

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4955179

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|---|--------------------------------|
| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| GLEN ROBERT RENNIE | 10/31/2017 |
| RAJESH R. IYENGAR | 11/02/2017 |
| THOMAS WAI-HO LEE | 10/30/2017 |
| TAKASHI NAKAI | 12/13/2017 |
| ARA MERMERIAN | 10/30/2017 |
| LEI JIA | 03/28/2018 |
| G-YOON JAMIE IM | 02/15/2018 |
| PAUL ALLEN RENHOWE | 12/11/2017 |
| JOON JUNG | 10/30/2017 |
| PETER GERMANO | 11/01/2017 |
| KARTHIK IYER | 11/02/2017 |
| TIMOTHY CLAUDE BARDEN | 10/30/2017 |
| KIM TANG | 05/01/2018 |
| RECEIVING PARTY DATA | |
| Name: | IRONWOOD PHARMACEUTICALS, INC. |
| Street Address: | 301 BINNEY STREET |
| City: | CAMBRIDGE |
| State/Country: | MASSACHUSETTS |
| Postal Code: | 02142 |
| PROPERTY NUMBERS Total: 1 | |
| Property Type | Number |
| Application Number: | 15693758 |
| CORRESPONDENCE DATA | |
| Fax Number: | (617)607-9200 |
| <i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i> | |
| Phone: | (617) 449-6590 |
| Email: | cgiordani@mccarter.com |
| Correspondent Name: | MCCARTER & ENGLISH, LLP |
| Address Line 1: | 265 FRANKLIN STREET |

PATENT

| | |
|---|----------------|
| Address Line 4: BOSTON, MASSACHUSETTS 02110 | |
| ATTORNEY DOCKET NUMBER: | 127553-01505 |
| NAME OF SUBMITTER: | MEI BAI, PH.D. |
| SIGNATURE: | /Mei Bai/ |
| DATE SIGNED: | 05/10/2018 |
| Total Attachments: 16 source=IW172 Executed Assignment#page1.tif source=IW172 Executed Assignment#page2.tif source=IW172 Executed Assignment#page3.tif source=IW172 Executed Assignment#page4.tif source=IW172 Executed Assignment#page5.tif source=IW172 Executed Assignment#page6.tif source=IW172 Executed Assignment#page7.tif source=IW172 Executed Assignment#page8.tif source=IW172 Executed Assignment#page9.tif source=IW172 Executed Assignment#page10.tif source=IW172 Executed Assignment#page11.tif source=IW172 Executed Assignment#page12.tif source=IW172 Executed Assignment#page13.tif source=IW172 Executed Assignment#page14.tif source=IW172 Executed Assignment#page15.tif source=IW172 Executed Assignment#page16.tif | |

ASSIGNMENT - WORLDWIDE

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, each undersigned inventor (hereinafter referred to singly and collectively as "ASSIGNOR") has sold, assigned, and transferred, and by these presents hereby sells, assigns, and transfers, unto

IRONWOOD PHARMACEUTICALS, INC.

301 Binney Street
Cambridge, Massachusetts 02142
United States of America

(hereinafter referred to as "ASSIGNEE") its successors and assigns, the full and exclusive right, title and interest for the United States, its territories and possessions, and all foreign countries in and to this invention relating to

sGC STIMULATORS

as set forth in the following Patent Applications:

U.S. Patent Application No. 15/693,758, filed September 1, 2017;
International PCT Application No. PCT/US2017/049834, filed September 1, 2017;
Argentina Patent Application No. P20170102449, filed September 1, 2017;
Gulf Cooperation Council Patent Application No. 2017/33914, filed August 31, 2017;
and
Taiwanese Patent Application No. 106129952, filed September 1, 2017

which claim the benefit of the following applications:

United States Provisional Application No. 62/382,942, filed September 2, 2016;
United States Provisional Application No. 62/423,445, filed November 17, 2016;
United States Provisional Application No. 62/468,598, filed March 8, 2017;
United States Provisional Application No. 62/482,486, filed April 6, 2017;

as well as in and to (a) all improvements and modifications of the above-identified invention or inventions, (b) the above-identified applications and all other applications for Letters Patent of the United States and countries foreign thereto for above-identified invention or inventions and all improvements and modifications thereof, (c) all Letters Patent which may issue from said applications in the United States and countries foreign thereto, (d) all divisions, continuations, reissues, and extensions of said applications and Letters Patent, and (e) the right to claim for any of said applications the full benefits and priority rights under the International Convention and any other international agreement to which the United States adheres; such right, title, and interest to be held and enjoyed by ASSIGNEE, its successors and assigns, to the full end of the

term or terms for which any and all such Letters Patent may be granted as fully and entirely as would have been held and enjoyed by ASSIGNOR had this Assignment not been made.

