

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6160109

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
MICHAEL D. ALTMAN	08/08/2016
BRIAN ANDRESEN	08/08/2016
WONSUK CHANG	08/08/2016
MATTHEW LLOYD CHILDERS	08/08/2016
JARED N. CUMMING	08/08/2016
ANDREW MARC HAIDLE	08/08/2016
TIMOTHY J. HENDERSON	08/08/2016
JAMES P. JEWELL	08/08/2016
RUI LIANG	08/08/2016
JONGWON LIM	08/05/2016
HONG LIU	08/08/2016
MIN LU	08/08/2016
ALAN B. NORTHRUP	08/09/2016
RYAN D. OTTE	08/10/2016
TONY SIU	08/08/2016
BENJAMIN WESLEY TROTTER	08/08/2016
QUANG T. TRUONG	08/08/2016
SHAWN P. WALSH	08/08/2016
KAKE ZHAO	08/08/2016

RECEIVING PARTY DATA

Name:	MERCK SHARP & DOHME CORP.
Street Address:	126 EAST LINCOLN AVENUE
City:	RAHWAH
State/Country:	NEW JERSEY
Postal Code:	07065

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	16904888

CORRESPONDENCE DATA**Fax Number:** (732)594-4720*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.***Phone:** 732-594-1932**Email:** us_efs@merck.com**Correspondent Name:** MERCK**Address Line 1:** 126 EAST LINCOLN AVENUE**Address Line 2:** RY86-2011A**Address Line 4:** RAHWAY, NEW JERSEY 07065**ATTORNEY DOCKET NUMBER:** 24164-US-CNT3**NAME OF SUBMITTER:** EUNICE KIM**SIGNATURE:** /EUNICE KIM/**DATE SIGNED:** 06/18/2020**Total Attachments: 63**

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WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- (1) Michael D. Altman, located at Needham, MA,
- (2) Brian Andresen, located at Brookline, MA,
- (3) Wonsuk Chang, located at Princeton, NJ,
- (4) Matthew Lloyd Childers, located at Medfield, MA,
- (5) Jared N. Cumming, located at Garwood, NJ,
- (6) Andrew Marc Haidle, located at Somerville, MA,
- (7) Timothy J. Henderson, located at Natick, MA,
- (8) James P. Jewell, located at Newton, MA,
- (9) Rui Liang, located at East Brunswick, NJ,
- (10) Jongwon Lim, located at Lexington, MA,
- (11) Hong Liu, located at Kenilworth, NJ,
- (12) Min Lu, located at Brookline, MA,
- (13) Alan B. Northrup, located at Reading, MA,
- (14) Ryan D. Otte, located at Natick, MA,
- (15) Tony Siu, located at Brookline, MA,
- (16) Benjamin Wesley Trotter, located at Medfield, MA,
- (17) Quang T. Truong, located at Morganville, NJ,
- (18) Shawn P. Walsh, located at Bridgewater, NJ,
- (19) Kake Zhao, located at Westfield, NJ

(hereinafter ASSIGNOR(S)), is/are the inventor(s) of the invention described in an application for Patents having the Attorney Docket Number indicated above and the following Title of the Invention:

CYCLIC DI-NUCLEOTIDE COMPOUNDS AS STING AGONISTS

and/or in the following application(s):

- U.S. Provisional Application No. 62/204,677 filed on August 13, 2015;
- U.S. Provisional Application No. 62/268,723 filed on December 17, 2015;
- U.S. Provisional Application No. 62/356,125 filed on June 29, 2016;
- U.S. Application No. 15/234,182 having a filing date of 08/11/2016; and
- PCT International Application No. _____ having a filing date of _____.
- U.S. Application No. 15/886,568 having a filing date of 02/01/2018

WHEREAS I/WE covenant that the rights and property herein conveyed are free and clear of any encumbrance, and that I/we have the full right to convey the same as herein expressed.

