

ARENA PHARMACEUTICALS INC

Form 424B5

July 11, 2017

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The information contained in this preliminary prospectus supplement and the accompanying prospectus is not complete and may be changed. This preliminary prospectus supplement and the accompanying prospectus do not constitute an offer to sell these securities and we are not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Filed Pursuant to Rule 424(b)(5)

Registration No. 333-219237

SUBJECT TO COMPLETION, DATED JULY 11, 2017

PRELIMINARY PROSPECTUS SUPPLEMENT

(To Prospectus dated July 11, 2017)

\$150,000,000

Arena Pharmaceuticals, Inc.

Common Stock

\$ per share

We are offering \$150,000,000 of shares of our common stock.

We have granted the underwriters an option to purchase up to an additional \$22,500,000 of shares of our common stock.

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Our common stock is listed on The NASDAQ Global Select Market under the symbol ARNA. On July 10, 2017, the closing price of our common stock on The NASDAQ Global Select Market was \$18.39 per share.

Investing in our common stock involves risks. See Risk Factors on page S-4 of this prospectus supplement and in the documents incorporated by reference into this prospectus supplement.

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.

| | Per Share | Total |
|---|-----------|-------|
| Public Offering Price | \$ | \$ |
| Underwriting Discounts and Commissions ⁽¹⁾ | \$ | \$ |
| Proceeds to Arena (before expenses) | \$ | \$ |

(1) See Underwriting for additional disclosure regarding underwriting compensation.

The underwriters expect to deliver the shares on or about July , 2017 through the book-entry facilities of The Depository Trust Company.

Joint Book-Running Managers

**Citigroup
Cantor Fitzgerald & Co.**

**Leerink Partners
UBS Investment Bank**

Co-Manager

JMP Securities

July , 2017

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus relate to an 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 headings *Where You Can Find More Information* and *Incorporation by Reference* in this prospectus supplement. These documents contain important information that you should consider when making your investment decision.

Unless otherwise specified or required by context, references in this prospectus supplement to Arena Pharmaceuticals, Arena, we, us and our refer to Arena Pharmaceuticals, Inc., and its wholly owned subsidiaries on a consolidated basis. Our cash and cash equivalents as of June 30, 2017, as disclosed on page S-2 of this prospectus supplement, includes approximately \$0.2 million of cash held as of such date by Beacon Discovery, Inc., a variable interest entity. APD is an abbreviation for Arena Pharmaceuticals Development.

Effective on June 16, 2017, we effected a one-for-ten reverse stock split of our outstanding common stock. Share and share-based numbers in this prospectus supplement have been modified to reflect on a retrospective basis the effect of the reverse stock split.

This document is in two parts. The first part is this prospectus supplement, which describes the terms of this offering of common stock and also adds to, updates and changes information contained in the accompanying prospectus and the documents incorporated by reference. The second part is the accompanying prospectus, which gives more general information. To the extent the information contained in this prospectus supplement differs from or conflicts with the information contained in the accompanying prospectus or any document incorporated by reference, the information in this prospectus supplement will control. 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 into the accompanying prospectus the statement in the document having the later date modifies or supersedes the earlier statement.

We have not, and the underwriters have not, authorized anyone to provide you with information different from that which is contained in or incorporated by reference in this prospectus supplement, the accompanying prospectus and in any free writing prospectus that we have authorized for use in connection with this offering. No one is making offers to sell or seeking offers to buy these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information contained in this prospectus supplement is accurate as of the date on the front cover of this prospectus supplement only and that any information we have incorporated by reference or included in the accompanying prospectus is accurate only as of the date given in the document incorporated by reference or as of the date of the prospectus, as applicable, regardless of the time of delivery of this prospectus supplement, the accompanying prospectus, any related free writing prospectus, or any sale of our common stock. Our business, financial condition, results of operations and prospects may have changed since that date.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference into this prospectus supplement or the accompanying prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

Arena Pharmaceuticals®, Arena® and our corporate logo are registered service marks of Arena. This prospectus supplement, the accompanying prospectus and the information incorporated herein and therein by reference may include trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus supplement or

the accompanying prospectus are the property of their respective owners.

Information contained on, or that can be accessed through, our website does not constitute part of this prospectus supplement, the accompanying prospectus or any related free writing prospectus.

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PROSPECTUS SUPPLEMENT SUMMARY

*This summary highlights selected information contained elsewhere or incorporated by reference in this prospectus supplement and the accompanying prospectus. This summary does not contain all the information you should consider before investing in our common stock. You should read and consider carefully the more detailed information in this prospectus supplement and the accompanying prospectus, including the factors described under the heading *Risk Factors* in this prospectus supplement and the financial and other information incorporated by reference in this prospectus supplement and the accompanying prospectus, as well as the information included in any free writing prospectus that we have authorized for use in connection with this offering, before making an investment decision.*

Overview

We are a biopharmaceutical company focused on developing novel, small-molecule drugs with optimized receptor pharmacology designed to deliver broad clinical utility across multiple therapeutic areas. Our proprietary pipeline includes potentially first- or best-in-class programs for which we own global commercial rights.

Our three most advanced clinical programs are:

Ralinepag (formerly APD811) an oral, next generation, selective IP receptor agonist targeting the prostacyclin pathway, for which we have reported positive topline results from our completed Phase 2 trial for pulmonary arterial hypertension, or PAH. Phase 3 trial preparations are ongoing.

Etrasimod (formerly APD334) an oral, next generation, selective sphingosine 1-phosphate, or S1P, receptor modulator targeting the S1P receptor subtypes 1, 4 and 5, which we are evaluating in multiple ongoing Phase 2 clinical trials for:

Ulcerative Colitis, or UC

Dermatological Extra-Intestinal Manifestations, or Derm EIMs, in Inflammatory Bowel Disease, or IBD

Pyoderma Gangrenosum, or PG, with and without co-morbidities including IBD

We also intend to initiate an additional trial in Primary Biliary Cholangitis, or PBC, in 2017.

APD371 a highly selective, peripherally restricted, orally available, full agonist of the cannabinoid-2 receptor, which we are evaluating in an ongoing Phase 2 clinical trial for pain associated with Crohn's disease

We intend to continue to explore additional indications for all of our clinical-stage programs.

