in a prospectus supplement (including any pricing supplement or term sheet) relating to any series of debt securities being offered, the aggregate principal amount and the following terms of the debt securities, if applicable:

the title and ranking of the debt securities (including the terms of any subordination provisions);

the price or prices (expressed as a percentage of the principal amount) at which we will sell the debt securities;

any limit on the aggregate principal amount of the debt securities;

the date or dates on which the principal of the securities of the series is payable;

the rate or rates (which may be fixed or variable) per annum or the method used to determine the rate or rates (including any commodity, commodity index, stock exchange index or financial index) at which the debt securities will bear interest, the date or dates from which interest will accrue, the date or dates on which interest will commence and be payable and any regular record date for the interest payable on any interest payment date;

the place or places where principal of, and interest, if any, on the debt securities will be payable (and the method of such payment), where the securities of such series may be surrendered for

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registration of transfer or exchange, and where notices and demands to us in respect of the debt securities may be delivered;

the period or periods within which, the price or prices at which and the terms and conditions upon which we may redeem the debt securities;

any obligation we have to redeem or purchase the debt securities pursuant to any sinking fund or analogous provisions or at the option of a holder of debt securities and the period or periods within which, the price or prices at which and in the terms and conditions upon which securities of the series shall be redeemed or purchased, in whole or in part, pursuant to such obligation;

the dates on which and the price or prices at which we will repurchase debt securities at the option of the holders of debt securities and other detailed terms and provisions of these repurchase obligations;

the denominations in which the debt securities will be issued, if other than denominations of \$1,000 and any integral multiple thereof;

whether the debt securities will be issued in the form of certificated debt securities or global debt securities;

the portion of principal amount of the debt securities payable upon declaration of acceleration of the maturity date, if other than the principal amount;

the currency of denomination of the debt securities, which may be United States Dollars or any foreign currency, and if such currency of denomination is a composite currency, the agency or organization, if any, responsible for overseeing such composite currency;

the designation of the currency, currencies or currency units in which payment of principal of, premium and interest on the debt securities will be made;

if payments of principal of, premium or interest on the debt securities will be made in one or more currencies or currency units other than that or those in which the debt securities are denominated, the manner in which the exchange rate with respect to these payments will be determined;

the manner in which the amounts of payment of principal of, premium, if any, or interest on the debt securities will be determined, if these amounts may be determined by reference to an index based on a currency or currencies or by reference to a commodity, commodity index, stock exchange index or financial index;

any provisions relating to any security provided for the debt securities;

any addition to, deletion of or change in the Events of Default described in this prospectus or in the indenture with respect to the debt securities and any change in the acceleration provisions described in this prospectus or in the indenture with respect to the debt securities;

any addition to, deletion of or change in the covenants described in this prospectus or in the indenture with respect to the debt securities;

any depositaries, interest rate calculation agents, exchange rate calculation agents or other agents with respect to the debt securities;

the provisions, if any, relating to conversion or exchange of any debt securities of such series, including if applicable, the conversion or exchange price and period, provisions as to whether conversion or exchange will be mandatory, the events requiring an adjustment of the conversion or exchange price and provisions affecting conversion or exchange;

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any other terms of the debt securities, which may supplement, modify or delete any provision of the indenture as it applies to that series, including any terms that may be required under applicable law or regulations or advisable in connection with the marketing of the securities; and

whether any of our direct or indirect subsidiaries will guarantee the debt securities of that series, including the terms of subordination, if any, of such guarantees. (Section 2.2)

We may issue debt securities that provide for an amount less than their stated principal amount to be due and payable upon declaration of acceleration of their maturity pursuant to the terms of the indenture. We will provide you with information on the federal income tax considerations and other special considerations applicable to any of these debt securities in the applicable prospectus supplement.

If we denominate the purchase price of any of the debt securities in a foreign currency or currencies or a foreign currency unit or units, or if the principal of and any premium and interest on any series of debt securities is payable in a foreign currency or currencies or a foreign currency unit or units, we will provide you with information on the restrictions, elections, general tax considerations, specific terms and other information with respect to that issue of debt securities and such foreign currency or currencies or foreign currency unit or units in the applicable prospectus supplement.

Transfer and Exchange

Each debt security will be represented by either one or more global securities registered in the name of The Depository Trust Company, or the Depository, or a nominee of the Depository (we will refer to any debt security represented by a global debt security as a "book-entry debt security"), or a certificate issued in definitive registered form (we will refer to any debt security represented by a certificated security as a "certificated debt security") as set forth in the applicable prospectus supplement. Except as set forth under the heading "Global Debt Securities and Book-Entry System" below, book-entry debt securities will not be issuable in certificated form.