WHEREAS, Merck Sharp & Dohme Corp., a corporation organized under the laws of the State of New Jersey, having an office at 126 East Lincoln Avenue, Rahway, New Jersey 07065, and its successors, assigns and legal representatives (hereinafter **ASSIGNEE**), is desirous of obtaining the entire right, title and interest in, to and under the invention disclosed in said application or applications;

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, I/we, said ASSIGNOR(S), do each hereby sell, assign and transfer or confirm the grant and assignment to said **ASSIGNEE** my/our entire right, title and interest in all countries of the world in and to my/our invention described in said application for Patents, in and to the right to file patent applications in the name of **ASSIGNEE**, its designee, or in any or all of our names, at its election, on the aforesaid invention in all countries of the world, together with all rights of priority in the aforesaid countries deriving from the above-identified application for Patents under the International Convention for the Protection of Industrial Property, under the Inter-American Convention relating to Inventions, Patents, Designs and Industrial Models and under any other international arrangement relating to patents or intellectual property, in and to any and all Letters Patent that are granted from the aforesaid application for Patents, in and to any applications claiming priority benefits to a provisional patent application or other applications filed on said invention, and in and to any continuations, divisions, reexaminations, reissues, renewals and extensions thereof of any of said Letters Patent, the same to be held and enjoyed by said **ASSIGNEE**, to the full ends of the terms for which all Letters Patent therefore may be granted, as fully and entirely as the same would have been held and enjoyed by us if this assignment and sale had not been made.

Worldwide Assignment

AND I/WE HEREBY covenant and agree that we will at any time, upon the request and at the expense of **ASSIGNEE**, without further compensation or charge to said **ASSIGNEE**, execute and deliver any and all documents that may be necessary or desirable to perfect the title to the foregoing invention, patent applications, and Letters Patent and continuations, divisions, reexaminations, reissues, renewals and extensions thereof in the name of **ASSIGNEE**, including the execution and procurement of any and all further documents evidencing this assignment and sale as may be necessary or desirable for recording the same in the Patent Office of any country concerned, and will make all rightful oaths and declarations and do all lawful acts requisite for procuring the same or for aiding therein.

I/WE HEREBY authorize **ASSIGNEE** to insert in this instrument the Application Number(s) and the filing date(s) of said application for Patents when officially notified thereof.

This document may be executed in any number of counterparts, each of which so executed shall be deemed to be an original, but all such components shall together constitute but one and the same document.

Executed this 8th day of AUGUST, 2016.

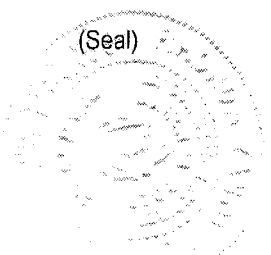
Michael D. Altman
Michael D. Altman

ACKNOWLEDGEMENT

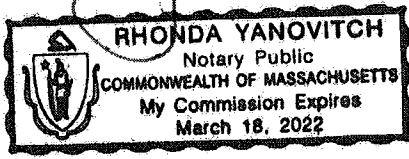
Commonwealth of Massachusetts

County Name, ss. SUFFOLK

On this 8 day of AUGUST, 2016, before me, the undersigned notary public, personally appeared **Michael D. Altman** proved to me through satisfactory evidence of identification, which was EMPLOYER ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.



Rhonda Yanovitch
Notary Public



Executed this 8 day of August, 2016.

Brian Andresen
Brian Andresen

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. SUFFOLK

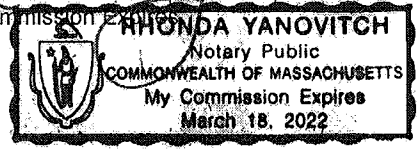
On this 8 day of AUGUST, 2016, before me, the undersigned notary public, personally appeared **Brian Andresen** proved to me through satisfactory evidence of identification, which was EMPLOYER ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)



Rhonda Yanovitch

Notary Public:
My Commission Expires



Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Wonsuk Chang

ACKNOWLEDGEMENT


State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Wonsuk Chang** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

Executed this 8 day of AUGUST, 2016.



