

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, par value \$0.0001 per share	6,476,002	\$187.34 ⁽¹⁾	\$1,213,214,214.68 ⁽¹⁾	\$140,976 ⁽²⁾

- (1) Estimated solely for purposes of calculating the registration fee pursuant to Rule 457(c) of the Securities Act of 1933, as amended, based on the market value of Alexion Pharmaceuticals, Inc. common stock being registered, as established by the average of the high and low prices of Alexion Pharmaceuticals, Inc. common stock as reported on the NASDAQ Global Select Market on August 11, 2015, which was \$187.34.
- (2) Calculated in accordance with Rule 456(b) and 457(r) of the Securities Act of 1933, as amended (the "Securities Act").

Filed Pursuant to Rule 424(b)(7)

Prospectus Supplement

(To Prospectus dated August 13, 2015)



Alexion Pharmaceuticals, Inc.

Common Stock

This prospectus supplement registers for resale, from time to time, up to 6,476,002 shares of our common stock, par value \$0.0001 per share, by the selling stockholders named herein. The prices at which such selling stockholders may dispose of their shares will be determined by the selling stockholders or their transferees. We will not receive proceeds from any sale of shares of common stock by the selling stockholders, but we have agreed to pay certain registration expenses relating to such shares of common stock. The selling stockholders from time to time may offer and sell the shares held directly to purchasers or through underwriters, broker-dealers or agents, who may receive compensation in the form of discounts, commissions or concessions. For further information regarding the possible methods by which the shares may be distributed, see "Plan of Distribution."

Our common stock is traded on the NASDAQ Global Select Market under the symbol "ALXN." On August 11, 2015, the last reported sales price per share of our common stock was \$186.31.

The selling stockholders are entities affiliated with one of our directors, Felix Baker.

See "Risk Factors" on page S-3 of this prospectus supplement and the risk factors described in the other documents incorporated by reference herein to read about risks you should consider before buying shares of the common stock.

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 supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is August 13, 2015.

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus relate to part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, using a shelf registration process. Both this prospectus supplement and the accompanying prospectus include or incorporate by reference important information about us, our common stock and other information you should know before investing. You should read both this prospectus supplement and the accompanying prospectus as well as additional information described under “Where You Can Find More Information” in this prospectus supplement before making an investment decision.

Neither we nor the selling stockholders have authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus supplement, in the accompanying prospectus or in any free writing prospectus prepared by or on behalf of us or the selling stockholders or to which we or the selling stockholders have referred you. Neither we nor the selling stockholders take responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus supplement and the accompanying prospectus do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the securities described in this prospectus supplement or an offer to sell or the solicitation of any offer to buy such securities in any circumstances in which such offer or solicitation is unlawful. You should assume that the information appearing in this prospectus supplement and the accompanying prospectus, the documents incorporated by reference and any related free writing prospectus is accurate only as of their respective dates. Our business, financial condition, results of operations and prospects may have changed materially since those dates.

This prospectus supplement may add to, update or change the information in the accompanying prospectus. If information in this prospectus supplement is inconsistent with information in the accompanying prospectus, this prospectus supplement will apply and will supersede that information in the accompanying prospectus.

We use various trademarks and trade names in our business, including without limitation “Alexion.” This prospectus supplement also contains trademarks and trade names of other businesses that are the property of their respective holders.

Unless otherwise indicated or unless the context requires otherwise, all references in this prospectus supplement to “Alexion,” “we,” “us” and “our” refer to Alexion Pharmaceuticals, Inc.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights selected information contained elsewhere in this prospectus supplement and the accompanying prospectus or incorporated by reference herein or therein. This summary does not contain all of the information you should consider before investing in our common stock. You should read this entire prospectus supplement and the accompanying prospectus carefully, especially the risks of investing in our common stock discussed under “Risk Factors” beginning on page S-3 of this prospectus supplement and the consolidated financial statements and notes to those consolidated financial statements incorporated by reference in this prospectus supplement, before making an investment decision.

Our Company

We are a biopharmaceutical company focused on serving patients with severe and ultra-rare disorders through the innovation, development and commercialization of life-transforming therapeutic products. Our marketed product Soliris® is the first and only therapeutic approved for patients with either of two severe and ultra-rare disorders resulting from chronic uncontrolled activation of the complement component of the immune system: paroxysmal nocturnal hemoglobinuria (PNH), a life-threatening and ultra-rare genetic blood disorder, and atypical hemolytic uremic syndrome (aHUS), a life-threatening and ultra-rare genetic disease. We are also evaluating additional potential indications for Soliris in other severe and devastating diseases in which uncontrolled complement activation is the underlying mechanism. In addition, Strensiq™ (asfotase alfa) for the treatment of hypophosphatasia (HPP) and Kanuma™ (Sebelipase alfa) for the treatment of lysosomal acid lipase deficiency (LAL-D) are undergoing regulatory review and we are progressing in various stages of development with additional product candidates as potential treatments for patients with severe and life-threatening ultra-rare disorders. We were incorporated in 1992 and began commercial sale of Soliris in 2007.