Certificated Debt Securities. You may transfer or exchange certificated debt securities at any office we maintain for this purpose in accordance with the terms of the indenture. (Section 2.4) No service charge will be made for any transfer or exchange of certificated debt securities, but we may require payment of a sum sufficient to cover any tax or other governmental charge payable in connection with a transfer or exchange. (Section 2.7)

You may effect the transfer of certificated debt securities and the right to receive the principal of, premium and interest on certificated debt securities only by surrendering the certificate representing those certificated debt securities and either reissuance by us or the trustee of the certificate to the new holder or the issuance by us or the trustee of a new certificate to the new holder.

Global Debt Securities and Book-Entry System. Each global debt security representing book-entry debt securities will be deposited with, or on behalf of, the Depository, and registered in the name of the Depository or a nominee of the Depository. Please see "Global Securities."

Covenants

We will set forth in the applicable prospectus supplement any restrictive covenants applicable to any issue of debt securities. (Article IV)

No Protection in the Event of a Change of Control

Unless we state otherwise in the applicable prospectus supplement, the debt securities will not contain any provisions which may afford holders of the debt securities protection in the event we have

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a change in control or in the event of a highly leveraged transaction (whether or not such transaction results in a change in control) which could adversely affect holders of debt securities.

Consolidation, Merger and Sale of Assets

We may not consolidate with or merge with or into, or convey, transfer or lease all or substantially all of our properties and assets to any person (a "successor person") unless:

we are the surviving corporation or the successor person (if other than Momenta) is a corporation organized and validly existing under the laws of any U.S. domestic jurisdiction and expressly assumes our obligations on the debt securities and under the indenture; and

immediately after giving effect to the transaction, no Default or Event of Default, shall have occurred and be continuing.

Notwithstanding the above, any of our subsidiaries may consolidate with, merge into or transfer all or part of its properties to us. (Section 5.1)

Events of Default

"Event of Default" means with respect to any series of debt securities, any of the following:

default in the payment of any interest upon any debt security of that series when it becomes due and payable, and continuance of such default for a period of 30 days (unless the entire amount of the payment is deposited by us with the trustee or with a paying agent prior to the expiration of the 30-day period);

default in the payment of principal of any security of that series at its maturity;

default in the performance or breach of any other covenant or warranty by us in the indenture (other than a covenant or warranty that has been included in the indenture solely for the benefit of a series of debt securities other than that series), which default continues uncured for a period of 60 days after we receive written notice from the trustee or Momenta and the trustee receive written notice from the holders of not less than 25% in principal amount of the outstanding debt securities of that series as provided in the indenture;

certain voluntary or involuntary events of bankruptcy, insolvency or reorganization of Momenta;

any other Event of Default provided with respect to debt securities of that series that is described in the applicable prospectus supplement. (Section 6.1)

No Event of Default with respect to a particular series of debt securities (except as to certain events of bankruptcy, insolvency or reorganization) necessarily constitutes an Event of Default with respect to any other series of debt securities. (Section 6.1) The occurrence of certain Events of Default or an acceleration under the indenture may constitute an event of default under certain indebtedness of ours or our subsidiaries outstanding from time to time.

We will provide the trustee written notice of any Default or Event of Default within 30 days of becoming aware of the occurrence of such Default or Event of Default, which notice will describe in reasonable detail the status of such Default or Event of Default and what action we are taking or propose to take in respect thereof. (Section 6.1)

If an Event of Default with respect to debt securities of any series at the time outstanding occurs and is continuing, then the trustee or the holders of not less than 25% in principal amount of the outstanding debt securities of that series may, by a notice in writing to us (and to the trustee if given by the holders), declare to be due and payable immediately the principal of (or, if the debt securities of that series are discount

securities, that portion of the principal amount as may be specified in the terms

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of that series) and accrued and unpaid interest, if any, on all debt securities of that series. In the case of an Event of Default resulting from certain events of bankruptcy, insolvency or reorganization, the principal (or such specified amount) of and accrued and unpaid interest, if any, on all outstanding debt securities will become and be immediately due and payable without any declaration or other act on the part of the trustee or any holder of outstanding debt securities. At any time after a declaration of acceleration with respect to debt securities of any series has been made, but before a judgment or decree for payment of the money due has been obtained by the trustee, the holders of a majority in principal amount of the outstanding debt securities of that series may rescind and annul the acceleration if all Events of Default, other than the non-payment of accelerated principal and interest, if any, with respect to debt securities of that series, have been cured or waived as provided in the indenture. (Section 6.2) We refer you to the prospectus supplement relating to any series of debt securities that are discount securities for the particular provisions relating to acceleration of a portion of the principal amount of such discount securities upon the occurrence of an Event of Default.

