

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT3105048

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	SECURITY INTEREST

**CONVEYING PARTY DATA**

Name	Execution Date
AMAG PHARMACEUTICALS, INC.	11/12/2014

**RECEIVING PARTY DATA**

<b>Name:</b>	JEFFERIES FINANCE LLC
<b>Street Address:</b>	520 MADISON AVENUE
<b>City:</b>	NEW YORK
<b>State/Country:</b>	NEW YORK
<b>Postal Code:</b>	10022

**PROPERTY NUMBERS Total: 26**

Property Type	Number
Patent Number:	6599498
Patent Number:	7553479
Patent Number:	7871597
Patent Number:	8501158
Patent Number:	8591864
Patent Number:	5490991
Patent Number:	5589591
Patent Number:	5981507
Patent Number:	5679323
Patent Number:	5055288
Patent Number:	4951675
Patent Number:	5069216
Patent Number:	5102652
Patent Number:	5160726
Patent Number:	5262176
Patent Number:	5248492
Patent Number:	5219554
Patent Number:	5352432
Patent Number:	5342607
Patent Number:	5336506
Patent Number:	5314679

PATENT

Property Type	Number
Patent Number:	5554386
Patent Number:	5478576
Application Number:	13937923
Application Number:	13197153
Application Number:	12145565

**CORRESPONDENCE DATA**

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ATTORNEY DOCKET NUMBER:	175274-635093
NAME OF SUBMITTER:	DAVID L. ODOM
SIGNATURE:	/David L. Odom/
DATE SIGNED:	11/12/2014

**Total Attachments: 8**

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**Grant of Security Interest**  
**in United States Patents and Trademarks**

FOR GOOD AND VALUABLE CONSIDERATION, receipt and sufficiency of which are hereby acknowledged, AMAG Pharmaceuticals, Inc., a Delaware corporation (the “Grantor”), having its chief executive office at 1100 Winter Street, Waltham, MA 02451, hereby grants to JEFFERIES FINANCE LLC, as Collateral Agent (the “Grantee”), with offices at 520 Madison Avenue, New York, New York 10022, a security interest in all of the Grantor’s right, title and interest in, to and under the following (all of the following items or types of property being herein collectively referred to as the “Patent and Trademark Collateral”), whether presently existing or hereafter arising or acquired which, includes the Grantor’s rights to:

(i) all United States patents and patent applications, including, without limitation the patents and patent applications referred to in Schedule A hereto, and, with respect to any and all of the foregoing: (i) all reissues, reexaminations, divisions, continuations, continuations-in-part, revisions, renewals or extensions thereof; (ii) all claims for, and rights to sue for, past, present or future infringements and other violations thereof; (iii) all Proceeds of the foregoing, including, without limitation, all income, license fees, royalties, damages and payments now or hereafter due or payable with respect to any of the foregoing, including damages and payments for past, present or future infringements or other violations thereof; and (iv) all other rights corresponding thereto throughout the world; and

(ii) all United States trademarks, trade names, corporate names, company names, business names, fictitious business names, trade styles, service marks, logos, certification marks, collective marks, brand names, trademark rights arising out of domain names and trade dress which are or have been used in the United States, in any state, province or territory or possession thereof, or in any other place, nation or jurisdiction, package and other designs, and any other source or business identifiers, and general intangibles of like nature, and the rights in any of the foregoing which arise under applicable Law, in each case whether registered or unregistered, and with respect to any and all of the foregoing: (i) the goodwill of the business symbolized thereby or associated therewith; (ii) all registrations and applications in connection therewith, including registrations and applications in the United States Patent and Trademark Office or in any similar office or agency of the United States, any state thereof or any other country or any political subdivision thereof, and including, without limitation, the registrations and applications referred to in Section (B) hereto; (iii) all extensions and renewals thereof; (iv) all claims for, and rights to sue for, past, present or future infringements, dilutions, and other violations thereof; (v) all Proceeds of the foregoing, including, without limitation, all income, license fees, royalties, damages and payments now or hereafter due or payable with respect to any of the foregoing, including damages and payments for past, present or future infringements, dilutions, or other violations thereof; and (vi) all other rights corresponding thereto throughout the world;

provided, however, that the Patent and Trademark Collateral shall not include and no Security Interest shall be deemed granted in any intent-to-use (ITU) United States application for a Trademark registration, for which an amendment to allege use or statement of use has not been filed under 15 U.S.C. § 1051(c) or 15 U.S.C. § 1051(d), respectively, in each case, only to the extent the grant of security interest in such intent-to-use Trademark is in violation of 15 U.S.C. § 1060 and only unless and until a “Statement of Use” or “Amendment to Allege Use” is filed with the United States Patent and Trademark Office.