Recent Developments

On June 22, 2015, we acquired Synageva BioPharma Corp. (Synageva), a publicly-held clinical-stage biotechnology company based in Lexington, Massachusetts. The acquisition was intended to further our objective to develop and deliver life-transforming therapies to an increasing number of patients with devastating and rare diseases. Synageva's lead product candidate, Kanuma™ (sebelipase alfa), is an enzyme replacement therapy for patients suffering with lysosomal acid lipase deficiency (LAL-D), a life-threatening, genetic metabolic disease for which there are no approved treatments.

Corporate Information

We were incorporated in Delaware in 1992. The address of our principal executive offices is 352 Knotter Drive, Cheshire, Connecticut 06410, and the telephone number at our principal executive offices is (203) 272-2596.

The Offering

Issuer	Alexion Pharmaceuticals, Inc.
Selling Stockholders	For information concerning the shares of our common stock that may be offered from time to time by the selling stockholders pursuant to this prospectus supplement, see the “Selling Stockholders.”
Common Stock Registered for Resale by the Selling Stockholders	6,476,002 shares
Use of Proceeds	We will not receive any of the proceeds from any sales of shares of our common stock by the selling stockholders. For more information, see the “Use of Proceeds.”
Insider Participation	On July 8, 2015, we entered into a Registration Rights Agreement (the Registration Rights Agreement) with the selling stockholders. This prospectus supplement is being filed pursuant to the Registration Rights Agreement. Entities affiliated with one of our directors, Felix Baker, are offering the shares of our common stock registered pursuant to this prospectus supplement, which may be sold from time to time.
Risk Factors	See “Risk Factors” beginning on page S-3 and other information included or incorporated by reference in this prospectus supplement and the accompanying prospectus for a discussion of factors you should carefully consider before deciding to invest in shares of our common stock.
NASDAQ Global Select Market Symbol	ALXN

RISK FACTORS

You should carefully consider the following risk factors, as well as the other information in this prospectus supplement and the accompanying prospectus, as well as the information incorporated by reference herein and therein, including without limitation the risks, uncertainties and assumptions discussed under the heading “Risk Factors” in our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2015 filed with the SEC on July 31, 2015, before you decide to invest in Alexion and our business because these risk factors may have a significant impact on our business, operating results, financial condition and cash flows. The risks and uncertainties described in the documents incorporated by reference and those described below are not the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations. If any of those risks actually occurs, our business, financial condition and results of operations could be materially and adversely affected.

Risks Related to this Offering

Our common stock price has historically been volatile.

The market price for our common stock is volatile. While we have recently experienced a general increase in the market price of our common stock, that trend may not continue, may not continue at the current rate or may reverse. During calendar year 2014, the price of our common stock as reported on the NASDAQ Global Select Market ranged from a high of \$203.30 to a low of \$126.76 and for the period January 1, 2015 through August 11, 2015, the range was from a high of \$208.88 to a low of \$150.06. Factors giving rise to this volatility may include:

- actual or anticipated variations in our quarterly or annual results of operations (including sales of Soliris), cash flows, financial condition or liquidity;
- unanticipated delays or challenges obtaining marketing approval for any of our product candidates (including Kanuma™ (sebelipase alfa) and Strensiq™ (asfotase alfa));
- our results of operations failing to meet the guidance we have provided;
- change in our earnings estimates;
- changes in earnings estimates of, or recommendations by, securities analysts;
- results of our clinical trials or product development efforts;
- actions by the U.S. Food and Drug Administration (FDA) or other regulatory agencies;
- changes in market valuations of similar companies;
- additions or departures of key management personnel;
- developments concerning proprietary rights, including patents and litigation;
- actions by institutional stockholders;

- competition;
- strategic transactions involving us or our competitors;
- public announcements by our competitors or others;
- speculation in the press or investment community;
- general financial market and economic conditions in the United States and abroad; and
- the realization of any of the other risk factors included in, or incorporated by reference to, this prospectus supplement and the accompanying prospectus.

Many of the factors listed above are beyond our control. Those factors may cause the market price of our common stock to decline, regardless of our financial performance and condition and prospects. It is impossible to provide any assurance that the market price of our common stock will not fall in the future, and it may be difficult for holders to resell shares of our common stock at prices they find attractive, or at all.

Investors in this offering may experience future dilution.

