

PATENT ASSIGNMENT

Electronic Version v1.1

Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT								
NATURE OF CONVEYANCE:	ASSIGNMENT								
CONVEYING PARTY DATA									
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Harald RUECKL</td> <td>01/07/2013</td> </tr> <tr> <td>Hanno SCHEFFCZIK</td> <td>01/22/2013</td> </tr> <tr> <td>Barbara SANTRY</td> <td>01/07/2013</td> </tr> </tbody> </table>		Name	Execution Date	Harald RUECKL	01/07/2013	Hanno SCHEFFCZIK	01/22/2013	Barbara SANTRY	01/07/2013
Name	Execution Date								
Harald RUECKL	01/07/2013								
Hanno SCHEFFCZIK	01/22/2013								
Barbara SANTRY	01/07/2013								
RECEIVING PARTY DATA									
Name:	Novartis Vaccines and Diagnostics GmbH								
Street Address:	Emil-von-Behring Strasse, 76								
City:	Marburg								
State/Country:	GERMANY								
Postal Code:	35041								
PROPERTY NUMBERS Total: 3									
<table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>13513564</td> </tr> <tr> <td>Application Number:</td> <td>12928163</td> </tr> <tr> <td>Application Number:</td> <td>61283518</td> </tr> </tbody> </table>		Property Type	Number	Application Number:	13513564	Application Number:	12928163	Application Number:	61283518
Property Type	Number								
Application Number:	13513564								
Application Number:	12928163								
Application Number:	61283518								
CORRESPONDENCE DATA									
Fax Number:	5106553542								
<i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>									
Email:	diana-1.castillo@novartis.com								
Correspondent Name:	Novartis Vaccines and Diagnostic, Inc.								
Address Line 1:	4560 Horton Street								
Address Line 2:	IP Services M/S X-100B								
Address Line 4:	Emeryville, CALIFORNIA 94608-2916								
ATTORNEY DOCKET NUMBER:	PAT053947-US-PCT								
NAME OF SUBMITTER:	Helen Lee								

CH \$120.00 13513564

Signature:	/Helen Lee, Reg. No. 39,270/
Date:	06/20/2013
Total Attachments: 6 source=PAT053947-US-PCT ASG GmbH Inv#page1.tif source=PAT053947-US-PCT ASG GmbH Inv#page2.tif source=PAT053947-US-PCT ASG GmbH Inv#page3.tif source=PAT053947-US-PCT ASG GmbH Inv#page4.tif source=PAT053947-US-PCT ASG GmbH Inv#page5.tif source=PAT053947-US-PCT ASG GmbH Inv#page6.tif	

ASSIGNMENT

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, we

Harald RUECKL, Hanno SCHEFFCZIK and Barbara SANTRY

do hereby sell, assign and transfer to **Novartis Vaccines and Diagnostics GmbH**, Emil-von-Behring Strasse 76, Marburg, Germany 35041 (hereinafter referred to as the "**ASSIGNEE**") and its successors, assigns and legal representatives, all our right, title and interest for all countries of the world in and to (1) all of our inventions and discoveries described in the patent application(s) entitled

CIRCULATION OF COMPONENTS DURING HOMOGENIZATION OF EMULSIONS

filed* in the RO/IB on December 3, 2010, and accorded International Patent Application Number PCT/IB2010/003394, (2) said patent application(s), (3) all national stages of said international patent application, (4) all other patent applications in all countries and regions claiming the priority of the United States Of America patent application filed on December 3, 2010, and accorded Application Number 13/513,564, and the United States Of America patent application filed on December 3, 2010, and accorded Application Number 12/928,163, and the United States Of America, patent application filed on December 3, 2009, and accorded Application Number 61/283,518 (5) all continuations and divisions of all of said patent applications (including further continuations and divisions such as, but not limited to, continuations of continuations and continuations of divisions), ((2)-(5) hereinafter referred to collectively as "patent applications"), (6) all patents that are granted on any of said patent applications, (7) all registrations and confirmations of, and importation certificates based on, one or more of said patents and (8) all reissues, renewals and extensions of said patents, reexamination certificates issued for said patents and supplementary protection certificates based on said patents (including the right to file patent applications on said inventions and discoveries in the names of **ASSIGNEE**, their designees or in any or all of our names, at their election and in accordance with applicable law in all countries and regions and all rights of priority in all countries and regions for all of said patent applications under the International Convention for the Protection of Industrial Property, and all other applicable similar international agreements), the same to be held and enjoyed by said **ASSIGNEE**, their successors, assigns and legal representatives, to the full ends of the terms for which all patents therefor may be granted, as fully and entirely as the same would have been held and enjoyed by us if this sale, assignment and transfer had not been made.

*We hereby authorize **ASSIGNEE** and their representatives to insert in this instrument the Application Number and the filing date of said patent application when notified thereof.