Matthew Lloyd Childers

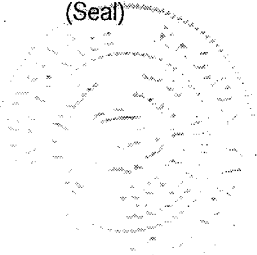
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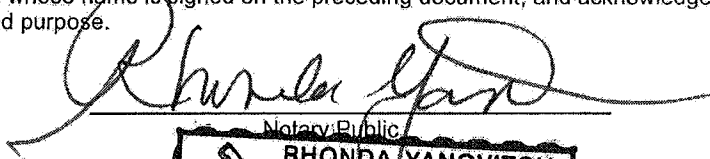
Commonwealth of Massachusetts

County Name, ss. SUFFOLK

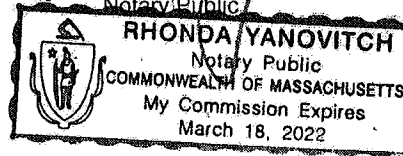
On this 8 day of AUGUST, 2016, before me, the undersigned notary public, personally appeared **Matthew Lloyd Childers** proved to me through satisfactory evidence of identification, which was Employer ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)





Notary Public



Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Jared N. Cumming

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Jared N. Cumming** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this 9 day of AUGUST, 2016

Andrew Marc Haidle
Andrew Marc Haidle

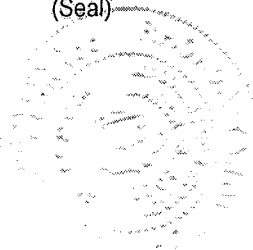
ACKNOWLEDGEMENT

Commonwealth of Massachusetts

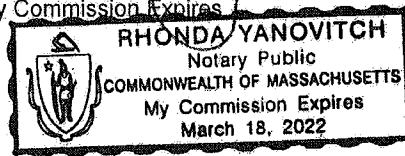
County Name, ss. SUFFOLK

On this 9 day of AUGUST, 2016, before me, the undersigned notary public, personally appeared **Andrew Marc Haidle** proved to me through satisfactory evidence of identification, which was EMPLOYER ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)



Rhonda Yanovitch
Notary Public:
My Commission Expires



Executed this 8 day of August, 2016.

[Signature]
Timothy J. Henderson

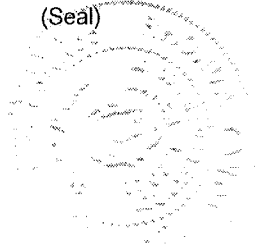
ACKNOWLEDGEMENT

Commonwealth of Massachusetts

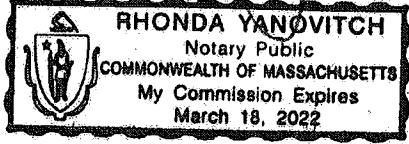
County Name, ss. Suffolk

On this 8 day of August, 2016, before me, the undersigned notary public, personally appeared **Timothy J. Henderson** proved to me through satisfactory evidence of identification, which was Employer ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)



[Signature]
Notary Public:
My Commission Expires



Executed this 8 day of August, 2016.

James P. Jewell
James P. Jewell

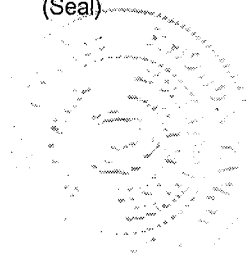
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Commonwealth of Massachusetts

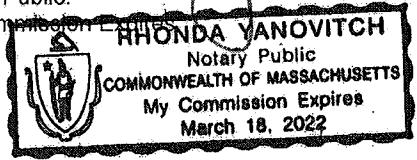
County Name, ss. Suffolk

On this 8 day of August, 2016, before me, the undersigned notary public, personally appeared James P. Jewell proved to me through satisfactory evidence of identification, which was Employee ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)



Rhonda Yanovitch
Notary Public:
My Commission Expires



Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Rui Liang

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Rui Liang** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

Jongwon Lim

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Jongwon Lim** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Hong Liu

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Hong Liu** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

Executed this 8 day of August, 2016.