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 paid by investors for the shares registered for resale by the selling stockholders pursuant to this prospectus supplement. We have an effective shelf registration statement from which additional shares of common stock can be offered. If the price per share at which we sell additional shares of our common stock or related securities in future transactions is less than the price per share paid by investors for shares sold by the selling stockholders pursuant to this prospectus supplement, investors who purchase such shares from the selling stockholders will suffer a dilution in their investment.

Future sales of our common stock may depress our stock price.

Immediately after this offering, we will have approximately 226,154,636 million shares of common stock outstanding, based on the number of outstanding shares of common stock as of July 29, 2015. The shares of common stock that are being registered for resale by the selling stockholders pursuant to this prospectus supplement may be resold in the public market immediately. We cannot predict the effect that future sales of our common stock or other equity-related securities would have on the market price of our common stock.

We have never paid cash dividends on our common stock, and because we do not anticipate paying any cash dividends in the foreseeable future, capital appreciation, if any, of our common stock will be your sole source of gain on an investment in our common stock.

We have never paid cash dividends on our common stock. We do not expect to declare or pay any cash dividends on our common stock in the near future. We intend to retain all earnings, if any, to invest in our operations. The payment of future dividends is within the discretion of our board of directors and will depend upon our future earnings, if any, our capital requirements, financial condition and other

relevant factors. As a result, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future. Furthermore, we agreed to certain covenants in connection with entering into our credit agreement which restrict our ability to pay dividends.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and the accompanying prospectus contain and incorporate by reference forward-looking statements that have been made pursuant to the provisions of the Private Securities Litigation Reform Act of 1995. All statements contained or incorporated by reference in this prospectus supplement and the accompanying prospectus other than statements of historical fact are forward-looking statements. Such forward-looking statements are based on current expectations, estimates and projections about our industry, management's beliefs, and certain assumptions made by our management, and may include, but are not limited to, statements regarding the potential benefits and commercial potential of Soliris for its approved indications and any expanded uses, timing and effect of sales of Soliris in various markets worldwide, pricing for Soliris, level of insurance coverage and reimbursement for Soliris, level of future Soliris sales and collections, timing regarding development and regulatory approvals for additional indications or in additional territories for Soliris, timing regarding development and regulatory approvals for our other therapeutic candidates, the medical and commercial potential of additional indications for Soliris, failure to satisfactorily address the issues raised by the FDA in the March 2013 Warning Letter and Form 483 issued by the FDA in August 2014, costs, expenses and capital requirements, cash outflows, cash from operations, status of reimbursement, price approval and funding processes in various countries worldwide, progress in developing commercial infrastructure and interest about Soliris and our drug candidates in the patient, physician and payer communities, the safety and efficacy of Soliris and our product candidates, estimates of the potential markets and estimated commercialization dates for Soliris and our product candidates around the world, sales and marketing plans, any changes in the current or anticipated market demand or medical need for Soliris or our product candidates, status of our ongoing clinical trials for eculizumab, asfotase alfa, sebelipase alfa and our other product candidates, commencement dates for new clinical trials, clinical trial results, evaluation of our clinical trial results by regulatory agencies, the adequacy of our pharmacovigilance and drug safety reporting processes, prospects for regulatory approval of Strensiq™ (asfotase alfa) and our other product candidates, need for additional research and testing, the uncertainties involved in the drug development process and manufacturing, performance and reliance on third party service providers, our future research and development activities, plans for acquired programs, our ability to develop and commercialize products with our collaborators, assessment of competitors and potential competitors, the outcome of challenges and opposition proceedings to our intellectual property, assertion or potential assertion by third parties that the manufacture, use or sale of Soliris infringes their intellectual property, estimates of the capacity of manufacturing and other service facilities to support Soliris and our product candidates, potential costs resulting from product liability or other third party claims, the sufficiency of our existing capital resources and projected cash needs, the possibility that expected tax benefits will not be realized, assessment of impact of recent accounting pronouncements, declines in sovereign credit ratings or sovereign defaults in countries where we sell Soliris, delay of collection or reduction in reimbursement due to adverse economic conditions or changes in government and private insurer regulations and approaches to reimbursement, the short and long term effects of other government healthcare measures, and the effect of shifting foreign exchange rates. Words such as "anticipates," "expects," "intends," "plans," "believes," "seeks," "estimates," variations of such words and similar expressions are intended to identify such forward-looking statements, although not all forward-looking statements contain these identifying words. These statements are not guarantees of future performance and are subject to certain

risks, uncertainties, and assumptions that are difficult to predict; therefore, actual results may differ materially from those expressed or forecasted in any such forward-looking statements. Such risks and uncertainties include, but are not limited to, those discussed later in this prospectus supplement under the section entitled “Risk Factors” and in “Part II, Item 1A—Risk Factors” in our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2015 filed with the SEC on July 31, 2015, which is incorporated by reference in this prospectus supplement and the accompanying prospectus. Unless required by law, we undertake no obligation to update publicly any forward-looking statements, whether because of new information, future events or otherwise. However, readers should carefully review the risk factors set forth in this and other reports or documents we file from time to time with the Securities and Exchange Commission.