And we hereby covenant and agree that we will, at any time, upon the request and at the expense of **ASSIGNEE**, execute and deliver all documents that may be necessary or desirable to perfect the title to the foregoing inventions and discoveries, patent applications, patents, registrations, confirmations, importation certificates, reissues, renewals, extensions, reexamination certificates and supplementary protection certificates in **ASSIGNEE**, their successors, assigns or other legal representatives, including the execution and procurement of all further documents evidencing this sale, assignment and transfer as may be necessary or desirable for recording the same in the patent office or other intellectual property office, agency or the like of any country or region, that we will, at any time, upon the request and at the expense of **ASSIGNEE**, execute all additional patent applications, applications for registration and/or confirmation of one or more of said patents, applications for certificates of importation based on one or more of said patents, applications for reissues, renewals and extensions of one or more of said patents and supplemental protection certificates based upon one or more of said patents, and that we will make all rightful oaths and declarations and do all lawful acts requisite for procuring the same or for aiding therein, without further compensation, but at the expense of **ASSIGNEE**, the successors, assigns or other legal representatives.

PATENT**REEL: 030655 FRAME: 0872**

This Assignment is effective as from the earliest priority date as stated above

Executed this 07 day of January, 2013.

Harald Ruedkl

Name: Harald RUECKL

Horst Schaefer
H. Schäfer
Ingenieurtechnik

#1 Witness:

M. Gwozdz

M. Gwozdz
Ingenieurtechnik

#2 Witness:

Executed this _____ day of _____, 20____.

Name: Hanno SCHEFFCZIK

#1 Witness:

#2 Witness:

Executed this _____ day of _____, 20____.

Name: Barbara SANTRY

#1 Witness:

#2 Witness:

ASSIGNMENT

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, we

Harald RUECKL, Hanno SCHEFFCZIK and Barbara SANTRY

do hereby sell, assign and transfer to **Novartis Vaccines and Diagnostics GmbH**, Emil-von-Behring Strasse 76, Marburg, Germany 35041 (hereinafter referred to as the "**ASSIGNEE**") and its successors, assigns and legal representatives, all our right, title and interest for all countries of the world in and to (1) all of our inventions and discoveries described in the patent application(s) entitled

CIRCULATION OF COMPONENTS DURING HOMOGENIZATION OF EMULSIONS

filed* in the RO/IB on December 3, 2010, and accorded International Patent Application Number PCT/IB2010/003394, (2) said patent application(s), (3) all national stages of said international patent application, (4) all other patent applications in all countries and regions claiming the priority of the United States Of America patent application filed on December 3, 2010, and accorded Application Number 13/513,564, and the United States Of America patent application filed on December 3, 2010, and accorded Application Number 12/928,163, and the United States Of America, patent application filed on December 3, 2009, and accorded Application Number 61/283,518 (5) all continuations and divisions of all of said patent applications (including further continuations and divisions such as, but not limited to, continuations of continuations and continuations of divisions), ((2)-(5) hereinafter referred to collectively as "patent applications"), (6) all patents that are granted on any of said patent applications, (7) all registrations and confirmations of, and importation certificates based on, one or more of said patents and (8) all reissues, renewals and extensions of said patents, reexamination certificates issued for said patents and supplementary protection certificates based on said patents (including the right to file patent applications on said inventions and discoveries in the names of **ASSIGNEE**, their designees or in any or all of our names, at their election and in accordance with applicable law in all countries and regions and all rights of priority in all countries and regions for all of said patent applications under the International Convention for the Protection of Industrial Property, and all other applicable similar international agreements), the same to be held and enjoyed by said **ASSIGNEE**, their successors, assigns and legal representatives, to the full ends of the terms for which all patents therefor may be granted, as fully and entirely as the same would have been held and enjoyed by us if this sale, assignment and transfer had not been made.

*We hereby authorize **ASSIGNEE** and their representatives to insert in this instrument the Application Number and the filing date of said patent application when notified thereof.

And we hereby covenant and agree that we will, at any time, upon the request and at the expense of **ASSIGNEE**, execute and deliver all documents that may be necessary or desirable to perfect the title to the foregoing inventions and discoveries, patent applications, patents, registrations, confirmations, importation certificates, reissues, renewals, extensions, reexamination certificates and supplementary protection certificates in **ASSIGNEE**, their successors, assigns or other legal representatives, including the execution and procurement of all further documents evidencing this sale, assignment and transfer as may be necessary or desirable for recording the same in the patent office or other intellectual property office, agency or the like of any country or region, that we will, at any time, upon the request and at the expense of **ASSIGNEE**, execute all additional patent applications, applications for registration and/or confirmation of one or more of said patents, applications for certificates of importation based on one or more of said patents, applications for reissues, renewals and extensions of one or more of said patents and supplemental protection certificates based upon one or more of said patents, and that we will make all rightful oaths and declarations and do all lawful acts requisite for procuring the same or for aiding therein, without further compensation, but at the expense of **ASSIGNEE**, the successors, assigns or other legal representatives.

