PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT2813727

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
VINAY GIRIJAVALLABHAN	06/25/2012
F. GEORGE NJOROGE	06/14/2012
STEPHANE BOGEN	06/25/2012
VISHAL VERMA	06/12/2012
FRANK BENNETT	06/07/2012
ANGELA KEREKES	06/12/2012
ASHOK ARASAPPAN	06/12/2012
DMITRI PISSARNITSKI	06/12/2012
QUN DANG	06/12/2012
IAN DAVIES	06/12/2012
DAVID B. OLSEN	06/25/2012
ANDREW STAMFORD	06/13/2012
JOSEPH P. VACCA	06/12/2012

RECEIVING PARTY DATA

Name:	MERCK SHARP & DOHME CORP.
Street Address:	126 EAST LINCOLN AVENUE
Internal Address:	RY86-2011A
City:	RAHWAY
State/Country:	NEW JERSEY
Postal Code:	07065-0900

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	14111687

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 via

US Mail.

Phone: 7325940994

us_efs@merck.com Email: JEFFREY P. BERGMAN **Correspondent Name:**

PATENT 502767132

Address Line 1: 126 EAST LINCOLN AVENUE

Address Line 2: RY86-2011A

Address Line 4: RAHWAY, NEW JERSEY 07065-0900

ATTORNEY DOCKET NUMBER: 23064

NAME OF SUBMITTER: KELLY A. PANNO

SIGNATURE: /KELLY A. PANNO/

DATE SIGNED: 04/15/2014

Total Attachments: 23
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> PATENT REEL: 032671 FRAME: 0002

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- (1) Vinay Girijavallabhan, located at Denville, New Jersey,
- (2) F. George Njoroge, located at Carmel, Indiana,
- (3) Stephane Bogen, located at Somerset, New Jersey,
- (4) Vishal Verma, located at Jersey City, New Jersey,
- (5) Frank Bennett, located at Cranford, New Jersey,
- (6) Angela Kerekes, located at Plainfield, New Jersey,
- (7) Ashok Arasappan, located at Bridgewater, New Jersey,
- (8) Dmitri Pissarnitski, located at Scotch Plains, New Jersey,
- (9) Qun Dang, located at Westfield, New Jersey,
- (10) Ian Davies, located at Princeton, New Jersey.
- (11) David B. Olsen, located at Lansdale, PA,
- (12) Andrew Stamford, located at Chatham, New Jersey,(13) Joseph P. Vacca, located at Shanghai, Peoples Republic of China,

(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:

2'-SUBSTITUTED NUCLEOSIDE derivativeS AND METHODS OF USE THEREOF FOR THE TREATMENT OF **VIRAL DISEASES**

and/or in the following application(s):

U.S. Provisional Application No. 61/475,068 filed on 4/13/2011; U.S. Application No. $\underline{14/111,687}$ having a filing date of

PCT International Application No. PCT/US12/33017 having a filing date of 4/11/2012

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.

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.

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

PATENT

Executed this <u>25</u> day of <u>1.75</u> , 201	2. Julium
Vinay Girijavallabhan	Stephane Bogen
Vishal Verma	Frank Bennett
ACKNOWLEDGEMENT	
County of Union (.s.:
Stephanie Bogen, Vishal Vermà, Frank Bennett⊤	2012, personally appeared before me Vinay Girijavallabhan, to me known, and known by me to be the same person(s) described acknowledged that he (she) executed the same, of his (her) own free
(Seal)	James a Regallo
	Notary Public KATHLEEN A. REYNOLDS Notary Public of New Jersey My Commission Expires August 3, 2016
Executed this <u>18</u> day of <u>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</u>	2.
Angela Kerekes	Ashok Arasappan
Dmitri Pissarnitski	Qun Dang
County of V UNION V)	.s.:
On this \(\) day of \(\) \(2012, personally appeared before me Angela Kerekes, Ashok known, and known by me to be the same person(s) described in and wledged that he (she) executed the same, of his (her) own free will
(Seal)	Darrey a Regraldo
	Notary Public KATHLEEN A. REYNOLDS Notary Public of New Jersey Notary Public of New Jersey 2016

