

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5132065

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	FOR ASSIGNMENT RECORDED 08/08/2018; REEL/FRAME 046720/0400 TO CORRECT TYPO OF INVENTOR NAME FROM JESSE LEE KULPER TO JESSE LEE KIUPER
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
DAVID HARRIS	07/18/2016
JAMES DINUNZIO	07/18/2016
WILLIAM A. MARINARO	07/18/2016
SUTTHILUG SOTTHIVIRAT	07/18/2016
CHAD DAVID BROWN	07/18/2016
SUNDEEP SUDISH DHARESHWAR	07/11/2016
JESSE LEE KUIPER	07/18/2016
YUNG-CHI LEE	07/08/2016
CRAIG ALFRED MCKELVEY	07/18/2016
MICHAEL MCNEVIN	07/18/2016
ELISE TOPOL MILLER	07/18/2016
LI XIONG	07/18/2016
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	MERCK SHARP & DOHME CORP.
<b>Street Address:</b>	126 EAST LINCOLN AVENUE
<b>City:</b>	RAHWAY
<b>State/Country:</b>	NEW JERSEY
<b>Postal Code:</b>	07065
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	15570056
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(732)594-4720
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	732-594-7159
<b>Email:</b>	virginia.finno-sorrentino@merck.com
<b>Correspondent Name:</b>	MERCK SHARP & DOHME CORP.

**Address Line 1:** 126 EAST LINCOLN AVENUE  
**Address Line 2:** RY86-2011A  
**Address Line 4:** RAHWAY, NEW JERSEY 07065

<b>ATTORNEY DOCKET NUMBER:</b>	24162
<b>NAME OF SUBMITTER:</b>	VIRGINIA M. FINNO-SORRENTINO
<b>SIGNATURE:</b>	/VIRGINIA M. FINNO-SORRENTINO/
<b>DATE SIGNED:</b>	09/10/2018

**Total Attachments: 36**

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## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5083915

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
DAVID HARRIS	07/18/2016
JAMES DINUNZIO	07/18/2016
WILLIAM A. MARINARO	07/18/2016
SUTTHILUG SOTTHIVIRAT	07/18/2016
CHAD DAVID BROWN	07/18/2016
SUNDEEP SUDISH DHARESHWAR	07/11/2016
<del>JESSE LEE KULPER</del> <u>JESSIE LEE KIUPER</u>	07/18/2016
YUNG-CHI LEE	07/08/2016
CRAIG ALFRED MCKELVEY	07/18/2016
MICHAEL MCNEVIN	07/18/2016
ELISE TOPOL MILLER	07/18/2016
LI XIONG	07/18/2016
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	MERCK SHARP & DOHME CORP.
<b>Street Address:</b>	126 EAST LINCOLN AVENUE
<b>City:</b>	RAHWAY
<b>State/Country:</b>	NEW JERSEY
<b>Postal Code:</b>	07065
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	15570056
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(732)594-4720
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	732-594-7159
<b>Email:</b>	virginia.finno-sorrentino@merck.com
<b>Correspondent Name:</b>	MERCK SHARP & DOHME CORP.
<b>Address Line 1:</b>	126 EAST LINCOLN AVENUE
<b>Address Line 2:</b>	RY86-2011A

PATENT

REEL: 047044 FRAME: 0742

**WORLDWIDE ASSIGNMENT**

WHEREAS, I/WE,

- (1) David Harris, located at New Providence, NJ,
- (2) James DiNunzio, located at Bridgewater, NJ,
- (3) William A. Marinaro, located at Scotch Plains, NJ,
- (4) Sutthilug Sotthivirat, located at Lansdale, PA,
- (5) Chad David Brown, located at Quakertown, PA,
- (6) Sundeep Sudish Dhareshwar, located at Whippany, NJ,
- (7) Jesse Lee Kuiper, located at North Wales, PA,
- (8) Yung-Chi Lee, located at New Providence, NJ,
- (9) Craig Alfred McKelvey, located at Ambler, PA,
- (10) Michael McNevin, located at Basking Ridge, NJ, *1/11/16*
- (11) Elise Topol Miller, located at Gilbertville, PA, *1/11/16*
- (12) Li Xiong, located at Cedar Knolls, 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:

**FIXED-DOSE COMBINATIONS OF ANTIVIRAL COMPOUNDS**

and/or in the following application(s):

U.S. Provisional Application No. 62/200,944 filed on August 4, 2015;  
U.S. Application No. 15/570,056 having a filing date of 02/02/2018; and  
PCT International Application No. PCT/US2016/044605 having a filing date of 07/29/2016.

