506395177 12/10/2020

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6441933

| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|---------------------------|----------------|
| GEORGE GRANT | 12/19/2017 |
| ANGELA MARGARET PATTERSON | 12/20/2017 |
| IMKE MULDER | 01/11/2018 |
| EMMA RAFTIS | 01/11/2018 |
| SEANIN MCCLUSKEY | 01/12/2018 |

RECEIVING PARTY DATA

| Name: | 4D PHARMA RESEARCH LIMITED | |
|-------------------|-----------------------------------|--|
| Street Address: | LIFE SCIENCES INNOVATION BUILDING | |
| Internal Address: | CORNHILL ROAD | |
| City: | ABERDEEN | |
| State/Country: | UNITED KINGDOM | |
| Postal Code: | AB25 2ZS | |

PROPERTY NUMBERS Total: 1

| Property Type | Number | |
|---------------------|----------|--|
| Application Number: | 17006356 | |

CORRESPONDENCE DATA

Fax Number: (650)493-6811

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: 6504939300 Email: rrsmith@wsgr.com

WILSON SONSINI GOODRICH & ROSATI **Correspondent Name:**

Address Line 1: 650 PAGE MILL ROAD

Address Line 4: PALO ALTO, CALIFORNIA 94304

| NAME OF SUBMITTER: | MOONKYOUNG UM |
|--------------------|-----------------|
| SIGNATURE: | /Moonkyoung Um/ |
| DATE SIGNED: | 12/10/2020 |

Total Attachments: 5

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PATENT REEL: 054601 FRAME: 0257

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PATENT REEL: 054601 FRAME: 0258

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|--|---|--|--|--|--|
| PATENT ASSIGNMENT | Docket Number 49455-717.301 | | | | |
| WHEREAS, the undersigned: | | | | | |
| George GRANT Aberdeen, United Kingdom Aberdeen, United Kingdom Aberdeen, United Kingdom Aberdeen, United Kingdom | Imke MULDER Aberdeen, United Kingdom Leeds, United Kingdom | | | | |
| 5. Emma RAFTIS Leeds, United Kingdom | | | | | |
| (hereinafter "Inventor(s))," have invented certain new and useful improve- | ments in | | | | |
| COMPOSITIONS COMP | RISING BACTERIAL STRAINS | | | | |
| for which a United States patent application is executed on even date herewith; for which application serial number 15/700,007 was filed on September 8, 2017 in the United States Patent and Trademark Office; for which application serial number was filed on in the U.S. Receiving Office of the Patent Cooperation Treaty; for which application serial number was filed on in the Patent Office; and/or for which an application was filed upon which a United States Patent issued on as U.S. Patent No (hereinafter, "Application(s)"). The term "Application(s)" also includes all patent applications that share or claim priority to or from the above application(s). | | | | | |
| WHEREAS, 4D Pharma Research Limited, a company of Scotland, having a place of business at Life Sciences Innovation Building, Cornhill Road, Aberdeen AB25 22S United Kingdom, (hereinafter "Assignee"), is desirous of acquiring the entire right, title and interest in and to said Application(s), and the inventions disclosed therein, and in and to all embodiments of the inventions, heretofore conceived, made or discovered, whether jointly or severally, by said Inventor(s) (hereinafter collectively referred to as "Inventions"), and in and to any and all patents, inventor's certificates and other forms of protection thereon granted in the United States, foreign countries, or under any international convention, agreement, protocol, or treaty, including those filed under the Paris Convention for the Protection of Industrial Property, The Patent Cooperation Treaty or otherwise (hereinafter "Patent(s)"). | | | | | |
| NOW, THEREFORE, in consideration of good and valuable consaid Assignee: | nsideration acknowledged by said Inventor(s) to have been received in full from | | | | |