Min Lu

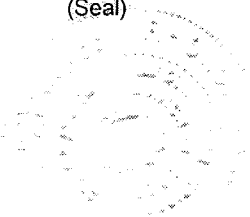
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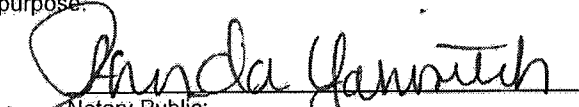
Commonwealth of Massachusetts

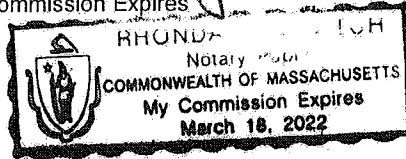
County Name, ss. Suffolk

On this 8 day of August, 2016, before me, the undersigned notary public, personally appeared Min Lu proved to me through satisfactory evidence of identification, which was Evidence ID to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)




Notary Public:
My Commission Expires



Executed this 9th day of August, 2016.

Alan B. Northrup
Alan B. Northrup

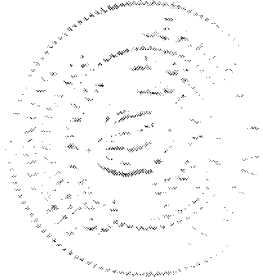
ACKNOWLEDGEMENT

Commonwealth of Massachusetts

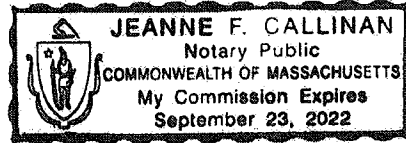
County Name, ss. Suffolk

On this 9 day of August, 2016, before me, the undersigned notary public, personally appeared **Alan B. Northrup** proved to me through satisfactory evidence of identification, which was Merck ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)



Jeanne F. Callinan
Notary Public:
My Commission Expires



Executed this 10 day of August, 2016.

Ryan D. Otte
Ryan D. Otte

ACKNOWLEDGEMENT

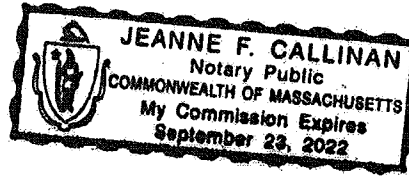
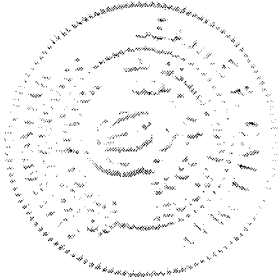
Commonwealth of Massachusetts

County Name, ss. Suffolk

On this 10 day of August, 2016, before me, the undersigned notary public, personally appeared Ryan D. Otte proved to me through satisfactory evidence of identification, which was Merck ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Jeanne F. Callinan
Notary Public:
My Commission Expires



Executed this 8 day of August, 2016.

Tony Siu
Tony Siu

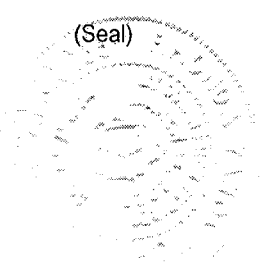
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Commonwealth of Massachusetts

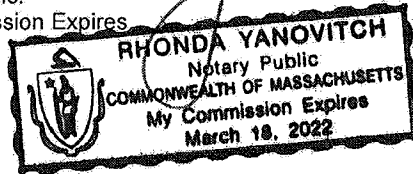
County Name, ss. Suffolk

On this 8 day of August, 2016, before me, the undersigned notary public, personally appeared **Tony Siu** proved to me through satisfactory evidence of identification, which was Employee ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)



Rhonda Yanovitch
Notary Public:
My Commission Expires



Executed this 8 day of Aug, 2016.

[Signature]
Benjamin Wesley Trotter

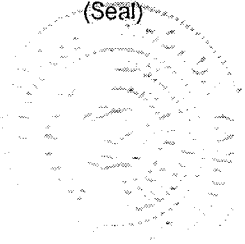
ACKNOWLEDGEMENT

Commonwealth of Massachusetts

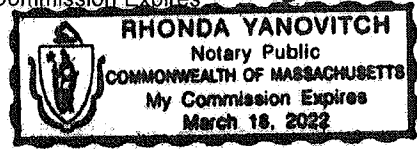
County Name, ss. Suffolk

On this 8 day of August, 2016, before me, the undersigned notary public, personally appeared **Benjamin Wesley Trotter** proved to me through satisfactory evidence of identification, which was Employee ID, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)