USE OF PROCEEDS

The net proceeds from the sale of shares of common stock pursuant to this prospectus supplement will be received by the selling stockholders or their transferees. We will not receive any of the proceeds from the sale of the shares by the selling stockholders or their transferees.

SELLING STOCKHOLDERS

In connection with the acquisition of Synageva, on July 8, 2015, we entered into a Registration Rights Agreement (the Registration Rights Agreement) with the selling stockholders identified below. The Registration Rights Agreement requires that, among other things, the Company file a final prospectus or prospectus supplement to an existing registration statement covering the resale of the Registrable Securities (as defined therein) of each of the selling stockholders. This prospectus supplement is being filed pursuant to the Registration Rights Agreement.

The following table sets forth information with respect to the beneficial ownership of our common stock as of July 29, 2015 for each selling stockholder. The percentages of shares outstanding provided in the table are based on a total of 226,154,636 shares of our common stock outstanding as of July 29, 2015.

The number of shares beneficially owned by each selling stockholder is determined pursuant to Rule 13d-3 promulgated by the SEC under the Securities Exchange Act of 1934, as amended (the Exchange Act). The information does not necessarily indicate beneficial ownership for any other purpose. Under those rules, the number of shares of common stock deemed outstanding includes shares issuable upon exercise of stock options held by the respective person or group that may be exercised within 60 days of July 29, 2015. For purposes of calculating each person's or group's percentage ownership, shares of common stock issuable pursuant to stock options exercisable within 60 days after July 29, 2015 are reflected in the table below and included as outstanding and beneficially owned for that person or group but are not treated as outstanding for the purpose of computing the percentage ownership of any other person or group.

Except as otherwise indicated, to our knowledge, the persons named in the table below have sole voting and investment power with respect to all shares of common stock shown as beneficially owned by them, subject to community property laws, where applicable.

Name	Common Stock Owned Prior to the Sale of the Shares Registered Pursuant to this Prospectus Supplement	Common Stock Registered for Resale Pursuant to this Prospectus Supplement	Common Stock Owned After Giving Effect to the Sale of the Shares Registered Pursuant to this Prospectus Supplement (1)
667, L.P. (2)	439,568	439,568	0
Baker Brothers Life Sciences, L.P. (3)	6,036,434	6,036,434	0

- (1) Assumes each selling stockholder has sold all the shares of common stock shown as being offered by each selling stockholder pursuant to this prospectus supplement.
- (2) The shares of common stock are held directly by 667, L.P., a limited partnership the sole general partner of which is Baker Biotech Capital, L.P., a limited partnership the sole general partner of which is Baker Biotech Capital (GP), LLC. Felix J. Baker, one of our directors, is a

controlling member of Baker Biotech Capital (GP), LLC. Felix Baker has served as our director since June 2015. Felix Baker is a principal of Baker Bros. Advisors LP, which has complete and unlimited discretion and authority over 667, L.P.'s investment and voting power.

- (3) The shares of common stock are held directly by Baker Brothers Life Sciences, L.P., a limited partnership the sole general partner of which is Baker Brothers Life Sciences Capital, L.P., a limited partnership the sole general partner of which is Baker Brothers Life Sciences Capital (GP), LLC. Felix J. Baker, one of our directors, is a controlling member of Baker Brothers Life Sciences Capital (GP), LLC. Felix Baker has served as our director since June 2015. Felix Baker is a principal of Baker Bros. Advisors LP, which has complete and unlimited discretion and authority over Baker Brothers Life Sciences, L.P.'s investment and voting power.

PLAN OF DISTRIBUTION

We are registering the shares of common stock on behalf of the selling stockholders. The selling stockholders will act independently of us in making decisions with respect to the timing, manner and size of each sale. The selling stockholders may, from time to time, sell any or all of their shares of common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These sales may be at fixed or negotiated prices. The selling stockholders may use any one or more of the following methods when selling shares:

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

The selling stockholders may also sell shares under Rule 144 under the Securities Act, if available, rather than under this prospectus supplement and accompanying prospectus.

Broker-dealers engaged by the selling stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling stockholders (or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser) in amounts to be negotiated. The selling stockholders do not expect these commissions and discounts to exceed what is customary in the types of transactions involved. Any profits on the resale of shares of common stock by a broker-dealer acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. Discounts, concessions, commissions and similar selling expenses, if any, attributable to the sale of shares will be borne by a selling stockholder. The selling stockholders may agree to indemnify any agent, dealer or broker-dealer that participates in transactions involving sales of the shares if liabilities are imposed on that person under the Securities Act.

The selling stockholders have advised us that they have not entered into any agreements, understandings or arrangements with any underwriters or broker-dealers regarding the sale of their shares of common stock, nor is there an underwriter or coordinating broker acting in connection with a proposed

sale of shares of common stock by any selling stockholder. If we are notified by any selling stockholder that any material arrangement has been entered into with a broker-dealer for the sale of shares of common stock, if required, we will file an amendment to this prospectus supplement. If the selling stockholders use this prospectus supplement and accompanying prospectus for any sale of the shares of common stock, they will be subject to the prospectus delivery requirements of the Securities Act.

The selling stockholders also may transfer the shares of common stock in other circumstances, in which case the transferees or other successors in interest will be the selling beneficial owners for purposes of this prospectus supplement and accompanying prospectus and may sell the shares of common stock from time to time under this prospectus supplement and accompanying prospectus after we have filed an amendment to this prospectus supplement under Rule 424(b)(3) or other applicable provision of the Securities Act supplementing or amending the list of selling stockholders to include the transferee or other successors in interest as selling stockholders under this prospectus supplement.

The selling stockholders and any broker-dealers or agents that are involved in selling the shares of common stock may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the shares of common stock purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act.

The selling stockholders and any other person participating in a distribution will be subject to the Exchange Act. The Exchange Act rules include, without limitation, Regulation M, which may limit the timing of purchases and sales of shares of our common stock by the selling stockholders and any such other person. In addition, Regulation M of the Exchange Act may restrict sales activity by a person engaged in the distribution of the shares for a period of up to five business days prior to the commencement of such distribution. This may affect the marketability of the shares of our common stock and the ability of any person or entity to engage in market-making activities with respect to shares of our common stock. We have informed the selling stockholders that the anti-manipulative provisions of Regulation M may apply to their sales in the market.

We are required to pay certain fees and expenses incident to the registration of the shares on behalf of the selling stockholders. We have agreed to indemnify the selling stockholders against certain losses, claims, damages and liabilities, including certain liabilities under the Securities Act.

LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Ropes & Gray LLP, Boston, Massachusetts.

EXPERTS

The consolidated financial statements of Alexion Pharmaceuticals, Inc. and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus supplement by reference to the Alexion Pharmaceuticals, Inc. Annual Report on Form 10-K for the year ended December 31, 2014 of Alexion Pharmaceuticals, Inc. have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The consolidated financial statements of Synageva BioPharma Corp. and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to Synageva BioPharma Corp.'s Annual Report on Form 10-K for the year ended December 31, 2014 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-3 with the SEC for the securities we are offering by this prospectus supplement and the accompanying prospectus. This prospectus supplement and the accompanying prospectus do not include all of the information contained in the registration statement. You should refer to the registration statement and its exhibits for additional information.

We are required to file annual and quarterly reports, current reports, proxy statements, and other information with the SEC. We make these documents publicly available, free of charge, on our website at www.alxn.com as soon as reasonably practicable after filing such documents with the SEC. You can read our SEC filings, including the registration statement, on the SEC's website at <http://www.sec.gov>. You also may read and copy any document we file with the SEC at its public reference facility at:

Public Reference Room
100 F Street N.E.
Washington, DC 20549

Please call the SEC at 1-800-732-0330 for further information on the operation of the public reference facilities.

INCORPORATION BY REFERENCE

The SEC allows us to “incorporate by reference” into this prospectus supplement and accompanying prospectus the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus supplement and accompanying prospectus, and information in documents that we file later with the SEC will automatically update and supersede information in this prospectus supplement and accompanying prospectus. We incorporate by reference into this prospectus supplement and accompanying prospectus the documents listed below and any future filings made by us with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act until the termination of this offering (other than documents or information deemed to have been furnished and not filed in accordance with SEC rules). We hereby incorporate by reference the following documents:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2014, filed with the SEC on February 6, 2015;
- our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2015, filed with the SEC on April 24, 2015, and June 30, 2015, filed with the SEC on July 31, 2015;
- our Current Reports on Form 8-K filed with the SEC on January 7, 2015, January 29, 2015, March 16, 2015, March 26, 2015, April 7, 2015, May 6, 2015, May 12, 2015, June 23, 2015 (as amended August 13, 2015), and August 13, 2015;
- our unaudited pro forma combined financial information as of March 31, 2015 and the unaudited pro forma combined statement of operations for the three months ended March 31, 2015 and the year ended December 31, 2014 contained included in our Registration Statement on Form S-4/A filed with the SEC on June 9, 2015; and
- our Registration Statement on Form 8-A filed with the SEC on February 12, 1996.

