

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
 WASHINGTON, D.C. 20549

FORM S-8
 REGISTRATION STATEMENT
 UNDER
 THE SECURITIES ACT OF 1933

AMAG PHARMACEUTICALS, INC.

(Exact Name of Registrant as Specified in its Charter)

Delaware
 (State or Other Jurisdiction of
 Incorporation or Organization)

04-2742593
 (I.R.S. Employer
 Identification No.)

1100 Winter Street
Waltham, Massachusetts 02451
 (Address of Principal Executive Offices, including Zip Code)

Employment Inducement Awards
AMAG Pharmaceuticals, Inc. 2015 Employee Stock Purchase Plan
AMAG Pharmaceuticals, Inc. Fourth Amended and Restated 2007 Equity Incentive Plan
 (Full Title of the Plans)

William K. Heiden
President and Chief Executive Officer
1100 Winter Street
Waltham, Massachusetts 02451 (617) 498-3300
 (Name, Address and Telephone Number, including Area Code, of Agent For Service)

Copies to:
Stuart M. Cable, Esq.
Ettore A. Santucci, Esq.
 Goodwin Procter LLP
 100 Northern Avenue
 Boston, MA 02210
 (617) 570-1000

Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer
 Non-accelerated filer (Do not check if a smaller reporting company) Smaller reporting company
 Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, \$0.01 par value per share	125,393 shares(2)	\$ 19.43(3)	\$ 2,436,386(3)	\$ 303.34
Common Stock, \$0.01 par value per share	45,918 shares(4)	\$ 21.58(5)	\$ 990,911(5)	\$ 123.37
AMAG Pharmaceuticals, Inc. Fourth Amended and Restated 2007 Equity Incentive Plan				
Shares Reserved for Grant				
Common Stock, \$0.01 par value per share	1,043,000 shares(6)	\$ 21.58(5)	\$ 22,507,940(5)	\$ 2,802.24
AMAG Pharmaceuticals, Inc. 2015 Employee Stock Purchase Plan				
Shares Reserved for Grant				
Common Stock, \$0.01 par value per share	500,000 shares(7)	\$ 18.35(8)	\$ 9,175,000(8)	\$ 1,142.29
TOTAL	1,714,311 shares		\$ 35,110,237	\$ 4,371.24

- Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "*Securities Act*"), this Registration Statement shall also be deemed to cover such additional securities which become issuable by reason of any stock dividend, stock split, recapitalization or any other similar transactions.
- Consists of shares of common stock, par value \$0.01 per share ("*Common Stock*") of AMAG Pharmaceuticals, Inc. (the "*Registrant*") which are issuable upon exercise of stock options granted outside of the Registrant's employee equity compensation plans to certain individuals to induce such individuals to accept employment with the Registrant (the "*Inducement Option Awards*").
- Calculated pursuant to Rule 457(h) under the Securities Act, solely for the purpose of computing the registration fee, based on the weighted average exercise price of the Inducement Option Awards.
- Consists of restricted stock units issued outside of the Registrant's employee equity compensation plans to certain individuals to induce such individuals to accept employment with the Registrant (the "*Inducement RSU Awards*").
- Estimated solely for the purpose of calculating the registration fee in accordance with Rules 457(c) and 457(h) of the Securities Act. The proposed maximum aggregate offering price is based upon the average of the high and low sales prices of the Registrant's Common Stock, as reported on the Nasdaq Global Select Market on July 31, 2018.

- (6) Represents an increase to the number of shares of Common Stock reserved for issuance pursuant to the AMAG Pharmaceuticals, Inc. Fourth Amended and Restated 2007 Equity Incentive Plan (the "*Equity Incentive Plan*"). Shares available for issuance under the Equity Incentive Plan were previously registered on registration statements on Form S-8 filed with the Securities and Exchange Commission (the "*Commission*") on January 15, 2008, June 12, 2009, August 12, 2010, August 7, 2013, May 6, 2015, May 11, 2016 and June 23, 2017.
 - (7) Represents an increase to the number of shares of Common Stock reserved for issuance pursuant to the AMAG Pharmaceuticals, Inc. 2015 Employee Stock Purchase Plan (the "*2015 ESPP*"). Shares available for issuance under the 2015 ESPP were previously registered on a registration statement on Form S-8 filed with the Commission on May 6, 2015.
 - (8) Estimated solely for the purpose of calculating the registration fee in accordance with Rules 457(c) and 457(h) of the Securities Act. The proposed maximum aggregate offering price is based upon 85% of the average of the high and low sales prices of the Registrant's Common Stock, as reported on the Nasdaq Global Select Market on July 31, 2018.
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EXPLANATORY NOTE