ASSIGNOR HEREBY AUTHORIZES ASSIGNEE to file patent applications in any or all countries on the above-identified invention or inventions in the name of the undersigned or in the name of ASSIGNEE or otherwise as ASSIGNEE may deem advisable under the International Convention or otherwise.

ASSIGNOR HEREBY AUTHORIZES AND REQUESTS the Commissioner of Patents and Trademarks to issue said Letters Patent to ASSIGNEE as assignee of the entire interest, for the sole use and benefit of ASSIGNEE, its successors and assigns.

ASSIGNOR HEREBY AGREES (a) to communicate to ASSIGNEE, its successors and assigns, or their representative or agents, all facts and information known or available to ASSIGNOR respecting said invention or inventions, improvements, and modifications including evidence for interference, reexamination, reissue, opposition, revocation, extension, or infringement purposes or other legal, judicial, or administrative proceedings, whenever requested by ASSIGNEE; (b) to testify in person or by affidavit as required by ASSIGNEE, its successors and assigns, in any such proceeding in the United States or a country foreign thereto; (c) to execute and deliver, upon request by ASSIGNEE, all lawful papers including, but not limited to, original, divisional, continuation, and reissue applications, renewals, assignments, powers of attorney, oaths, affidavits, and declarations, depositions; and (d) to provide all reasonable assistance to ASSIGNEE, its successors and assigns, in obtaining and enforcing proper title in and protection for said invention or inventions, improvements, and modifications under the intellectual property laws of the United States and countries foreign thereto.

ASSIGNOR HEREBY REPRESENTS AND WARRANTS that ASSIGNOR has the full and unencumbered right to sell, assign, and transfer the interests sold, assigned, and transferred herein, and that ASSIGNOR has not executed and will not execute any document or instrument in conflict herewith.

ASSIGNOR HEREBY GRANTS to the law firm of **McCarter & English, LLP** the power and authority to insert in this Assignment any further identification which may be necessary or desirable to comply with the rules of the U.S. Patent and Trademark Office for recordation of this Assignment.

ASSIGNOR UNDERSTANDS AND AGREES that the attorneys and agents of the law firm of **McCarter & English, LLP** do not personally represent ASSIGNOR OR ASSIGNOR's legal interests, but instead represent the interests of ASSIGNEE; since said attorneys and agents cannot provide legal advice to ASSIGNOR with respect to this Assignment, ASSIGNOR acknowledges its right to seek its own independent legal counsel.

Executed this 31st day of October, 2017.


Glen Robert Rennie

United States of America)
State of MA)
County of Middlesex)

On this 31st day of October, 2017 before me, the
the undersigned notary public, personally appeared Glen Robert Rennie
(name of document signer), proved to me through satisfactory evidence of identification,
which was MA driver's license, to be the person whose name
is signed on the preceding or attached document in my presence.

_____ (official signature and seal of notary)

My commission expires 10/1/2021



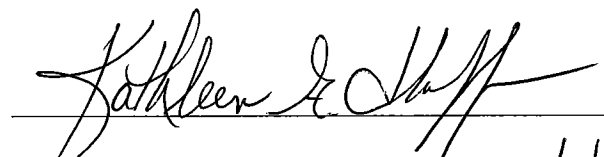
Executed this 2ND day of November, 2017.

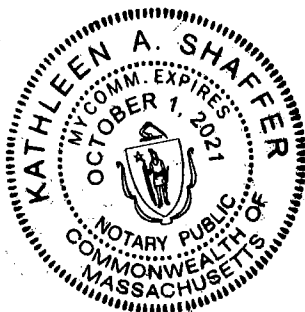


Rajesh R. Iyengar

United States of America)
State of MA)
County of Middlesex)

On this 2ND day of November, 2017 before me, the
the undersigned notary public, personally appeared Rajesh R. Iyengar
(name of document signer), proved to me through satisfactory evidence of identification,
which was Known to me, to be the person whose name
is signed on the preceding or attached document in my presence.

 (official signature and seal of notary)
My commission expires 10/1/2021.



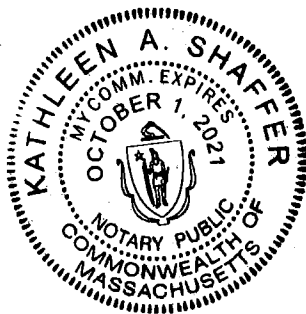
Executed this 30th day of October, 2017.

Thomas Wai-Ho Lee
Thomas Wai-Ho Lee

United States of America)
State of MA)
County of Middlesex)

On this 30th day of October, 2017 before me, the
the undersigned notary public, personally appeared Thomas Wai-Ho Lee
(name of document signer), proved to me through satisfactory evidence of identification,
which was MA driver's license, to be the person whose name
is signed on the preceding or attached document in my presence.

Kathleen A. Shaffer (official signature and seal of notary)
My commission expires 10/1/2021.



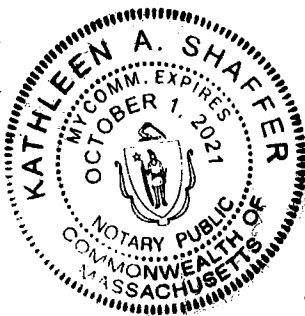
Executed this 13th day of December, 2017.

Takashi Nakai
Takashi Nakai

United States of America)
State of MA)
County of Middlesex)

On this 13th day of December, 2017 before me, the
the undersigned notary public, personally appeared Takashi Nakai
(name of document signer), proved to me through satisfactory evidence of identification,
which was personally known to me, to be the person whose name
is signed on the preceding or attached document in my presence.

Kathleen A. Shaffer (official signature and seal of notary)
My commission expires 10/1/2021.



Executed this 30th day of October, 2017.

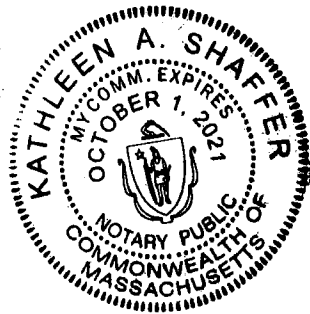
Ara Mermerian

Ara Mermerian


United States of America)
State of MA)
County of Middlesex)

On this 30th day of October, 2017 before me, the
the undersigned notary public, personally appeared Ara Mermerian
(name of document signer), proved to me through satisfactory evidence of identification,
which was MA driver's license, to be the person whose name
is signed on the preceding or attached document in my presence.

Kathleen A. Shaffer (official signature and seal of notary)
My commission expires 10/1/2021.




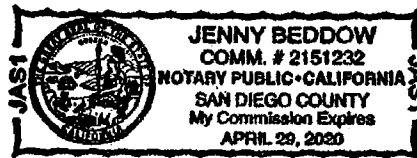
Executed this 28th day of March, 2018.


James Jia
Lei

United States of America)
State of California)
County of San Diego)

On this 28th day of March, 2018 before me, the
the undersigned notary public, personally appeared Lei Jia
(name of document signer), proved to me through satisfactory evidence of identification,
which was CA Drivers License, to be the person whose name
is signed on the preceding or attached document in my presence.

 (official signature and seal of notary)
My commission expires 04/29/2020



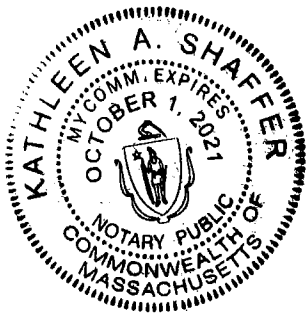
Executed this 15th day of February, 2018.

G-Yoon Jamie Im
G-Yoon Jamie Im

United States of America)
State of MA)
County of Middlesex)

On this 15th day of February, 2018 before me, the
the undersigned notary public, personally appeared G-Yoon Jamie Im
(name of document signer), proved to me through satisfactory evidence of identification,
which was known to me, to be the person whose name
is signed on the preceding or attached document in my presence.

Kathleen A. Shaffer (official signature and seal of notary)
My commission expires 10/1/2021.



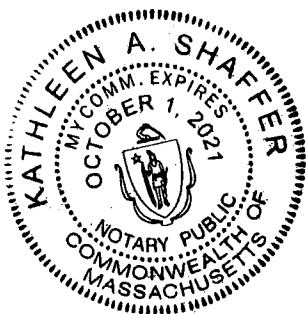
Executed this 11th day of December, 2017.

Paul Renhowe
Paul Allan Renhowe

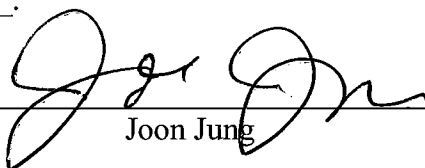
United States of America)
State of MA)
County of Middlesex)

On this 11th day of December, 2017 before me, the
the undersigned notary public, personally appeared Paul Allan Renhowe
(name of document signer), proved to me through satisfactory evidence of identification,
which was MA driver's license, to be the person whose name
is signed on the preceding or attached document in my presence.

Kathleen A. Shaffer (official signature and seal of notary)
My commission expires 10/1/2021.

