505085307 09/10/2018

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5132065

SUBMISSION TYPE:	NEW ASSIGNMENT
	FOR ASSIGNMENT RECORDED 08/08/2018; REEL/FRAME 046720/0400 TO CORRECT TYPO OF INVENTOR NAME FROM JESSE LEE KULPER TO JESSE LEE KIUPER

CONVEYING PARTY DATA

Name	Execution Date
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

RECEIVING PARTY DATA

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

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15570056

CORRESPONDENCE DATA

Fax Number: (732)594-4720

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent

using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 732-594-7159

Email: virginia.finno-sorrentino@merck.com **Correspondent Name:** MERCK SHARP & DOHME CORP.

PATENT 505085307 REEL: 047044 FRAME: 0740

Address Line 1: 126 EAST LINCOLN AVENUE

Address Line 2: RY86-2011A

Address Line 4: RAHWAY, NEW JERSEY 07065

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

Total Attachments: 36

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505037164 08/06/2018

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5083915

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
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 KULPER JESSIE LEE KIUPER	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

RECEIVING PARTY DATA

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

PROPERTY NUMBERS Total: 1

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Application Number:	15570056

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using a lax number, if provided, if that is unsuccessful, it will be sent via 05 mail.

Phone: 732-594-7159

Email: virginia.finno-sorrentino@merck.com
Correspondent Name: MERCK SHARP & DOHME CORP.
Address Line 1: 126 EAST LINCOLN AVENUE

Address Line 2: RY86-2011A

WORLDWIDE ASSIGNMENT

WHEREAS, IWE,

- (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, Marcon Co. (11) Files Teach Mills.
- (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. 15/570,056 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

Executed this day of	, 2016.
David Harris	
ACKNOWLEDGEMENT	
of of)) s.s.:)
On this day of	, 2016, personally appeared before me David Harris to me known, and ed in and who executed the foregoing instrument, and acknowledged that he
(Seal)	
	Notary Public
Executed this day of	, 2016.
James DiNunzio	
ACKNOWLEDGEMENT	
of	\
County of) s.s.:)
On this day of and known by me to be the same person des he (she) executed the same, of his (her) own	, 2016, personally appeared before me James DiNunzio to me known, cribed in and who executed the foregoing instrument, and acknowledged that free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
William A. Marinaro	
ACKNOWLEDGEMENT	
County of) s.s.:
On this day of and known by me to be the same person describ- he (she) executed the same, of his (her) own free	, 2016, personally appeared before me William A. Marinaro to me known, ed in and who executed the foregoing instrument, and acknowledged that will for the purpose set forth.
(Seal)	
	Notary Public
Executed this 18 day of 1014,	2016.
Sutthilus Sotthivirat	
ACKNOWLEDGEMENT	
Corymonwalthor Peyersylvania	 8.s.:
County of Manual S	অ-ত
On this day of known, and known by me to be the same person acknowledged that he (she) executed the same, of	, 2016, personally appeared before me Sutthilug Sotthivirat to me described in and who executed the foregoing instrument, and if his (her) own free will for the purpose set forth.
(Seal) COMMONWEALTH OF PENNSYLVANIA Notarial Seal Dorothy M. Miller, Notary Public Upper Gwynedd Twp., Montgomery County My Commission Expires May 14, 2017 SEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES	Notary Public