PATENT

REEL: 030655 FRAME: 0874

This Assignment is effective as from the earliest priority date as stated above

Executed this _____ day of _____, 20____.

Name: Harald RUECKL

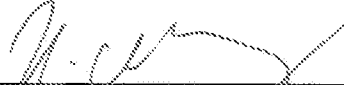
#1 Witness:

#2 Witness:

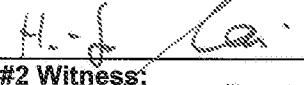
Executed this 22 day of January, 2013.



Name: Hanno SCHEFFCZIK



#1 Witness: H. Nahrgang



#2 Witness: Dr. H.-J. Mai

Executed this _____ day of _____, 20____.

Name: Barbara SANTRY

#1 Witness:

#2 Witness:

ASSIGNMENT

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, we

Harald RUECKL, Hanno SCHEFFCZIK and Barbara SANTRY

do hereby sell, assign and transfer to **Novartis Vaccines and Diagnostics GmbH**, Emil-von-Behring Strasse 76, Marburg, Germany 35041 (hereinafter referred to as the "**ASSIGNEE**") and its successors, assigns and legal representatives, all our right, title and interest for all countries of the world in and to (1) all of our inventions and discoveries described in the patent application(s) entitled

CIRCULATION OF COMPONENTS DURING HOMOGENIZATION OF EMULSIONS

filed* in the RO/IB on December 3, 2010, and accorded International Patent Application Number PCT/IB2010/003394, (2) said patent application(s), (3) all national stages of said international patent application, (4) all other patent applications in all countries and regions claiming the priority of the United States Of America patent application filed on December 3, 2010, and accorded Application Number 13/513,564, and the United States Of America patent application filed on December 3, 2010, and accorded Application Number 12/928,163, and the United States Of America patent application filed on December 3, 2009, and accorded Application Number 61/283,518 (5) all continuations and divisions of all of said patent applications (including further continuations and divisions such as, but not limited to, continuations of continuations and continuations of divisions), ((2)-(5) hereinafter referred to collectively as "patent applications"), (6) all patents that are granted on any of said patent applications, (7) all registrations and confirmations of, and importation certificates based on, one or more of said patents and (8) all reissues, renewals and extensions of said patents, reexamination certificates issued for said patents and supplementary protection certificates based on said patents (including the right to file patent applications on said inventions and discoveries in the names of **ASSIGNEE**, their designees or in any or all of our names, at their election and in accordance with applicable law in all countries and regions and all rights of priority in all countries and regions for all of said patent applications under the International Convention for the Protection of Industrial Property, and all other applicable similar international agreements), the same to be held and enjoyed by said **ASSIGNEE**, their successors, assigns and legal representatives, to the full ends of the terms for which all patents therefor may be granted, as fully and entirely as the same would have been held and enjoyed by us if this sale, assignment and transfer had not been made.

*We hereby authorize **ASSIGNEE** and their representatives to insert in this instrument the Application Number and the filing date of said patent application when notified thereof.

And we hereby covenant and agree that we will, at any time, upon the request and at the expense of **ASSIGNEE**, execute and deliver all documents that may be necessary or desirable to perfect the title to the foregoing inventions and discoveries, patent applications, patents, registrations, confirmations, importation certificates, reissues, renewals, extensions, reexamination certificates and supplementary protection certificates in **ASSIGNEE**, their successors, assigns or other legal representatives, including the execution and procurement of all further documents evidencing this sale, assignment and transfer as may be necessary or desirable for recording the same in the patent office or other intellectual property office, agency or the like of any country or region, that we will, at any time, upon the request and at the expense of **ASSIGNEE**, execute all additional patent applications, applications for registration and/or confirmation of one or more of said patents, applications for certificates of importation based on one or more of said patents, applications for reissues, renewals and extensions of one or more of said patents and supplemental protection certificates based upon one or more of said patents, and that we will make all rightful oaths and declarations and do all lawful acts requisite for procuring the same or for aiding therein, without further compensation, but at the expense of **ASSIGNEE**, the successors, assigns or other legal representatives.

This Assignment is effective as from the earliest priority date as stated above

Executed this _____ day of _____, 20____.

Name: Harald RUECKL

#1 Witness:

#2 Witness:

Executed this _____ day of _____, 20____.

Name: Hanno SCHEFFCZIK


#1 Witness:

#2 Witness:


Executed this 07 day of JAN, 2013.



Name: Barbara SANTRY



#1 Witness:



#2 Witness: