506113386 06/18/2020

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

PATENT REEL: 052976 FRAME: 0824

506113386

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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> PATENT REEL: 052976 FRAME: 0825

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PATENT REEL: 052976 FRAME: 0826

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.

Computer Generated Template "Assignment-Merck Sharp & Dohme. Single Assignee Worldwide" (Assignment) Merck Sharp & Dohme Corp. 11/04/2010

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 P day of AUGUST, 2016.	
Malel Oto	
Michael D. Altman	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss. SUFFICE	
On this <u>f</u> day of <u>Avervs T</u> , 2016, Michael D. Altman proved to me through satisfactory even to be the person whose name	before me, the undersigned notary public, personally appeared vidence of identification, which was
that he/she signed it voluntarily for its stated purpose) - 0 -
(Seal)	ronda Un noveld
	Hotary Public
	A RHONDA YANOVITCH
	COMMONWEALTH OF MASSACHUSETTS My Commission Expires
	March 18, 2022

Executed this 8 day of August , 2016. Brian Andresen
ACKNOWLEDGEMENT
Commonwealth of Massachusetts
County Name, ss. SUFFALIC
On this day of Avery 2016, before me, the undersigned notary public, personally appeared Brian Andresen proved to me through satisfactory evidence of identification, which was
that he/she signed it voluntarily for its stated purpose.
(Seal) Shurela Clanner
Notaly Public: My Commission Particular VANOVITCH
Notary Public COMMONWEALTH OF MASSACHUSETTS My Commission Expires
March 18, 2022

Executed this day of	, 2016.
Wonsuk Chang	
ACKNOWLEDGEMENT	
State of New Jersey)	
)ss County Name, Union)	
On this day of known by me to be the same person des (she) executed the same, of his (her) own	, 2016, personally appeared before me Wonsuk Chang to me known, an cribed in and who executed the foregoing instrument, and acknowledged that he n free will for the purpose set forth.
(Seal)	
	Notary Public: My Commission Expires

Executed this 8 day of AGUST	_ , 2016.
MATES (S.	•
Matthew Lloyd Childers	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss. SUFFOLK	
iviatinew Libya Childers proved to me through	, 2016, before me, the undersigned notary public, personally appeared h satisfactory evidence of identification, which was <u>CMY(n)</u> ex to ose name is signed on the preceding document, and acknowledged to me
that he/she signed it voluntarily for its stated pu	urpose.
(Seal)	Charles Sand
	Notary Biblic RHONDA YANOVITCH
	COMMONWEALTH OF MASSACHUSETTS My Commission Expires March 18, 2022

Executed this day of	, 2016.
Jared N. Cumming	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
Jared N. Cumming proved to me through sati	, 2016, before me, the undersigned notary public, personally appeared sfactory evidence of identification, which wasose name is signed on the preceding document, and acknowledged to me urpose.
(Seal)	
	Notary Public: My Commission Expires

Executed this \(\frac{Q}{2} \) day of \(\frac{AV67VST}{2} \)	, 2016
Andrew Marc Haidle	Laill
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss. Support	
On this <u>Y</u> day of <u>Au 6/VS</u> Andrew Marc Haidle proved to me through to be the person	, 2016, before me, the undersigned notary public, personally appeared a satisfactory evidence of identification, which was whose name is signed on the preceding document, and acknowledged to me
that he/she signed it voluntarily for its state	
(Seal)	Notary Public:
	My Commission Expires RHONDA YANOVITCH Notary Public
	COMMONWEATH OF MASSACHUSETTS My Commission Expires March 18, 2022

Executed this 8 day of Augustinating Timothy J. Henderson	<u></u>
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss. Suffails	
On this 🔾 day of <u>Qu</u>	, 2016, before me, the undersigned notary public, personally appeared
Timothy J. Henderson proved to me to	hough satisfactory evidence of identification, which was Caply a (V) son whose name is signed on the preceding document, and acknowledged to m
that he/she signed it voluntarily for its s	
(Seàl)	(Should text
	Notary Public: My Commission Expires
	RHONDA YANOVITCH Notary Public COMMONWEATH OF MASSACHUSETTS My Commission Expires
	March 18, 2022

James P. Jewell	, 2016.
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
James P. Jewell proved to me through satis	, 2016, before me, the undersigned notary public, personally appeared sfactory evidence of identification, which was בעם אוניים ביים וליים אוניים ביים וליים ביים ביים וליים ביים ביים ביים ביים ביים ביים ביים
that he/she signed it voluntarily for its stated	
(Seal)	Khynla Jann
	My Commission EHHONDA YANOVITCH Notary Public COMMONWEALTH OF MASSACHUSETTS My Commission Expires March 18, 2022