To induce the individuals listed below to accept employment with the Registrant, the Registrant granted the following equity awards to such individuals (the “**Employment Inducement Awards**”) on the dates detailed below (each, a “**Grant Date**”):

- an option to purchase 62,393 shares of Common Stock with a per-share exercise price of \$20.55 and a restricted stock unit award (each, an “**RSU Award**”) with respect to 28,418 shares of Common Stock granted to J. Alan Butcher to induce Mr. Butcher to accept employment as the Registrant’s Executive Vice President and Chief Business Officer, such grant made on April 30, 2018;
- an option to purchase 20,000 shares of Common Stock with a per-share exercise price of \$19.00 and an RSU Award with respect to 9,000 shares of Common Stock granted to Tracy Palmer Berns to induce Ms. Berns to accept employment as the Registrant’s Chief Compliance Officer, such grant made on September 27, 2017;
- an option to purchase 28,000 shares of Common Stock with a per-share exercise price of \$17.40 and an RSU Award with respect to 6,000 shares of Common Stock granted to Laura Williams, M.D., M.P.H. to induce Dr. Williams to accept employment as the Registrant’s Senior Vice President of Clinical Development, such grant made on September 5, 2017; and
- an option to purchase 15,000 shares of Common Stock with a per-share exercise price of \$19.10 and an RSU Award with respect to 2,500 shares of Common Stock granted to Oscar Sanchez to induce Mr. Sanchez to accept employment as the Registrant’s Vice President of Quality, such grant made on August 7, 2017.

Each Inducement Option Award will vest in equal annual installments over 4 years from the respective Grant Date and each Inducement RSU Award will vest in equal annual installments over 3 years from the respective Grant Date. Each Employment Inducement Award was approved by the Registrant’s Board of Directors in compliance with and in reliance on NASDAQ Listing Rule 5635(c)(4), which exempts employment inducement grants from the general requirement of the NASDAQ Listing Rules that equity-based compensation plans and arrangements be approved by stockholders. The Employment Inducement Awards were granted outside of the Restated Equity Incentive Plan and its predecessor plans. This Registration Statement on Form S-8 (this “**Registration Statement**”) registers, among other securities described below, shares of Common Stock issuable pursuant to the Employment Inducement Awards.

On April 4, 2018, the Registrant’s Board of Directors approved an amendment to the Equity Incentive Plan, subject to stockholder approval, which, among other things, increases the aggregate number of shares of Common Stock authorized for issuance under the Equity Incentive Plan by 1,043,000 shares from 9,480,325 shares to 10,523,325 shares and increases the aggregate number of shares that may be issued in the form of incentive stock options from 9,480,325 shares to 10,523,325 shares. On June 7, 2018, the Registrant held its 2018 Annual Meeting of Stockholders at which the Registrant’s stockholders approved the amendment to the Equity Incentive Plan. This Registration Statement registers, among other securities described above and below, the additional 1,043,000 shares of Common Stock reserved for issuance under the Equity Incentive Plan.

On April 4, 2018, the Registrant’s Board of Directors approved an amendment to the 2015 ESPP, subject to stockholder approval, which, among other things, increases the aggregate number of shares of Common Stock authorized for issuance under the 2015 ESPP by 500,000 shares from 200,000 shares to 700,000 shares. On June 7, 2018, the Registrant held its 2018 Annual Meeting of Stockholders at which the Registrant’s stockholders approved the amendment to the 2015 ESPP. This Registration Statement registers, among other securities described above, the additional 500,000 shares of Common Stock reserved for issuance under the 2015 ESPP.