Executed this 8 day of 304	_ , 2016.
Caland Bran	
Chad David Brown	
ACKNOWLEDGEMENT	
Commonwealth of Pernsylvaxio	<i>Ş</i>).
County of Monthson County) s.s.:)
On this day of and known by me to be the same person describe (she) executed the same, of his (her) own free	_, 2016, personally appeared before me Chad David Brown to me known, bed in and who executed the foregoing instrument, and acknowledged that se will for the purpose set forth.
(Seal)	Toblish Willer
COMMONWEALTH OF PENNSYLVANIA Notarial Seal Dorothy M. Miller, Notary Public Upper Gwynedd Twp., Montgomery County My Commission Expires May 14, 2017 MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES	Notary Public
Executed this day of	, 2016.
Sundeep Sudish Dhareshwar	
ACKNOWLEDGEMENT	
of)
County of) s.s.:)
me known, and known by me to be the same per	_, 2016, personally appeared before me Sundeep Sudish Dhareshwar to rson 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 <u>&</u> day of <u></u>	_ , 2016.
and the state of t	
Jesse Lee Kuiper	
ACKNOWLEDGEMENT	
<u>Commonwealth</u> of Pennsylvaxio	al.
County of Management) s.s.:)
On this day of and known by me to be the same person describe (she) executed the same, of his (her) own fre	_, 2016, personally appeared before me Jesse Lee Kuiper to me known, bed in and who executed the foregoing instrument, and acknowledged that se will for the purpose set forth.
(Seal) COMMONWEALTH OF PENNSYLVANIA Notarial Seal Dorothy M. Miller, Notary Public Upper Gwynedd Twp., Montgomery County My Commission Expires May 14, 2017 MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES	Notary Public
Executed this day of	, 2016.
Yung-Chi Lee	
ACKNOWLEDGEMENT	
of	}
County of) s.s.;)
On this day of known by me to be the same person described in she) executed the same, of his (her) own free w	, 2016, personally appeared before me Yung-Chi Lee to me known, and n and who executed the foregoing instrument, and acknowledged that he ill for the purpose set forth.
(Seal)	
	Notary Public

Executed this May of 3016.
Craig Alfred McKelvey
ACKNOWLEDGEMENT
Commonutality of Penneulognia
County of Manyoniery) 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) Notarial Seal Dorothy M. Miller, Notary Public Upper Gwynedd Twp., Montgomery County My Commission Expires May 14, 2017 MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES
Executed this day of , 2016.
Michael
ACKNOWLEDGEMENT
Mononical of Pensilaxia) County of Managemery
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 ne (she) executed the same, of his (her) own free will for the purpose set forth.
(Seal) COMMONWEALTH OF PENNSYLVANIA Notarial Seal Dorothy M. Miller, Notary Public Upper Gwynedd Twp., Montgomery County My Commission Expires May 14, 2017 MEMSER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Page 6 of 7

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

Executed this 18 day of 1	, 2016.
Elise Topol Miller	
ACKNOWLEDGEMENT	
<u>Commonwealth</u> of Pennsylvaxia	1
County of Montgomery) s.s.:)
On this day of and known by me to be the same person describe (she) executed the same, of his (her) own fre	_, 2016, personally appeared before me Elise Topol Miller to me known, ped in and who executed the foregoing instrument, and acknowledged that e will for the purpose set forth.
(Seal) COMMONWEALTH OF PENNSYLVANIA	- Transcon Con One
Notarial Seal Dorothy M. Miller, Notary Public Upper Gwynedd Twp., Montgomery County My Commission Expires May 14, 2017 MY COMMISSION EXPIRES MAY 14, 2017	Notary Public
Executed this day of	, 2016.
Li Xiong	
ACKNOWLEDGEMENT	
of	
County of) s.s.:
On this day of by me to be the same person described in and w executed the same, of his (her) own free will for t	, 2016, personally appeared before me Li Xiong to me known, and known ho executed the foregoing instrument, and acknowledged that he (she) he purpose set forth.
(Seal)	
	Notary Public