Executed this day of	, 2016.
Rui Liang	· · · · · · · · · · · · · · · · · · ·
ACKNOWLEDGEMENT	
State of New Jersey))ss	
)ss County Name, Union)	
On this day of known by me to be the same person describe (she) executed the same, of his (her) own fre	, 2016, personally appeared before me Rui Liang to me known, and ed in and who executed the foregoing instrument, and acknowledged that he e 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.	
, to be the person	, 2016, before me, the undersigned notary public, personally appeared factory evidence of identification, which wasn whose name is signed on the preceding document, and acknowledged to me
that he/she signed it voluntarily for its state	ed purpose.
(Seal)	
	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 known by me to be the same person described in (she) executed the same, of his (her) own free wil	, 2016, personally appeared before me Hong Liu to me known, and and who executed the foregoing instrument, and acknowledged that he I for the purpose set forth.
(Seal)	
	Notary Public:
	My Commission Expires

Executed this 8 day of August	_ , 2016.
Min Lu	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss. Suffally	
On this 8 day of Que wo	, 2016, before me, the undersigned notary public, personally appeared
Min Lu proved to me through satisfactor evide	ence of identification, which was Employ 1 ose name is signed on the preceding document, and acknowledged to me
that he/she signed it voluntarily for its stated pu	
(Seal)	Anda Gannuch
	Notary Public: My Commission Expires
	RHUNDANOTARY NOTARY NOT

Executed this 9th day of Aug	ust , 2016.		
alish			
Alan B. Northrup			
ACKNOWLEDGEMENT			
Commonwealth of Massachusetts			
County Name, ss. Su Holk	<u> </u>		
On this day of AUG	2016, before	me, the undersigned notary public, personally appear	arec
, to be the p	erson whose name is signe	of identification, which was <u>Merck 1D</u> ed on the preceding document, and acknowledged to	me
that he/she signed it voluntarily for its	stated purpose.	10	
(Seal)	La	une fallinan	
The state of the s	Notary Public My Commiss	ic: sion Expires	
			ì
		JEANNE F. CALLINAN Notary Public	
		COMMONWEALTH OF MASSACHUSETTS My Commission Expires	
		September 23, 2022	

Executed this 10 day of August	_ , 2016.
Byan D. Otte	
Rỳản D. Otte	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	•
County Name, ss.	
On this D day of Que UST Ryan D. Otte proved to me through satisfactory	_, 2016, before me, the undersigned notary public, personally appeared evidence of identification, which was
, to be the person who	se name is signed on the preceding document, and acknowledged to me
that he/she signed it voluntarily for its stated pur	pose.
(Seal)	Dearine & Callina
	Nøta/y Public:
	My/Commission Expires
	/ /
	JEANNE F. CALLINAN
and the second of the second o	COMMONWEATH Public
	COMMONWEALTH OF MASSACHUSETTS My Commission Expires September on
	September 22 2000

Executed this day of August, 2016 Tony Siu	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss. Sufficient	
On this 8 day of August , 2016	6, before me, the undersigned notary public, personally appeared
Tony Siu proved to me through satisfactory evidence of	of identification, which was <u>his signed on the preceding document, and acknowledged</u> to me
that he/she signed it voluntarily for its stated purpose.	surface on the preceding document, and acknowledged to me
(Seal)	Amoula Janon
	Commission Expires VANOVITCH
	Notary Public Notary Public Commonwealth OF MASSACHUSETTS My Commission Expires My Commission Expires Merch 18, 2022

My Commission Expires

RHONDA YANOVITCH
Notary Public
DIMMONWEALTH OF MASSACHUSETTS
My Commission Expires
March 18, 2023

Executed this da	y of	_ , 2016.
Quang T. Truong		
ACKNOWLEDGEMEN	NT .	
State of New Jersey County Name, Union))ss)	
and known by me to be	e the same person describ	_, 2016, personally appeared before me Quang T. Truong to me known, ned in and who executed the foregoing instrument, and acknowledged tha e will for the purpose set forth.
(Seal)		
		Notary Public: My Commission Expires

Executed this da	ay of	, 2016.		
Shawn P. Walsh				
ACKNOWLEDGEME	NT .			
State of New Jersey County Name, Union))ss)			
and known by me to be	e me same person des	, 2016, personally appe scribed in and who executed free will for the purpose set	eared before me Shawn P. Wa the foregoing instrument, and forth.	alsh to me known, I acknowledged tha
		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) Rul 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. 62/204,67	77 filed on August 13, 2015;	
U.S. Provisional Application No. 62/268,72	23 filed on December 17, 2015;	
U.S. Provisional Application No. 62/356,12	25 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.