Additionally, we have collaborations with the following pharmaceutical companies:

Eisai Inc. and Eisai Co., Ltd. in their efforts with respect to BELVIQ®

Axovant Sciences Ltd. in its efforts with respect to nelotanserin, an orally available inverse agonist of the serotonin 2A receptor, which is in (i) a Phase 2 clinical trial in Lewy body dementia patients who experience frequent visual hallucinations, and (ii) a separate Phase 2 clinical trial to evaluate nelotanserin as a potential treatment for rapid-eye-movement, or REM, behavior disorder in patients with dementia with Lewy bodies

Boehringer Ingelheim International GmbH targeting a G protein-coupled receptor that belongs to the group of orphan central nervous system receptors, which is in preclinical development

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Recent Developments

Ralinepag

On July 10, 2017, we announced positive Phase 2 results for ralinepag. In this study, the primary efficacy analysis demonstrated a statistically significant absolute change from baseline in pulmonary vascular resistance, or PVR, compared to placebo. Ralinepag also demonstrated numerical improvement in 6-minute walk distance, or 6MWD.

The Phase 2 study was a randomized, double-blind, placebo-controlled, dose-ranging study in 61 adult patients with PAH, WHO/NYHA functional class II-IV. Study medication was titrated over nine weeks, followed by a 13-week treatment period. The primary efficacy analysis was absolute change from baseline in PVR at week 22. Additional endpoints included change from baseline in 6-minute walk test, proportion of subjects who exhibit clinical worsening and safety and tolerability. Patients who completed week 22 could transition to an open-label ralinepag extension study.

Ralinepag improved median PVR by 163.9 dyn.s.cm-5 from baseline compared to a 0.7 dyn.s.cm-5 worsening from baseline in the placebo arm (P=0.02). Patients treated with ralinepag had a 29.8% improvement in PVR compared to the placebo arm (P=0.03) and a 20.1% improvement in PVR compared to baseline. The study was not powered to show a difference in 6MWD from placebo and, while between group comparison directionally favored ralinepag, this was a not a statistically-significant finding. Patients receiving ralinepag did demonstrate a 36m increase from baseline, a statistically significant within group increase.

Adverse events observed in the study were consistent with other prostacyclin treatments for the management of PAH, with headache, nausea, diarrhea, jaw pain and flushing being the most commonly reported adverse events. Serious adverse events occurred in four (10%) of the patients taking ralinepag and in six (28.6%) of the patients taking placebo. There were no deaths among the patients taking ralinepag and there were two deaths in the placebo group.

We plan to present full study results at future medical congresses.

Etrasimod

We had previously reported that the etrasimod Phase 2 study in ulcerative colitis would enroll up to 160 patients. We currently expect the final enrollment to be in the range of 120-160 patients.

APD371

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We recently announced the design of the ongoing Phase 2a investigation into the treatment of pain associated with Crohn's disease. The study is a randomized, open-label, study to evaluate tolerability, pharmacokinetics, and efficacy in up to 20 subjects with Crohn's disease pain.

Certain Preliminary Financial Results

As of June 30, 2017, we had approximately \$130.8 million of cash and cash equivalents. This amount is unaudited and preliminary, is subject to completion of financial closing procedures that could result in changes to the amount, and does not present all information necessary for an understanding of our financial condition as of June 30, 2017.

Corporate Information

We were incorporated in the state of Delaware in April 1997. Our principal executive offices are located in the United States at 6154 Nancy Ridge Drive, San Diego, California 92121, and our telephone number is 858.453.7200. In addition, we have clinical operations and manufacturing operations in Zug and Zofingen, Switzerland, respectively. Our website address is www.arenapharm.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, the accompanying prospectus or any of the documents incorporated by reference herein.

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The Offering

| | |
|--|---|
| Common stock to be offered by us | shares |
| Option to purchase additional shares from us | We have granted the underwriters an option for 30 days from the date of this prospectus supplement to purchase up to an aggregate of _____ additional shares of our common stock. |
| Common stock to be outstanding after this offering | shares (or _____ shares if the underwriters exercise in full their option to purchase additional shares) |
| Use of proceeds | We intend to use the net proceeds from this offering for the clinical and preclinical development of drug candidates, including our planned Phase 3 clinical trial of ralinepag for the treatment of PAH, for general corporate purposes, including working capital and costs associated with manufacturing services, and for capital expenditures. See the section entitled Use of Proceeds. |
| Risk factors | You should read the section entitled Risk Factors on page S-4 for a discussion of factors to consider carefully before deciding to invest in shares of our common stock. |
| NASDAQ Global Select Market symbol | ARNA |

The number of shares of common stock outstanding immediately following this offering set forth above is based on 31,775,010 shares of common stock outstanding as of June 30, 2017 and excludes, as of that date:

4,193,992 shares of common stock issuable upon the exercise of outstanding stock options at a weighted-average exercise price of \$21.46 per share;

2,813,153 shares of common stock available for future issuance under our 2017 Long-Term Incentive Plan;

22,595 shares of common stock issuable pursuant to restricted stock units; and

77,888 shares of common stock issuable upon achieving target for the Total Stockholder Return Performance Restricted Stock Unit awards.

Unless otherwise indicated, all information in this prospectus supplement assumes no exercise of the underwriters' option to purchase additional shares.

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RISK FACTORS

*Investing in our common stock involves a high degree of risk. Our business, prospects, financial condition or operating results could be materially adversely affected by the risks identified below, as well as other risks not currently known to us or that we currently consider immaterial. The trading price of our common stock could decline due to any of these risks, and you may lose all or part of your investment. Before deciding whether to invest in our common stock, you should consider carefully the risk factors discussed below and those contained in the section entitled *Risk Factors* contained in our *Quarterly Report on Form 10-Q* for the quarter ended March 31, 2017, as filed with the Securities and Exchange Commission, or SEC, which is incorporated herein by reference in its entirety, as well as any amendment or update to our risk factors reflected in subsequent filings with the SEC.*

Risks Related to this Offering

Management will have broad discretion as to the use of the net proceeds from this offering, and may not use the proceeds effectively.

Because we have not designated the amount of net proceeds from this offering to be used for any particular purpose, our management will have broad discretion as to the application of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of the offering. Our management may use the net proceeds for corporate purposes that may not improve our financial condition or market value.

You may experience immediate and substantial dilution in the book value per share of the common stock you purchase in this offering.

Since the price per share of our common stock being offered in this offering is substantially higher than the net tangible book value per share of our common stock, you will suffer substantial dilution with respect to the net tangible book value of the common stock you purchase in this offering. Based on the public offering price of \$ per share and our net tangible book value as of March 31, 2017, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of \$ per share with respect to the net tangible book value of the common stock. The exercise of outstanding stock options and the settlement of restricted stock units may result in further dilution of your investment. See the section entitled *Dilution* for a more detailed discussion of the dilution you will incur if you purchase common stock in this offering.