THIS GRANT is granted in conjunction with the security interests granted to the Grantee pursuant to the Security Agreement among the Grantor, the Grantee and certain other parties dated as of November 12, 2014, as amended, restated, supplemented or otherwise modified from time to time (the “Security”

Agreement”). The rights and remedies of the Grantee with respect to the security interest granted herein are without prejudice to, and are in addition to those set forth in the Security Agreement, all terms and provisions of which are incorporated herein by reference. In the event that any provisions of this Agreement are deemed to conflict with the Security Agreement, the provisions of the Security Agreement shall govern.

This Patent and Trademark Security Agreement may be authenticated by the parties hereto in any number of counterparts, each of which shall collectively and separately constitute one agreement.

The Grantor authorizes and requests that the Commissioner of Patents and Trademarks and any other applicable government officer record this Grant of Security Interest in United States Patents and Trademarks.

This Grant of Security Interest in United States Patents and Trademarks shall be governed by, and construed in accordance with the laws of the State of New York.

This Grant of Security Interest in United States Patents and Trademarks may be executed in counterparts (and by different parties hereto on different counterparts), each of which shall constitute an original, but all of which when taken together shall constitute a single agreement.

IN WITNESS WHEREOF, the parties hereto have duly executed this Grant of Security Interest in United States Patents and Trademarks as of the day and year first above written.

AMAG PHARMACEUTICALS, INC.  
as Grantor


By: William K. Heiden

Name: William K. Heiden

Title: President and Chief Executive Officer

Agreed and Accepted:

JEFFERIES FINANCE LLC,  
as Collateral Agent and Grantee

By:   
Name: Paul McDonnell  
Title: Managing Director

**SCHEDULE A to Patent and Trademark Security Agreement**

**PATENTS AND PATENT APPLICATIONS**

<u>Serial No. or Patent No.</u>	<u>Date</u>	<u>Issue Title</u>	<u>Status</u>	<u>Country</u>	<u>Patent Holder</u>
6599498	7/29/2003	HEAT STABLE COLLOIDAL IRON OXIDES COATED WITH REDUCED CARBOHYDRATES AND CARBOHYDRATES DERIVATIVES	Granted	United States of America	AMAG Pharmaceuticals, Inc.
7553479	6/30/2009	HEAT STABLE COLLOIDAL IRON OXIDES COATED WITH REDUCED CARBOHYDRATES AND USES THEREOF	Granted	United States of America	AMAG Pharmaceuticals, Inc.
7871597	1/18/2011	POLYOL AND POLYETHER IRON OXIDE COMPLEXES AS PHARMACOLOGICAL AND/OR MRI CONTRAST AGENTS	Granted	United States of America	AMAG Pharmaceuticals, Inc.
8501158	8/6/2013	POLYOL AND POLYETHER IRON OXIDE COMPLEXES AS PHARMACOLOGICAL AND/OR MRI CONTRAST AGENTS	Granted	United States of America	AMAG Pharmaceuticals, Inc.
8591864	11/26/2013	POLYOL AND POLYETHER IRON OXIDE COMPLEXES AS PHARMACOLOGICAL AND/OR MRI CONTRAST AGENTS	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5490991	2/13/1996	DIRECTED DELIVERY OF RADIOPROTECTANTS USING A RECEPTOR SPECIFIC CARRIER	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5589591	12/31/1996	ENDOTOXIN-FREE POLYSACCHARIDES	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5981507	11/9/1999	POLYMERIC CARRIERS LINKED TO NUCLEOTIDE ANALOGUES VIA A PHOSPHORIMIDE BOND	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5679323	10/21/1997	HEPATOCYTE-SPECIFIC RECEPTOR MEDIATED ENDOCYTOSIS-TYPE	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5055288	10/08/1991	VASCULAR MAGNETIC IMAGING METHOD AND AGENT COMPRISING BIODEGRADABLE SUPERPARAMAGNETIC METAL OXIDES	Granted	United States of America	AMAG Pharmaceuticals, Inc.
4951675	08/28/1990	BIODEGRADABLE SUPERPARAMAGNETIC METAL OXIDES AS CONTRAST AGENTS FOR	Granted	United States of America	AMAG Pharmaceuticals, Inc.

5069216	12/03/1991	MR IMAGING SILANIZED BIODEGRADABLE SUPERPARAMAGNETIC METAL OXIDES AS CONTRAST AGENTS FOR IMAGING THE GASTROINTESTINAL TRACT	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5102652	04/07/1992	LOW MOLECULAR WEIGHT CARBOHYDRATES AS ADDITIVES TO STABILIZE METAL OXIDE COMPOSITIONS	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5160726	11/03/1993	FILTER STERILIZATION FOR PRODUCTION OF COLLOIDAL, SUPERPARAMAGNETIC MR CONTRAST AGENTS	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5262176	11/16/1993	SYNTHESIS OF POLYSACCHARIDE COVERED SUPERPARAMAGNETIC OXIDE COLLOIDS	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5248492	09/28/1993	LOW MOLECULAR WEIGHT CARBOHYDRATES AS ADDITIVES TO STABILIZE METAL OXIDE COMPOSITIONS	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5219554	06/15/1993	HYDRATED BIODEGRADABLE SUPERPARAMAGNETIC METAL OXIDES	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5352432	10/04/1994	ASIALOGLYCOPROTEIN RECEPTOR SPECIFIC COMPOSITIONS AND THEIR USE AS MRI CONTRAST	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5342607	08/30/1994	RECEPTOR MEDIATED ENDOCYTOSIS TYPE MAGNETIC RESONANCE IMAGING CONTRAST AGENTS	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5336506	08/09/1994	TARGETING OF THERAPEUTIC AGENTS USING POLYSACCHARIDES	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5314679	05/24/1994	VASCULAR MAGNETIC RESONANCE IMAGING METHOD COMPRISING NANOPARTICLES	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5554386	09/10/1996	DELIVERY OF THERAPEUTIC AGENTS TO RECEPTORS USING POLYSACCHARIDES	Granted	United States of America	AMAG Pharmaceuticals, Inc.
5478576	12/26/1995	ARABINO GALACTAN DERIVATIVES AND USES THEREOF	Granted	United States of America	AMAG Pharmaceuticals, Inc.



13/937923	7/9/2013	POLYOL AND POLYETHER IRON OXIDE COMPLEXES AS PHARMACOLOGICAL AND/OR MRI CONTRAST AGENTS	Pending	United States of America	AMAG Pharmaceuticals, Inc.
13/197153	8/3/2011	MACROPHAGE-ENHANCED MRI (MEMRI) IN A SINGLE IMAGING SESSION	Published	United States of America	AMAG Pharmaceuticals, Inc.
12/145565	06/25/2008	MACROPHAGE-ENHANCED MRI (MEMRI)	Published	United States of America	AMAG Pharmaceuticals, Inc.

**SCHEDULE B to Patent and Trademark Security Agreement**

**TRADEMARKS**

<u>Registration No.</u>	<u>Country</u>	<u>Issue Date</u>	<u>Mark</u>
3,998,406	United States of America	7/19/2011	A Design
3,932,595	United States of America	3/15/2011	A Design
3,949,095	United States of America	4/19/2011	AMAG PHARMACEUTICALS
4,002,635	United States of America	7/26/2011	AMAG PHARMACEUTICALS
3,706,009	United States of America	11/3/2009	FERAHEME
4,509,702	United States of America	1/21/2014	FERAHEME FERUMOXYTOL INJECTION
2,051,253	United States of America	4/8/1997	FERIDEX I.V.
4,477,864	United States of America	2/4/2014	IRON MATTERS
4,480,662	United States of America	2/11/2014	IRON MATTERS FE
1,498,200	United States of America	08/02/1998	FERIDEX
2,080,060	United States of America	7/15/1997	COMBIDEX

**TRADEMARK APPLICATIONS**

<u>Application No.</u>	<u>Country</u>	<u>Application Date</u>	<u>Mark</u>
86/035,599	United States of America	8/12/2013	A logo
86/138,446	United States of America	12/9/2013	AMAG 2018 GROWING BUILDING TOGETHER
86/035,596	United States of America	8/12/2013	AMAG PHARMACEUTICALS
77/159,943	United States of America	04/18/2007	CELESTIA PHARMACEUTICALS