

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5816370

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
HOWARD HUGHES MEDICAL INSTITUTE	07/13/2012
JEANNIE T LEE	05/14/2013
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	THE GENERAL HOSPITAL CORPORATION D/B/A MASSACHUSETTS GENERAL HOSPITAL
<b>Street Address:</b>	55 FRUIT STREET
<b>City:</b>	BOSTON
<b>State/Country:</b>	MASSACHUSETTS
<b>Postal Code:</b>	02114
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	15872684
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(617)646-8646
<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>	
<b>Phone:</b>	6176468000
<b>Email:</b>	patents_CristinB@wolfgreenfield.com
<b>Correspondent Name:</b>	CRISTIN BERKEY
<b>Address Line 1:</b>	WOLF, GREENFIELD & SACKS, P.C.
<b>Address Line 2:</b>	600 ATLANTIC AVENUE
<b>Address Line 4:</b>	BOSTON, MASSACHUSETTS 02210
<b>ATTORNEY DOCKET NUMBER:</b>	R0693.70050US00
<b>NAME OF SUBMITTER:</b>	CRISTIN BERKEY
<b>SIGNATURE:</b>	/Cristin Berkey/
<b>DATE SIGNED:</b>	11/12/2019
<b>Total Attachments: 36</b>	
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## ASSIGNMENT

For good and valuable consideration, the receipt of which is hereby acknowledged, I, the undersigned Assignor, hereby:

1. Sell, assign and transfer to **The General Hospital Corporation d/b/a Massachusetts General Hospital**, having a place of business at **55 Fruit Street; Boston, Massachusetts 02114**, its successors, assigns and legal representatives, all hereinafter referred to as the Assignee, my entire right, title and interest for the United States and all foreign countries, in and to any and all inventions and designs which are disclosed in the provisional application filed in the United States Patent and Trademark Office on **May 16, 2012** under No. **61/647,858**, bearing Attorney Docket No. **R0693.70001US00**, and entitled **COMPOSITIONS AND METHODS FOR MODULATING SMN GENE FAMILY EXPRESSION**, provisional application filed in the United States Patent and Trademark Office on **October 27, 2012** under No. **61/719,394**, bearing Attorney Docket No. **R0693.70001US01**, and entitled **COMPOSITIONS AND METHODS FOR MODULATING SMN GENE FAMILY EXPRESSION**, and provisional application United States Letters Patent filed in the United States Patent and Trademark Office on **March 14, 2013** under No. **61/785,529**, bearing Attorney Docket No. **R0693.70001US02**, and entitled **COMPOSITIONS AND METHODS FOR MODULATING SMN GENE FAMILY EXPRESSION**, and in and to the applications and all corresponding provisional, non-provisional, divisional, continuing, substitute, renewal, reissue and all other applications for Letters Patent, utility models, industrial designs or similar intellectual property rights which have been or shall be filed in the United States, internationally, and in any foreign country, including but not limited to China, Japan and Korea, on any of the inventions; and in and to all original and reissued patents which have been or shall be issued in the United States or any other jurisdiction on the inventions, including the right to apply for patent rights in each foreign country and all rights to priority, including the right to claim priority for China, Japan and Korea;
2. Agree that the Assignee may apply for and receive Letters Patent and utility model and industrial design registrations for the inventions in its own name; and when requested, without charge to but at the expense of the Assignee, I agree to carry out in good faith the intent and purpose of this assignment, by executing all non-provisional, divisional, continuing, substitute, renewal, reissue, and all other patent, utility model and industrial design applications on any and all the inventions, by executing all rightful oaths, assignments, powers of attorney and other papers, by communicating to the Assignee all facts known to me relating to the inventions and the history thereof, and generally by doing everything reasonably possible which the Assignee shall consider desirable for aiding in securing and maintaining proper protection for the inventions and for vesting title to the inventions and all applications for patents and all patents on the inventions, in the Assignee;
3. Request the Director of the United States Patent and Trademark Office to issue the Letters Patent to the Assignee;
4. Authorize and request Wolf, Greenfield & Sacks, P.C. to supply any missing patent/application identification information or correct any errors in the patent/application identification information provided above, whether discovered prior to or after recordation;
5. Covenant with the Assignee that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by me and that full right to convey the same as herein expressed is possessed by me; and
6. Appoint Assignee, through its designee, my attorney-in-fact to execute, in my name and on my behalf, any and all documents required to effectuate this Assignment, specifically including, but not limited to, those documents specified above and any necessary corrective assignments.