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, including through our at-the-market equity offering program. In January 2017, we entered into an Equity Distribution Agreement, pursuant to which we may sell and issue shares of our common stock having an aggregate offering price of up to \$50 million from time to time in transactions that are deemed to be at-the-market offering as defined in Rule 415 under the Securities Act of 1933, as amended, or the Securities Act. As of June 30, 2017, we had sold approximately 489,000 shares of our common stock at an average price of \$15.05 per share under the Equity Distribution Agreement, for aggregate gross proceeds of \$7.4 million before deducting commissions and other issuance costs. 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

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stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and the accompanying prospectus, including the documents that we incorporate by reference herein and therein, 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 forward-looking statements can generally be identified as such because the context of the statement may include words such as may, will, intend, plan, believe, anticipate, expect, estimate, predict, potential, opportunity, the negative of these words or words of similar import, though not all forward-looking statement contain these identifying words. Similarly, statements that describe our future plans, strategies, intentions, expectations, objectives, goals or prospects are also forward-looking statements. Discussions containing these forward-looking statements may be found, among other places, in the Business and Management s Discussion and Analysis of Financial Condition and Results of Operations sections incorporated by reference from our most recent Annual Report on Form 10-K, as well as any amendments thereto reflected in subsequent filings with the SEC. These forward-looking statements are based largely on our expectations and projections about future events and future trends affecting our business, and are subject to risks and uncertainties that could cause actual results to differ materially from those anticipated in the forward-looking statements. The risks and uncertainties include, among others, those noted in Risk Factors above and those included in the documents that we incorporate by reference herein.

In addition, past financial and/or operating performance is not necessarily a reliable indicator of future performance and you should not use our historical performance to anticipate results or future period trends. We can give no assurances that any of the events anticipated by the forward-looking statements will occur or, if any of them do, what impact they will have on our results of operations and financial condition. Except as required by law, we undertake no obligation to publicly revise our forward-looking statements to reflect events or circumstances that arise after the filing of this prospectus supplement or the filing of the accompanying prospectus or documents incorporated by reference herein and therein that include forward-looking statements.

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USE OF PROCEEDS

We estimate the net proceeds to us from this offering will be approximately \$140.8 million (or \$162.0 million if the underwriters exercise in full their option to purchase additional shares), after payment of 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 clinical and preclinical development of drug candidates, including our planned Phase 3 clinical trial of ralinepag for the treatment of PAH, for general corporate purposes, including working capital and costs associated with manufacturing services, and for capital expenditures. In addition, we may use a portion of the net proceeds to acquire drugs or drug candidates, technologies, businesses or other assets, although we have no current plans, commitments or agreements to do so as of the date of this prospectus supplement.

The timing and amount of our actual expenditures will be based on many factors, including the timing and success of our preclinical and clinical trials, our current and any future collaborations for our research and development programs, whether we choose to curtail some of our research or development activities and whether we achieve regulatory approval of any new drug candidates. We will retain broad discretion in determining how we will allocate the net proceeds from this offering.

Table of Contents**DILUTION**

Our net tangible book value as of March 31, 2017 was approximately \$24.5 million, or \$0.99 per share. Net tangible book value per share is determined by dividing our total tangible assets, less total liabilities, by the number of shares of our common stock outstanding as of March 31, 2017.

After giving effect to the sale of _____ shares of our common stock in this offering at the public offering price of \$ _____ per share 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 March 31, 2017 would have been approximately \$ _____ million, or \$ _____ per share. This represents an immediate increase in net tangible book value of \$ _____ per share to existing stockholders and immediate dilution in net tangible book value of \$ _____ per share to investors purchasing common stock in this offering.

The following table illustrates this dilution on a per share basis:

| | |
|--|---------|
| Public offering price per share | \$ |
| Net tangible book value per share as of March 31, 2017 | \$ 0.99 |
| Increase in net tangible book value per share attributable to this offering | |
| As adjusted net tangible book value per share as of March 31, 2017, after giving effect to this offering | \$ |
| Dilution per share to new investors purchasing shares in this offering | \$ |

If the underwriters exercise in full their option to purchase up to _____ additional shares of common stock at the public offering price of \$ _____ per share, the as adjusted net tangible book value after this offering would be \$ _____ per share, representing an increase in net tangible book value of \$ _____ per share to existing stockholders and immediate dilution in net tangible book value of \$ _____ per share to investors purchasing our common stock in this offering.

The above discussion and table are based on 24,772,875 shares of our common stock issued and outstanding as of March 31, 2017 and exclude as of that date:

3,951,457 shares of common stock issuable upon the exercise of outstanding stock options at a weighted-average exercise price of \$22.30 per share;

563,571 shares of common stock available for future issuance under our 2013 Long-Term Incentive Plan;

50,297 shares of common stock issuable pursuant to restricted stock units;

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77,888 shares of common stock issuable upon achieving target for the Total Stockholder Return Performance Restricted Stock Unit awards;

110,325 shares of common stock available for future issuance under our 2009 Employee Stock Purchase Plan, as amended; and

6,250 shares of common stock available for future issuance under our Deferred Compensation Plan.

To the extent that outstanding options are exercised or outstanding restricted stock units are settled, you may experience further dilution. We may choose to raise additional capital due to market conditions or strategic considerations even if at that time we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

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Citigroup Global Markets Inc., Leerink Partners LLC, Cantor Fitzgerald & Co. and UBS Securities LLC are acting as joint book-running managers of this offering. Citigroup Global Markets Inc. and Leerink Partners LLC are also acting as representatives of the underwriters named below. Subject to the terms and conditions stated in the underwriting agreement dated the date of this prospectus supplement, each underwriter named below has severally agreed to purchase, and we have agreed to sell to that underwriter, the number of shares set forth opposite the underwriter's name in the following table.

| Underwriter | Number of Shares |
|-------------------------------|-----------------------------|
| Citigroup Global Markets Inc. | |
| Leerink Partners LLC | |
| Cantor Fitzgerald & Co. | |
| UBS Securities LLC | |
| JMP Securities LLC | |

Total

The underwriting agreement provides that the obligations of the underwriters to purchase the shares included in this offering are subject to approval of legal matters by counsel and to other conditions. The underwriters are obligated to purchase all the shares (other than those covered by the underwriters' option to purchase additional shares described below) if they purchase any of the shares.

Shares sold by the underwriters to the public will initially be offered at the public offering price set forth on the cover of this prospectus supplement. Any shares sold by the underwriters to securities dealers may be sold at a discount from the public offering price not to exceed \$ _____ per share. If all the shares are not sold at the initial offering price, the underwriters may change the offering price and the other selling terms.

If the underwriters sell more shares than the total number set forth in the table above, we have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus supplement, to purchase up to an additional \$22,500,000 of shares at the public offering price less the underwriting discount. To the extent the option is exercised, each underwriter must purchase a number of additional shares approximately proportionate to that underwriter's initial purchase commitment. Any shares issued or sold under the option will be issued and sold on the same terms and conditions as the other shares that are the subject of this offering.