My Commission Expires August 3, 2010

Executed this day of	, 2012.
F. George Njoroge	· · · · · · · · · · · · · · · · · · ·
ACKNOWLEDGEMENT	
of) s.s.:
On this day of to me known, and known by me to be th	, 2012, personally appeared before me F. George Njoroge ne same person described in and who executed the foregoing instrument, and e same, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2012.
David B. Olsen	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
On this day of and known by me to be the same person	, 2012, personally appeared before me David B. Olsen to me known, n described in and who executed the foregoing instrument, and acknowledged her) own free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this <u>13</u> day of <u>Sturids</u>	, 2012.
lan Davies Andrew Stamford	
ACKNOWLEDGEMENT Lity of Rahway County of Union	
to me known, and known by me to be the same	, 2012, personally appeared before me lan Davies, Andrew Stamford person described in and who executed the foregoing instrument, and e, of his (her) own free will for the purpose set forth.
(Seal)	Notary Public KATHLEEN A. REYNOLDS Notary Public of New Jarsey My Commission Expires August 3, 2016
Executed this day of	, 2012.
Joseph P. Vacca	
ACKNOWLEDGEMENT)
County of) s.s.:)
On this day of and known by me to be the same person descr that he (she) executed the same, of his (her) ov	, 2012, personally appeared before me Joseph P. Vacca to me known, ibed in and who executed the foregoing instrument, and acknowledged wn free will for the purpose set forth.
(Seal)	Notary Public

WORLDWIDE ASSIGNMENT

WHEREAS, IME.

- (1) Vinay Girijavallabhan, located at Denville, New Jersey,
- (2) F. George Njoroge, located at Carmel, Indiana,
- (3) Stephane Bogen, located at Somerset, New Jersey,
- (4) Vishal Verma, located at Jersey City, New Jersey,(5) Frank Bennett, located at Cranford, New Jersey,
- (6) Angela Kerekes, located at Plainfield, New Jersey,
- (7) Ashok Arasappan, located at Bridgewater, New Jersey.
- (8) Dmitri Pissarnitski, located at Scotch Plains, New Jersey,
- (9) Qun Dang, located at Westfield, New Jersey,
- (10) Ian Davies, located at Princeton, New Jersey,
- (11) David B. Olsen, located at Lansdale, PA,
- (12) Andrew Stamford, located at Chatham, New Jersey,
- (13) Joseph P. Vacca, located at Shanghai, Peoples Republic of China,

(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:

2'-SUBSTITUTED NUCLEOSIDE derivativeS AND METHODS OF USE THEREOF FOR THE TREATMENT OF VIRAL DISEASES

and/or in the following application(s):

U.S. Provisional Application No. 61/475,068 filed on 4/13/2011; U.S. Application No. 14/111, 687 having a filing date of 04/11/201 and PCT International Application No. PCT/US12/33017 having a filing date of 4/11/2012

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.

AND IME 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.

IME 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.

Computer Generated Template "Assignment-Merck Sharp & Dohme. Single Assignee Worldwide" (Assignment) Merck Sharp & Dohme Corp. 11/0 20A TENT REEL: 032671 FRAME: 0007