This instrument is executed under seal and signed under the pains and penalties of perjury under the laws of the United States of America.

5/14/13  
Date

[Signature]  
Inventor: Jeannie T. Lee  
for herself and as agent for the Howard Hughes  
Medical Institute  
Address: 185 Cambridge Street  
Boston, Massachusetts 02114  
Citizenship: US

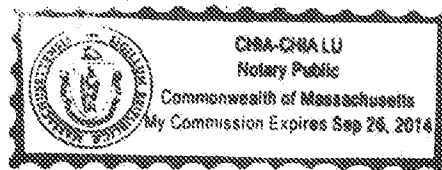
COMMONWEALTH OF MASSACHUSETTS  
COUNTY OF Suffolk :

On this 14 day of May, 2013, before me, the undersigned notary public,  
personally appeared Jeannie T. Lee, proved to me through satisfactory evidence of  
identification, which were MA Drivers License  
to be the person who signed the preceding or attached document in my presence and swore or affirmed  
to me that the contents of the document are truthful and accurate to the best of (his) (her) knowledge  
and belief and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

SEAL

[Signature]  
Notary Public

My commission expires: Sept. 26, 2014




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2. Agree that the Assignee may apply for and receive Letters Patent and utility model and industrial design registrations for the inventions in its own name; and when requested, without charge to but at the expense of the Assignee, I agree to carry out in good faith the intent and purpose of this assignment, by executing all non-provisional, divisional, continuing, substitute, renewal, reissue, and all other patent, utility model and industrial design applications on any and all the inventions, by executing all rightful oaths, assignments, powers of attorney and other papers, by communicating to the Assignee all facts known to me relating to the inventions and the history thereof, and generally by doing everything reasonably possible which the Assignee shall consider desirable for aiding in securing and maintaining proper protection for the inventions and for vesting title to the inventions and all applications for patents and all patents on the inventions, in the Assignee;
3. Request the Director of the United States Patent and Trademark Office to issue the Letters Patent to the Assignee;
4. Authorize and request Wolf, Greenfield & Sacks, P.C. to supply any missing patent/application identification information or correct any errors in the patent/application identification information provided above, whether discovered prior to or after recordation;
5. Covenant with the Assignee that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by me and that full right to convey the same as herein expressed is possessed by me; and
6. Appoint Assignee, through its designee, my attorney-in-fact to execute, in my name and on my behalf, any and all documents required to effectuate this Assignment, specifically including, but not limited to, those documents specified above and any necessary corrective assignments.

This instrument is executed under seal and signed under the pains and penalties of perjury under the laws of the United States of America.

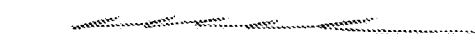
5/14/13  
Date

  
Inventor: Jeannie T. Lee  
for herself and as agent for the Howard Hughes  
Medical Institute  
Address: 185 Cambridge Street  
Boston, Massachusetts 02114  
Citizenship: US

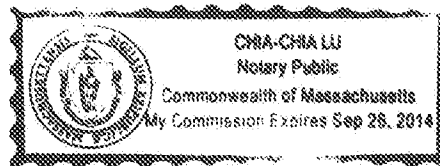
COMMONWEALTH OF MASSACHUSETTS  
COUNTY OF Suffolk :

On this 14 day of May, 2013, before me, the undersigned notary public,  
personally appeared Jeannie T. Lee, proved to me through satisfactory evidence of  
identification, which were MA Drivers License,  
to be the person who signed the preceding or attached document in my presence and swore or affirmed  
to me that the contents of the document are truthful and accurate to the best of (his) (her) knowledge  
and belief and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