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

Attorney Docket No.: 24162

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**David Harris**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **David Harris** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**James DiNunzio**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **James DiNunzio** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

William A. Marinaro

## ACKNOWLEDGEMENT

\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **William A. Marinaro** 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)

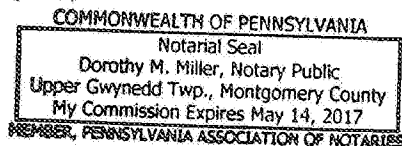
Notary PublicExecuted this 18 day of July, 2016.Sutthilug Sotthivirat

## ACKNOWLEDGEMENT

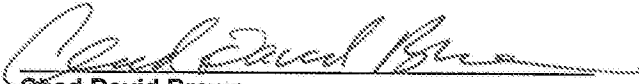
Commonwealth of Pennsylvania )  
County of Montgomery ) s.s.:

On this 18 day of July, 2016, personally appeared before me **Sutthilug Sotthivirat** 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)

Dorothy M. Miller  
Notary Public

Executed this 18 day of JULY, 2016.

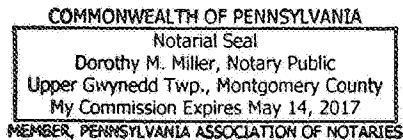
  
 Chad David Brown


# ACKNOWLEDGEMENT

Commonwealth of Pennsylvania ) s.s.:  
 County of Montgomery )

On this 18 day of July, 2016, personally appeared before me **Chad David Brown** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Sundeep Sudish Dhareshwar**

# ACKNOWLEDGEMENT

\_\_\_\_\_ of \_\_\_\_\_ )  
 County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Sundeep Sudish Dhareshwar** 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)


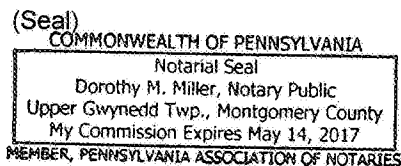
\_\_\_\_\_  
 Notary Public

Executed this 16 day of July, 2016.  
\_\_\_\_\_  
Jesse Lee Kuiper

## ACKNOWLEDGEMENT

Commonwealth of Pennsylvania ) s.s.:  
County of Montgomery )

On this 18 day of July, 2016, personally appeared before me **Jesse Lee Kuiper** 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.

  
\_\_\_\_\_  
Notary Public

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
Yung-Chi Lee

## ACKNOWLEDGEMENT

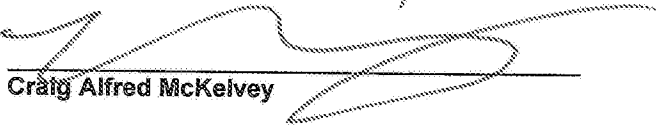
\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Yung-Chi Lee** 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

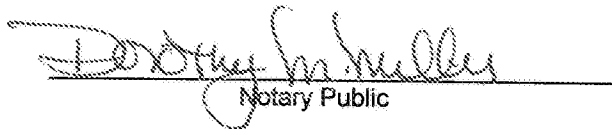
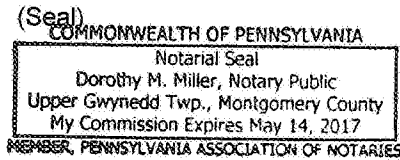


Executed this 18th day of July, 2016.  
Craig Alfred McKeivey

## ACKNOWLEDGEMENT

Commonwealth of Pennsylvania)  
County of Montgomery) s.s.:

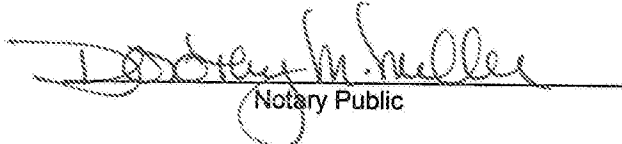
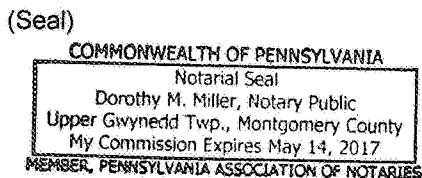
On this 18 day of July, 2016, personally appeared before me Craig Alfred McKeivey to me known, and known by me to be the same person described in and who executed the foregoing instrument, and acknowledged that he (she) executed the same, of his (her) own free will for the purpose set forth.