Computer Generated Template "Assignment-Merck Sharp & Dohme, Single Assignee Worldwide" (Assignment) Merck Sharp & Dohme Corp. 11/04/2010

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.

IWE 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.	
Michael D. Altman proved to me through s	, 2016, before me, the undersigned notary public, personally appeared atisfactory evidence of identification, which was whose name is signed on the preceding document, and acknowledged to methods.
(Seal)	i pui pose.
	Notary Public

Executed this day of,	2016.
Brian Andresen	-
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
On this day of, Brian Andresen proved to me through satisfactor, to be the person whose that he/she signed it voluntarily for its stated purpo	2016, before me, the undersigned notary public, personally appeared y evidence of identification, which was name is signed on the preceding document, and acknowledged to me se.
(Seal)	
	Notary Public: My Commission Expires

Executed this day of	, 2016.	
Wonsuk Chang		
ACKNOWLEDGEMENT		
State of New Jersey)		
County Name, Union)		
On this day of known by me to be the same person do (she) executed the same, of his (her) o	, 2016, personally appeared before me escribed in and who executed the foregoing instrument free will for the purpose set forth.	Wonsuk Chang to me known, an ment, and acknowledged that he
(Seal)		
	Notary Public:	WOMANICOUS 4-4-4
	My Commission Expires	

Executed this day of,	2016.
Matthew Lloyd Childers	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
On this day of Matthew Lloyd Childers proved to me through sa	2016, before me, the undersigned notary public, personally appeared atisfactory evidence of identification, which was
that he/she signed it voluntarily for its stated purpo	name is signed on the preceding document, and acknowledged to me ose.
(Seal)	
	Notary Public

	Attorney Docket No.: 24164
Executed this day of, 2	016.
Jared N. Cumming	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
On this day of, 2 Jared N. Cumming proved to me through satisfact, to be the person whose rethat he/she signed it voluntarily for its stated purpose	2016, before me, the undersigned notary public, personally appeared ory evidence of identification, which was
(Seal)	
	Notary Public: My Commission Expires

Executed this day of	, 2016,
Andrew Marc Haidle	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
Andrew Marc Haidle proved to me throug	, 2016, before me, the undersigned notary public, personally appeared h satisfactory evidence of identification, which was whose name is signed on the preceding document, and acknowledged to me d purpose.
(Seal)	
	Notary Public: My Commission Expires

Executed this day of	, 2016.
Timothy J. Henderson	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
Timothy J. Henderson proved to me through	, 2016, before me, the undersigned notary public, personally appeared h satisfactory evidence of identification, which was
that he/she signed it voluntarily for its stated	rhose name is signed on the preceding document, and acknowledged to me purpose.
(Seal)	
	Notary Public: My Commission Expires

Executed this day of	, 2016.
James P. Jewell	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
James P. Jewell proved to me through sa	, 2016, before me, the undersigned notary public, personally appeared tisfactory evidence of identification, which wasn whose name is signed on the preceding document, and acknowledged to me
that he/she signed it voluntarily for its state	ed purpose.
(Seal)	
	Notary Public:
	My Commission Expires

Executed this day of ,	2016,
	: -
Rui Liang	
ACKNOWLEDGEMENT	
State of New Jersey)	
County Name, Union)	
On this day of known by me to be the same person described in (she) executed the same, of his (her) own free wil	, 2016, personally appeared before me Rui Liang to me known, and and who executed the foregoing instrument, and acknowledged that he I for the purpose set forth.
(Seal)	
	Notary Public:
	My Commission Expires

Executed this 05 day of August	, 2016.
Charles .	
Jongwor Lim	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss. Su Holk	
On this day of	
	actory evidence of identification, which was Merck D
	whose name is signed on the preceding document, and acknowledged to me
that he/ehe signed it voluntarily for its state	purpose.
(Seal)	Jeanne F Callinan
	Notary Public:
	My Commission Expires
	JEANNE F. CALLINAN
	LAMEN PLIDIC L
	1) LO MASSAUHUSETTO P
	My Commission Expires