SEAL

  
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2. Agree that the Assignee may apply for and receive Letters Patent and utility model and industrial design registrations for the inventions in its own name; and when requested, without charge to but at the expense of the Assignee, I agree to carry out in good faith the intent and purpose of this assignment, by executing all non-provisional, divisional, continuing, substitute, renewal, reissue, and all other patent, utility model and industrial design applications on any and all the inventions, by executing all rightful oaths, assignments, powers of attorney and other papers, by communicating to the Assignee all facts known to me relating to the inventions and the history thereof, and generally by doing everything reasonably possible which the Assignee shall consider desirable for aiding in securing and maintaining proper protection for the inventions and for vesting title to the inventions and all applications for patents and all patents on the inventions, in the Assignee;
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Address: 185 Cambridge Street

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Citizenship: US

COMMONWEALTH OF MASSACHUSETTS

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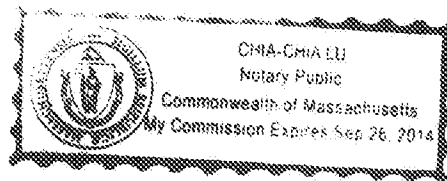
On this 14 day of May, 2013, before me, the undersigned notary public,  
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identification, which were MA Driver's License,  
to be the person who signed the preceding or attached document in my presence and swore or affirmed  
to me that the contents of the document are truthful and accurate to the best of (his) (her) knowledge  
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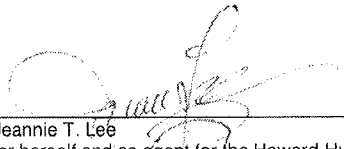
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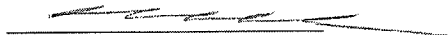
Date 5/14/13

  
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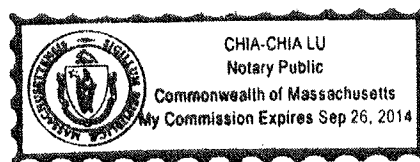
COMMONWEALTH OF MASSACHUSETTS  
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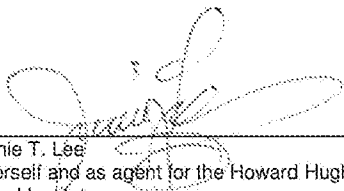
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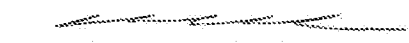
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Inventor:   
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COMMONWEALTH OF MASSACHUSETTS  
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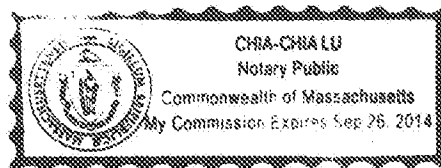
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6. Appoint Assignee, through its designee, my attorney-in-fact to execute, in my name and on my behalf, any and all documents required to effectuate this Assignment, specifically including, but not limited to, those documents specified above and any necessary corrective assignments.

This instrument is executed under seal and signed under the pains and penalties of perjury under the laws of the United States of America.

5/14/13  
Date

*Jeannie T. Lee*  
Inventor: Jeannie T. Lee  
for herself and as agent for the Howard Hughes  
Medical Institute  
Address: 185 Cambridge Street  
Boston, Massachusetts 02114  
Citizenship: US

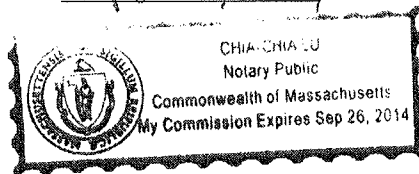
COMMONWEALTH OF MASSACHUSETTS  
COUNTY OF Suffolk:

On this 14 day of May, 2013, before me, the undersigned notary public,  
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identification, which were MA. Driver's License  
to be the person who signed the preceding or attached document in my presence and swore or affirmed  
to me that the contents of the document are truthful and accurate to the best of (his) (her) knowledge  
and belief and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