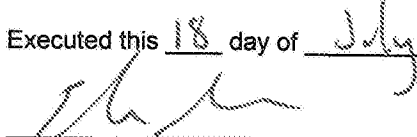
  
Notary PublicExecuted this 18 day of July, 2016.  
Michael McNevin

## ACKNOWLEDGEMENT

Commonwealth of Pennsylvania)  
County of Montgomery) s.s.:

On this 18 day of July, 2016, personally appeared before me Michael McNevin 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.

  
Notary Public

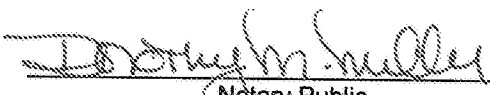
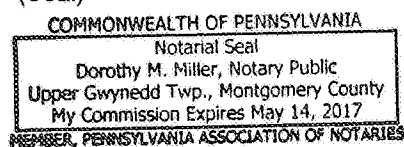
Executed this 18 day of July, 2016.  
\_\_\_\_\_  
Elise Topol Miller

## ACKNOWLEDGEMENT

Commonwealth of Pennsylvania ) s.s.:  
County of Montgomery )

On this 18 day of July, 2016, personally appeared before me **Elise Topol Miller** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
Li Xiong

## ACKNOWLEDGEMENT

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Li Xiong** 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

**WORLDWIDE ASSIGNMENT**

WHEREAS, I/WE,

- (1) David Harris, located at New Providence, NJ,
- (2) James DiNunzio, located at Bridgewater, NJ,
- (3) William A. Marinaro, located at Scotch Plains, NJ,
- (4) Sutthilug Sotthivirat, located at Lansdale, PA,
- (5) Chad David Brown, located at Quakertown, PA,
- (6) Sundeep Sudish Dhareshwar, located at Whippany, NJ,
- (7) Jesse Lee Kuiper, located at North Wales, PA,
- (8) Yung-Chi Lee, located at New Providence, NJ,
- (9) Craig Alfred McKelvey, located at Ambler, PA,
- (10) Michael McNevin, located at Basking Ridge, NJ,
- (11) Elise Topol Miller, located at Gilbertsville, PA,
- (12) Li Xiong, located at Cedar Knolls, 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:

**FIXED-DOSE COMBINATIONS OF ANTIVIRAL COMPOUNDS**

and/or in the following application(s):

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U.S. Application No. 15/750,056 having a filing date of 02/02/2018; and  
PCT International Application No. PCT/US2016/044605 having a filing date of 07/29/2016.

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

Attorney Docket No.: 24162

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**David Harris**

**ACKNOWLEDGEMENT**

\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **David Harris** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**James DiNunzio**

**ACKNOWLEDGEMENT**

\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **James DiNunzio** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**William A. Marinaro**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **William A. Marinaro** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Sutthilug Sotthivirat**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Sutthilug Sotthivirat** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Chad David Brown**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Chad David Brown** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Sundeep Sudish Dhareshwar**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Sundeep Sudish Dhareshwar** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Jesse Lee Kuiper**

**ACKNOWLEDGEMENT**

\_\_\_\_\_) of \_\_\_\_\_)  
County of \_\_\_\_\_) s.s.:  
\_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Jesse Lee Kuiper** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Yung-Chi Lee**

**ACKNOWLEDGEMENT**

\_\_\_\_\_) of \_\_\_\_\_)  
County of \_\_\_\_\_) s.s.:  
\_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Yung-Chi Lee** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Craig Alfred McKelvey**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Craig Alfred McKelvey** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Michael McNevin**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Michael McNevin** 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



Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
Elise Topol Miller

**ACKNOWLEDGEMENT**

\_\_\_\_\_) of \_\_\_\_\_)  
County of \_\_\_\_\_) s.s.:  
\_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Elise Topol Miller** 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

Executed this 18<sup>th</sup> day of July, 2016.

Li Xiong

**ACKNOWLEDGEMENT**

State of New Jersey)  
County of Union) s.s.:  
\_\_\_\_\_)

On this 18<sup>th</sup> day of July, 2016, personally appeared before me **Li Xiong** 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)

Kathleen A. Reynolds  
Notary Public

KATHLEEN A. REYNOLDS  
Notary Public of New Jersey  
My Commission Expires August 3, 2016

**WORLDWIDE ASSIGNMENT**

WHEREAS, I/WE,

- (1) David Harris, located at New Providence, NJ,
- (2) James DiNunzio, located at Bridgewater, NJ,
- (3) William A. Marinaro, located at Scotch Plains, NJ,
- (4) Sutthilug Sotthivirat, located at Lansdale, PA,
- (5) Chad David Brown, located at Quakertown, PA,
- (6) Sundeep Sudish Dhareshwar, located at Whippany, NJ,
- (7) Jesse Lee Kuiper, located at North Wales, PA,
- (8) Yung-Chi Lee, located at New Providence, NJ,
- (9) Craig Alfred McKelvey, located at Ambler, PA,
- (10) Michael McNevin, located at Basking Ridge, NJ,
- (11) Elise Topol Miller, located at Gilbertsville, PA,
- (12) Li Xiong, located at Cedar Knolls, 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:

**FIXED-DOSE COMBINATIONS OF ANTIVIRAL COMPOUNDS**

and/or in the following application(s):

U.S. Provisional Application No. 62/200,944 filed on August 4, 2015;  
U.S. Application No. 15/750,056 having a filing date of 02/02/2018; and  
PCT International Application No. PCT/US2016/044605 having a filing date of 07/29/2016.

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

Attorney Docket No.: 24162

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**David Harris**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **David Harris** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**James DiNunzio**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **James DiNunzio** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**William A. Marinaro**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **William A. Marinaro** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Sutthilug Sotthivirat**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Sutthilug Sotthivirat** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Chad David Brown**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Chad David Brown** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Sundeep Sudish Dhareshwar**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Sundeep Sudish Dhareshwar** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
Jesse Lee Kuiper

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Jesse Lee Kuiper** 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

Executed this 08 day of July, 2016.

Yung-Chi Lee  
Yung-Chi Lee

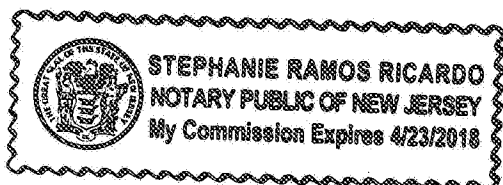
**ACKNOWLEDGEMENT**

State New Jersey of New Jersey )  
County of Union ) s.s.:  
\_\_\_\_\_ )

On this 8 day of July, 2016, personally appeared before me **Yung-Chi Lee** 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)

Stephanie Ramos Ricardo  
Notary Public



Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Craig Alfred McKelvey**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Craig Alfred McKelvey** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Michael McNevin**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Michael McNevin** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Elise Topol Miller**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Elise Topol Miller** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Li Xiong**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Li Xiong** 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



**WORLDWIDE ASSIGNMENT**

WHEREAS, I/WE,

- (1) David Harris, located at New Providence, NJ,
- (2) James DiNunzio, located at Bridgewater, NJ,
- (3) William A. Marinaro, located at Scotch Plains, NJ,
- (4) Sutthilug Sotthivirat, located at Lansdale, PA,
- (5) Chad David Brown, located at Quakertown, PA,
- (6) Sundeep Sudish Dhareshwar, located at Whippany, NJ,
- (7) Jesse Lee Kuiper, located at North Wales, PA,
- (8) Yung-Chi Lee, located at New Providence, NJ,
- (9) Craig Alfred McKelvey, located at Ambler, PA,
- (10) Michael McNevin, located at Basking Ridge, NJ,
- (11) Elise Topol Miller, located at Gilbertsville, PA,
- (12) Li Xiong, located at Cedar Knolls, 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:

**FIXED-DOSE COMBINATIONS OF ANTIVIRAL COMPOUNDS**

and/or in the following application(s):

U.S. Provisional Application No. 62/200,944 filed on August 4, 2015;  
U.S. Application No. 15/750,056 having a filing date of 02/02/2018; and  
PCT International Application No. PCT/US2016/044605 having a filing date of 07/29/2016.

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

Attorney Docket No.: 24162

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**David Harris**

**ACKNOWLEDGEMENT**

\_\_\_\_\_) of \_\_\_\_\_)  
County of \_\_\_\_\_) s.s.:  
\_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **David Harris** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**James DiNunzio**

**ACKNOWLEDGEMENT**

\_\_\_\_\_) of \_\_\_\_\_)  
County of \_\_\_\_\_) s.s.:  
\_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **James DiNunzio** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**William A. Marinaro**

**ACKNOWLEDGEMENT**

\_\_\_\_\_) of \_\_\_\_\_)  
County of \_\_\_\_\_) s.s.:  
\_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **William A. Marinaro** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Sutthilug Sotthivirat**

**ACKNOWLEDGEMENT**

\_\_\_\_\_) of \_\_\_\_\_)  
County of \_\_\_\_\_) s.s.:  
\_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Sutthilug Sotthivirat** 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

Executed this 11 day of JULY, 2016.

\_\_\_\_\_  
Chad David Brown

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Chad David Brown** 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

Executed this 11 day of JULY, 2016.

