504520456 08/25/2017

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2

EPAS ID: PAT4567161

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
GEORGE GRANT	07/21/2016
IMKE MULDER	07/21/2016
ANGELA MARGARET PATTERSON	07/19/2016

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:	15631945

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: 650 493 9300 Email: rrsmith@wsgr.com

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

Address Line 1: 650 PAGE MILL ROAD

Address Line 4: PALO ALTO, CALIFORNIA 94304-1050

ATTORNEY DOCKET NUMBER:	49455-719.301
NAME OF SUBMITTER:	DAVID MATA
SIGNATURE:	/David Mata/
DATE SIGNED:	08/25/2017

Total Attachments: 26

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PATENT REEL: 043676 FRAME: 0268 504520456

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PATENT REEL: 043676 FRAME: 0269

PARTIES:

- (1) GEORGE GRANT of Life Sciences Innovation Building, Cornhill Road, Aberdeen AB25 2ZS, United Kingdom ("INVENTOR")
- (2) 4D PHARMA RESEARCH LIMITED (formerly GT Biologics Limited) (registered in Scotland with company number SC336222) of Life Sciences Innovation Building, Cornhill Road, Aberdeen, AB25 2ZS, United Kingdom ("ASSIGNEE")

RECITALS:

- A. The INVENTOR is the inventor or one of the inventors in respect of the invention(s) (the "INVENTION") which is the subject of the patent application(s) identified in the Schedule (the "APPLICATION").
- B. The INVENTOR's contribution to the INVENTION was made during the course of the INVENTOR's normal duties as an employee of the ASSIGNEE and in circumstances such that, as between the INVENTOR and the ASSIGNEE, all rights in the INVENTION have been taken to be owned by the ASSIGNEE.
- C. The ASSIGNEE has filed or wishes to file a patent application(s) in respect of the INVENTION (the "APPLICATION") in its own name, which the INVENTOR accepts that the ASSIGNEE is fully entitled to do.
- D. For the avoidance of doubt and so as to confirm the ASSIGNEE's legal title to the same, the parties have agreed to execute this Agreement for the purpose of ensuring that all rights in the INVENTION (including the APPLICATION and all other intellectual property rights) are vested in the ASSIGNEE.

OPERATIVE TERMS:

In consideration of the sum of £1 (one pound sterling) paid by the ASSIGNEE to the INVENTOR (the receipt and sufficiency of which is hereby acknowledged) IT IS AGREED as follows:

Assignment

- 1.1 The INVENTOR hereby confirms the assignment to the ASSIGNEE and the ASSIGNEE hereby confirms its acceptance of all the INVENTOR's intellectual property right title and interest in and to the APPLICATION for all designated states including without limitation:
 - (a) the APPLICATION and all patent applications and patents which may now or in the future derive or claim priority from any thereof or otherwise relate in whole or in part to the INVENTION including all divisionals, continuations, continuations-in-part, reissues, extensions, supplementary protection certificates, renewals and registrations in relation to any thereof and all and any other rights in the INVENTION (the "PATENT RIGHTS"), including the right to apply for any of the same;
 - (b) the benefit of all priority rights:
 - (c) the right to seek and obtain registrations in other countries:
 - (d) all other intellectual property rights and know-how including without limitation any copyrights and design rights (whether or not registrable) relating in any way to the INVENTION;
 - (e) the right to sue for and obtain injunctive relief, damages and all other relief in respect of any infringement or misuse (whether past present or future) of any of the rights hereby transferred.
- 1.2 The INVENTOR confirms that the INVENTOR's contribution to the INVENTION was made in the circumstances set out in Recital B and that the ASSIGNEE has accordingly at all relevant times been the owner of all the INVENTORS' rights in the INVENTION, including being entitled to file the APPLICATION and any other applications included in the PATENT RIGHTS in the name of the ASSIGNEE or permit a third party to file any of the same in its own name and to transfer any rights in the INVENTION and/or the PATENT RIGHTS to any third party without reference to the INVENTOR.