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- f(1) David Harris, located at New Providence, NJ,
- (2) James DiNunzio, located at Bridgewater, NJ,
- 6 (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 day of	, 2016.
David Harris	
ACKNOWLEDGEMENT	
of)
County of) s.s.:)
On this day of known by me to be the same person descr (she) executed the same, of his (her) own	, 2016, personally appeared before me David Harris to me known, and ribed in and who executed the foregoing instrument, and acknowledged that he 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 and known by me to be the same person d he (she) executed the same, of his (her) ov	, 2016, personally appeared before me James DiNunzio to me known, escribed in and who executed the foregoing instrument, and acknowledged that wn free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
William A. Marinaro	
ACKNOWLEDGEMENT	
of)) s.s.:)
On this day of	, 2016, personally appeared before me William A. Marinaro to me known, scribed in and who executed the foregoing instrument, and acknowledged that
(Seal)	
	Notary Public
Executed this day of	, 2016.
Sutthilug Sotthivirat	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
known, and known by me to be the same pe	, 2016, personally appeared before me Sutthilug Sotthivirat to me rson described in and who executed the foregoing instrument, and me, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
Chad David Brown	
ACKNOWLEDGEMENT	
of) s.s.:
On this day of	, 2016, personally appeared before me Chad David Brown to me known
(Seal)	
	Notary Public
Executed this day of	, 2016.
Sundeep Sudish Dhareshwar	
ACKNOWLEDGEMENT	
of)
County of) s.s.:)
me known, and known by me to be the same	, 2016, personally appeared before me Sundeep Sudish Dhareshwar to e person described in and who executed the foregoing instrument, and ame, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
Jesse Lee Kuiper	
ACKNOWLEDGEMENT	
of)) s.s.:)
On this day of	, 2016, personally appeared before me Jesse Lee Kuiper to me known, described in and who executed the foregoing instrument, and acknowledged that
(Seal)	
	Notary Public
Executed this day of	, 2016.
Yung-Chi Lee	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
On this day of known by me to be the same person desc (she) executed the same, of his (her) own	, 2016, personally appeared before me Yung-Chi Lee to me known, and ribed in and who executed the foregoing instrument, and acknowledged that he free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
Craig Alfred McKelvey	
ACKNOWLEDGEMENT	
County of)) s.s.:)
On this day of known, and known by me to be the same pers	, 2016, personally appeared before me Craig Alfred McKelvey to me on described in and who executed the foregoing instrument, and le, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2016.
NATIONAL DESCRIPTION	
Michael McNevin	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
On this day of and known by me to be the same person desci he (she) executed the same, of his (her) own fr	, 2016, personally appeared before me Michael McNevin to me known, ribed in and who executed the foregoing instrument, and acknowledged that ree will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
Elise Topol Miller	
ACKNOWLEDGEMENT	
of)) s.s.:)
On this day of and known by me to be the same person descr he (she) executed the same, of his (her) own fr	, 2016, personally appeared before me Elise Topol Miller to me known, ribed in and who executed the foregoing instrument, and acknowledged that ree will for the purpose set forth
(Seal)	oc will to the purpose set form.
	Notary Public
Executed this 18 day of	, 2016.
ACKNOWLEDGEMENT	
On this Aday of State On the same person described in and executed the same, of his (her) own free will for) s.s.:) , 2016, personally appeared before me Li Xiong to me known, and known who executed the foregoing instrument, and acknowledged that he (she) or the purpose set forth.
(Seal)	Notary Public KATHLEEN A REYNOLDS Notary Public of New Jersey My Commission Expires August 3, 2016

Page 7 of 7
Computer Generated Template "Assignment-Merck Sharp & Dohme. Single Assignee Worldwide" (Assignment) Merck Sharp & Dohme Corp. 11/04/2010

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- f(1) David Harris, located at New Providence, NJ,
- (2) James DiNunzio, located at Bridgewater, NJ,
- 6 (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:

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and/or in the following application(s):