This document also incorporates by reference the following information that previously been filed with the SEC by Synageva BioPharma Corp.:

- Synageva’s audited consolidated historical financial statements included in Synageva’s Annual Report on Form 10-K for the fiscal year ended December 31, 2014, filed with the SEC on February 6, 2015;
- Synageva’s unaudited consolidated interim financial statements included in Synageva’s Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2015, filed with the SEC on April 30, 2015.

You may obtain documents incorporated by reference into this prospectus supplement at no cost by requesting them in writing or telephoning us at the following address:

Investor Relations
Alexion Pharmaceuticals, Inc.
352 Knotter Drive

Cheshire, Connecticut 06410
(203) 272-2596

These filings are also made available, free of charge, on our website at <http://www.alxn.com>. The information contained in, and that can be accessed through, our website is not incorporated into and does not form a part of this prospectus supplement.



ALEXION PHARMACEUTICALS, INC.

Common Stock

We may offer and sell, or facilitate the resale of, shares of our common stock from time to time. We will provide specific offering terms in supplements to this prospectus. The prospectus supplements may also add, update or change information contained or incorporated by reference in this document. This prospectus may be used to offer and sell securities only if accompanied by a prospectus supplement. You should read this prospectus and any prospectus supplements, along with the additional information described under the headings "Where You Can Find More Information" and "Incorporation by Reference," before making an investment decision.

The shares of our common stock may be sold directly to our stockholders or to purchasers or through agents on our behalf or through underwriters or dealers as designated from time to time. If any agents or underwriters are involved in the sale of any of these securities, the applicable prospectus supplement will provide the names of the agents or underwriters and any applicable fees, commissions, or discounts.

Our common stock is listed on The Nasdaq Global Select Market under the symbol "ALXN."

Investing in these securities involves substantial risk. Please see "Risk Factors" on page 1.

The address of our principal executive offices is 352 Knotter Drive, Cheshire, Connecticut 06410, and the telephone number at our principal executive offices is (203) 272-2596.

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

The date of this prospectus is August 13, 2015

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ABOUT THIS PROSPECTUS

Each time securities are offered for sale using this prospectus, we will provide the number of shares and offering price in a supplement to this prospectus. The prospectus supplements also may add, update or change the information contained or incorporated by reference in this prospectus and also will describe the specific manner in which we will be offering shares. You should read carefully both this prospectus and any prospectus supplement together with the additional information described under the headings “Where You Can Find More Information” and “Incorporation by Reference.”

We have not authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus, in any accompanying prospectus supplement or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are not making 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 or incorporated by reference herein is accurate only as of the date on the front of this prospectus or the respective dates of filing of the incorporated documents. Our business, financial condition, results of operations and prospects may have changed since that date.

Unless otherwise indicated or unless the context requires otherwise, all references in this prospectus to “Alexion,” “we,” “us” and “our” refer to Alexion Pharmaceuticals, Inc.

RISK FACTORS

For a discussion of the factors you should carefully consider before deciding to purchase any shares, please review “Part II, Item 1A—Risk Factors” in our most recent Quarterly Report on Form 10-Q, which is incorporated by reference in this prospectus, as that disclosure has been updated by subsequent periodic reports, as well as the “Risk Factors” section in the applicable prospectus supplement.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the Securities and Exchange Commission, or the SEC. You may read and copy any materials that we file with the SEC at its Public Reference Room, 100 F Street, N.E., Washington, D.C. 20549. You may call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room. Our SEC filings are also available to the public from the SEC’s website at <http://www.sec.gov>.

INCORPORATION BY REFERENCE

The SEC’s rules allow us to “incorporate by reference” the information we have filed with the SEC, which means that we can disclose important information by referring you to those documents. The information incorporated by reference is a part of this prospectus, and information that we file later with the SEC will automatically update and supersede the information included and/or incorporated by reference in this prospectus. We incorporate by reference into this prospectus the information or 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 1933, as amended (other than, in each case, any document or portion of a document that is deemed not to be filed) after the initial filing of the registration statement that contains this prospectus and prior to the termination of the offerings to which this prospectus relates:

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2014, filed with the SEC on February 6, 2015;
- our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2015, filed with the SEC on April 24, 2015, and June 30, 2015, filed with the SEC on July 31, 2015;
- our Current Reports on Form 8-K filed with the SEC on January 7, 2015, January 29, 2015, March 16, 2015, March 26, 2015, April 7, 2015, May 6, 2015, May 12, 2015, June 23, 2015 (as amended August 13, 2015), and August 13, 2015;
- our unaudited pro forma combined financial information as of March 31, 2015 and the unaudited pro forma combined statement of operations for the three months ended March 31, 2015 and the year ended December 31, 2014 contained included in our Registration Statement on Form S-4/A filed with the SEC on June 9, 2015; and
- our Registration Statement on Form 8-A filed with the SEC on February 12, 1996.