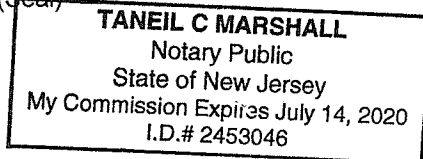
Sundeep Sudish Dhareshwar  
Sundeep Sudish Dhareshwar

**ACKNOWLEDGEMENT**

11, July of 2016 )  
County of Morris ) s.s.:

On this 11 day of July, 2016, personally appeared before me **Sundeep Sudish Dhareshwar** 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)



Taneil C. Marshall  
Notary Public

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Jesse Lee Kuiper**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Jesse Lee Kuiper** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Yung-Chi Lee**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Yung-Chi Lee** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Craig Alfred McKelvey**

**ACKNOWLEDGEMENT**

\_\_\_\_\_, of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Craig Alfred McKelvey** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Michael McNevin**

**ACKNOWLEDGEMENT**

\_\_\_\_\_, of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Michael McNevin** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Elise Topol Miller**

**ACKNOWLEDGEMENT**

\_\_\_\_\_) of \_\_\_\_\_)  
County of \_\_\_\_\_) s.s.:  
\_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Elise Topol Miller** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Li Xiong**

**ACKNOWLEDGEMENT**

\_\_\_\_\_) of \_\_\_\_\_)  
County of \_\_\_\_\_) s.s.:  
\_\_\_\_\_)

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Li Xiong** 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

**WORLDWIDE ASSIGNMENT**

WHEREAS, I/WE,

- (1) David Harris, located at New Providence, NJ,
- (2) James DiNunzio, located at Bridgewater, NJ,
- (3) William A. Marinaro, located at Scotch Plains, NJ,
- (4) Sutthilug Sotthivirat, located at Lansdale, PA,
- (5) Chad David Brown, located at Quakertown, PA,
- (6) Sundeep Sudish Dhareshwar, located at Whippany, NJ,
- (7) Jesse Lee Kuiper, located at North Wales, PA,
- (8) Yung-Chi Lee, located at New Providence, NJ,
- (9) Craig Alfred McKelvey, located at Ambler, PA,
- (10) Michael McNevin, located at Basking Ridge, NJ,
- (11) Elise Topol Miller, located at Gilbertsville, PA,
- (12) Li Xiong, located at Cedar Knolls, 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:

**FIXED-DOSE COMBINATIONS OF ANTIVIRAL COMPOUNDS**

and/or in the following application(s):

U.S. Provisional Application No. 62/200,944 filed on August 4, 2015;  
U.S. Application No. 15/750,056 having a filing date of 02/02/2018; and  
PCT International Application No. PCT/US2016/044605 having a filing date of 07/29/2016.

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 18 day of July, 2016.

David Harris  
David Harris

ACKNOWLEDGEMENT

State of New Jersey } s.s.:  
County of Union }

On this 18<sup>th</sup> day of July, 2016, personally appeared before me **David Harris** 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

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

Executed this 18 day of July, 2016.

James DiNunzio  
James DiNunzio

ACKNOWLEDGEMENT

State of New Jersey } s.s.:  
County of Union }

On this 18<sup>th</sup> day of July, 2016, personally appeared before me **James DiNunzio** 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

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

Executed this 18 day of July, 2016.

William A. Marinaro  
William A. Marinaro

## ACKNOWLEDGEMENT

State of New Jersey  
County of Union, s.s.:

On this 18<sup>th</sup> day of July, 2016, personally appeared before me **William A. Marinaro** 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

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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

Sutthilug Sotthivirat

## ACKNOWLEDGEMENT

\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Sutthilug Sotthivirat** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Chad David Brown**

**ACKNOWLEDGEMENT**

\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Chad David Brown** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Sundeep Sudish Dhareshwar**

**ACKNOWLEDGEMENT**

\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Sundeep Sudish Dhareshwar** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Jesse Lee Kuiper**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Jesse Lee Kuiper** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Yung-Chi Lee**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:  
\_\_\_\_\_ )

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Yung-Chi Lee** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Craig Alfred McKelvey**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Craig Alfred McKelvey** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Michael McNevin**

**ACKNOWLEDGEMENT**

\_\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Michael McNevin** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Elise Topol Miller**

**ACKNOWLEDGEMENT**

\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Elise Topol Miller** 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

Executed this \_\_\_\_ day of \_\_\_\_\_, 2016.

\_\_\_\_\_  
**Li Xiong**

**ACKNOWLEDGEMENT**

\_\_\_\_ of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) s.s.:

On this \_\_\_\_ day of \_\_\_\_\_, 2016, personally appeared before me **Li Xiong** 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