Part I

INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

Item 1. Plan Information.*

Item 2. Registrant Information and Employee Plan Annual Information.*

* Information required by Part I to be contained in the Section 10(a) prospectus is omitted from this Registration Statement in accordance with Rule 428 under the Securities Act and the “Note” to Part I of Form S-8.

Part II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The Registrant hereby incorporates by reference into this Registration Statement the following documents filed by the Registrant with the Commission (excluding any portions of such documents that have been “furnished” but not “filed” for purposes of the Securities Exchange Act of 1934, as amended (the “*Exchange Act*”)):

(a) the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2017 (File No. 001-10865), filed with the Commission on March 1, 2018 (including, for the avoidance of doubt, information specifically incorporated by reference in the Registrant’s Form 10-K from the Registrant’s Definitive Proxy Statement for its 2018 Annual Meeting of Stockholders, filed with the Commission on April 25, 2018);

(b) the Registrant’s Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2018 as filed with the Commission on May 4, 2018;

(c) the Registrant’s Current Reports on Form 8-K (excluding any information and exhibits furnished under either Item 2.02 and Item 7.01 thereof) as filed with the Commission on February 5, 2018, June 8, 2018 and June 15, 2018;

(d) all other documents filed with the Commission by the Registrant pursuant to Section 13(a) or 15(d) of the Exchange Act since the end of the fiscal year covered by the document referred to in (a) above; and

(e) the description of the Registrant’s outstanding Common Stock contained under Item 8.01 of the Registrant’s Current Report on Form 8-K, filed with the Commission on August 1, 2013 (File No. 001-10865), including all amendments or reports filed for the purpose of updating such description, including the amendment described under Item 5.03 of our Current Report on Form 8-K, as filed on May 28, 2015.

In addition, all documents subsequently filed by the Registrant with the Commission pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, on or after the date of this Registration Statement and prior to the filing of a post-effective amendment to this Registration Statement 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 in this Registration Statement and to be part hereof from the date of filing of such 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 purposes of this Registration Statement to the extent that a statement contained herein or in any other subsequently filed document which also is incorporated or deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Under no circumstances will any information filed under current items 2.02 or 7.01 of a Current Report on Form 8-K be deemed incorporated herein by reference unless such Form 8-K expressly provides to the contrary.

The Registrant will provide without charge to each grantee of Employee Inducement Awards or each Restated Equity Incentive Plan or 2015 ESPP participant upon the written or oral request of that person, a copy of any and all of the information that has been incorporated in this Registration Statement by reference other than exhibits unless those exhibits are specifically incorporated by reference into the documents. Requests for these copies should be directed to the Registrant's investor relations department at the following address and telephone number: AMAG Pharmaceuticals, Inc., 1100 Winter Street, Waltham, Massachusetts, 02451; (617) 498-3300.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law (the "*DGCL*") empowers a corporation to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he or she is or was a director, officer, employee or agent of the corporation or another enterprise if serving at the request of the corporation. Depending on the character of the proceeding, a corporation may indemnify against expenses (including attorney's fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding if the person indemnified acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful. In the case of an action by or in the right of the corporation, no indemnification may be made in 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 the court in which such action or suit was brought shall determine that despite the adjudication of liability, but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses that the court shall deem proper. Section 145 further provides that to the extent a present or former director or officer of a corporation has been successful in the defense of any action, suit or proceeding referred to above, or in defense of any claim, issue or matter therein, he or she shall be indemnified against expenses (including attorney's fees) actually and reasonably incurred by him or her in connection therewith.

As permitted by the DGCL, the Registrant's Certificate of Incorporation, as amended, provides that the Registrant shall, to the fullest extent permitted by law, indemnify all directors and officers of the Registrant and, if approved by the Registrant's Board of Directors, all employees and agents of the Registrant. The Certificate of Incorporation also contains a provision eliminating the liability of directors of the Registrant to the Registrant or its stockholders for monetary damage, to the fullest extent permitted by law. The Certificate of Incorporation also permits the Registrant to maintain insurance to protect itself and any director, officer, employee or agent against any liability whether or not the Registrant would have the power to indemnify such persons under the DGCL (and the Registrant has obtained director and officer liability insurance for the benefit of its directors and officers).