SEAL

*Chia Chia EU*  
Notary Public

My commission expires: Sept. 26, 2014




## ASSIGNMENT

For good and valuable consideration, the receipt of which is hereby acknowledged, I, the undersigned Assignor, hereby:

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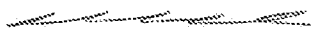
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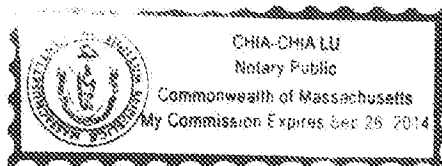
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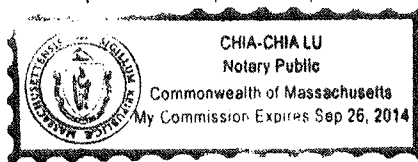
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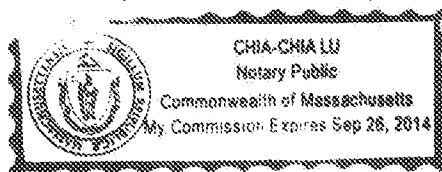
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Date

5/19/13

Inventor: Jeannie T. Lee

for herself and as agent for the Howard Hughes  
Medical Institute

Address: 185 Cambridge Street

Boston, Massachusetts 02114

Citizenship: US

STATE/Commonwealth of Massachusetts  
COUNTY OF Suffolk

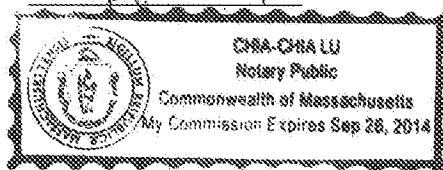
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SEAL

Notary Public

My commission expires:

Sept. 26, 2014




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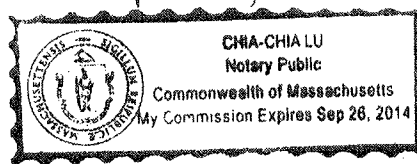
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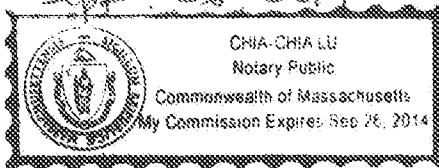
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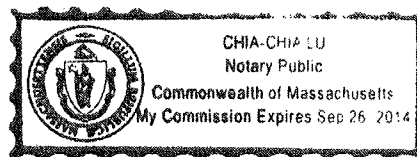
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and belief and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

SEAL

*Chia-Chia Lu*  
Notary Public

My commission expires: Sept. 26, 2014



## ASSIGNMENT

For good and valuable consideration, the receipt of which is hereby acknowledged, I, the undersigned Assignor, hereby:

1. Sell, assign and transfer to **The General Hospital Corporation d/b/a Massachusetts General Hospital**, having a place of business at **55 Fruit Street; Boston, Massachusetts 02114**, its successors, assigns and legal representatives, all hereinafter referred to as the Assignee, my entire right, title and interest for the United States and all foreign countries, in and to any and all inventions and designs which are disclosed in the provisional application filed in the United States Patent and Trademark Office on **May 16, 2012** under No. **61/648,069**, bearing Attorney Docket No. **R0693.70014US00**, and entitled **COMPOSITIONS AND METHODS FOR MODULATING GENE EXPRESSION**, and the provisional application filed in the United States Patent and Trademark Office on **March 14, 2013** under No. **61/786,095**, bearing Attorney Docket No. **R0693.70014US01**, and entitled **COMPOSITIONS AND METHODS FOR MODULATING GENE EXPRESSION**, and in and to the applications and all corresponding provisional, non-provisional, divisional, continuing, substitute, renewal, reissue and all other applications for Letters Patent, utility models, industrial designs or similar intellectual property rights which have been or shall be filed in the United States, internationally, and in any foreign country, including but not limited to China, Japan and Korea, on any of the inventions; and in and to all original and reissued patents which have been or shall be issued in the United States or any other jurisdiction on the inventions, including the right to apply for patent rights in each foreign country and all rights to priority, including the right to claim priority for China, Japan and Korea;
2. Agree that the Assignee may apply for and receive Letters Patent and utility model and industrial design registrations for the inventions in its own name; and when requested, without charge to but at the expense of the Assignee, I agree to carry out in good faith the intent and purpose of this assignment, by executing all non-provisional, divisional, continuing, substitute, renewal, reissue, and all other patent, utility model and industrial design applications on any and all the inventions, by executing all rightful oaths, assignments, powers of attorney and other papers, by communicating to the Assignee all facts known to me relating to the inventions and the history thereof, and generally by doing everything reasonably possible which the Assignee shall consider desirable for aiding in securing and maintaining proper protection for the inventions and for vesting title to the inventions and all applications for patents and all patents on the inventions, in the Assignee;
3. Request the Director of the United States Patent and Trademark Office to issue the Letters Patent to the Assignee;
4. Authorize and request Wolf, Greenfield & Sacks, P.C. to supply any missing patent/application identification information or correct any errors in the patent/application identification information provided above, whether discovered prior to or after recordation;
5. Covenant with the Assignee that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by me and that full right to convey the same as herein expressed is possessed by me; and
6. Appoint Assignee, through its designee, my attorney-in-fact to execute, in my name and on my behalf, any and all documents required to effectuate this Assignment, specifically including, but not limited to, those documents specified above and any necessary corrective assignments.