Executed this day of	2016.
Hong Liu	
ACKNOWLEDGEMENT	
State of New Jersey)	
)ss County Name, Union)	
On this day of known by me to be the same person described in (she) executed the same, of his (her) own free will.	, 2016, personally appeared before me Hong Liu to me known, and and who executed the foregoing instrument, and acknowledged that hill for the purpose set forth.
(Seal)	
	Notary Public: My Commission Expires

Executed this day of	, 2016 ₄
Min Lu	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
Min Lu proved to me through satisfactory evid	, 2016, before me, the undersigned notary public, personally appeared ence of identification, which wasose name is signed on the preceding document, and acknowledged to mauroose.
(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 Alan B. Northrup proved to me through sa	, 2016, before me, the undersigned notary public, personally appeared tisfactory evidence of identification, which was
that he/she signed it voluntarily for its stated	whose name is signed on the preceding document, and acknowledged to med 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 Ryan D. Otte proved to me through satisf	, 2016, before me, the undersigned notary public, personally appeared actory evidence of identification, which was
that he/she signed it voluntarily for its state	ed 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 ence of identification, which wasename is signed on the preceding document, and acknowledged to me
that he/she signed it voluntarily for its stated purp	oose.
(Seal)	
	Notary Public: My Commission Expires

Executed this , 2016.	
Benjamin Wesley Trotter	•
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
Benjamin Wesley Trotter proved to me through satisfation to be the person whose name	i, before me, the undersigned notary public, personally appeared ctory evidence of identification, which was is signed on the preceding document, and acknowledged to me
that he/she signed it voluntarily for its stated purpose.	
(Seal)	
	ary Public; Commission Expires

Executed this d	ay of	, 2016.
Quang T. Truong	naja namananananananananananananananananana	
ACKNOWLEDGEME	INT	
State of New Jersey County Name, Union)ss	
On this and known by me to the (she) executed the	day of be the same person desc e same, of his (her) own fi	, 2016, personally appeared before me Quang T. Truong to me known, ribed in and who executed the foregoing instrument, and acknowledged that ree will for the purpose set forth.
(Seal)		
		Notary Public: My Commission Expires

Executed this day o	f, 2016	
Shawn P. Walsh	anne de la constante de la con	
ACKNOWLEDGEMENT	•	
State of New Jersey)	
County Name, Union))ss	
and known by me to be th	ny of, 2016 ne same person described in a ne, of his (her) own free will fo	b, personally appeared before me Shawn P. Walsh to me known, nd who executed the foregoing instrument, and acknowledged that or the purpose set forth.
		ary Public:
	My !	Commission Expires

Executed this day of, 2016.	
Kake Zhao	
ACKNOWLEDGEMENT	
State of New Jersey))es County Name, Union) On this day of, 2016, personally appeared before me Kake Zhao to me ki	nown, and
known by me to be the same person described in and who executed the foregoing instrument, and acknowled (she) executed the same, of his (her) own free will for the purpose set forth.	iged that he
(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 Refillworth, N
- (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. 62/204,67	7 filed on August 13, 2015;	
U.S. Provisional Application No. 62/268,72	3 filed on December 17, 2015;	
U.S. Provisional Application No. 62/356,12	25 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.

Computer Generated Template "Assignment-Merck Sharp & Dohme. Single Assignee Worldwide" (Assignment) Merck Sharp & Dohme Corp. 11/04/2010

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 thisd	ay of	, 2016.
Mîchael D. Altman		
ACKNOWLEDGEME	ENT	
Commonwealth of Ma	assachusetts	
County Name, ss		
	day of roved to me through sa , to be the person w voluntarily for its stated	, 2016, before me, the undersigned notary public, personally appeared tisfactory evidence of identification, which was
(Seal)	voiding for to stated	pui pode.
		Notary Public

	•
Executed this day of	, 2016.
	<u> </u>
Brian Andresen	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
Brian Andresen proved to me through satisfaction, to be the person who	, 2016, before me, the undersigned notary public, personally appeared tory evidence of identification, which wasose name is signed on the preceding document, and acknowledged to me
that he/she signed it voluntarily for its stated pu	rpose.
(Seal)	
	Notary Public: My Commission Expires

Executed this day of Lugust, 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 Open

VALERIE H RIGGI

Executed this day of	, 2016.
Matthew Lloyd Childers	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
On this day of, to be the person withat he/she signed it voluntarily for its stated	, 2016, before me, the undersigned notary public, personally appeared the satisfactory evidence of identification, which was whose name is signed on the preceding document, and acknowledged to me purpose.
(Seal)	
	Notary Public