| 1. Said Inventor(s) do hereby sell, assign, transfer and convey unto said Assignee the entire right, title and interest (a) in and to said Inventions; (b) in and to said Applications, including the right to claim priority to and from said Application(s); (c) in and to each and every application that is a divisional, substitution, continuation, or continuation-in-part of any of said Application(s); (d) in and to said Patent(s) and each and every patent issuing or reissuing from any of the foregoing; (e) in and to each and every reissue, reexamination, renewal or extension of any kind of any of the foregoing; (f) in and to each and every patent and application filed outside the United States and corresponding to any of the foregoing; and (g) in and to all claims for past, present and future infringement of the Patent(s), including all rights to sue for and to receive and recover for Assignee's own use all past, present, and future lost profits, royalties, and damages of whatever nature recoverable from an infringement of the Patent(s). | | | | | |
| 2. Said Inventor(s) hereby covenant and agree to cooperate with said Assignee to enable said Assignee to enjoy to the fullest extent the right, title and interest herein conveyed in the United States, foreign countries, or under any international convention, agreement, protocol, or treaty. Such cooperation by said Inventor(s) shall include prompt production of pertinent facts and documents, giving of testimony, execution of pertitions, oaths, specifications, declarations or other papers, and other assistance all to the extent deemed necessary or desirable by said Assignee (a) for perfecting in said Assignee the right, title and interest herein conveyed; (b) for prosecuting any applications covering said Inventions; (c) for filing and prosecuting substitute, divisional, continuing or additional applications covering said Inventions; (d) for filing and prosecuting applications for reissuance of any said Patent(s); (e) for interference or other priority proceedings involving said Inventions; and (f) for legal proceedings involving said Inventions and any applications therefor and any Patent(s) granted thereon, including without limitation reissues and reexaminations, opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that reasonable expenses incurred by said Inventor(s) in providing such cooperation shall be paid for by said Assignee. | | | | | |
| The terms and covenants of this assignment shall inur representatives, and shall be binding upon said Inventor(s), their respective | e to the benefit of said Assignee, its successors, assigns and other legal heirs, legal representatives and assigns. | | | | |
| Said Inventor(s) hereby warrant, represent and covens contract, or understanding in conflict herewith. | mt that said Inventor(s) have not entered and will not enter into any assignment, | | | | |
| 5. Said Inventor(s) hereby request that any Patent(s) issuing in the United States, foreign countries, or under any international convention, agreement, protocol, or treaty, be issued in the name of the Assignee, or its successors and assigns, for the sole use of said Assignee, its successors, legal representatives and assigns. | | | | | |
| 6. This instrument will be interpreted and construed in accordance with the laws of the State of California, without regard to conflict of law principles. If any provision of this instrument is found to be illegal or unenforceable, the other provisions shall remain effective and enforceable to the greatest extent permitted by law. This instrument may be executed in counterparts, each of which is deemed an original, but all of which together constitute one and the same agreement. | | | | | |
| in with the Sant inventor(s) have executed and d | elivered this instrument to said Assignee as of the dates written below: | | | | |
| Date: 19 Dac 2017 George GRANT | Date:Angela Margaret PATTERSON | | | | |
| <i>ारायया</i> क्षाप्त अवस्था अवस्थ ा । १४ ० । । । । । । । । । । । । । । । । । । । | Augese Waigate FATTERSUN | | | | |
| Date: | Date: | | | | |
| Imke MULDER | Seanin MCCLUSKEY | | | | |
| Date: | | | | | |
| Emms RAFTIS | | | | | |

Page I of 2

| PATENT ASSIGNMENT | Docket Number 49455-717.301 | | | |
|---|--|--|--|--|
| WHEREAS, the undersigned: | : 8 | | | |
| 1. George GRANT 2. Angela Margaret PATTERSON 3. Imke MULDER Aberdeen, United Kingdom Norwich, United Kingdom Aberdeen, United Kingdom | 4. Seanin MCCLUSKEY gdom Leeds, United Kingdom | | | |
| 5. Emma RAFTIS Leeds, United Kingdom | | | | |
| (hereinafter "Inventor(s));" have invented certain new and useful improvements in | | | | |
| COMPOSITIONS COMPRISING BACTERIAL STRA | AINS | | | |
| for which a United States patent application is executed on even date herewith; for which application serial number 15/700.007 was filed on September 8, 2017 in the United States patent application serial number was filed on in the U.S. Receiving Office; for which application serial number was filed on in the Patent Office; for which an application was filed upon which a United States Patent issued on as (hereinafter, "Application(s)"). The term "Application(s)" also includes all patent applications that share application(s). | e of the Patent Cooperation Treaty; and/or U.S. Patent No or claim priority to or from the above | | | |
| WHEREAS, 4D Pharma Research Limited, a company of Scotland, having a place of business at Life Sco Aberdeen AB25 2ZS United Kingdom, (hereinafter "Assignee"), is desirous of acquiring the entire right, the inventions disclosed therein, and in and to all embodiments of the inventions, heretofore conceived, as aid Inventor(s) (hereinafter collectively referred to as "Inventions"), and in and to any and all patents, in thereon granted in the United States, foreign countries, or under any international convention, agreement. Paris Convention for the Protection of Industrial Property, The Patent Cooperation Treaty or otherwise (| title and interest in and to said Application(s), and nade or discovered, whether jointly or severally, by eventor's certificates and other forms of protection, protocol, or treaty, including those filed under the hereinafter "Patent(s)"). | | | |
| NOW, THEREFORE, in consideration of good and valuable consideration acknowledged by said Assignee: | aid Inventor(s) to have been received in full from | | | |
| 1. Said Inventor(s) do hereby sell, assign, transfer and convey unto said Assignee the de Inventions; (b) in and to said Applications, including the right to claim priority to and from said Application is a divisional, substitution, continuation, or continuation-in-part of any of said Application(s); (d) in and or reissuing from any of the foregoing; (e) in and to each and every reissue, reexamination, renewal or examt to each and every patent and application filed outside the United States and corresponding to any of present and future infringement of the Patent(s), including all rights to sue for and to receive and recover lost profits, royalties, and damages of whatever nature recoverable from an infringement of the Patent(s). | tion(s); (c) in and to each and every application that I to said Patent(s) and each and every patent issuing tension of any kind of any of the foregoing; (f) in the foregoing; and (g) in and to all claims for past, for Assignee's own use all past, present, and future | | | |
| 2. Said Inventor(s) hereby covenant and agree to cooperate with said Assignee to enabling title and interest herein conveyed in the United States, foreign countries, or under any international cooperation by said Inventor(s) shall include prompt production of pertinent facts and documents, giving specifications, declarations or other papers, and other assistance all to the extent deemed necessary or de Assignee the right, title and interest herein conveyed; (b) for prosecuting any applications covering said divisional, continuing or additional applications covering said Inventions; (d) for filing and prosecuting a divisional, continuing or additional applications covering said Inventions; and (f) for legal proceedings therefor and any Patent(s) granted thereon, including without limitation reissues and reexaminations, opportority contests, public use proceedings, infringement actions and court actions; provided, however, that in providing such cooperation shall be paid for by said Assignee. | convention, agreement, protocol, or treaty. Such ; of testimony, execution of petitions, oaths, sirable by said Assignee (a) for perfecting in said Inventions; (c) for filing and prosecuting substitute, applications for reissuance of any said Patent(s); involving said Inventions and any applications position proceedings, cancellation proceedings, | | | |
| The terms and covenants of this assignment shall inure to the benefit of said Assign representatives, and shall be binding upon said Inventor(s), their respective heirs, legal representatives and | nee, its successors, assigns and other legal and assigns. | | | |
| 4. Said Inventor(s) hereby warrant, represent and covenant that said Inventor(s) have not entered and will not enter into any assignment, contract, or understanding in conflict herewith. | | | | |
| 5. Said Inventor(s) hereby request that any Patent(s) issuing in the United States, foreign countries, or under any international convention, agreement, protocol, or treaty, be issued in the name of the Assignee, or its successors and assigns, for the sole use of said Assignee, its successors, legal representatives and assigns. | | | | |
| 6. This instrument will be interpreted and construed in accordance with the laws of th law principles. If any provision of this instrument is found to be illegal or unenforceable, the other prov greatest extent permitted by law. This instrument may be executed in counterparts, each of which is decome and the same agreement. | risions shall remain effective and enforceable to the emed an original, but all of which together constitute | | | |
| IN WITNESS WHEREOF, said Inventor(s) have executed and delivered this instrument to sa | nu Assigner as ut the dates written volum. | | | |
| Date: Date: | Angela Margaret PATTERSON | | | |
| Date: 11 January Itulden Date: 11 January Itulden Imke MULDER Date: 2018 Date: 2018 | Seanin MCCLUSKEY | | | |

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| | PATENT ASSIGNMENT | # 18 1 | Docket Number 49455-717.301 |
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| WHEREAS, the undersigned: | | | |
| George GRANT Aberdeen, United Kingdom | Angela Margaret PATTERSON Norwich, United Kingdom | Imke MULDER Aberdeen, United King | 4. Seanin MCCLUSKEY dom Leeds, United Kingdom |
| 5. Emma RAFTIS Leeds, United Kingdom | | | |
| (hereinafter "Inventor(s))," have | invented certain new and useful improveme | ents in | |
| | COMPOSITIONS COMPRI | ISING BACTERIAL STRA | ins |
| for which applicate for which applicate for which applicate for which applicate for which an applicate for which applicate | I States patent application is executed on evice serial number 15/700,007 was filed on ion serial number was filed on ion serial number was filed on cation was filed upon which a United States the term "Application(s)" also includes all p | September 8, 2017 in the Un in the U.S. Receiving Office in thePatent Office; s Patent issued on, as I | e of the Patent Cooperation Treaty; and/or U.S. Patent No |
| Aberdeen AB25 2ZS United Kin the inventions disclosed therein, said Inventor(s) (hereinafter coll- thereon granted in the United Sta | edom, (hereinafter "Assignee"), is desirous and in and to all embodiments of the invent ectively referred to as "Inventions"), and in | of acquiring the entire right, lons, heretofore conceived, n and to any and all patents, in tional convention, agreement, | title and interest in and to said Application(s), and take or discovered, whether jointly or severally, by ventor's certificates and other forms of protection protocol, or treaty, including those fitted under the percinafter "Patent(s)"). |
| | | | aid Inventor(s) to have been received in full from |
| is a divisional, substitution, conti or reissuing from any of the fore and to each and every patent and present and future infringement of lost profits, royalties, and damage 2. Said Invent right, title and interest herein con cooperation by said Inventor(s) s specifications, declarations or of Assignee the right, title and inter divisional, continuing or addition (e) for interference or other prior therefor and any Patent(s) grante priority contests, public use proc in providing such cooperation sh | nuation, or continuation-in-part of any of segoing; (e) in and to each and every reissue, application filed outside the United States to fithe Patent(s), including all rights to sue fit es of whatever nature recoverable from an iterior(s) hereby covenant and agree to cooperatively din the United States, foreign countrichall include prompt production of pertinent their papers, and other assistance all to the exest herein conveyed; (b) for prosecuting any hall applications covering said Inventions; (c) ity proceedings involving said Inventions; and thereon, including without limitation reisseedings, infringement actions and court act all be paid for by said Assignee. | aid Application(s); (d) in and reexamination, renewal or ex and corresponding to any of to rand to receive and recover infringement of the Patent(s). the with said Assigned to enables, or under any international facts and documents, giving then the deemed necessary or design applications covering said if of filing and prosecuting a and (f) for legal proceedings uses and reexaminations, oppions; provided, however, that | le said Assignee to enjoy to the fullest extent the convention, agreement, protocol, or treaty. Such of testimony, execution of petitions, oaths, sirable by said Assignee (a) for perfecting in said nventions; (c) for filing and prosecuting substitute, pplications for reissuance of any said Patent(s); involving said Inventions and any applications osition proceedings, cancellation proceedings, reasonable expenses incurred by said Inventor(s) |
| representatives, and shall be bind | nd covenants of this assignment shall inure ting upon said Inventor(s), their respective l or(s) hereby warrant, represent and covenan | heirs, legal representatives an | ee, its successors, assigns and other legal id assigns. not entered and will not enter into any assignment, |
| contract, or understanding in con 5. Said Invent | flict herewith. on(s) hereby request that any Patent(s) issui | ing in the United States, forci | gn countries, or under any international convention e sole use of said Assignee, its successors, legal |
| law principles. If any provision | of this instrument is found to be illegal or u | menforceable, the other provi | State of California, without regard to conflict of sions shall remain effective and enforceable to the med an original, but all of which together constitut |
| IN WITNESS WHER | EOF, said Inventor(s) have executed and de | elivered this instrument to sai | d Assignee as of the dates written below: |
| Date:Geor | ge GRANT | Date: 20-12-17 | Angela Margaret PATTERSON |
| Date: Irnke | MULDER | Date: | Seanin MCCLUSKEY |
| Date: | | : | |