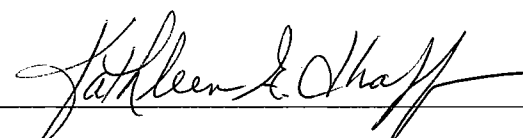


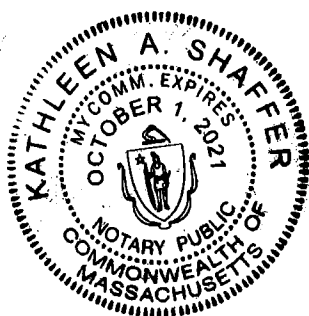
Executed this 30th day of October, 2017.


Joon Jung

United States of America)
State of MA)
County of Middlesex)

On this 30th day of October, 2017 before me, the
the undersigned notary public, personally appeared Joon Jung
(name of document signer), proved to me through satisfactory evidence of identification,
which was MA driver's license, to be the person whose name
is signed on the preceding or attached document in my presence.


_____(official signature and seal of notary)
My commission expires 10/1/2021.




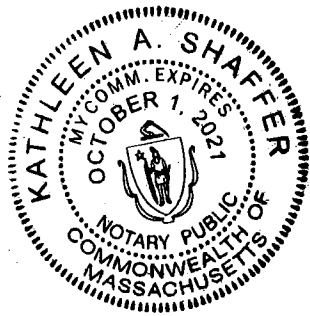
Executed this 1st day of November, 2017.


Peter Germano

United States of America)
State of MA)
County of Middlesex)

On this 1st day of November, 2017 before me, the
the undersigned notary public, personally appeared Peter Germano
(name of document signer), proved to me through satisfactory evidence of identification,
which was MA driver's license, to be the person whose name
is signed on the preceding or attached document in my presence.

 (official signature and seal of notary)
My commission expires 10/1/2021.

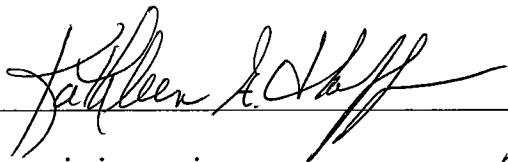


Executed this 2ND day of November, 2017.

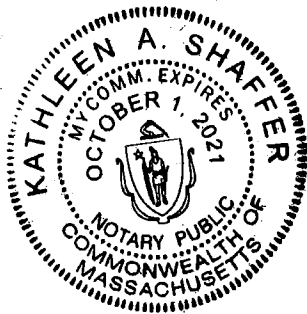

Karthik Iyer

United States of America)
State of MA)
County of Middlesex)

On this 2ND day of November, 2017 before me, the
the undersigned notary public, personally appeared Karthik Iyer
(name of document signer), proved to me through satisfactory evidence of identification,
which was MA driver's license, to be the person whose name
is signed on the preceding or attached document in my presence.



My commission expires 10/1/2021.



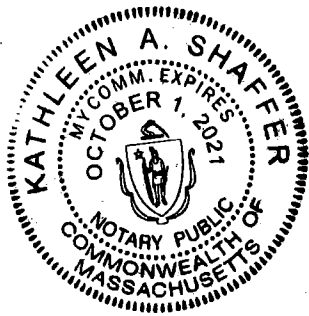
Executed this 30th day of October, 2017.

Timothy Claude Barden
Timothy Claude Barden

United States of America)
State of MA)
County of Middlesex)

On this 30th day of October, 2017 before me, the
the undersigned notary public, personally appeared Timothy Claude Barden
(name of document signer), proved to me through satisfactory evidence of identification,
which was known to me, to be the person whose name
is signed on the preceding or attached document in my presence.

Kathleen E. Shaffer (official signature and seal of notary)
My commission expires 10/1/2021.



Executed this 1st day of MAY, 2018.



Kim Tang

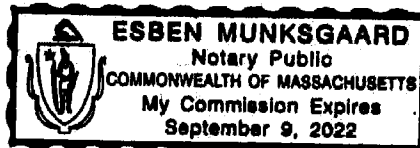
United States of America)
State of Massachusetts)
County of Suffolk)

On this 1st day of May, 2018 before me, the
the undersigned notary public, personally appeared Kim Tang
(name of document signer), proved to me through satisfactory evidence of identification,
which was personal knowledge, to be the person whose name
is signed on the preceding or attached document in my presence.



(official signature and seal of notary)

My commission expires September 9, 2022.



Acceptance of Assignment by the Assignee:

Executed this 8th day of May, 2018.

Karen E. Brown
Ironwood Pharmaceuticals, Inc.

Name: Karen E. Brown

Title: VP, Chief IP Counsel

United States of America)
State of MA)
County of Middlesex)

On this 8th day of May, 2018 before me, the
the undersigned notary public, personally appeared Karen E. Brown
(name of document signer), proved to me through satisfactory evidence of identification,
which was Known to me, to be the person whose name
is signed on the preceding or attached document in my presence.

Kathleen A. Shaffer (official signature and seal of notary)
My commission expires 10/1/2021.