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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	, 2016.
David Harris	
ACKNOWLEDGEMENT	
of)) s.s.:
	, 2016, personally appeared before me David Harris to me known, and bed in and who executed the foregoing instrument, and acknowledged that he
(Seal)	
	Notary Public
Executed this day of	, 2016.
James DiNunzio	
ACKNOWLEDGEMENT	
of)
County of) s.s.:)
On this day of and known by me to be the same person de he (she) executed the same, of his (her) ow	, 2016, personally appeared before me James DiNunzio to me known, escribed in and who executed the foregoing instrument, and acknowledged that in free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
William A. Marinaro	
ACKNOWLEDGEMENT	
of)) s.s.:
County of)
On this day of and known by me to be the same person de he (she) executed the same, of his (her) own	, 2016, personally appeared before me William A. Marinaro to me known, scribed in and who executed the foregoing instrument, and acknowledged that a free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2016.
Sutthilug Sotthivirat	
ACKNOWLEDGEMENT	
of)
County of) s.s.:)
known, and known by me to be the same per	, 2016, personally appeared before me Sutthilug Sotthivirat to me rson described in and who executed the foregoing instrument, and me, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
Chad David Brown	
ACKNOWLEDGEMENT	
County of) s.s.:
On this day of	, 2016, personally appeared before me Chad David Brown to me known described in and who executed the foregoing instrument, and acknowledged that
(Seal)	
	Notary Public
Executed this day of	, 2016.
Sundeep Sudish Dhareshwar	
ACKNOWLEDGEMENT	
of)
County of) s.s.:)
On this day of me known, and known by me to be the sa acknowledged that he (she) executed the	, 2016, personally appeared before me Sundeep Sudish Dhareshwar to ame 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

REEL: 047044 FRAME: 0760

Executed this day of	, 2016.
Jesse Lee Kuiper	
ACKNOWLEDGEMENT	
of County of)) s.s.:)
and known by me to be the same person descril	_, 2016, personally appeared before me Jesse Lee Kuiper to me known, ped in and who executed the foregoing instrument, and acknowledged that
he (she) executed the same, of his (her) own fre (Seal)	e will for the purpose set forth.
	Notary Public
Executed this & day of July Yung-Chi Lee	, 2016.
ACKNOWLEDGEMENT	
On this day of) s.s.:) _ , 2016, personally appeared before me Yung-Chi Lee to me known, and n and who executed the foregoing instrument, and acknowledged that he rill for the purpose set forth.
(Seal)	Notary Public
STEPHANIE RAMOS RICAR MOTARY PUBLIC OF NEW JER My Commission Explica 4/23/2	SEY 🖇

Page 5 of 7
Computer Generated Template "Assignment-Merck Sharp & Dohme. Single Assignee Worldwide" (Assignment) Merck Sharp & Dohme Corp. 11/04/2010

Executed this day of	, 2016.
Craig Alfred McKelvey	
ACKNOWLEDGEMENT	
of)) s.s.:
On this day of known, and known by me to be the same	, 2016, personally appeared before me Craig Alfred McKelvey to me 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	, 2016.
Michael McNevin	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
On this day of and known by me to be the same person on the (she) executed the same, of his (her) or	, 2016, personally appeared before me Michael McNevin to me known, described in and who executed the foregoing instrument, and acknowledged that wn free will for the purpose set forth.
(Seal)	
	Notary Public

REEL: 047044 FRAME: 0762

Executed this day of	, 2016.
Elise Topol Miller	
ACKNOWLEDGEMENT	
of)
of County of) s.s.:)
On this day of and known by me to be the same person he (she) executed the same, of his (her)	, 2016, personally appeared before me Elise Topol Miller to me known, n described in and who executed the foregoing instrument, and acknowledged that own free will for the purpose set forth
(Seal)	The state of the purpose of form.
	Notary Public
Executed this day of	, 2016.
Li Xiong	
ACKNOWLEDGEMENT	
of)
County of) s.s.:)
On this day of oy me to be the same person described executed the same, of his (her) own free	, 2016, personally appeared before me Li Xiong to me known, and known in and who executed the foregoing instrument, and acknowledged that he (she) will for the purpose set forth.
(Seal)	
	Notary Public

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- f(1) David Harris, located at New Providence, NJ,
- (2) James DiNunzio, located at Bridgewater, NJ,
- 6 (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 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 ed in and who executed the foregoing instrument, and acknowledged that he
(Seal)	
	Notary Public
Executed this day of	, 2016.
James DiNunzio	
ACKNOWLEDGEMENT	
of)
County of) s.s.:)
On this day of and known by me to be the same person desc ne (she) executed the same, of his (her) own	, 2016, personally appeared before me James DiNunzio to me known, cribed in and who executed the foregoing instrument, and acknowledged that 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, ribed in and who executed the foregoing instrument, and acknowledged that
(Seal)	
	Notary Public
Executed this day of	_ , 2016.
Sutthilug Sotthivirat	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
known, and known by me to be the same perso	, 2016, personally appeared before me Sutthilug Sotthivirat to me on described in and who executed the foregoing instrument, and e, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this H day of i THE	_ , 2016.
Chad David Brown	
ACKNOWLEDGEMENT	
of	_)) s.s.:)
On this day of and known by me to be the same person descri he (she) executed the same, of his (her) own fre	, 2016, personally appeared before me Chad David Brown to me known bed in and who executed the foregoing instrument, and acknowledged that see will for the purpose set forth.
(Seal)	
	Notary Public
Executed this II day of JULY	_ , 2016.
Macedinae	
Sundeep Sudish Dhareshwar	
ACKNOWLEDGEMENT	
11, July of 2016	
County of Morris) s.s.:)
On this <u>\</u> day of <u>July</u> me known, and known by me to be the same pe acknowledged that he (she) executed the same	_, 2016, personally appeared before me Sundeep Sudish Dhareshwar to erson described in and who executed the foregoing instrument, and , of his (her) own free will for the purpose set forth.
(Seal) TANEIL C MARSHALL Notary Public State of New Jersey My Commission Expires July 14, 2020 I.D.# 2453046	Mushe DD Notary Public

REEL: 047044 FRAME: 0767

Executed this day of	, 2016.
Jesse Lee Kuiper	
ACKNOWLEDGEMENT	
of)) s.s.:
of County of) s.s.:)
and known by me to be the same perso	, 2016, personally appeared before me Jesse Lee Kuiper to me known, on described in and who executed the foregoing instrument, and acknowledged that r) 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 known by me to be the same person de (she) executed the same, of his (her) or	, 2016, personally appeared before me Yung-Chi Lee to me known, and escribed in and who executed the foregoing instrument, and acknowledged that he wn free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
Craig Alfred McKelvey	
ACKNOWLEDGEMENT	
of)) s.s.:
On this day of known, and known by me to be the same per	, 2016, personally appeared before me Craig Alfred McKelvey to me son described in and who executed the foregoing instrument, and me, 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 and known by me to be the same person desc he (she) executed the same, of his (her) own	, 2016, personally appeared before me Michael McNevin to me known, cribed in and who executed the foregoing instrument, and acknowledged that free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
Elise Topol Miller	
ACKNOWLEDGEMENT	
of)) s.s.:)
On this day of	, 2016, personally appeared before me Elise Topol Miller to me known, scribed in and who executed the foregoing instrument, and acknowledged that
(Seal)	
	Notary Public
Executed this day of	, 2016.
Li Xiong	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
On this day of by me to be the same person described in ar executed the same, of his (her) own free will	, 2016, personally appeared before me Li Xiong to me known, and known and who executed the foregoing instrument, and acknowledged that he (she) for the purpose set forth.
(Seal)	
	Notary Public

WORLDWIDE ASSIGNMENT

WHEREAS, I/WE,

- f(1) David Harris, located at New Providence, NJ.
- (2) James DiNunzio, located at Bridgewater, NJ,
- 6 (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

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.

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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 & Dohrne. Single Assignee Worldwide" (Assignment) Merck Sharp & Dohrne Corp. 11/04/2010

Executed this <u>tal</u> day of <u>Saly</u> ,	, 2016.
Deflection of the second	
David Harris	
County of)) s.s.:) , 2016, personally appeared before me David Harris to me known, and n and who executed the foregoing instrument, and acknowledged that he ill for the purpose set forth.
(Seal)	Dona A. Cai
	Notary Public
	VALERIE H RIGGI ID # 2274161 NOTARY PUBLIC STATE OF NEW JERSEY My Commission Expires April 12, 2021
Executed this <u>仡</u> day of <u></u>	2016,
James DiNunzia ACKNOWLEDGEMENT	
10000000000000000000000000000000000000	
County of	S.S.:
On this day of d	, 2016, personally appeared before me James DiNunzio to me known, sed in and who executed the foregoing instrument, and acknowledged that will for the purpose set forth.
(Seal)	11.0.0.4 Rei
	Notary Public
	VALERIE H RIGGI
	ID # 2274161 NOTARY PUBLIC
	STATE OF NEW JERSEY My Commission Expires April 12, 2021

Page 2 of 7
Computer Generated Template "Assignment-Merck Sharp & Dohme. Single Assignee Worldwide" (Assignment) Merck Sharp & Dohme Corp. 11/04/2010

Executed this <u>/ </u> day of <u></u>	, 2016.
William A. Marinaro	
County of On this 18 day of and known by me to be the same person descrit he (she) executed the same, of his (her) own free (Seal)) s.s.:) s.s.:), s.s.: , 2016, personally appeared before me William A. Marinaro to me known bed in and who executed the foregoing instrument, and acknowledged that e will for the purpose set forth.
(Scary	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	
County of) s.s.:)
On this day of known, and known by me to be the same person acknowledged that he (she) executed the same,	, 2016, personally appeared before me Sutthilug Sotthivirat to me 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 day of	, 2016.
Chad David Brown	
ACKNOWLEDGEMENT	
of) s.s.:)
On this day of and known by me to be the same perso he (she) executed the same, of his (her	, 2016, personally appeared before me Chad David Brown to me known on described in and who executed the foregoing instrument, and acknowledged that own free will for the purpose set forth.
(Seal)	
	Notary Public
	· · · ·
	- 1/42
Executed this day of	, 2016.
Sundeep Sudish Dhareshwar	
ACKNOWLEDGEMENT	
of)
County of) s.s.:)
me known, and known by me to be the s	, 2016, personally appeared before me Sundeep Sudish Dhareshwar to same person described in and who executed the foregoing instrument, and se 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	
On this day of	, 2016, personally appeared before me Jesse Lee Kuiper to me known, cribed in and who executed the foregoing instrument, and acknowledged that
(Seal)	
	Notary Public
Executed this day of	, 2016.
Yung-Chi Lee	
ACKNOWLEDGEMENT	
of	
County of) s.s.:)
On this day of known by me to be the same person describe (she) executed the same, of his (her) own free	, 2016, personally appeared before me Yung-Chi Lee to me known, and d in and who executed the foregoing instrument, and acknowledged that he will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
Craig Alfred McKelvey	
ACKNOWLEDGEMENT	
of)
of County of)) s.s.:)
known, and known by me to be the sam	, 2016, personally appeared before me Craig Alfred McKelvey to me ne person described in and who executed the foregoing instrument, and ne same, of his (her) own free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2016.
Michael McNevin	
ACKNOWLEDGEMENT	
of)) s.s.;
County of)
On this day of and known by me to be the same person ne (she) executed the same, of his (her)	, 2016, personally appeared before me Michael McNevin to me known, a described in and who executed the foregoing instrument, and acknowledged that own free will for the purpose set forth.
(Seal)	
	Notary Public

Executed this day of	, 2016.
Elise Topol Miller	
ACKNOWLEDGEMENT	
County of)) s.s.:)
On this day of _ and known by me to be the same person des he (she) executed the same, of his (her) own	, 2016, personally appeared before me Elise Topol Miller to me known, cribed in and who executed the foregoing instrument, and acknowledged that free will for the purpose set forth.
(Seal)	
	Notary Public
Executed this day of	, 2016.
Li Xiong	
ACKNOWLEDGEMENT	
of)) s.s.:
County of)
On this day of by me to be the same person described in and executed the same, of his (her) own free will for	, 2016, personally appeared before me Li Xiong to me known, and known d who executed the foregoing instrument, and acknowledged that he (she) or the purpose set forth.
(Seal)	
	Notary Public

Page 7 of 7
Computer Generated Template "Assignment-Merck Sharp & Dohme. Single Assignee Worldwide" (Assignment) Merck Sharp & Dohme Corp. 11/04/2010

PATENT REEL: 047044 FRAME: 0777

RECORDED: 09/10/2018