Executed this 4 day of Jule	, 2012.
F. George Marroge	
ACKNOWLEDGEMENT	
CITU of INDIANA	OUS)
C17Y of INDIANA County of MARION) s.s.:)
On this <u>19</u> day of <u>June</u> to me known, and known by me to be the	, 2012, personally appeared before me F. George Njoroge same person described in and who executed the foregoing instrument, and same, of his (her) own free will for the purpose set forth.
(Seal)	Sugally Goo
	Notary Public
	Teresa Wilkison Notary Public
•	SEAL STATE OF INDIANA MY COMMISSION EXPIRES OCT. 14, 2015
	THE SOUTH OF THE STATE OF THE AUTO AND THE PAID
Executed this day of	. 2012.
	•
David B. Olsen	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
On this day of and known by me to be the same person that he (she) executed the same, of his (h	, 2012, personally appeared before me David B. Olsen to me known, described in and who executed the foregoing instrument, and acknowledged ter) own free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2012.
lan Davies	
Andrew Stamford	
ACKNOWLEDGEMENT	
of County of) s.s.:
On this day of to me known, and known by me to be the	, 2012, personally appeared before me lan Davies, Andrew Stamford same person described in and who executed the foregoing instrument, and same, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2012.
Joseph P. Vacca	
ACKNOWLEDGEMENT	
County of)) s.s.:)
and known by me to be the same person	, 2012, personally appeared before me Joseph P. Vacca to me known described in and who executed the foregoing instrument, and acknowledged ner) own free will for the purpose set forth.
(Seal)	
	Notary Public

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- (1) Vinay Girijavallabhan, located at Denville, New Jersey,
- (2) F. George Njoroge, located at Carmel, Indiana,
- (3) Stephane Bogen, located at Somerset, New Jersey,
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- (5) Frank Bennett, located at Cranford, New Jersey,
- (6) Angela Kerekes, located at Plainfield, New Jersey,
- (7) Ashok Arasappan, located at Bridgewater, New Jersey,
- (8) Dmitri Pissarnitski, located at Scotch Plains, New Jersey,
- (9) Qun Dang, located at Westfield, New Jersey,
- (10) Ian Davies, located at Princeton, New Jersey,
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and/or in the following application(s):

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PCT International Application No. PCT/US12/33017 having a filing date of 4/11/2012

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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.

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

PATENT REEL: 032671 FRAME: 0010

Executed this <u>//</u> day of <u>\\\</u>	<u>儿</u> , 2012.	
Vinay Girijayallabhan		Stephane Bogen
- 11·12\		
Vishal Varma		Frank Bennett
ACKNOWLEDGEMENT		
Citys of Rah	W/)	
County of 1/1/20) s.s.:	
Stephanie Bogen, Vishal Verma, Ér	ank Bennett to me k	ersonally appeared before me Vinay Girijavallabhan, nown, and known by me to be the same person(s) described //ledged that he (she) executed the same, of his (her) own free
(Seal)		Andrew & Rundle
		Notary Public KATHLEEN A. REYNOLDS
		Notary Public of New Jersey My Commission Expires August 3, 2016
Executed this 12 day of <u>Jurx</u>	₹. , 2012.	
Mych Kento		Alabard
Angéla Kerékes		Ashdk Arasappan 🍦
Omitri Pissarnitski	······································	Qun Dang
ACKNOWLEDGEMENT ACKNOWLEDGEMENT ACKNOWLEDGEMENT	(\$ A .) ()	
County of Uxino	2004	
	/ びと , 2012, p	ersonally appeared before me Angela Kerekes, Ashok
Arasappan, Dmitri Pissarnitski/Qu	n Dang to me known	, and known by me to be the same person(s) described in and I that he (she) executed the same, of his (her) own free will
(Seal)		Authur a Ryalds Notary Public
		KATHLEEN A. REYNOLDS Notary Public of New Jersey My Commission Expires August 3, 2016

Page 2 of 4
Computer Generated Template "Assignment-Merck Sharp & Dohme. Single Assignee Worldwide" (Assignment) Merck Sharp & Dohme Corp. 11/04/2010
PATENT

