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| PATENT ASSIGNMENT COVER SHEET |
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EPAS ID: PAT4106300

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| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| NOVARTIS VACCINES AND DIAGNOSTICS SRL | 10/20/2016 |
| RECEIVING PARTY DATA | |
| Name: | GLAXOSMITHKLINE BIOLOGICALS SA |
| Street Address: | RUE DE L'INSTITUT 89 |
| City: | RIXENSART |
| State/Country: | BELGIUM |
| Postal Code: | 1330 |
| PROPERTY NUMBERS Total: 2 | |
| Property Type | Number |
| Application Number: | 10467657 |
| Application Number: | 12371691 |
| CORRESPONDENCE DATA | |
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| Address Line 2: | UW2220 |
| Address Line 4: | KING OF PRUSSIA, PENNSYLVANIA 19406 |
| ATTORNEY DOCKET NUMBER: | VN51512 |
| NAME OF SUBMITTER: | CARLY MORROW |
| SIGNATURE: | /Carly Morrow/ |
| DATE SIGNED: | 10/20/2016 |
| Total Attachments: 2 | |
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| source=VN51512 GEN Confirmatory Assignment#page2.tif | |

CONFIRMATORY ASSIGNMENT

WE, GSK VACCINES S R L (formerly known as NOVARTIS VACCINES AND DIAGNOSTICS S R L) a company incorporated under the laws of Italy, having its registered office at Via Fiorentina 1, 53100, Siena, Italy, and Novartis AG a company limited by shares duly incorporated in Switzerland and whose registered office is at Lichtstrasse 35, 4056 Basel, Switzerland do hereby declare that we are or were the sole owner of the following patents/applications listed in the attached Schedule 1, entitled **GONOCOCCAL PROTEINS AND NUCLEIC ACIDS**

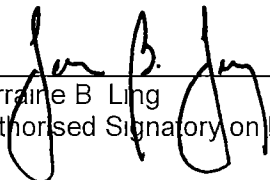
And in accordance with the Patent Assignment Agreement dated 26 February 2015 between Novartis Vaccines and Diagnostics S r l , Novartis Pharma AG and Novartis AG, NOVARTIS VACCINES AND DIAGNOSTICS S R L has assigned and GSK VACCINES S R L hereby assigns the entire right, title and interest and from which priority may be claimed from one or more applications, or any division, continuation and continuation-in-part of said application to in and to said patent application and all countries in which this/these application(s) are filed to Novartis AG

And in accordance with the Intellectual Property Assignment Agreement dated 2 March 2015 between NOVARTIS AG and GLAXOSMITHKLINE BIOLOGICALS SA for good and valuable consideration, the receipt of which is hereby acknowledged, we NOVARTIS AG have assigned and hereby assign the entire right, title and interest and from which priority may be claimed from one or more applications, or any division, continuation and continuation-in-part of said application to in and to said patent application and all countries in which this/these application(s) are filed to GLAXOSMITHKLINE BIOLOGICALS SA of Rue de l'Institut 89, 1330 Rixensart, Belgium

NOVARTIS VACCINES AND DIAGNOSTICS S R L has changed its name, as of 1 September 2015, into the new name "GLAXOSMITHKLINE VACCINES S R L " or in abbreviated form "GSK VACCINES S R L "


Dated this 20 October 2016

Signed for and on behalf of GSK VACCINES S R L




Lorraine B. Ling
Authorized Signatory on behalf of GSK VACCINES S R L

Signed for and on behalf of NOVARTIS AG

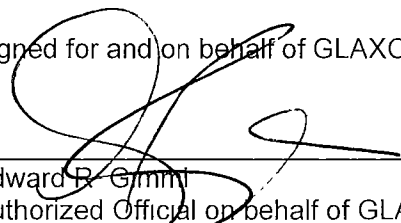


William R. Majarian
Authorized Signatory on behalf of
NOVARTIS AG



Theodore R. Furman
Authorized Signatory on behalf of
NOVARTIS AG

Signed for and on behalf of GLAXOSMITHKLINE BIOLOGICALS SA



Edward R. Grimm
Authorized Official on behalf of GLAXOSMITHKLINE BIOLOGICALS SA

| Country | Application Date | Schedule 1 | | |
|-------------------------------|------------------|--------------------|------------|---------------|
| | | Application Number | Grant Date | Patent Number |
| Austria | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Belgium | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Cyprus | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Denmark | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| European Patent Convention | 12-Feb-02 | 06076927 0 | | |
| European Patent Convention | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Finland | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| France | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| United Kingdom | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Germany | 12-Feb-02 | 02730631 5 | 03-Jan-07 | 60217320 5 |
| Greece | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Ireland | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Italy | 12-Feb-02 | 502007901510023 | 03-Jan-07 | EP1385876 |
| Luxembourg | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Netherlands | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Portugal | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Switzerland | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Spain | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Sweden | 12-Feb-02 | 02730631 5 | 03-Jan-07 | EP1385876 |
| Turkey | 12-Feb-02 | 2007/01928 | 03-Jan-07 | TR200701928 |
| United States | 12-Feb-02 | 10/467657 | 17-Mar-09 | 7504111 |
| United States | 16-Feb-09 | 12/371691 | 04-Feb-14 | 8642050 |