We and our executive officers and directors have agreed that, subject to specified limited exceptions, for a period of 60 days from the date of this prospectus supplement, we and they will not, without the prior written consent of Citigroup Global Markets Inc. and Leerink Partners LLC, dispose of or hedge any shares or any securities convertible into or exchangeable for our common stock. Citigroup Global Markets Inc. and Leerink Partners LLC in their sole discretion may release any of the securities subject to these lock-up agreements at any time.

The shares are listed on The NASDAQ Global Select Market under the symbol ARNA.

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The following table shows the underwriting discounts and commissions that we are to pay to the underwriters in connection with this offering. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

| | Paid by Arena | |
|-----------|---------------|---------------|
| | No Exercise | Full Exercise |
| Per share | \$ | \$ |
| Total | \$ | \$ |

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We estimate that our total expenses for this offering will be \$185,000. We have also agreed to reimburse the underwriters for certain FINRA-related expenses and other expenses incurred by them in connection with this offering in an amount up to \$10,000.

In connection with the offering, the underwriters may purchase and sell shares in the open market. Purchases and sales in the open market may include short sales, purchases to cover short positions, which may include purchases pursuant to the underwriters' option to purchase additional shares, and stabilizing purchases.

Short sales involve secondary market sales by the underwriters of a greater number of shares than they are required to purchase in the offering.

Covered short sales are sales of shares in an amount up to the number of shares represented by the underwriters' option to purchase additional shares.

Naked short sales are sales of shares in an amount in excess of the number of shares represented by the underwriters' option to purchase additional shares.

Covering transactions involve purchases of shares either pursuant to the underwriters' option to purchase additional shares or in the open market in order to cover short positions.

To close a naked short position, the underwriters must purchase shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering.

To close a covered short position, the underwriters must purchase shares in the open market or must exercise the option to purchase additional shares. In determining the source of shares to close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the underwriters' option to purchase additional shares.

Stabilizing transactions involve bids to purchase shares so long as the stabilizing bids do not exceed a specified maximum.

Purchases to cover short positions and stabilizing purchases, as well as other purchases by the underwriters for their own accounts, may have the effect of preventing or retarding a decline in the market price of the shares. They may also cause the price of the shares to be higher than the price that would otherwise exist in the open market in the absence of these transactions. The underwriters may conduct these transactions on The NASDAQ Global Select Market, in the over-the-counter market or otherwise. If the underwriters commence any of these transactions, they may discontinue them at any time.

Conflicts of Interest

The underwriters are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, principal investment, hedging, financing and brokerage activities. The underwriters and their respective affiliates have in the past performed commercial banking, investment banking and advisory services for us

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from time to time for which they have received no more than customary fees and reimbursement of expenses and may, from time to time, engage in transactions with and perform services for us in the ordinary course of their business for which they may receive customary fees and reimbursement of expenses. In the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (which may include bank loans and/or credit default swaps) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investments and securities activities may involve securities and/or instruments of ours or our affiliates. The underwriters and their affiliates

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may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, or to contribute to payments the underwriters may be required to make because of any of those liabilities.

Notice to Prospective Investors in the European Economic Area

In relation to each member state of the European Economic Area that has implemented the Prospectus Directive (each, a relevant member state), with effect from and including the date on which the Prospectus Directive is implemented in that relevant member state (the relevant implementation date), an offer of shares described in this prospectus supplement may not be made to the public in that relevant member state other than:

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

to fewer than 100 or, if the relevant member state has implemented the relevant provision of the 2010 PD Amending Directive, 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the relevant Dealer or Dealers nominated by us for any such offer; or

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

provided that no such offer of shares shall require us or any underwriter to publish a prospectus pursuant to Article 3 of the Prospectus Directive.

For purposes of this provision, the expression an offer of securities to the public 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 the shares to be offered so as to enable an investor to decide to purchase or subscribe for the shares, as the expression may be varied in that member state by any measure implementing the Prospectus Directive in that member state, and the expression Prospectus Directive means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the relevant member state) and includes any relevant implementing measure in the relevant member state. The expression 2010 PD Amending Directive means Directive 2010/73/EU.

The sellers of the shares have not authorized and do not authorize the making of any offer of shares through any financial intermediary on their behalf, other than offers made by the underwriters with a view to the final placement of the shares as contemplated in this prospectus supplement. Accordingly, no purchaser of the shares, other than the underwriters, is authorized to make any further offer of the shares on behalf of the sellers or the underwriters.

Notice to Prospective Investors in the United Kingdom

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This prospectus supplement and the accompanying prospectus are only being distributed to, and is only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, or 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 (each such person being referred to as a relevant person). This prospectus supplement and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other persons in the United Kingdom. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

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Notice to Prospective Investors in France

Neither this prospectus supplement nor any other offering material relating to the shares described in this prospectus supplement has been submitted to the clearance procedures of the *Autorité des Marchés Financiers* or of the competent authority of another member state of the European Economic Area and notified to the *Autorité des Marchés Financiers*. The shares have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France. Neither this prospectus supplement nor any other offering material relating to the shares has been or will be:

released, issued, distributed or caused to be released, issued or distributed to the public in France; or

used in connection with any offer for subscription or sale of the shares to the public in France.

Such offers, sales and distributions will be made in France only:

to qualified investors (*investisseurs qualifiés*) and/or to a restricted circle of investors (*cercle restreint d'investisseurs*), in each case investing for their own account, all as defined in, and in accordance with articles L.411-2, D.411-1, D.411-2, D.734-1, D.744-1, D.754-1 and D.764-1 of the French Code monétaire et financier;

to investment services providers authorized to engage in portfolio management on behalf of third parties; or

in a transaction that, in accordance with article L.411-2-II-1° -or-2° -or 3° of the French Code monétaire et financier and article 211-2 of the General Regulations (*Règlement Général*) of the *Autorité des Marchés Financiers*, does not constitute a public offer (*appel public à l'épargne*).

The shares may be resold directly or indirectly, only in compliance with articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French *Code monétaire et financier*.

Notice to Prospective Investors in 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 Ordinance (Cap. 32, Laws of Hong Kong), or (ii) to professional investors within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a prospectus within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong) 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 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 within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder.

Notice to Prospective Investors in Japan

The shares offered in this prospectus supplement have not been and will not be registered under the Financial Instruments and Exchange Law of Japan. The shares have not been offered or sold and will not be offered or sold, directly or indirectly, in Japan or to or for the account of any resident of Japan (including any corporation or other entity organized under the laws of Japan), except (i) pursuant to an exemption from the registration requirements of the Financial Instruments and Exchange Law and (ii) in compliance with any other applicable requirements of Japanese law.