Executed this day of	, 2012.
F. George Njoroge	
ACKNOWLEDGEMENT	
of	
County of)) s.s.:)
to me known, and known by me to be	, 2012, personally appeared before me F. George Njoroge the same person described in and who executed the foregoing instrument, and the same, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2012.
David B. Olsen	·
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
On this day of and known by me to be the same pers	, 2012, personally appeared before me David B. Olsen to me known, son described in and who executed the foregoing instrument, and acknowledged is (her) own free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this /2 day of <u>Qual</u>	_ , 2012.
1/ANO165	
lan Davies	······································
Andrew Stamford	· · · · · · · · · · · · · · · · · · ·
•	
ACKNOWLEDGEMENT	
City of Rahway)
County of Union U) s.s.;)
to me known, and known by me to be the same	, 2012, personally appeared before me lan Davies, Andrew Stamford person described in and who executed the foregoing instrument, and a of his (her) own free will for the purpose set forth.
(Seal)	Another A. Renaldo
	Notary Public
	KATHLEEN A REYNOLDS Notary Public of New Jersey My Commission Expires August 3, 2016
Executed this day of	_, 2012.
Joseph P. Vacca	
ACKNOWLEDGEMENT	
County of) s.s.:)
On this day of and known by me to be the same person descri that he (she) executed the same, of his (her) ov	, 2012, personally appeared before me Joseph P. Vacca to me known ibed in and who executed the foregoing instrument, and acknowledged vn free will for the purpose set forth.
(Seal)	
	Notary Public

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- (1) Vinay Girijavallabhan, located at Denville, New Jersey,
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Vinay Girijavallabhan		Stephane Bogen
•		
Vishal Verma	1.10.10.	Frank Bennett
ACKNOWLEDGEMENT		
of)	
of County of) s.s.:)	
On this day of	, 2012, per I nk Bennet t to me knowle trument, and acknowle	rsonally appeared before me Vinay Girijavallabhan, own, and known by me to be the same person(s) described edged that he (she) executed the same, of his (her) own free
(Seal)		
	MARINE CONTRACTOR CONT	Notary Public
Executed this day of	, 2012.	
	V.	
Angela Kerekes	MANA A PARA PARA PARA PARA PARA PARA PARA	Ashok Arasappan
Dmitri Pissarnitski		Qun Dang
Dillian i issumitsii		a Jung
ACKNOWLEDGEMENT		
of)) s.s.:	
County of)	
On this day of	, 2012, per Dang to me known, att, and acknowledged	rsonally appeared before me Angela Kerekes, Ashok and known by me to be the same person(s) described in and that he (she) executed the same, of his (her) own free will
(Seal)		
		Notary Public

Executed this day of	, 2012.
F. George Njoroge	
ACKNOWLEDGEMENT	
of)) s.s.:)
to me known, and known by me to be the same	2012, personally appeared before me F. George Njoroge person described in and who executed the foregoing instrument, and of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this 25 day of Jules	, 2012.
Dispez-	
David B. Olsen	
and known by me to be the satifie person describ)) s.s.:) 2012, personally appeared before me David B. Olsen to me known, ped in and who executed the foregoing instrument, and acknowledged
that he (she) executed the same, of his (her) ow (Seal)	n free will for the purpose set forth. 1 Nay or 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

Executed this day of	, 2012.
lan Davies	
Andrew Stamford	
ACKNOWLEDGEMENT	
of)
of) s.s.:)
On this day of to me known, and known by me to be acknowledged that he (she) executed	, 2012, personally appeared before me Ian Davies, Andrew Stamford the same person described in and who executed the foregoing instrument, and the same, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2012.
,	
Joseph P. Vacca	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
and known by me to be the same pers	, 2012, personally appeared before me Joseph P. Vacca to me known son described in and who executed the foregoing instrument, and acknowledged is (her) own free will for the purpose set forth.
(Seal)	
	Notary Public