This document also incorporates by reference the following information that previously been filed with the SEC by Synageva BioPharma Corp.:

- Synageva's audited consolidated historical financial statements included in Synageva's Annual Report on Form 10-K for the fiscal year ended December 31, 2014, filed with the SEC on February 6, 2015;
- Synageva's unaudited consolidated interim financial statements included in Synageva's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2015, filed with the SEC on April 30, 2015.

You may obtain documents incorporated by reference into this prospectus at no cost by requesting them in writing or telephoning us at the following:

Investor Relations
Alexion Pharmaceuticals, Inc.
352 Knotter Drive
Cheshire, CT 06410
(203) 272-2596

These filings are also made available, free of charge, on our website at <http://www.alxn.com>. The information contained in, and that can be accessed through, our website is not incorporated into and does not form a part of this prospectus.

This prospectus constitutes a part of a registration statement on Form S-3, referred to herein, including all amendments and exhibits, as the Registration Statement, which we have filed with the SEC under the Securities Act of 1933, as amended, or the Securities Act. This prospectus does not contain all of the information contained in the Registration Statement. We refer you to the Registration Statement and related exhibits for further information regarding us and our securities. The Registration Statement may be inspected at the public reference facilities maintained by the SEC at the address set forth above or from the SEC's website at <http://www.sec.gov>. Statements contained in this prospectus or in a document incorporated or deemed to be incorporated by reference herein concerning the provisions of any document filed as an exhibit to the Registration Statement are not necessarily complete and, in each instance, reference is made to the copy of such document filed as an exhibit to the Registration Statement or otherwise filed with the SEC. Each such statement is qualified in its entirety by such reference.

ALEXION PHARMACEUTICALS, INC.

We are a biopharmaceutical company focused on serving patients with severe and ultra-rare disorders through the innovation, development and commercialization of life-transforming therapeutic products. Our marketed product Soliris® is the first and only therapeutic approved for patients with either of two severe and ultra-rare disorders resulting from chronic uncontrolled activation of the complement component of the immune system: paroxysmal nocturnal hemoglobinuria (PNH), a life-threatening and ultra-rare genetic blood disorder, and atypical hemolytic uremic syndrome (aHUS), a life-threatening and ultra-rare genetic disease. We are also evaluating additional potential indications for Soliris in other severe and devastating diseases in which uncontrolled complement activation is the underlying mechanism. In addition, Strensiq™ (asfotase alfa) for the treatment of hypophosphatasia (HPP) and Kanuma™ (Sebelipase alfa) for the treatment of lysosomal acid lipase deficiency (LAL-D) are undergoing regulatory review and we are progressing in various stages of development with additional product candidates as potential treatments for patients with severe and life-threatening ultra-rare disorders. We were incorporated in 1992 and began commercial sale of Soliris in 2007.

USE OF PROCEEDS

The use of proceeds from the disposition of the securities covered by this prospectus will be as set forth in the applicable prospectus supplement.

DESCRIPTION OF CAPITAL STOCK

As of the date of this prospectus, our certificate of incorporation authorizes us to issue 290,000,000 shares of common stock, par value \$0.0001 per share, and 5,000,000 shares of preferred stock, par value \$0.0001 per share.

The following summary describes the material terms of our capital stock. The description of capital stock is qualified by reference to our certificate of incorporation, as amended, and our bylaws, both of which are incorporated into this prospectus by reference to the SEC filings to which they are exhibits.

Common Stock

Voting. Common stockholders are entitled to one vote per share for the election of directors and on all other matters that require stockholder approval. There is no cumulative voting.

Dividends and Other Distributions. Subject to any preferences that may apply to any shares of preferred stock outstanding at the time, holders of our common stock are entitled to share in an equal amount per share any dividends declared by our board of directors on the common stock and paid out of legally available assets.

Distribution on Dissolution. Subject to any preferential rights of any outstanding preferred stock, in the event of our liquidation, dissolution or winding up, holders of our common stock are entitled to share ratably in the assets remaining after payment of liabilities and the liquidation preferences of any outstanding preferred stock.

Other Rights. Our common stock does not carry any preemptive rights enabling a holder to subscribe for, or receive shares of, any class of our common stock or any other securities convertible into shares of any class of our common stock, or any redemption rights.