	Executed this 8 day or turnst , 2016.
	Jared N. Cumming
	ACKNOWLEDGEMENT 1 71 - 20 14 2 1 (142)
	Commonwealth of Massachusetts State of New Jersey
	County Name, ss. Www.
	On this 8th day of Cugust , 2016, before me, the undersigned notary public, personally appeared Jared N. Cumming proved to me through satisfactory evidence of identification, which was N. D. Cugust Cugust
۴	C9247 38 775 64704 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) lalere H. Keggi
	Notary Public: My Commission Expires April 12, 2021
, nex	THE STATE OF THE S

VALERIE H RIGGI

Executed this day of	, 2016.
Andrew Marc Haidle	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
Andrew Marc Haidle proved to me through s	, 2016, before me, the undersigned notary public, personally appeared satisfactory evidence of identification, which washose name is signed on the preceding document, and acknowledged to me purpose.
(Seal)	
	Notary Public: My Commission Expires

Executed this day of	, 2016.
Timothy J. Henderson	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	-
, to be the perso	, 2016, before me, the undersigned notary public, personally appeared ough satisfactory evidence of identification, which was
that he/she signed it voluntarily for its sta	ted purpose.
(Seal)	
	Notary Public: My Commission Expires

Executed this day of	, 2016.
James P. Jewell	
•	
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	William Control of the Control of th
James P. Jewell proved to me the	, 2016, before me, the undersigned notary public, personally appears
that he/she signed it voluntarily for	ne person whose name is signed on the preceding document, and acknowledged to not rits stated purpose.
(Seal)	
	Notary Public: My Commission Expires

Executed this and day of August, 2016

Rui Liang

ACKNOWLEDGEMENT

State of New Jersey

))ss

County Name, Union

On this day of d

(Seal)

Notary Public:

My Commission Expires

VALERIE H RIGGI

Executed this day of	, 2016.	
Jongwon Lim		
ACKNOWLEDGEMENT		
Commonwealth of Massachuse	ts	
County Name, ss.		
Jongwon Lim proved to me th	, 2016, before me, the undersigned notary public, personally apprough satisfactory evidence of identification, which was the person whose name is signed on the preceding document, and acknowledged for its stated purpose.	
(Seal)		
	Notary Public: My Commission Expires	

Executed this 8 day of 1, 2016.
Hong Liu
ACKNOWLEDGEMENT
State of New Jersey))ss
County Name, Union)
On this Pth day of Quant, 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)

My Commission Expires (2)

VALERIE H RIGGI

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 evidence of identification, which was
(Seal)	54 parpood.
	Notary Public: My Commission Expires

Executed this day of	, 2016.
Alan B. Northrup	·
ACKNOWLEDGEMENT	
Commonwealth of Massachusetts	
County Name, ss.	
Alan B. Northrup proved to me through sat	, 2016, before me, the undersigned notary public, personally appeared isfactory evidence of identification, which was whose name is signed on the preceding document, and acknowledged to me 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 by evidence of identification, which wasnose name is signed on the preceding document, and acknowledged to measurpose.
(Seal)	
•	Notary Public:

Executed this da	y of	, 2016.
Tony Siu		
ACKNOWLEDGEME	NT	
Commonwealth of Ma	ssachusetts	
County Name, ss		
On this Tony Siu proved to me that he/she signed it ve	e through satisfactory , to be the person	, 2016, before me, the undersigned notary public, personally appeared vevidence of identification, which was whose name is signed on the preceding document, and acknowledged to med 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)

My Commission Expires

Executed this <u>8</u> day of <u>August</u>, 2016

Quang T. Truopig

ACKNOWLEDGEMENT

State of New Jersey

)ss

County Name, Union

On this & day of day of day of day of day of 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

VALERIE H RIGGI

Executed this 8 day of Angust

ACKNOWLEDGEMENT

State of New Jersey

County Name, Union

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.

My Commission Expires



VALERIE H RIGGI

Executed this 8 day of Gugust, 2016

Kake Zhao

ACKNOWLEDGEMENT

State of New Jersey

County Name, Union)

On this day of d

(Seal)

1

VALERIE H RIGGI

ID # 2274161

NOTARY PUBLIC

STATE OF NEW JERSEY

My Commission Expires April 12, 2021

Page 21 of 21

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RECORDED: 06/18/2020