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- (1) Vinay Girijavallabhan, located at Denville, New Jersey,
- (2) F. George Njoroge, located at Carmel, Indiana,
- (3) Stephane Bogen, located at Somerset, New Jersey,
- (4) Vishal Verma, located at Jersey City, New Jersey,
- (5) Frank Bennett, located at Cranford, New Jersey,
- (6) Angela Kerekes, located at Plainfield, New Jersey,
- (7) Ashok Arasappan, located at Bridgewater, New Jersey,
- (8) Dmitri Pissarnitski, located at Scotch Plains, New Jersey,
- (9) Qun Dang, located at Westfield, New Jersey,
- (10) Ian Davies, located at Princeton, New Jersey.
- (11) David B. Olsen, located at Lansdale, PA,
- (12) Andrew Stamford, located at Chatham, New Jersey,
- (13) Joseph P. Vacca, located at Shanghai, Peoples Republic of China,

(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:

2'-SUBSTITUTED NUCLEOSIDE derivativeS AND METHODS OF USE THEREOF FOR THE TREATMENT OF VIRAL DISEASES

and/or in the following application(s):

U.S. Provisional Application No. 61/475,068 filed on 4/13/2011;

U.S. Application No.14/111, 687 having a filing date of 0.4/11/20.1; and

PCT International Application No. PCT/US12/33017 having a filing date of 4/11/2012

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.

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.

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

Executed this day of	, 2012.		
Vinay Girijavallabhan		Stephane Bogen	
Vishal Verma		Frank Bennett	
ACKNOWLEDGEMENT			
of) s.s.:		
On this day of Stephanie Bogen, Vishal Verma, Fra	, 2012, pe ink Bennett to me kn	sonally appeared before me Vinay Girijavown, and known by me to be the same peredged that he (she) executed the same, of	rallabhan, son(s) described his (her) own free
(Seal)			
	B 1144444444444444444444444444444444444	Notary Public	-
Executed this day of	, 2012.		
Angela Kerekes		Ashok Arasappan	
Dmitri Pissarnitski		Qun Dang	***************************************
ACKNOWLEDGEMENT			
of) s.s.:		
On this day of Arasappan, Dmitri Pissarnitski, Qun	, 2012, pe Dang to me known,	rsonally appeared before me Angela Kere and known by me to be the same person(s that he (she) executed the same, of his (he	kes, Ashok) described in and er) own free will
(Seal)			
		Notary Public	-

Executed this day of	, 2012.
F. George Njoroge	<u> </u>
ACKNOWLEDGEMENT	
of)) s.s.:)
On this day of to me known, and known by me to be th	, 2012, personally appeared before me F. George Njoroge le same person described in and who executed the foregoing instrument, and e same, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2012.
David B. Olsen	
ACKNOWLEDGEMENT	
of	
County of) 5.5
and known by me to be the same persor	, 2012, personally appeared before me David B. Olsen to me known, a described in and who executed the foregoing instrument, and acknowledged (her) own free will for the purpose set forth.
(Seal)	
	Notany Public

Executed this day of	, 2012.
lan Davies	······································
Andrew Stamford	· · · · · · · · · · · · · · · · · · ·
A OWNOWN PROPERPING	
ACKNOWLEDGEMENT of	
County of) s.s.:)
to me known, and known by me to be the sam	, 2012, personally appeared before me lan Davies, Andrew Stamford ne person described in and who executed the foregoing instrument, and ne, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this 12 day of Queen	, 2012.
ACKNOWLEDGEMENT 1 / 1/10/10/10/10/10/10/10/10/10/10/10/10/10) s.s.:
On this 2 day of that he (she) executed the same, of his (her) of	, 2012, personally appeared before me Joseph P. Vacca to me known, cribed in and who executed the foregoing instrument, and acknowledged own free will for the purpose set forth.
(Seal)	Motary Public
	COMMONWEALTH OF PENNSYLVANIA Notarial Seal Marjorle M. Bennett, Notary Public

Upper Gwynedd Twp., Montgomery County
My Commission Expires Jan. 24, 2018
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTABLES

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- (1) Vinay Girijavallabhan, located at Denville, New Jersey,
- (2) F. George Njoroge, located at Carmel, Indiana,
- (3) Stephane Bogen, located at Somerset, New Jersey,
- (4) Vishal Verma, located at Jersey City, New Jersey,
- (5) Frank Bennett, located at Cranford, New Jersey,
- (6) Angela Kerekes, located at Plainfield, New Jersey,
- (7) Ashok Arasappan, located at Bridgewater, New Jersey,
- (8) Dmitri Pissarnitski, located at Scotch Plains, New Jersey,
- (9) Qun Dang, located at Westfield, New Jersey,
- (10) Ian Davies, located at Princeton, New Jersey,
- (11) David B. Olsen, located at Lansdale, PA,
- (12) Andrew Stamford, located at Chatham, New Jersey,
- (13) Joseph P. Vacca, located at Shanghai, Peoples Republic of China,

(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:

2'-SUBSTITUTED NUCLEOSIDE derivativeS AND METHODS OF USE THEREOF FOR THE TREATMENT OF VIRAL DISEASES

and/or in the following application(s):

U.S. Provisional Application No. 61/475,068 filed on 4/13/2011; U.S. Application No. 14/111, 687 having a filing date of 14/11/201 and PCT International Application No. PCT/US12/33017 having a filing date of 4/11/2012

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.

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.

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

PATENT REEL: 032671 FRAME: 0022

Executed this The day of Gude	, 2012.	
Vinay Girijavallabhan	Stephane Bogen	
Vishal Verma	Frank Bennett	
ACKNOWLEDGEMENT	્રામાં કર્યા કરવાના કરવાના આ માત્રા કરવાના કર્	
County of Urion		
Stephanie Bogen, Vishal Verma, Frank Ben	, 2012, personally appeared before me Vinay Girijavallabhan, inett to me known, and known by me to be the same person(s) des, and acknowledged that he (she) executed the same, of his (her) o	cribed
(Seal)	Anthony A Proudly	
	Notary Public	
	KATHLEEN A. REYNOLDS Notary Public of New Jersey My Commission Expires August 3, 2016	
	Mik Animinisahu Puhues undaga ot vota	
Executed this day of	, 2012.	
	<u> </u>	
Angela Kerekes	Ashok Arasappan	
Dmitri Pissarnitski	Qun Dang	
ACKNOWLEDGEMENT		
of		
County of) \$.s.;;)	
Arasappan, Dmitri Pissarnitski, Qun Dang I	, 2012, personally appeared before me Angela Kerekes, Asho to me known, and known by me to be the same person(s) described cknowledged that he (she) executed the same, of his (her) own free	d in and
(Seal)		
	Notary Public	

Executed this day of	, 2012.
F. George Njoroge	
ACKNOWLEDGEMENT	
of)) s.s.:
On this day of to me known, and known by me to be	, 2012, personally appeared before me F. George Njoroge the same person described in and who executed the foregoing instrument, and the same, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2012.
David B. Olsen	
ACKNOWLEDGEMENT	
of	
of) s.s)
and known by me to be the same pers	, 2012, personally appeared before me David B. Olsen to me known, son described in and who executed the foregoing instrument, and acknowledged s (her) own free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2012.
lan Davies	
Andrew Stamford	
ACKNOWLEDGEMENT	
of)
)) s.s.:
County of	
On this day of to me known, and known by me to be the	, 2012, personally appeared before me lan Davies, Andrew Stamford same person described in and who executed the foregoing instrument, and same, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2012.
Joseph P. Vacca	
ACKNOWLEDGEMENT	
of)
) s.s.:
County of)
and known by me to be the same person	, 2012, personally appeared before me Joseph P. Vacca to me known described in and who executed the foregoing instrument, and acknowledged ner) own free will for the purpose set forth.
(Seal)	
	Notary Public