This instrument is executed under seal and signed under the pains and penalties of perjury under the laws of the United States of America.

5/14/13  
Date

[Signature]  
Inventor: Jeannie T. Lee  
for herself and as agent for the Howard Hughes  
Medical Institute  
Address: 185 Cambridge Street  
Boston, Massachusetts 02114  
Citizenship: US

STATE/Commonwealth of Massachusetts  
COUNTY OF Suffolk

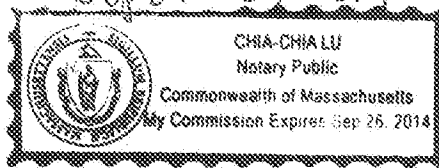
On this 14 day of May, 2013, before me, the undersigned notary public,  
personally appeared Jeannie T. Lee, proved to me through satisfactory evidence of  
identification, which were MA Drivers License,  
to be the person who signed the preceding or attached document in my presence and swore or affirmed  
to me that the contents of the document are truthful and accurate to the best of (his) (her) knowledge  
and belief and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

SEAL

[Signature]  
Notary Public

My commission expires:

Sept. 26, 2014




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2. Agree that the Assignee may apply for and receive Letters Patent and utility model and industrial design registrations for the inventions in its own name; and when requested, without charge to but at the expense of the Assignee, I agree to carry out in good faith the intent and purpose of this assignment, by executing all non-provisional, divisional, continuing, substitute, renewal, reissue, and all other patent, utility model and industrial design applications on any and all the inventions, by executing all rightful oaths, assignments, powers of attorney and other papers, by communicating to the Assignee all facts known to me relating to the inventions and the history thereof, and generally by doing everything reasonably possible which the Assignee shall consider desirable for aiding in securing and maintaining proper protection for the inventions and for vesting title to the inventions and all applications for patents and all patents on the inventions, in the Assignee;
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5. Covenant with the Assignee that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by me and that full right to convey the same as herein expressed is possessed by me; and
6. Appoint Assignee, through its designee, my attorney-in-fact to execute, in my name and on my behalf, any and all documents required to effectuate this Assignment, specifically including, but not limited to, those documents specified above and any necessary corrective assignments.

This instrument is executed under seal and signed under the pains and penalties of perjury under the laws of the United States of America.