[Signature]
Notary Public:
My Commission Expires



Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Quang T. Truong

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Quang T. Truong** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Shawn P. Walsh

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Shawn P. Walsh** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.
(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Kake Zhao

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Kake Zhao** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- (1) Michael D. Altman, located at Needham, MA,
- (2) Brian Andresen, located at Brookline, MA,
- (3) Wonsuk Chang, located at Princeton, NJ,
- (4) Matthew Lloyd Childers, located at Medfield, MA,
- (5) Jared N. Cumming, located at Garwood, NJ,
- (6) Andrew Marc Haidle, located at Somerville, MA,
- (7) Timothy J. Henderson, located at Natick, MA,
- (8) James P. Jewell, located at Newton, MA,
- (9) Rui Liang, located at East Brunswick, NJ,
- (10) Jongwon Lim, located at Lexington, MA,
- (11) Hong Liu, located at Kenilworth, NJ,
- (12) Min Lu, located at Brookline, MA,
- (13) Alan B. Northrup, located at Reading, MA,
- (14) Ryan D. Otte, located at Natick, MA,
- (15) Tony Siu, located at Brookline, MA,
- (16) Benjamin Wesley Trotter, located at Medfield, MA,
- (17) Quang T. Truong, located at Morganville, NJ,
- (18) Shawn P. Walsh, located at Bridgewater, NJ,
- (19) Kake Zhao, located at Westfield, NJ

(hereinafter ASSIGNOR(S)), is/are the inventor(s) of the invention described in an application for Patents having the Attorney Docket Number indicated above and the following Title of the Invention:

CYCLIC DI-NUCLEOTIDE COMPOUNDS AS STING AGONISTS

and/or in the following application(s):

- U.S. Provisional Application No. 62/204,677 filed on August 13, 2015;
- U.S. Provisional Application No. 62/268,723 filed on December 17, 2015;
- U.S. Provisional Application No. 62/356,125 filed on June 29, 2016;
- U.S. Application No. _____ having a filing date of _____; and
- PCT International Application No. _____ having a filing date of _____.

WHEREAS I/WE covenant that the rights and property herein conveyed are free and clear of any encumbrance, and that I/we have the full right to convey the same as herein expressed.

WHEREAS, Merck Sharp & Dohme Corp., a corporation organized under the laws of the State of New Jersey, having an office at 126 East Lincoln Avenue, Rahway, New Jersey 07065, and its successors, assigns and legal representatives (hereinafter **ASSIGNEE**), is desirous of obtaining the entire right, title and interest in, to and under the invention disclosed in said application or applications;

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, I/we, said ASSIGNOR(S), do each hereby sell, assign and transfer or confirm the grant and assignment to said **ASSIGNEE** my/our entire right, title and interest in all countries of the world in and to my/our invention described in said application for Patents, in and to the right to file patent applications in the name of **ASSIGNEE**, its designee, or in any or all of our names, at its election, on the aforesaid invention in all countries of the world, together with all rights of priority in the aforesaid countries deriving from the above-identified application for Patents under the International Convention for the Protection of Industrial Property, under the Inter-American Convention relating to Inventions, Patents, Designs and Industrial Models and under any other international arrangement relating to patents or intellectual property, in and to any and all Letters Patent that are granted from the aforesaid application for Patents, in and to any applications claiming priority benefits to a provisional patent application or other applications filed on said invention, and in and to any continuations, divisions, reexaminations, reissues, renewals and extensions thereof of any of said Letters Patent, the same to be held and enjoyed by said **ASSIGNEE**, to the full ends of the terms for which all Letters Patent therefore may be granted, as fully and entirely as the same would have been held and enjoyed by us if this assignment and sale had not been made.