Anti-Takeover Provisions

Delaware Law. We are subject to Section 203 of the Delaware General Corporation Law. This statute regulating corporate takeovers prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for three years following the date that the stockholder became an interested stockholder, unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (a) shares owned by persons who are directors and also officers,

and (b) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or

- on or subsequent to the date of the transaction, the business combination is approved by the board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66²/₃% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. An interested stockholder is any person who, together with such person's affiliates and associates (i) owns 15% or more of a corporation's voting securities or (ii) is an affiliate or associate of a corporation and was the owner of 15% or more of the corporation's voting securities at any time within the three year period immediately preceding a business combination of the corporation governed by Section 203. We expect the existence of this provision to have an anti-takeover effect with respect to transactions that our board of directors does not approve in advance. We also anticipate that Section 203 may discourage takeover attempts that might result in a premium over the market price for the shares of common stock held by our stockholders.

Bylaw and Certificate of Incorporation Provisions. Our bylaws provide that special meetings of our stockholders may be called only by the Chairman of the board of directors, the President, the Secretary, or a majority of the board of directors, or upon the written request of stockholders who together own of record 50% of the outstanding stock of all classes entitled to vote at such meeting. Our bylaws also specify that the authorized number of directors may be changed only by resolution of the board of directors. Our certificate of incorporation does not include a provision for cumulative voting for directors. Under cumulative voting, a minority stockholder holding a sufficient percentage of a class of shares may be able to ensure the election of one or more directors. These and other provisions contained in our certificate of incorporation and bylaws could delay or discourage transactions involving an actual or potential change in control of us or our management, including transactions in which stockholders might otherwise receive a premium for their shares over then current prices. These provisions could also limit the ability of stockholders to remove current management or approve transactions that stockholders may deem to be in their best interests and could adversely affect the price of our common stock.

Transfer Agent and Registrar

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

Listing

Our common stock is listed on The NASDAQ Global Select Market under the symbol "ALXN."

PLAN OF DISTRIBUTION

General

The shares may be sold:

- to or through underwriting syndicates represented by one or more managing underwriters;
- to or through one or more underwriters without a syndicate;
- through dealers or agents; or
- to investors directly in negotiated sales or in competitively bid transactions.

The prospectus supplement for each offering will describe, to the extent required, information with respect to that offering, including:

- the name or names of any underwriters and the respective amounts underwritten;
- the sale price and the proceeds from the sale;
- any underwriting discounts and other items constituting underwriters' compensation;
- any initial public offering price and any discounts or concessions allowed or reallocated or paid to dealers; and
- any material relationships with the underwriters.

Underwriters

If underwriters are used in the sale, we will execute an underwriting agreement with those underwriters relating to the sale of the shares. Unless otherwise set forth in the applicable prospectus supplement, the obligations of the underwriters to purchase these shares will be subject to conditions, and the underwriters will be obligated to purchase all of these shares if any are purchased.

The shares subject to an underwriting agreement will be acquired by the underwriters for their own account and may be resold by them from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. Underwriters may be deemed to have received compensation in the form of underwriting discounts or commissions and may also receive commissions from the purchasers of these shares for whom they may act as agent. Underwriters may sell these shares to or through dealers. These dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for whom they may act as agent. Any initial public offering price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time.

Agents

We may sell shares through agents designated by us from time to time. We will name any agent involved in the offer or sale of these shares and will list commissions payable by us to these agents in the

applicable prospectus supplement. These agents will be acting on a best efforts basis to solicit purchases for the period of its appointment, unless we state otherwise in the applicable prospectus supplement.

Direct Sales

We may sell shares directly to purchasers. In this case, we will not engage underwriters or agents in the offer and sale of the applicable shares.

Indemnification

We may indemnify underwriters, dealers or agents who participate in the distribution of shares against certain liabilities, including liabilities under the Securities Act, and agree to contribute to payments which these underwriters, dealers or agents may be required to make.

Secondary Sales

Shares of our common stock may be sold from time to time by selling stockholders, through public or private transactions at prevailing market prices or at privately negotiated prices, as described in the applicable prospectus supplement.

LEGAL MATTERS

Unless the applicable prospectus supplement indicates otherwise, our counsel, Ropes & Gray, LLP, Boston Massachusetts, will pass upon the validity of the shares of common stock offered by this prospectus.

EXPERTS

The consolidated financial statements of Alexion Pharmaceuticals, Inc. and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to the Alexion Pharmaceuticals, Inc. Annual Report on Form 10-K for the year ended December 31, 2014 of Alexion Pharmaceuticals, Inc. have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

The consolidated financial statements of Synageva BioPharma Corp. and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to Synageva BioPharma Corp.'s Annual Report on Form 10-K for the year ended December 31, 2014 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.