The indenture provides that the trustee may refuse to perform any duty or exercise any of its rights or powers under the indenture unless the trustee receives indemnity satisfactory to it against any cost, liability or expense which might be incurred by it in performing such duty or exercising such right or power. (Section 7.1(e)) Subject to certain rights of the trustee, the holders of a majority in principal amount of the outstanding debt securities of any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee or exercising any trust or power conferred on the trustee with respect to the debt securities of that series. (Section 6.12)

No holder of any debt security of any series will have any right to institute any proceeding, judicial or otherwise, with respect to the indenture or for the appointment of a receiver or trustee, or for any remedy under the indenture, unless:

that holder has previously given to the trustee written notice of a continuing Event of Default with respect to debt securities of that series; and

the holders of not less than 25% in principal amount of the outstanding debt securities of that series have made written request, and offered indemnity or security satisfactory to the trustee, to the trustee to institute the proceeding as trustee, and the trustee has not received from the holders of not less than a majority in principal amount of the outstanding debt securities of that series a direction inconsistent with that request and has failed to institute the proceeding within 60 days. (Section 6.7)

Notwithstanding any other provision in the indenture, the holder of any debt security will have an absolute and unconditional right to receive payment of the principal of, premium and any interest on that debt security on or after the due dates expressed in that debt security and to institute suit for the enforcement of payment. (Section 6.8)

The indenture requires us, within 120 days after the end of our fiscal year, to furnish to the trustee a statement as to compliance with the indenture. (Section 4.3) If a Default or Event of Default occurs and is continuing with respect to the securities of any series and if it is known to a responsible officer of the trustee, the trustee shall mail to each Securityholder of the securities of that series notice of a Default or Event of Default within 90 days after it occurs or, if later, after a responsible officer of the trustee has knowledge of such Default or Event of Default. The indenture provides that the trustee may withhold notice to the holders of debt securities of any series of any Default or Event of Default (except in payment on any debt securities of that series) with respect to debt securities of that series if the trustee determines in good faith that withholding notice is in the interest of the holders of those debt securities. (Section 7.5)

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Modification and Waiver

We and the trustee may modify, amend or supplement the indenture or the debt securities of any series without the consent of any holder of any debt security:

to cure any ambiguity, defect or inconsistency;

to comply with covenants in the indenture described above under the heading "Consolidation, Merger and Sale of Assets";

to provide for uncertificated securities in addition to or in place of certificated securities;

to add guarantees with respect to debt securities of any series or secure debt securities of any series;

to surrender any of our rights or powers under the indenture;

to add covenants or events of default for the benefit of the holders of debt securities of any series;

to comply with the applicable procedures of the applicable depositary;

to make any change that does not adversely affect the rights of any holder of debt securities;

to provide for the issuance of and establish the form and terms and conditions of debt securities of any series as permitted by the indenture;

to effect the appointment of a successor trustee with respect to the debt securities of any series and to add to or change any of the provisions of the indenture to provide for or facilitate administration by more than one trustee; or

to comply with requirements of the SEC in order to effect or maintain the qualification of the indenture under the Trust Indenture Act. (Section 9.1)

We may also modify and amend the indenture with the consent of the holders of at least a majority in principal amount of the outstanding debt securities of each series affected by the modifications or amendments. We may not make any modification or amendment without the consent of the holders of each affected debt security then outstanding if that amendment will:

reduce the amount of debt securities whose holders must consent to an amendment, supplement or waiver;

reduce the rate of or extend the time for payment of interest (including default interest) on any debt security;

reduce the principal of or premium on or change the fixed maturity of any debt security or reduce the amount of, or postpone the date fixed for, the payment of any sinking fund or analogous obligation with respect to any series of debt securities;

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reduce the principal amount of discount securities payable upon acceleration of maturity;

waive a default in the payment of the principal of, premium or interest on any debt security (except a rescission of acceleration of the debt securities of any series by the holders of at least a majority in aggregate principal amount of the then outstanding debt securities of that series and a waiver of the payment default that resulted from such acceleration);

make the principal of or premium or interest on any debt security payable in currency other than that stated in the debt security;

make any change to certain provisions of the indenture relating to, among other things, the right of holders of debt securities to receive payment of the principal of, premium and interest on