Notice to Prospective Investors in Singapore

This prospectus supplement has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus supplement and any other document or material in connection with the

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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 under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (the SFA), (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), 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 compliance with 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; or

a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

shares, debentures and units of shares and debentures of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares pursuant to an offer made under Section 275 of the SFA except:

to an institutional investor (for corporations, under Section 274 of the SFA) or to a relevant person defined in Section 275(2) of the SFA, or to any person pursuant to an offer that is made on terms that such shares, debentures and units of shares and debentures of that corporation or such rights and interest in that trust 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, and further for corporations, in accordance with the conditions specified in Section 275 of the SFA;

where no consideration is or will be given for the transfer; or

where the transfer is by operation of law.

Notice to Prospective Investors in Australia

No prospectus or other disclosure document (as defined in the Corporations Act 2001 (Cth) of Australia, or the Corporations Act) in relation to the common stock has been or will be lodged with the Australian Securities & Investments Commission, or ASIC. This document has not been lodged with ASIC and is only directed to certain categories of exempt persons. Accordingly, if you receive this document in Australia, you confirm and warrant that you are either:

a sophisticated investor under section 708(8)(a) or (b) of the Corporations Act;

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a sophisticated investor under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant's certificate to us which complies with the requirements of section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;

a person associated with the company under section 708(12) of the Corporations Act; or

a professional investor within the meaning of section 708(11)(a) or (b) of the Corporations Act, and to the extent that you are unable to confirm or warrant that you are an exempt sophisticated investor, associated person or professional investor under the Corporations Act any offer made to you under this document is void and incapable of acceptance; and

you warrant and agree that you will not offer any of the common stock for resale in Australia within 12 months of that common stock being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

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Notice to Prospective Investors in Canada

The shares offered in this prospectus supplement may be sold 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 shares 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 particulars of these rights or consult with a legal advisor.

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LEGAL MATTERS

Cooley LLP, San Diego, California, will pass upon the validity of the issuance of the shares being sold in this offering. Certain legal matters relating to this offering will be passed upon for the underwriters by Latham & Watkins LLP, San Diego, California.

EXPERTS

The consolidated financial statements of Arena Pharmaceuticals, Inc. and subsidiaries as of December 31, 2016 and 2015 and for each of the years in the three-year period ended December 31, 2016, and management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2016, have been incorporated by reference herein and in the registration statement in reliance upon the reports of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the shares of common stock we are offering under this prospectus supplement. This prospectus supplement and the accompanying prospectus do not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities we are offering under this prospectus supplement, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. We file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy the registration statement, as well as any other material we file with the SEC, at the SEC's Public Reference Room at 100 F Street, NE, Washington, D.C. 20549. Please call the SEC at 1.800.SEC.0330 for more information on the Public Reference Room. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including Arena. The SEC's Internet site can be found at www.sec.gov.

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INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it, which means that we can disclose important information to you by referring you to those documents. Information incorporated by reference is part of this prospectus supplement and the accompanying prospectus. Later information filed with the SEC will update and supersede this information. The SEC's Internet site can be found at <http://www.sec.gov>.

We incorporate by reference the documents listed below and any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus supplement until the termination of the offering of the shares covered by this prospectus supplement (other than portions of Current Reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items):

our Annual Report on Form 10-K for the year ended December 31, 2016, filed with the SEC on March 15, 2017, and Amendment No. 1 to our Annual Report on Form 10-K/A for the fiscal year ended December 31, 2016, filed with the SEC on May 5, 2017;

the information specifically incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2016 from our Definitive Proxy Statement on Schedule 14A for our 2017 Annual Meeting of Stockholders, filed with the SEC on April 28, 2017;

our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2017, filed with the SEC on May 9, 2017;

our Current Reports on Form 8-K and Form 8-K/A (other than information furnished rather than filed) filed with the SEC on January 4, 2017, January 6, 2017, February 14, 2017, April 17, 2017, April 18, 2017, June 15, 2017 and July 10, 2017; and

the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on July 26, 2000, including any amendments or reports filed for the purposes of updating this description.

You may request a copy of these filings, at no cost, by writing or telephoning us at the following address or telephone number:

Arena Pharmaceuticals, Inc.

Attn: Investor Relations

6154 Nancy Ridge Drive

San Diego, California 92121

Telephone number: 858.453.7200

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In accordance with Rule 412 of the Securities Act, any statement contained in a document incorporated by reference herein shall be deemed modified or superseded to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement.

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PROSPECTUS

Arena Pharmaceuticals, Inc.

Common Stock

We may, from time to time, offer and sell shares of our common stock in amounts, at prices and on terms described in one or more supplements to this prospectus. We may also authorize one or more free writing prospectuses to be provided to you in connection with these offerings.

This prospectus describes some of the general terms that may apply to an offering of our common stock. The specific terms and any other information relating to a specific offering will be set forth in a post-effective amendment to the registration statement of which this prospectus is a part, in a supplement to this prospectus or in a free writing prospectus, or may be set forth in one or more documents incorporated by reference in this prospectus. You should read this prospectus, the information incorporated by reference into this prospectus and any applicable prospectus supplement or free writing prospectus carefully before you invest.

Shares of our common stock may be sold by us to or through underwriters or dealers, directly to purchasers or through agents designated from time to time. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus and in the applicable prospectus supplement. If any underwriters are involved in the sale of any common stock with respect to which this prospectus is being delivered, the names of such underwriters and any applicable discounts or commissions and options to purchase additional shares will be set forth in a prospectus supplement. The price to the public of such securities and the net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

Our common stock is listed on The NASDAQ Global Select Market under the symbol ARNA. On July 10, 2017, the last reported sale price of our common stock on The NASDAQ Global Select Market was \$18.39 per share.

Investing in our common stock involves a high degree of risk. See Risk Factors on page 3 of this prospectus and as updated in our future filings made with the Securities and Exchange Commission that are incorporated by reference into this prospectus.

This prospectus may not be used to offer or sell any securities unless accompanied by a prospectus supplement.

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

The date of this prospectus is July 11, 2017.

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We have not authorized anyone to provide you with information other than the information contained in or incorporated by reference into this prospectus or any applicable prospectus supplement or free writing prospectus that we may authorize in connection with an offering of our common stock. We are not making an offer to sell or seeking an offer to buy shares of our common stock under this prospectus or any applicable prospectus supplement or free writing prospectus in any jurisdiction where the offer or sale is not permitted. The information contained in this prospectus, any applicable prospectus supplement or free writing prospectus, and the documents incorporated by reference herein and therein are accurate only as of their respective dates, regardless of the time of delivery of this prospectus or any sale of a security.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission, or SEC, using a shelf registration process as a well-known seasoned issuer, as defined in Rule 405 under the Securities Act of 1933, as amended, or the Securities Act. Under this shelf registration statement, we may sell from time to time in one or more offerings the common stock described in this prospectus. No limit exists on the aggregate number of shares that we may sell pursuant to the registration statement.

Each time we sell any common stock under this prospectus, we will provide a prospectus supplement that will contain more specific information about the terms of that offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to an offering of our common stock. The prospectus supplement, or information incorporated by reference in this prospectus or any prospectus supplement that is of a more recent date, may also add, update or change information contained in this prospectus. To the extent that any statement that we make in a prospectus supplement is inconsistent with statements made in this prospectus, the statements made in this prospectus will be deemed modified or superseded by those made in the prospectus supplement. You should read both this prospectus and any applicable prospectus supplement, together with the additional information described below under the heading Where You Can Find More Information. This prospectus may not be used to consummate a sale of our common stock unless it is accompanied by a prospectus supplement. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to an offering of our common stock.

Arena Pharmaceuticals®, Arena® and our corporate logo are registered service marks of Arena. All other brand names or trademarks appearing in this prospectus are the property of their respective holders. Unless otherwise specified or

required by context, references in this prospectus to Arena Pharmaceuticals, Arena, we, us and our refer to Arena Pharmaceuticals, Inc., and its wholly owned subsidiaries on a consolidated basis.

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SUMMARY

The following summary highlights information contained elsewhere or incorporated by reference in this prospectus. This summary does not contain all the information that may be important to purchasers of our common stock. Prospective purchasers of our common stock should carefully read and consider this entire prospectus, all documents incorporated by reference herein, any prospectus supplement accompanying this prospectus, and any related free writing prospectus.

Company Overview

We are a biopharmaceutical company focused on developing novel, small-molecule drugs with optimized receptor pharmacology designed to deliver broad clinical utility across multiple therapeutic areas. Our proprietary pipeline includes potentially first- or best-in-class programs for which we own global commercial rights.

Our three most advanced clinical programs are:

Ralinepag (formerly APD811) - an oral, next generation, selective IP receptor agonist targeting the prostacyclin pathway, for which we have reported positive topline results from our completed Phase 2 trial for pulmonary arterial hypertension, or PAH. Phase 3 trial preparations are ongoing.

Etrasimod (formerly APD334) - an oral, next generation, selective sphingosine 1-phosphate, or S1P, receptor modulator targeting the S1P receptor subtypes 1, 4 and 5, which we are evaluating in multiple ongoing Phase 2 clinical trials for:

Ulcerative Colitis, or UC

Dermatological Extra-Intestinal Manifestations, or Derm EIMs, in Inflammatory Bowel Disease, or IBD

Pyoderma Gangrenosum, or PG, with and without co-morbidities including IBD

We also intend to initiate an additional trial in Primary Biliary Cholangitis, or PBC, in 2017.

APD371 - a highly selective, peripherally restricted, orally available, full agonist of the cannabinoid-2 receptor, which we are evaluating in an ongoing Phase 2 clinical trial for pain associated with Crohn's disease. We intend to continue to explore additional indications for all of our clinical-stage programs.

Additionally, we have collaborations with the following pharmaceutical companies:

Eisai Inc. and Eisai Co., Ltd. in their efforts with respect to BELVIQ®

Axovant Sciences Ltd. in its efforts with respect to nelotanserin, an orally available inverse agonist of the serotonin 2A receptor, which is in (i) a Phase 2 clinical trial in Lewy body dementia patients who experience frequent visual hallucinations, and (ii) a separate Phase 2 clinical trial to evaluate nelotanserin as a potential treatment for rapid-eye-movement, or REM, behavior disorder in patients with dementia with Lewy bodies

Boehringer Ingelheim International GmbH targeting a G protein-coupled receptor that belongs to the group of orphan central nervous system receptors, which is in preclinical development

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Recent Developments

Ralinepag

On July 10, 2017, we announced positive Phase 2 results for ralinepag. In this study, the primary efficacy analysis demonstrated a statistically significant absolute change from baseline in pulmonary vascular resistance, or PVR, compared to placebo. Ralinepag also demonstrated numerical improvement in 6-minute walk distance, or 6MWD.

The Phase 2 study was a randomized, double-blind, placebo-controlled, dose-ranging study in 61 adult patients with PAH, WHO/NYHA functional class II-IV. Study medication was titrated over nine weeks, followed by a 13-week treatment period. The primary efficacy analysis was absolute change from baseline in PVR at week 22. Additional endpoints included change from baseline in 6-minute walk test, proportion of subjects who exhibit clinical worsening and safety and tolerability. Patients who completed week 22 could transition to an open-label ralinepag extension study.

Ralinepag improved median PVR by 163.9 dyn.s.cm-5 from baseline compared to a 0.7 dyn.s.cm-5 worsening from baseline in the placebo arm (P=0.02). Patients treated with ralinepag had a 29.8% improvement in PVR compared to the placebo arm (P=0.03) and a 20.1% improvement in PVR compared to baseline. The study was not powered to show a difference in 6MWD from placebo and, while between group comparison directionally favored ralinepag, this was not a statistically-significant finding. Patients receiving ralinepag did demonstrate a 36m increase from baseline, a statistically significant within group increase.

Adverse events observed in the study were consistent with other prostacyclin treatments for the management of PAH, with headache, nausea, diarrhea, jaw pain and flushing being the most commonly reported adverse events. Serious adverse events occurred in four (10%) of the patients taking ralinepag and in six (28.6%) of the patients taking placebo. There were no deaths among the patients taking ralinepag and there were two deaths in the placebo group.

We plan to present full study results at future medical congresses.

Etrasimod

We had previously reported that the etrasimod Phase 2 study in ulcerative colitis would enroll up to 160 patients. We currently expect the final enrollment to be in the range of 120-160 patients.

APD371

We recently announced the design of the ongoing Phase 2a investigation into the treatment of pain associated with Crohn's disease. The study is a randomized, open-label, study to evaluate tolerability, pharmacokinetics, and efficacy in up to 20 subjects with Crohn's disease pain.

Company Information

We incorporated in the state of Delaware in April 1997. Our corporate offices are located at 6154 Nancy Ridge Drive, San Diego, California 92121, our telephone number is 858.453.7200 and our website address is www.arenapharm.com. The information contained in or accessible through our website does not constitute part of this prospectus.

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RISK FACTORS

An investment in our common stock involves risks. Prior to making a decision about investing in our common stock, you should carefully consider the specific risks discussed under **Risk Factors** in any applicable prospectus supplement and in our filings with the SEC incorporated by reference in this prospectus, together with all of the other information contained in this prospectus and any applicable prospectus supplement or incorporated by reference in this prospectus. The risks and uncertainties described in any applicable prospectus supplement and in our SEC filings are not the only ones facing us. Additional risks and uncertainties not presently known to us, or that we currently see as immaterial, may also harm our business. If any of the risks or uncertainties described in any applicable prospectus supplement or our SEC filings or any such additional risks and uncertainties actually occur, our business, results of operations and financial condition could be materially and adversely affected. In that case, the trading price of our common stock could decline, and you might lose all or part of your investment.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and any applicable prospectus supplement or free writing prospectus, including the documents that we incorporate by reference herein and therein, 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 forward-looking statements can generally be identified as such because the context of the statement will include words such as may, will, intend, plan, believe, anticipate, expect, estimate, predict, potential, continue, opportunity, the negative of these words or words of similar import. Similarly, statements that describe our future plans, strategies, intentions, expectations, objectives, goals or prospects are also forward-looking statements. Discussions containing these forward-looking statements may be found, among other places, in the Business and Management's Discussion and Analysis of Financial Condition and Results of Operations sections incorporated by reference from our most recent Annual Report on Form 10-K and our Quarterly Reports on Form 10-Q for the quarterly periods ended subsequent to our filing of such Annual Report on Form 10-K, as well as any amendments thereto reflected in subsequent filings with the SEC. These forward-looking statements are based largely on our expectations and projections about future events and future trends affecting our business, and are subject to risks and uncertainties that could cause actual results to differ materially from those anticipated in the forward-looking statements. The risks and uncertainties include, among others, those noted in Risk Factors above and in any applicable prospectus supplement or free writing prospectus, and those included in the documents that we incorporate by reference herein and therein.

In addition, past financial and/or operating performance is not necessarily a reliable indicator of future performance and you should not use our historical performance to anticipate results or future period trends. We can give no assurances that any of the events anticipated by the forward-looking statements will occur or, if any of them do, what impact they will have on our results of operations and financial condition. Except as required by law, we undertake no obligation to publicly revise our forward-looking statements to reflect events or circumstances that arise after the filing of this prospectus or any applicable prospectus supplement or free writing prospectus, or documents incorporated by reference herein and therein, that include forward-looking statements.

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USE OF PROCEEDS

Except as described in any prospectus supplement, we currently intend to use the net proceeds from the sale of common stock under this prospectus for the clinical and preclinical development of drug candidates, for general corporate purposes, including working capital and costs associated with manufacturing services, and for capital expenditures. We may also use a portion of the net proceeds to acquire drugs or drug candidates, technologies, businesses or other assets, although we have no current plans, commitments or agreements to do so as of the date of this prospectus. The timing and amount of our actual expenditures will be based on many factors, including the timing and success of our preclinical and clinical trials, our current and any future collaborations for our research and development programs, whether we choose to curtail some of our research or development activities and whether we achieve regulatory approval of any new drug candidates. We will retain broad discretion in determining how we will allocate the net proceeds from the sale of common stock under this prospectus.

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DESCRIPTION OF CAPITAL STOCK

As of the date of this prospectus, our amended and restated certificate of incorporation, as amended, authorizes us to issue 73,500,000 shares of common stock, par value \$0.0001 per share, and 7,500,000 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 amended and restated certificate of incorporation and our amended and restated bylaws, which are incorporated by reference as exhibits into the registration statement of which this prospectus is a part.

Common Stock

Voting. Common stockholders are entitled to one vote per share for the election of directors and on all other matters that require common stockholder approval.

Dividends and Other Distributions. Holders of our common stock are entitled to share in an equal amount per share in 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.

Preferred Stock

Under our amended and restated certificate of incorporation, as amended, our board of directors has the authority, without further action by stockholders, to designate up to 7,500,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges, qualifications and restrictions granted to or imposed upon the preferred stock, including dividend rights, conversion rights, voting rights, rights and terms of redemption, liquidation preference and sinking fund terms, any or all of which may be greater than the rights of our common stock.

The issuance of preferred stock could adversely affect the voting power of holders of common stock and reduce the likelihood that common stockholders will receive dividend payments and payments upon liquidation. The issuance could have the effect of decreasing the market price of the common stock. The issuance of preferred stock also could have the effect of delaying, deterring or preventing a change in control of us.

Anti-Takeover Provisions

Delaware Law. We are governed by the provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years after the date of the transaction in which the person became an interested stockholder, unless (i) before the date that the person became an interested stockholder, our board of directors approved either the business combination or the transaction which makes the person an interested stockholder, (ii) 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

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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 (iii) after the date that the person became an interested stockholder, the business combination is approved by our board of directors and the vote of at least 66 2/3% of our outstanding voting stock that is not owned by the interested stockholder. Generally, a business combination includes (A) any merger or consolidation involving the corporation and the interested stockholder, (B) any sale, transfer, pledge or other disposition involving the interested stockholder of 10% or more of the assets of the corporation, (C) subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder, (D) any transaction involving the corporation that has the effect of increasing the proportionate share of its stock owned by the interested stockholder, or (E) the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation. An interested stockholder is a person who either owns 15% or more of our outstanding voting stock or, together with affiliates and associates, owns or, within three prior years, did own, 15% or more of our outstanding voting stock. The statute could have the effect of delaying, deferring or preventing a change in our control.

Bylaw and Certificate of Incorporation Provisions. Our amended and restated bylaws provide that special meetings of our stockholders may be called by our board of directors or President. Our amended and restated certificate of incorporation (i) specifies that the authorized number of directors shall be fixed by our board of directors in the manner provided by our amended and restated bylaws, which provide that the number of directors constituting our board of directors shall be fixed from time to time by resolution passed by a majority of our board of directors and (ii) 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 amended and restated certificate of incorporation and amended and restated 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. Such 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 on The NASDAQ Global Select Market

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

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PLAN OF DISTRIBUTION

We may sell our common stock covered by this prospectus in any of three ways (or in any combination):

to or through underwriters or dealers;

directly to one or more purchasers; or

through agents.

We may distribute the common stock:

from time to time in one or more transactions at a fixed price or prices, which may be changed from time to time;

at market prices prevailing at the time of sale;

at prices related to the prevailing market prices; or

at negotiated prices.

Each time we offer and sell shares of our common stock covered by this prospectus, we will provide a prospectus supplement or supplements that will describe the method of distribution and set forth the terms of the offering, including:

the name or names of any underwriters, dealers or agents;

the amounts of securities underwritten or purchased by each of them;

the purchase price of the common stock and the proceeds we will receive from the sale;

any option to purchase additional shares under which underwriters may purchase additional common stock from us;

any underwriting discounts or commissions or agency fees and other items constituting underwriters' or agents' compensation;

the public offering price of the common stock;

any discounts, commissions or concessions allowed or reallocated or paid to dealers; and

any securities exchange or market on which the common stock may be listed.

Any public offering price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time. We may determine the price or other terms of the common stock offered under this prospectus by use of an electronic auction. We will describe how any auction will determine the price or any other terms, how potential investors may participate in the auction and the nature of the obligations of the underwriter, dealer or agent in the applicable prospectus supplement.

Underwriters or dealers may offer and sell the offered common stock 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. If underwriters or dealers are used in the sale of any common stock, the common stock will be acquired by the underwriters or dealers for their own account and may be resold from time to time in one or more transactions described above. The common stock may be either offered to the public through underwriting syndicates represented by managing underwriters, or directly by underwriters or dealers. Generally, the underwriters' or dealers' obligations to purchase the common stock will be subject to certain conditions precedent. The underwriters or dealers will be obligated to purchase all of the common stock if they purchase any

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of the common stock, unless otherwise specified in the prospectus supplement. We may use underwriters with whom we have a material relationship. We will describe the nature of any such relationship in the prospectus supplement, naming the underwriter.

We may sell the common stock through agents from time to time. The prospectus supplement will name any agent involved in the offer or sale of the common stock and any commissions we pay to them. Generally, any agent will be acting on a best efforts basis for the period of its appointment. We may authorize underwriters, dealers or agents to solicit offers by certain purchasers to purchase the common stock from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. The contracts will be subject only to those conditions set forth in the prospectus supplement, and the prospectus supplement will set forth any commissions we pay for solicitation of these contracts.

Agents, dealers and underwriters may be entitled to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, or to contribution with respect to payments which the agents, dealers or underwriters may be required to make in respect thereof. Agents, dealers and underwriters may be customers of, engage in transactions with, or perform services for us in the ordinary course of business.

To facilitate the offering of our common stock, underwriters participating in the offering may engage in overallotment, stabilizing transactions, short covering transactions and penalty bids in accordance with Regulation M under the Exchange Act. Overallotment involves the sale by the underwriters for the offering of more shares than we sold to them, which create a short position. This short sales position may involve either covered short sales or naked short sales. Covered short sales are short sales made in an amount not greater than the underwriters' option to purchase additional shares for the offering. The underwriters may close out any covered short position either by exercising their overallotment option or by purchasing shares in the open market. To determine how they will close the covered short position, the underwriters will consider, among other things, the price of common stock available for purchase in the open market, as compared to the price at which they may purchase common stock through their overallotment option. Naked short sales are short sales in excess of the overallotment option. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that, in the open market after pricing, there may be downward pressure on the price of the common stock that could adversely affect investors who purchase shares in the offering. Stabilizing transactions permit bids to purchase the underlying security for the purpose of fixing the price of the security so long as the stabilizing bids do not exceed a specified maximum. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the securities originally sold by the dealer are purchased in a covering transaction to cover short positions.

Any underwriters who are qualified market makers on The NASDAQ Global Select Market may engage in passive market making transactions in our common stock, preferred stock, warrants and debt securities, as applicable, on The NASDAQ Global Select Market in accordance with Rule 103 of Regulation M, during the business day prior to the pricing of the offering, before the commencement of offers or sales of the securities. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security; if all independent bids are lowered below the passive market maker's bid, however, the passive market maker's bid must then be lowered when certain purchase limits are exceeded.

In compliance with guidelines of the Financial Industry Regulatory Authority, or FINRA, the maximum consideration or discount to be received by any FINRA member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

Similar to other purchase transactions, an underwriter's purchase to cover the syndicate short sales or to stabilize the market price of our common stock may have the effect of raising or maintaining the market price of our

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common stock or preventing or mitigating a decline in the market price of our common stock. As a result, the share price of our common stock may be higher than the price that might otherwise exist in the open market. The imposition of a penalty bid might also have an effect on the price of the common stock if it discourages resales of the shares.

Neither we nor the underwriters makes any representation or prediction as to the effect that the transactions described above may have on the price of our common stock. If such transactions are commenced, they may be discontinued without notice at any time.

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LEGAL MATTERS

The validity of the securities being offered hereby will be passed upon for us by Cooley LLP, San Diego, California.

EXPERTS

The consolidated financial statements of Arena Pharmaceuticals, Inc. as of December 31, 2016 and 2015 and for each of the years in the three-year period ended December 31, 2016, and management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2016, have been incorporated by reference herein and in the registration statement in reliance upon the reports of KPMG LLP, independent registered public accounting firm, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement or the exhibits which are part of the registration statement. For further information with respect to us and the shares of common stock offered by this prospectus, we refer you to the registration statement and the exhibits filed as part of the registration statement. We file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy any document we file with the SEC at the SEC's public reference room at 100 F Street, N.E., Washington, D.C. 20549. Please 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 at the SEC's website at <http://www.sec.gov>. We also maintain a website at <http://www.arenapharm.com>. The information contained in, or that can be accessed through, our website is not part of this prospectus.

INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it, which means that we can disclose important information to you by referring you to those documents instead of having to repeat the information in this prospectus. The information incorporated by reference is considered to be part of this prospectus, and later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings we will make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act after the date of this prospectus (other than information furnished under Item 2.02 or Item 7.01 of Form 8-K) until the termination of the offering of the shares covered by this prospectus:

our Annual Report on Form 10-K for the year ended December 31, 2016, filed with the SEC on March 15, 2017, and Amendment No. 1 to our Annual Report on Form 10-K/A for the fiscal year ended December 31, 2016, filed with the SEC on May 5, 2017;

the information specifically incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2016 from our Definitive Proxy Statement on Schedule 14A for our 2017 Annual Meeting of Stockholders, filed with the SEC on April 28, 2017;

our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2017, filed with the SEC on May 9, 2017;

our Current Reports on Form 8-K and Form 8-K/A (other than information furnished rather than filed) filed with the SEC on January 4, 2017, January 6, 2017, February 14, 2017, April 17, 2017, April 18, 2017, June 15, 2017 and July 10, 2017; and

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the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on July 26, 2000, including any amendments or reports filed for the purposes of updating this description. You can request a copy of these filings, at no cost, by writing or telephoning us at the following address or telephone number:

Arena Pharmaceuticals, Inc.
Attn: Investor Relations
6154 Nancy Ridge Drive
San Diego, California 92121
Telephone number: 858.453.7200

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\$150,000,000

Arena Pharmaceuticals, Inc.

Common Stock

PRELIMINARY PROSPECTUS SUPPLEMENT

July , 2017

Joint Book-Running Managers

Citigroup

Leerink Partners

Cantor Fitzgerald & Co.

UBS Investment Bank

Co-Manager

JMP Securities