Worldwide Assignment

AND I/WE HEREBY covenant and agree that we will at any time, upon the request and at the expense of **ASSIGNEE**, without further compensation or charge to said **ASSIGNEE**, execute and deliver any and all documents that may be necessary or desirable to perfect the title to the foregoing invention, patent applications, and Letters Patent and continuations, divisions, reexaminations, reissues, renewals and extensions thereof in the name of **ASSIGNEE**, including the execution and procurement of any and all further documents evidencing this assignment and sale as may be necessary or desirable for recording the same in the Patent Office of any country concerned, and will make all rightful oaths and declarations and do all lawful acts requisite for procuring the same or for aiding therein.

I/WE HEREBY authorize **ASSIGNEE** to insert in this instrument the Application Number(s) and the filing date(s) of said application for Patents when officially notified thereof.

This document may be executed in any number of counterparts, each of which so executed shall be deemed to be an original, but all such components shall together constitute but one and the same document.

Executed this ____ day of _____, 2016.

Michael D. Altman

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Michael D. Altman** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public

Executed this ____ day of _____, 2016.

Brian Andresen

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Brian Andresen** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

Wonsuk Chang

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this _____ day of _____, 2016, personally appeared before me **Wonsuk Chang** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

Matthew Lloyd Childers

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Matthew Lloyd Childers** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Jared N. Cumming

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Jared N. Cumming** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Andrew Marc Haidle

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Andrew Marc Haidle** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Timothy J. Henderson

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Timothy J. Henderson** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

James P. Jewell

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **James P. Jewell** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Rui Liang

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Rui Liang** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

Executed this 05 day of August, 2016.

Jongwon Lim
Jongwon Lim

ACKNOWLEDGEMENT

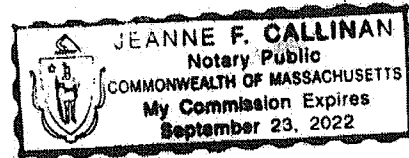
Commonwealth of Massachusetts

County Name, ss. Suffolk

On this 5 day of August, 2016, before me, the undersigned notary public, personally appeared Jongwon Lim proved to me through satisfactory evidence of identification, which was Merck ID Jongwon Lim, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Jeanne F. Callinan
Notary Public:
My Commission Expires



Executed this ____ day of _____, 2016.

Hong Liu

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Hong Liu** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Min Lu

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Min Lu** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

Alan B. Northrup

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Alan B. Northrup** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

Ryan D. Otte

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Ryan D. Otte** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

Tony Siu

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Tony Siu** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

Benjamin Wesley Trotter

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Benjamin Wesley Trotter** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public;
My Commission Expires

Executed this ____ day of _____, 2016:

Quang T. Truong

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Quang T. Truong** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

Shawn P. Walsh

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Shawn P. Walsh** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.
(Seal)

Notary Public:
My Commission Expires

Executed this ____ day of _____, 2016.

Kake Zhao

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this ____ day of _____, 2016, personally appeared before me **Kake Zhao** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Notary Public:
My Commission Expires

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- (1) Michael D. Altman, located at Needham, MA,
- (2) Brian Andresen, located at Brookline, MA,
- (3) Wonsuk Chang, located at Princeton, NJ,
- (4) Matthew Lloyd Childers, located at Medfield, MA,
- (5) Jared N. Cumming, located at Garwood, NJ,
- (6) Andrew Marc Haidle, located at Somerville, MA,
- (7) Timothy J. Henderson, located at Natick, MA,
- (8) James P. Jewell, located at Newton, MA,
- (9) Rui Liang, located at East Brunswick, NJ,
- (10) Jongwon Lim, located at Lexington, MA,
- (11) Hong Liu, located at Kenilworth, NJ,
- (12) Min Lu, located at Brookline, MA,
- (13) Alan B. Northrup, located at Reading, MA,
- (14) Ryan D. Otte, located at Natick, MA,
- (15) Tony Siu, located at Brookline, MA,
- (16) Benjamin Wesley Trotter, located at Medfield, MA,
- (17) Quang T. Truong, located at Morganville, NJ,
- (18) Shawn P. Walsh, located at Bridgewater, NJ,
- (19) Kake Zhao, located at Westfield, NJ

(hereinafter ASSIGNOR(S)), is/are the inventor(s) of the invention described in an application for Patents having the Attorney Docket Number indicated above and the following Title of the Invention:

CYCLIC DI-NUCLEOTIDE COMPOUNDS AS STING AGONISTS

and/or in the following application(s):

U.S. Provisional Application No. 62/204,677 filed on August 13, 2015;
U.S. Provisional Application No. 62/268,723 filed on December 17, 2015;
U.S. Provisional Application No. 62/356,125 filed on June 29, 2016;
U.S. Application No. _____ having a filing date of _____; and
PCT International Application No. _____ having a filing date of _____.