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those debt securities and to institute suit for the enforcement of any such payment and to waivers or amendments; or

waive a redemption payment with respect to any debt security. (Section 9.3)

Except for certain specified provisions, the holders of at least a majority in principal amount of the outstanding debt securities of any series may on behalf of the holders of all debt securities of that series waive our compliance with provisions of the indenture. (Section 9.2) The holders of a majority in principal amount of the outstanding debt securities of any series may on behalf of the holders of all the debt securities of such series waive any past default under the indenture with respect to that series and its consequences, except a default in the payment of the principal of, premium or any interest on any debt security of that series; provided, however, that the holders of a majority in principal amount of the outstanding debt securities of any series may rescind an acceleration and its consequences, including any related payment default that resulted from the acceleration. (Section 6.13)

Defeasance of Debt Securities and Certain Covenants in Certain Circumstances

Legal Defeasance. The indenture provides that, unless otherwise provided by the terms of the applicable series of debt securities, we may be discharged from any and all obligations in respect of the debt securities of any series (subject to certain exceptions). We will be so discharged upon the irrevocable deposit with the trustee, in trust, of money and/or U.S. government obligations or, in the case of debt securities denominated in a single currency other than U.S. Dollars, government obligations of the government that issued or caused to be issued such currency, that, through the payment of interest and principal in accordance with their terms, will provide money or U.S. government obligations in an amount sufficient in the opinion of a nationally recognized firm of independent public accountants or investment bank to pay and discharge each installment of principal, premium and interest on and any mandatory sinking fund payments in respect of the debt securities of that series on the stated maturity of those payments in accordance with the terms of the indenture and those debt securities.

This discharge may occur only if, among other things, we have delivered to the trustee an opinion of counsel stating that we have received from, or there has been published by, the United States Internal Revenue Service a ruling or, since the date of execution of the indenture, there has been a change in the applicable United States federal income tax law, in either case to the effect that, and based thereon such opinion shall confirm that, the holders of the debt securities of that series will not recognize income, gain or loss for United States federal income tax purposes as a result of the deposit, defeasance and discharge and will be subject to United States federal income tax on the same amounts and in the same manner and at the same times as would have been the case if the deposit, defeasance and discharge had not occurred. (Section 8.3)

Defeasance of Certain Covenants. The indenture provides that, unless otherwise provided by the terms of the applicable series of debt securities, upon compliance with certain conditions:

we may omit to comply with the covenant described under the heading "Consolidation, Merger and Sale of Assets" and certain other covenants set forth in the indenture, as well as any additional covenants which may be set forth in the applicable prospectus supplement; and

any omission to comply with those covenants will not constitute a Default or an Event of Default with respect to the debt securities of that series ("covenant defeasance").

The conditions include:

depositing with the trustee money and/or U.S. government obligations or, in the case of debt securities denominated in a single currency other than U.S. Dollars, government obligations of the government that issued or caused to be issued such currency, that, through the payment of

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interest and principal in accordance with their terms, will provide money in an amount sufficient in the opinion of a nationally recognized firm of independent public accountants or investment bank to pay and discharge each installment of principal of, premium and interest on and any mandatory sinking fund payments in respect of the debt securities of that series on the stated maturity of those payments in accordance with the terms of the indenture and those debt securities; and

delivering to the trustee an opinion of counsel to the effect that we have received from, or there has been published by, the United States Internal Revenue Service a ruling or, since the date of execution of the indenture, there has been a change in the applicable United States federal income tax law, in either case to the effect that, and based thereon such opinion shall confirm that, the holders of the debt securities of that series will not recognize income, gain or loss for United States federal income tax purposes as a result of the deposit and related covenant defeasance and will be subject to United States federal income tax on the same amounts and in the same manner and at the same times as would have been the case if the deposit and related covenant defeasance had not occurred. (Section 8.4)

No Personal Liability of Directors, Officers, Employees or Stockholders

None of our past, present or future directors, officers, employees or stockholders, as such, will have any liability for any of our obligations under the debt securities or the indenture or for any claim based on, or in respect or by reason of, such obligations or their creation. By accepting a debt security, each holder waives and releases all such liability. This waiver and release is part of the consideration for the issue of the debt securities. However, this waiver and release may not be effective to waive liabilities under U.S. federal securities laws, and it is the view of the SEC that such a waiver is against public policy.

