

CALCULATION OF REGISTRATION FEE

| Title of Securities to be Registered | Amount to be Registered | Proposed Maximum Offering Price Per Share (2) | Proposed Maximum Aggregate Offering Price (2) | Amount of Registration Fee |
|--|-------------------------|---|---|----------------------------|
| Common Stock, \$0.01 par value per share | 7,156,546 shares (1) | \$1.46 | \$10,448,557 | \$1,210.99 |
| Total | 7,156,546 shares | \$1.46 | \$10,448,557 | \$1,210.99 |

(1) The number of shares of common stock, par value \$0.01 per share (“Common Stock”) of Bellerophon Therapeutics, Inc. (the “Registrant”), which may be sold upon the exercise of options or issuance of stock-based awards which may be hereafter issued under the 2015 Equity Incentive Plan (the “Equity Plan”) consists of (i) 4,550,409 additional shares of Common Stock not previously registered which may hereafter be issued under the Equity Plan pursuant to an amendment to the Equity Plan adopted by the Registrant’s stockholders on May 4, 2017 and (ii) 2,606,137 additional shares of Common Stock not previously registered which may hereafter be issued under the Equity Plan by operation of the Equity Plan’s “evergreen provision.” In accordance with Rule 416 under the Securities Act of 1933, as amended (the “Securities Act”), this Registration Statement shall be deemed to cover any additional securities that may from time to time be offered or issued to prevent dilution resulting from stock splits, stock dividends or similar transactions under the Equity Plan.

(2) Pursuant to Rule 457(c) of the Securities Act, the proposed maximum offering price per share and the proposed maximum aggregate offering price are estimated solely for the purpose of calculating the amount of the registration fee for shares reserved for future grant or issuance under the Equity Plan which are based on the average of the high and low prices of Registrant’s Common Stock as reported on the NASDAQ Global Market as of a date (July 14, 2017) within five business days prior to filing this Registration Statement.

PART I

INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

EXPLANATORY NOTE

This Registration Statement on Form S-8 is filed to register an increase of (i) 2,606,137 shares of the Registrant's Common Stock reserved under the Equity Plan effective January 1, 2017, by operation of the Equity Plan's "evergreen" provision and (ii) 4,550,409 shares of the Registrant's Common Stock reserved under the Equity Plan effective May 4, 2017 pursuant to an amendment to the Equity Plan adopted by the Registrant's stockholders. This Registration Statement registers additional securities of the same class as other securities for which Registration Statements on Form S-8 have previously been filed and are effective. Accordingly, this Registration Statement hereby incorporates by reference pursuant to General Instruction E of Form S-8 the contents of the Registration Statement on Form S-8, File No. 333-210312, filed with the Securities and Exchange Commission on March 21, 2016 by the Registrant, relating to the Registrant's 2015 Equity Incentive Plan and Inducement Stock Option Award for Fabian Tenenbaum and the Registration Statement on Form S-8, File No. 333-202069, filed with the Securities and Exchange Commission on February 13, 2015 by the Registrant, relating to the Registrant's 2015 Equity Incentive Plan, 2014 Equity Incentive Plan, Assumed Ikaria Holdings, Inc. 2007 Stock Option Plan and Assumed Amended and Restated Ikaria Holdings, Inc. 2010 Long Term Incentive Plan.

The documents containing the information specified in "Item 1. Plan Information" and "Item 2. Registrant Information and Employee Plan Annual Information" of this Part I of this Registration Statement is included in documents sent or given by the Registrant to participants in the Equity Plan covered by this Registration Statement, pursuant to Rule 428(b)(1) under the Securities Act.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents filed by the Registrant with the Securities and Exchange Commission (the "SEC") are incorporated herein by reference:

• Annual Report on Forms 10-K and 10-K/A for the year ended December 31, 2016 filed with the SEC on March 13, 2017 and March 17, 2017;

• Quarterly Report on Form 10-Q for the quarter ended March 31, 2017 filed with the SEC on May 15, 2017;

• Current Reports on Form 8-K filed with the SEC on January 6, 2017, March 16, 2017, May 2, 2017, May 5, 2017, and May 12, 2017;

• Definitive Proxy Statement on Schedule 14A filed with the SEC on March 20, 2017; and

• The description of the Common Stock contained in the Registrant's Registration Statement on Form 8-A filed with the SEC on February 10, 2015, including any amendments or reports filed for the purpose of updating that description.

All reports and other documents filed by the Registrant after the date hereof pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference herein and to be part hereof from the date of filing of such reports and documents. Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for the purposes of this Registration Statement 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. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interest of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Section 102 of the General Corporation Law of the State of Delaware permits a corporation to eliminate the personal liability of directors of a corporation to the corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. The Registrant's certificate of incorporation provides that no director of the Registrant shall be personally liable to it or its stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability, except to the extent that the General Corporation Law of the State of Delaware prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty.

Section 145 of the General Corporation Law of the State of Delaware provides that a corporation has the power to indemnify a director, officer, employee, or agent of the corporation, or a person serving at the request of the corporation for another corporation, partnership, joint venture, trust or other enterprise in related capacities against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with an action, suit or proceeding to which he was or is or is threatened to be made a party to any threatened, pending, or completed action, suit or proceeding by reason of such position, if such person acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation, and, in any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful, except that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or other adjudicating court determines that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnification for such expenses which the Court of Chancery or such other court shall deem proper.

The Registrant's certificate of incorporation provides that it will indemnify each person who was or is a party or threatened to be made a party to any threatened, pending or completed action, suit or proceeding (other than an action by or in the right of the Registrant) by reason of the fact that he or she is or was, or has agreed to become, a director or officer, or is or was serving, or has agreed to serve, at the Registrant's request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (all such persons being referred to as an "Indemnitee"), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding and any appeal therefrom, if such Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, the Registrant's best interests, and, with respect to any criminal action or proceeding, he or she had no reasonable cause to believe his or her conduct was unlawful.

The Registrant's certificate of incorporation also provides that it will indemnify any Indemnitee who was or is a party to an action or suit by or in the right of the Registrant to procure a judgment in the Registrant's favor by reason of the fact that the Indemnitee is or was, or has agreed to become, a director or officer, or is or was serving, or has agreed to serve, at the Registrant's request as a director, officer, partner, employee or trustee of, or in a

similar capacity with, another corporation, partnership, joint venture, trust or other enterprise, or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees) and, to the extent permitted by law, amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding, and any appeal therefrom, if the Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, the Registrant's best interests, except that no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the Registrant, unless a court determines that, despite such adjudication but in view of all of the circumstances, he or she is entitled to indemnification of such expenses. Notwithstanding the foregoing, to the extent that any Indemnitee has been successful, on the merits or otherwise, he or she will be indemnified by the Registrant against all expenses (including attorneys' fees) actually and reasonably incurred in connection therewith. Expenses must be advanced to an Indemnitee under certain circumstances.

The Registrant has entered into indemnification agreements with each of its directors and executive officers. These indemnification agreements may require the Registrant, among other things, to indemnify directors and executive officers for some expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by a director or executive officer in any action or proceeding arising out of his or her service as one of the Registrant's directors or executive officers, or any of the Registrant's subsidiaries or any other company or enterprise to which the person provides services at the Registrant's request.

The Registrant maintains a general liability insurance policy that covers certain liabilities of the directors and officers of the Registrant arising out of claims based on acts or omissions in their capacities as directors or officers.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits

The Index to Exhibits immediately preceding the exhibits is incorporated herein by reference.

Item 9. Undertakings.

(a) The Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

- (i) To include any prospectus required by section 10(a)(3) of the Securities Act;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of this Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in this Registration Statement;
- Provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Securities and

Exchange Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in this Registration Statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

The Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) (b) that is incorporated by reference in this Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or (c) controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the Township of Warren, State of New Jersey, on this 21st day of July, 2017.

BELLEROPHON THERAPEUTICS, INC.

By: /s/ Fabian Tenenbaum

Name: Fabian Tenenbaum

Title: Chief Executive Officer

POWER OF ATTORNEY AND SIGNATURES

We, the undersigned officers and directors of Bellerophon Therapeutics, Inc., hereby severally constitute and appoint Fabian Tenenbaum and Megan Schoeps, and each of them singly, our true and lawful attorneys with full power to them, and each of them singly, to sign for us and in our names in the capacities indicated below, the Registration Statement on Form S-8 filed herewith and any and all subsequent amendments to said Registration Statement, and generally to do all such things in our names and on our behalf in our capacities as officers and directors to enable Bellerophon Therapeutics, Inc. to comply with the provisions of the Securities Act of 1933, as amended, and all requirements of the Securities and Exchange Commission, hereby ratifying and confirming our signatures as they may be signed by our said attorneys, or any of them, to said Registration Statement and any and all amendments thereto. Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

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| Signature | Title | Date |
|--|--|---------------|
| /s/ Fabian Tenenbaum Fabian Tenenbaum | Chief Executive Officer and Director (principal executive officer) | July 21, 2017 |
| /s/ Megan Schoeps Megan Schoeps | Controller (principal financial and accounting officer) | July 21, 2017 |
| /s/ Jonathan M. Peacock Jonathan M. Peacock | Chairman | July 21, 2017 |
| /s/ Naseem Amin Naseem Amin | Director | July 21, 2017 |
| /s/ Scott Bruder Scott Bruder | Director | July 21, 2017 |
| /s/ Mary Ann Cloyd Mary Ann Cloyd | Director | July 21, 2017 |
| /s/ Jens Leuhring Jens Luehring | Director | July 21, 2017 |
| /s/ Andre V. Moura Andre V. Moura | Director | July 21, 2017 |
| /s/ Daniel Tassé Daniel Tassé | Director | July 21, 2017 |
| /s/ Adam Weinstein Adam Weinstein | Director | July 21, 2017 |

EXHIBIT INDEX

Number Description

- 4.1(1) Restated Certificate of Incorporation of the Registrant
- 4.2(1) Amended and Restated By-laws of the Registrant
- 5.1 Opinion of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel to the Registrant
- 23.1 Consent of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., (included in Exhibit 5.1)
- 23.2 Consent of KPMG LLP, independent registered public accounting firm
- 24.1 Power of Attorney (included on the signature pages of this registration statement)
- 99.1(2) 2015 Equity Incentive Plan, as amended

(1) Previously filed with the Securities and Exchange Commission on February 25, 2015 as an exhibit to the Registrant's Current Report on Form 8-K (File No. 001-36845) and incorporated herein by reference.

(2) Previously filed with the Securities and Exchange Commission on March 20, 2017 as Appendix A to the Registrant's Definitive Proxy Statement (File No. 001-36845) and incorporated herein by reference.