WHEREAS I/WE covenant that the rights and property herein conveyed are free and clear of any encumbrance, and that I/we have the full right to convey the same as herein expressed.

WHEREAS, Merck Sharp & Dohme Corp., a corporation organized under the laws of the State of New Jersey, having an office at 126 East Lincoln Avenue, Rahway, New Jersey 07065, and its successors, assigns and legal representatives (hereinafter **ASSIGNEE**), is desirous of obtaining the entire right, title and interest in, to and under the invention disclosed in said application or applications;

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, I/we, said ASSIGNOR(S), do each hereby sell, assign and transfer or confirm the grant and assignment to said **ASSIGNEE** my/our entire right, title and interest in all countries of the world in and to my/our invention described in said application for Patents, in and to the right to file patent applications in the name of **ASSIGNEE**, its designee, or in any or all of our names, at its election, on the aforesaid invention in all countries of the world, together with all rights of priority in the aforesaid countries deriving from the above-identified application for Patents under the International Convention for the Protection of Industrial Property, under the Inter-American Convention relating to Inventions, Patents, Designs and Industrial Models and under any other international arrangement relating to patents or intellectual property, in and to any and all Letters Patent that are granted from the aforesaid application for Patents, in and to any applications claiming priority benefits to a provisional patent application or other applications filed on said invention, and in and to any continuations, divisions, reexaminations, reissues, renewals and extensions thereof of any of said Letters Patent, the same to be held and enjoyed by said **ASSIGNEE**, to the full ends of the terms for which all Letters Patent therefore may be granted, as fully and entirely as the same would have been held and enjoyed by us if this assignment and sale had not been made.

Worldwide Assignment

AND I/WE HEREBY covenant and agree that we will at any time, upon the request and at the expense of **ASSIGNEE**, without further compensation or charge to said **ASSIGNEE**, execute and deliver any and all documents that may be necessary or desirable to perfect the title to the foregoing invention, patent applications, and Letters Patent and continuations, divisions, reexaminations, reissues, renewals and extensions thereof in the name of **ASSIGNEE**, including the execution and procurement of any and all further documents evidencing this assignment and sale as may be necessary or desirable for recording the same in the Patent Office of any country concerned, and will make all rightful oaths and declarations and do all lawful acts requisite for procuring the same or for aiding therein.

I/WE HEREBY authorize **ASSIGNEE** to insert in this instrument the Application Number(s) and the filing date(s) of said application for Patents when officially notified thereof.

This document may be executed in any number of counterparts, each of which so executed shall be deemed to be an original, but all such components shall together constitute but one and the same document.

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Michael D. Altman

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Michael D. Altman** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Brian Andresen

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Brian Andresen** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this 8th day of August, 2016.

Wonsuk Chang
Wonsuk Chang

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this 8th day of August, 2016, personally appeared before me **Wonsuk Chang** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Valerie H. Riggi
Notary Public:
My Commission Expires April 12, 2021



VALERIE H RIGGI
ID # 2274161
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires April 12, 2021

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Matthew Lloyd Childers

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Matthew Lloyd Childers** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public

Attorney Docket No.: 24164

Executed this 8 day of August, 2016.

Jared N. Cumming

ACKNOWLEDGEMENT

~~Commonwealth of Massachusetts~~

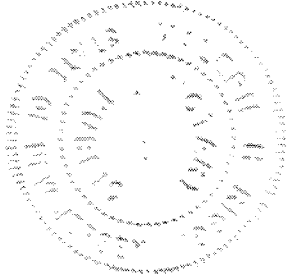
State of New Jersey *(initials)*

County Name, ss. Union

On this 8th day of August, 2016, before me, the undersigned notary public, personally appeared Jared N. Cumming proved to me through satisfactory evidence of identification, which was NJ Drivers License # C92473872506704 to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Valerie H. Riggi
Notary Public:
My Commission Expires April 12, 2021



VALERIE H RIGGI
ID # 2274161
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires April 12, 2021

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Andrew Marc Haidle

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Andrew Marc Haidle** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Timothy J. Henderson

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Timothy J. Henderson** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

James P. Jewell

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **James P. Jewell** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Attorney Docket No.: 24164

Executed this 8th day of August, 2016.