Governing Law

The indenture and the debt securities, including any claim or controversy arising out of or relating to the indenture or the securities, will be governed by the laws of the State of New York (Section 10.10).

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DESCRIPTION OF WARRANTS

We will set forth in the applicable prospectus supplement a description of any warrants issued by us that may be offered and sold pursuant to this prospectus.

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GLOBAL SECURITIES

Book-Entry, Delivery and Form

Unless we indicate differently in a prospectus supplement, the securities initially will be issued in book-entry form and represented by one or more global notes or global securities, or, collectively, global securities. The global securities will be deposited with, or on behalf of, The Depository Trust Company, New York, New York, as depository, or DTC, and registered in the name of Cede & Co., the nominee of DTC. Unless and until it is exchanged for individual certificates evidencing securities under the limited circumstances described below, a global security may not be transferred except as a whole by the depository to its nominee or by the nominee to the depository, or by the depository or its nominee to a successor depository or to a nominee of the successor depository.

DTC has advised us that it is:

a limited-purpose trust company organized under the New York Banking Law;

a "banking organization" within the meaning of the New York Banking Law;

a member of the Federal Reserve System;

a "clearing corporation" within the meaning of the New York Uniform Commercial Code; and

a "clearing agency" registered pursuant to the provisions of Section 17A of the Exchange Act.

DTC holds securities that its participants deposit with DTC. DTC also facilitates the settlement among its participants of securities transactions, such as transfers and pledges, in deposited securities through electronic computerized book-entry changes in participants' accounts, thereby eliminating the need for physical movement of securities certificates. "Direct participants" in DTC include securities brokers and dealers, including underwriters, banks, trust companies, clearing corporations and other organizations. DTC is a wholly-owned subsidiary of The Depository Trust & Clearing Corporation, or DTCC. DTCC is the holding company for DTC, National Securities Clearing Corporation and Fixed Income Clearing Corporation, all of which are registered clearing agencies. DTCC is owned by the users of its regulated subsidiaries. Access to the DTC system is also available to others, which we sometimes refer to as indirect participants, that clear through or maintain a custodial relationship with a direct participant, either directly or indirectly. The rules applicable to DTC and its participants are on file with the SEC.

Purchases of securities under the DTC system must be made by or through direct participants, which will receive a credit for the securities on DTC's records. The ownership interest of the actual purchaser of a security, which we sometimes refer to as a beneficial owner, is in turn recorded on the direct and indirect participants' records. Beneficial owners of securities will not receive written confirmation from DTC of their purchases. However, beneficial owners are expected to receive written confirmations providing details of their transactions, as well as periodic statements of their holdings, from the direct or indirect participants through which they purchased securities. Transfers of ownership interests in global securities are to be accomplished by entries made on the books of participants acting on behalf of beneficial owners. Beneficial owners will not receive certificates representing their ownership interests in the global securities, except under the limited circumstances described below.

To facilitate subsequent transfers, all global securities deposited by direct participants with DTC will be registered in the name of DTC's partnership nominee, Cede & Co., or such other name as may be requested by an authorized representative of DTC. The deposit of securities with DTC and their registration in the name of Cede & Co. or such other nominee will not change the beneficial ownership of the securities. DTC has no knowledge of the actual beneficial owners of the securities. DTC's records reflect only the identity of the direct participants to whose accounts the securities are credited,

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which may or may not be the beneficial owners. The participants are responsible for keeping account of their holdings on behalf of their customers.

So long as the securities are in book-entry form, you will receive payments and may transfer securities only through the facilities of the depositary and its direct and indirect participants. We will maintain an office or agency in the location specified in the prospectus supplement for the applicable securities, where notices and demands in respect of the securities and the indenture may be delivered to us and where certificated securities may be surrendered for payment, registration of transfer or exchange.

Conveyance of notices and other communications by DTC to direct participants, by direct participants to indirect participants and by direct participants and indirect participants to beneficial owners will be governed by arrangements among them, subject to any legal requirements in effect from time to time.

Redemption notices will be sent to DTC. If less than all of the securities of a particular series are being redeemed, DTC's practice is to determine by lot the amount of the interest of each direct participant in the securities of such series to be redeemed.

Neither DTC nor Cede & Co. (or such other DTC nominee) will consent or vote with respect to the securities. Under its usual procedures, DTC will mail an omnibus proxy to us as soon as possible after the record date. The omnibus proxy assigns the consenting or voting rights of Cede & Co. to those direct participants to whose accounts the securities of such series are credited on the record date, identified in a listing attached to the omnibus proxy.