Page 1 of 2

| PATENT ASSIGNMENT | Docket Number 49455-717.301 |
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| WHEREAS, the undersigned: | |
| 1. George GRANT 2. Angela Margaret PATTERSON 3. Imke M Aberdeen, United Kingdom Norwich, United Kingdom Aberde | MULDER 4. Seanin MCCLUSKEY een, United Kingdom Leeds, United Kingdom |
| 5. Emma RAFTIS Leeds, United Kingdom | |
| (hereinafter "Inventor(s))," have invented certain new and useful improvements in | |
| COMPOSITIONS COMPRISING BAC | |
| for which a United States patent application is executed on even date here for which application serial number 15/790.007 was filed on September 1 for which application serial number was filed on in the U.S. for which application serial number was filed on in the U.S. for which an application was filed upon which a United States Patent issu (hereinafter, "Application(s)"). The term "Application(s)" also includes all patent application(s). | Receiving Office of the Patent Cooperation Treaty; |
| WHEREAS, 4D Pharma Research Limited, a company of Scotland, having a place of but Aberdeen AB25 27S United Kingdom. (hereinafter "Assignee"), is desirous of acquiring the inventions disclosed therein, and in and to all embodiments of the inventions, hereto said Inventor(s) (hereinafter collectively referred to as "Inventions"), and in and to any a thereon granted in the United States, foreign countries, or under any international convergaris Convention for the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of the Protection of Industrial Property, The Patent Cooperation Treatment of The Patent Cooperation Treatment of The Protection of Industrial Property, The Patent Cooperation Treatment of The Patent Cooperation | g the entire right, the and interest in and to said Application(s), and fore conceived, made or discovered, whether jointly or severally, by and all patents, inventor's certificates and other forms of protection intion, agreement, protocol, or treaty, including those filed under the by or otherwise (hereinafter "Patent(s)"). |
| NOW, THEREFORE, in consideration of good and valuable consideration ac said Assignee: | knowledged by said Inventor(s) to have been received in full from |
| 1. Said Inventor(s) do hereby sell, assign, transfer and convey unto sa Inventions; (b) in and to said Applications, including the right to claim priority to and fr is a divisional, substitution, continuation, or continuation-in-part of any of said Applicat or reissuing from any of the foregoing; (e) in and to each and every reissue, reexaminati and to each and every patent and application filed outside the United States and correspondent and future infringement of the Patent(s), including all rights to sue for and to recoverable from an infringement of the patent of th | om said Application(s); (c) in and to each and every application that ion(s); (d) in and to said Patent(s) and each and every patent issuing on, renewal or extension of any kind of any of the foregoing; (f) in onding to any of the foregoing; and (g) in and to all claims for past, zerve and recover for Assignee's own use all past, present, and future |
| 2. Said Inventor(s) hereby covenant and agree to cooperate with said right, title and interest herein conveyed in the United States, foreign countries, or under cooperation by said Inventor(s) shall include prompt production of pertinent facts and d specifications, declarations or other papers, and other assistance all to the extent deeme. Assignee the right, title and interest herein conveyed; (b) for prosecuting any application divisional, continuing or additional applications covering said Inventions; (d) for filing: (e) for interference or other priority proceedings involving said Inventions; and (f) for letherefor and any Patent(s) granted thereon, including without limitation reissues and respiriority contests, public use proceedings, infringement actions and court actions; providing providing such cooperation shall be paid for by said Assignee. | ocuments, giving of testimony, execution of peritoris, came, if necessary or desirable by said Assignee (a) for perfecting in said nes covering said Inventions; (c) for filing and prosecuting substitute, and prosecuting applications for reissuance of any said Patent(s); egal proceedings involving said Inventions and any applications examinations, opposition proceedings, cancellation proceedings, |
| 3. The terms and covenants of this assignment shall inure to the bene representatives, and shall be binding upon said inventor(s), their respective heirs, legal | fit of said Assignee, its successors, assigns and other legal representatives and assigns. |
| 4. Said Inventor(s) hereby warrant, represent and covenant that said contract, or understanding in conflict herewith | Inventor(s) have not entered and will not enter into any assignment, |
| 5. Said Inventor(s) hereby request that any Patent(s) issuing in the U agreement, protocol, or treaty, be issued in the name of the Assignee, or its successors a representatives and assigns. | nited States, foreign countries, or under any international convention, and assigns, for the sole use of said Assignee, its successors, legal |
| law principles. If any provision of this instrument is found to be illegal or unenforceab greatest extent permitted by law. This instrument may be executed in counterparts, eac one and the same agreement. | th of which is deemed an original, but an or which together constitute |
| IN WITNESS WHEREOF, said-Inventor(s) have executed and delivered this | s instrument to said Assigned as of the dates written delow: |
| Date: Date: | Angela Margaret PATTERSON |
| Date: Date: | 2/1/18 C Sean in MCCLUSKEY |
| Imke MULDER | OCCUPANTAL OFFICE AND ADDRESS OF THE OCCUPANTAL |
| Date: | 8 |

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PATENT ASSIGNMENT

Docket Number 49455-717.301

RECEIVED AND AGREED TO BY ASSIGNEE: 4D Pharma Research Limited

Date: Lianuacy 2018 Signature: Alex Stevenson
Title: Director, Chief Scientific Officer

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PATENT REEL: 054601 FRAME: 0263