The Registrant has entered into indemnification agreements with each of its current directors and certain of its officers, pursuant to which the Registrant agreed to indemnify each director and such officers with respect to any expenses, judgments, fines, penalties, and amounts paid in settlement in connection with any claim, pending or completed action, suit or proceeding, or any inquiry or investigation, related to any actions taken by the director or officer related to their service as a director or officer if the indemnitee acted in good faith and in a manner the indemnitee reasonably believed to be in or not opposed to the best interests of the Registrant, and with respect to any criminal proceeding, had no reasonable cause to believe the indemnitee's conduct was unlawful.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

The exhibits listed below represent a complete list of exhibits filed or incorporated by reference as part of this Registration Statement:

- 4.1 [Form of Non-Qualified Stock Option Agreement — Non-Plan Inducement Grant \(incorporated herein by reference to Exhibit 10.12 to the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2017, File No. 001-10865\).](#)
- 4.2 [Form of Restricted Stock Unit Award Agreement — Non-Plan Inducement Grant \(incorporated herein by reference to Exhibit 10.13 to the Registrant’s Annual Report on Form 10-K for the year ended December 31, 2017, File No. 001-10865\).](#)
- 4.3 [Certificate of Incorporation of the Registrant, as restated \(incorporated herein by reference to Exhibit 3.1 and 4.1 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2010, File No. 001-10865\).](#)
- 4.4 [Certificate of Amendment to Restated Certificate of Incorporation of the Registrant \(incorporated herein by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K filed May 28, 2015, File No. 001-10865\).](#)
- 4.5 [Amended and Restated By-Laws of the Registrant \(incorporated herein by reference to Exhibit 3.1 to the Registrant’s Current Report on Form 8-K filed December 17, 2015, File No. 001-10865\).](#)
- 4.6 [Specimen certificate representing the Registrant’s Common Stock \(incorporated herein by reference to Exhibit 4.3 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2009, File No. 001-14732\).](#)
- 4.7 [AMAG Pharmaceuticals, Inc. Fourth Amended and Restated 2007 Equity Incentive Plan, as amended \(incorporated herein by reference to Appendix A to the Registrant’s Definitive Proxy Statement on Schedule 14A filed April 25, 2018, File No. 001-10865\).](#)
- 4.8 [AMAG Pharmaceuticals, Inc. 2015 Employee Stock Purchase Plan \(incorporated herein by reference to Appendix C to the Registrant’s Definitive Proxy Statement on Schedule 14A filed April 16, 2015, File No. 001-10865\).](#)
- 4.9 [AMAG Pharmaceuticals, Inc. First Amendment to 2015 Employee Stock Purchase Plan \(incorporated herein by reference to Appendix B to the Registrant’s Definitive Proxy Statement on Schedule 14A filed April 25, 2018, File No. 001-10865\).](#)
- 5.1* [Legal opinion of Goodwin Procter LLP.](#)
- 23.1* [Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm.](#)
- 23.2* [Consent of Goodwin Procter LLP \(contained in the opinion filed as Exhibit 5.1 to this Registration Statement\).](#)
- 24.1* [Power of attorney \(included in the signature page to this Registration Statement\).](#)

* Filed herewith.

Item 9. Undertakings.

The undersigned 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 the 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 the 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 the registration statement;

Provided, however, that paragraphs (1)(i) and (1)(ii) herein 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 Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in the 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 undersigned 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) that is incorporated by reference in the 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.

The undersigned Registrant hereby undertakes to deliver or cause to be delivered with the prospectus, to each person to whom the prospectus is sent or given, the latest annual report to security holders that is incorporated by reference in the prospectus and furnished pursuant to and meeting the requirements of Rule 14a-3 or Rule 14c-3 under the Exchange Act; and, where interim financial information required to be presented by Article 3 of Regulation S-X are not set forth in the prospectus, to deliver, or cause to be delivered to each person to whom the prospectus is sent or given, the latest quarterly report that is specifically incorporated by reference in the prospectus to provide such interim financial information.

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 Commission such indemnification is against public policy as expressed in the Securities 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 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 City of Waltham, Commonwealth of Massachusetts, on the 3rd day of August, 2018.

AMAG PHARMACEUTICALS, INC.

By: /s/ William K. Heiden
William K. Heiden
President and Chief Executive Officer

POWER OF ATTORNEY

We, the undersigned officers and directors of AMAG Pharmaceuticals, Inc., hereby severally constitute and appoint William K. Heiden, Edward Myles and Joseph D. Vittiglio, and each of them singly (with full power to each of them to act alone), our true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution in each of them for him and in his name, place and stead, and in any and all capacities, to sign for us and in our names in the capacities indicated below any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as full to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ William K. Heiden</u> William K. Heiden	President, Chief Executive Officer and Director (Principal Executive Officer)	August 3, 2018
<u>/s/ Edward Myles</u> Edward Myles	Executive Vice President, Chief Accounting Officer and Treasurer (Principal Financial and Accounting Officer)	August 3, 2018
<u>/s/ Barbara Deptula</u> Barbara Deptula	Director	August 3, 2018
<u>/s/ John Fallon, M.D.</u> John Fallon, M.D.	Director	August 3, 2018
<u>/s/ Robert J. Perez</u> Robert J. Perez	Director	August 3, 2018
<u>/s/ Lesley Russell, MB.Ch.B., MRCP</u> Lesley Russell, MB.Ch.B., MRCP	Director	August 3, 2018
<u>/s/ Gino Santini</u> Gino Santini	Director	August 3, 2018
<u>/s/ Davey Scoon</u> Davey Scoon	Director	August 3, 2018
<u>/s/ James R. Sulat</u> James R. Sulat	Director	August 3, 2018



Goodwin Procter LLP
Counselors at Law
100 Northern Avenue
Boston, MA 02210
T: 617.570.1000
F: 617.523.1231

August 3, 2018

AMAG Pharmaceuticals, Inc.
1100 Winter Street
Waltham, MA 02451

Re: Securities Being Registered under Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as counsel to you in connection with your filing of a Registration Statement on Form S-8 (the "Registration Statement") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), on or about the date hereof relating to an aggregate of 1,714,311 shares (the "Shares") of Common Stock, \$0.01 par value per share ("Common Stock"), of AMAG Pharmaceuticals, Inc., a Delaware corporation (the "Company"), that may be issued pursuant to (i) the Company's Fourth Amended and Restated 2007 Equity Incentive Plan (the "Equity Incentive Plan"), (ii) the Company's 2015 Employee Stock Purchase Plan (the "2015 ESPP"), (iii) the Option Grant Agreement by and between the Company and Oscar Sanchez, dated as of August 7, 2017, (iv) the Restricted Stock Unit Agreement by and between the Company and Oscar Sanchez, dated as of August 7, 2017, (v) the Option Grant Agreement by and between the Company and Laura Williams, dated as of September 5, 2017, (vi) the Restricted Stock Unit Agreement by and between the Company and Laura Williams, dated as of September 5, 2017, (vii) the Option Grant Agreement by and between the Company and Tracy Berns, dated as of September 27, 2017, (viii) the Restricted Stock Unit Agreement by and between the Company and Tracy Berns, dated as of September 27, 2017, (ix) the Option Grant Agreement by and between the Company and James Butcher, dated as of April 30, 2018, and (x) the Restricted Stock Unit Agreement by and between the Company and James Butcher, dated as of April 30, 2018 (this clause (x) together with clauses (iii), (iv), (v), (vi), (vii), (viii) and (ix), the "Inducement Grants").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinions set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinion set forth below, on certificates of officers of the Company.

The opinion set forth below is limited to the Delaware General Corporation Law.

For purposes of the opinion set forth below, we have assumed that no event occurs that causes the number of authorized shares of Common Stock available for issuance by the Company to be less than the number of then unissued Shares.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and, upon issuance and delivery against payment therefor in accordance with the terms of the Equity Incentive Plan, the 2015 ESPP or the Inducement Grants, as applicable, will be validly issued, fully paid and nonassessable.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ Goodwin Procter LLP

GOODWIN PROCTER LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of AMAG Pharmaceuticals, Inc. of our report dated February 28, 2018 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in AMAG Pharmaceuticals, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2017.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts

August 3, 2018