So long as securities are in book-entry form, we will make payments on those securities to the depositary or its nominee, as the registered owner of such securities, by wire transfer of immediately available funds. If securities are issued in definitive certificated form under the limited circumstances described below, we will have the option of making payments by check mailed to the addresses of the persons entitled to payment or by wire transfer to bank accounts in the United States designated in writing to the applicable trustee or other designated party at least 15 days before the applicable payment date by the persons entitled to payment, unless a shorter period is satisfactory to the applicable trustee or other designated party.

Redemption proceeds, distributions and dividend payments on the securities will be made to Cede & Co., or such other nominee as may be requested by an authorized representative of DTC. DTC's practice is to credit direct participants' accounts upon DTC's receipt of funds and corresponding detail information from us on the payment date in accordance with their respective holdings shown on DTC records. Payments by participants to beneficial owners will be governed by standing instructions and customary practices, as is the case with securities held for the account of customers in bearer form or registered in "street name." Those payments will be the responsibility of participants and not of DTC or us, subject to any statutory or regulatory requirements in effect from time to time. Payment of redemption proceeds, distributions and dividend payments to Cede & Co., or such other nominee as may be requested by an authorized representative of DTC, is our responsibility, disbursement of payments to direct participants is the responsibility of DTC, and disbursement of payments to the beneficial owners is the responsibility of direct and indirect participants.

Except under the limited circumstances described below, purchasers of securities will not be entitled to have securities registered in their names and will not receive physical delivery of securities. Accordingly, each beneficial owner must rely on the procedures of DTC and its participants to exercise any rights under the securities and the indenture.

The laws of some jurisdictions may require that some purchasers of securities take physical delivery of securities in definitive form. Those laws may impair the ability to transfer or pledge beneficial interests in securities.

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DTC may discontinue providing its services as securities depository with respect to the securities at any time by giving reasonable notice to us. Under such circumstances, in the event that a successor depository is not obtained, securities certificates are required to be printed and delivered.

As noted above, beneficial owners of a particular series of securities generally will not receive certificates representing their ownership interests in those securities. However, if:

DTC notifies us that it is unwilling or unable to continue as a depository for the global security or securities representing such series of securities or if DTC ceases to be a clearing agency registered under the Exchange Act at a time when it is required to be registered and a successor depository is not appointed within 90 days of the notification to us or of our becoming aware of DTC's ceasing to be so registered, as the case may be;

we determine, in our sole discretion, not to have such securities represented by one or more global securities; or

an Event of Default has occurred and is continuing with respect to such series of securities,

we will prepare and deliver certificates for such securities in exchange for beneficial interests in the global securities. Any beneficial interest in a global security that is exchangeable under the circumstances described in the preceding sentence will be exchangeable for securities in definitive certificated form registered in the names that the depository directs. It is expected that these directions will be based upon directions received by the depository from its participants with respect to ownership of beneficial interests in the global securities.

We have obtained the information in this section and elsewhere in this prospectus concerning DTC and DTC's book-entry system from sources that are believed to be reliable, but we take no responsibility for the accuracy of this information.

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SELLING SECURITYHOLDERS

Information about selling securityholders, where applicable, will be set forth in a prospectus supplement, in a post-effective amendment or in filings we make with the SEC under the Exchange Act that are incorporated by reference.

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PLAN OF DISTRIBUTION

We or any of the selling securityholders may sell the offered securities from time to time:

through underwriters or dealers;

through agents;

directly to one or more purchasers; or

through a combination of any of these methods of sale.

We will identify the specific plan of distribution, including any underwriters, dealers, agents or direct purchasers and their compensation in the applicable prospectus supplement.

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LEGAL MATTERS

Latham & Watkins LLP will pass upon certain legal matters relating to the issuance and sale of the securities offered hereby on behalf of Momenta Pharmaceuticals, Inc. Additional legal matters may be passed upon for us, the selling securityholders or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The consolidated financial statements of Momenta Pharmaceuticals, Inc. appearing in Momenta Pharmaceuticals, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2015 and the effectiveness of Momenta Pharmaceuticals, Inc.'s internal control over financial reporting as of December 31, 2015, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

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\$150,000,000

Momenta Pharmaceuticals, Inc.

Common Stock

PROSPECTUS SUPPLEMENT

Goldman Sachs & Co. LLC

, 2018