Rui Liang
Rui Liang

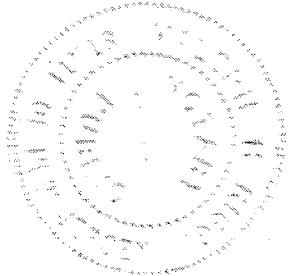
ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this 8th day of August, 2016, personally appeared before me **Rui Liang** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Valerie H. Riggi
Notary Public:
My Commission Expires April 12, 2021



VALERIE H RIGGI
ID # 2274161
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires April 12, 2021

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Jongwon Lim

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Jongwon Lim** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this 8 day of Aug, 2016.

Hong Liu

Hong Liu

ACKNOWLEDGEMENT

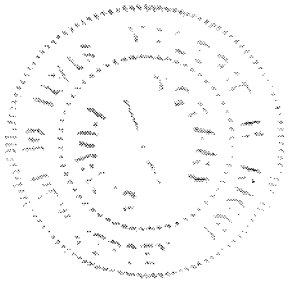
State of New Jersey)
)ss
County Name, Union)

On this 8th day of August, 2016, personally appeared before me **Hong Liu** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Valerie H. Riggi

Notary Public:
My Commission Expires April 12, 2021



VALERIE H RIGGI
ID # 2274161
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires April 12, 2021

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Min Lu

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Min Lu** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Alan B. Northrup

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Alan B. Northrup** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Ryan D. Otte

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Ryan D. Otte** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Tony Siu

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Tony Siu** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Worldwide Assignment

Attorney Docket No.: 24164

Executed this ____ day of _____, 2016.

Benjamin Wesley Trotter

ACKNOWLEDGEMENT

Commonwealth of Massachusetts

County Name, ss. _____

On this ____ day of _____, 2016, before me, the undersigned notary public, personally appeared **Benjamin Wesley Trotter** proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the preceding document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

(Seal)

Notary Public:
My Commission Expires

Executed this 8 day of August, 2016.

Quang T. Truong
Quang T. Truong

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this 8th day of August, 2016, personally appeared before me **Quang T. Truong** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)

Valerie H. Riggi
Notary Public:
My Commission Expires April 12, 2021



VALERIE H RIGGI
ID # 2274161
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires April 12, 2021

Executed this 8 day of August, 2016.

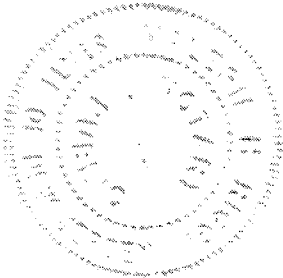
Shawn P. Walsh
Shawn P. Walsh

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this 8th day of August, 2016, personally appeared before me **Shawn P. Walsh** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.
(Seal)

Valerie H. Riggi
Notary Public;
My Commission Expires April 12, 2021



VALERIE H RIGGI
ID # 2274161
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires April 12, 2021

Executed this 8th day of August, 2016.

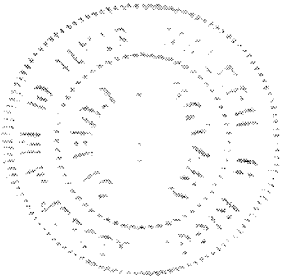
Kake Zhao
Kake Zhao

ACKNOWLEDGEMENT

State of New Jersey)
)ss
County Name, Union)

On this 8th day of August, 2016, personally appeared before me **Kake Zhao** to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

(Seal)



Valerie H. Riggi
Notary Public:
My Commission Expires April 12, 2021

VALERIE H RIGGI
ID # 2274161
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires April 12, 2021