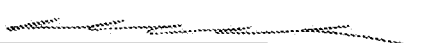
5/14/13  
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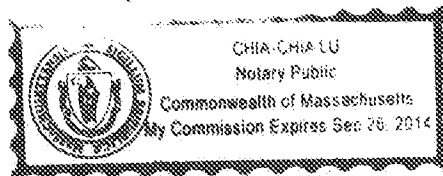
STATE/Commonwealth of Massachusetts  
COUNTY OF Suffolk:

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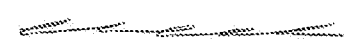
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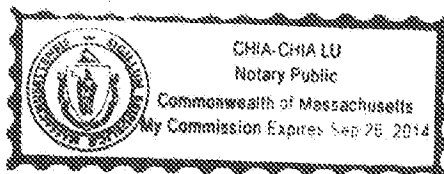
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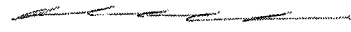
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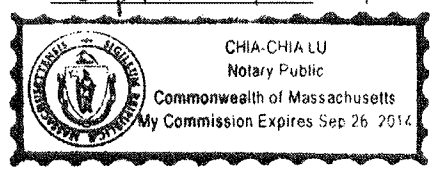
  
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and belief and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

SEAL  
  
Notary Public

My commission expires: Sept. 26, 2014



APPOINTMENT OF INVESTIGATOR AS AGENT

Appointment by the Howard Hughes Medical Institute ("HHMI") of Jeannie T. Lee, MD, PhD, an employee of HHMI, as its agent for the purpose of assigning certain rights to The General Hospital Corporation, doing business as the Massachusetts General Hospital ("Institution").

WHEREAS, HHMI and Institution collaborate in the active conduct of medical research pursuant to an Agreement between them dated as of November 16, 1987 (the "Agreement");

WHEREAS, pursuant to the Agreement, HHMI has agreed to assign to Institution HHMI's rights with respect to intellectual property resulting from research by HHMI employees, alone or with others, at the Institution during the term of the Agreement, whether or not patentable or copyrightable, and whether funded in whole or in part by HHMI (each a "Subject Property");

WHEREAS, research conducted pursuant to the Agreement by Jeannie T. Lee, MD, PhD while employed by HHMI at Institution has resulted in the inventions covered by the patent applications listed on Exhibit A attached hereto (collectively, the "Inventions"), and the Inventions are Subject Property; and

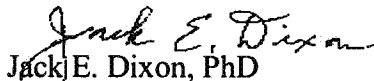
WHEREAS, HHMI wishes Jeannie T. Lee, MD, PhD to act as its agent for the purpose of assigning to Institution the rights HHMI has in the Inventions by reason of the research program conducted at Institution.

NOW THEREFORE, HHMI hereby appoints Jeannie T. Lee, MD, PhD as its agent for the purpose of assigning the rights HHMI has or may acquire in the Inventions by reason of the research program conducted at Institution to Institution in accordance with and subject to the conditions of the Agreement.

Executed: July 13, 2012

HOWARD HUGHES MEDICAL INSTITUTE

By:

  
Jack E. Dixon, PhD

Vice President and Chief Scientific Officer

ATTESTED:

  
Craig A. Alexander

Vice President and General Counsel

MGH 21708  
HHMI 05189

# Exhibit A

Title	Serial Number	Filing Date
COMPOSITIONS AND METHODS FOR MODULATING FXN EXPRESSION	61/647,786	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING SMN GENE FAMILY EXPRESSION	61/647,858	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING UTRN EXPRESSION	61/647,886	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING HEMOGLOBIN GENE FAMILY EXPRESSION	61/647,901	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING CFTR EXPRESSION	61/647,915	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING ATP2A2 EXPRESSION	61/647,925	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING PAH EXPRESSION	61/647,938	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING APOA1/ABCA1 EXPRESSION	61/647,949	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING CEP290 EXPRESSION	61/648,030	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING PTEN EXPRESSION	61/648,041	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING BDNF EXPRESSION	61/648,058	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING ADIPOQ EXPRESSION	61/648,045	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING MECP2 EXPRESSION	61/648,051	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING CD274 EXPRESSION	61/648,052	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING GENE EXPRESSION	61/648,069	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING GENE EXPRESSION	61/648,077	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING GENE EXPRESSION	61/648,016	5/16/2012
COMPOSITIONS AND METHODS FOR MODULATING GENE EXPRESSION	61/648,021	5/16/2012

MGH 21708  
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