2. Covenants

The INVENTOR covenants with the ASSIGNEE as follows:

Assignment (Emplop ATENT REEL: 043676 FRAME: 0270

- (a) that the INVENTOR has not done or omitted to do any act or thing whatsoever whereby any patents or other intellectual property rights relating to the INVENTION might be invalidated or otherwise prejudicially affected or the due performance of this Agreement hindered or prevented;
- (b) that the INVENTOR has not given any permission to any third party to use the INVENTION and has not otherwise assigned or granted to any third party any rights in or under the INVENTION (including the PATENT RIGHTS)
- (c) that the INVENTOR is not aware of any infringement or unauthorised use of any of the rights confirmed in, transferred or intended to be transferred to the ASSIGNEE under this Agreement.

3. Further Assurance

- 3.1 The INVENTOR undertakes at the ASSIGNEE's expense to execute any further documents and do all things which the ASSIGNEE may reasonably require in order to ensure the vesting in the ASSIGNEE (or the ASSIGNEE's successors in title or nominees as the case may be) of all property rights title and interests intended to be confirmed in, assigned transferred or granted to the ASSIGNEE hereunder (including the PATENT RIGHTS) and to give the ASSIGNEE the full benefit of this Agreement including doing all acts which may be necessary or desirable in connection with:
 - the filing and prosecution of any of the PATENT RIGHTS anywhere in the world and obtaining grant in relation thereto;
 - (b) protecting and enforcing the PATENT RIGHTS and other intellectual property rights relating to the INVENTION;
 - (c) recording any PATENT RIGHTS in the name of the ASSIGNEE or the ASSIGNEE's successors in title or nominees as sole applicant or registered proprietor as the case may be:
 - (d) assisting in the resolution of any question concerning the INVENTION or any of the PATENT RIGHTS.
- 3.2 The INVENTOR hereby authorises the officers from time to time of the ASSIGNEE and the ASSIGNEE's agents to do or authorise the doing of all such acts (including the signing of all such documents) on behalf of the INVENTOR as the ASSIGNEE may consider appropriate for the purpose of giving effect to the provisions of clause 3.1, including but not limited to the annotation of this Agreement with any reference information regarding any of the PATENT RIGHTS as may be required by any relevant Patent Office.
- 3. Law

This Agreement shall be governed by and construed and take effect in accordance with the laws of England and the parties hereby submit to the exclusive jurisdiction of the Courts of England.

IN WITNESS of which the parties have executed and delivered this Agreement as a Deed (in the case of the ASSIGNEE by authorised signatories) as of the date of the last signature.

SCHEDULE - THE INVENTION(s)

1) Immune Modulation

Country	Application No.	Filing Date	Status
GB	1423084.1	23.12.14	Abandoned
PCT	PCT/GB2015/054112	22.12.15	Pending
Argentina	20150104271	22.12.15	Pending
Taiwan	104143468	23.12.15	Pending
Venezuela	2015001050	22.12.15	Pending

EXECUTED and DELIVERED as a DEED by the INVENTOR:	EXECUTED and DELIVERED as a DEED by the ASSIGNEE:
Signature: Yewy ly d	Signature:
George GRANT	
Date: 21 July 2016,	Name:
Uale.	Title: Director
Witness Signature:	Date:
Witness Name: ADRIAN ANDRAM	
Witness Address: August August	Witness Signature:
	Witness Name:
30 ceasy sixe	Witneses Artelegos
GALL SMEET LOWARD	Witness Address:
ECZA GES UNITED	

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PARTIES:

- (1) **GEORGE GRANT** of Life Sciences Innovation Building, Cornhill Road, Aberdeen AB25 2ZS, United Kingdom ("INVENTOR")
- (2) 4D PHARMA RESEARCH LIMITED (formerly GT Biologics Limited) (registered in Scotland with company number SC336222) of Life Sciences Innovation Building, Cornhill Road, Aberdeen, AB25 2ZS, United Kingdom ("ASSIGNEE")

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- B. The INVENTOR's contribution to the INVENTION was made during the course of the INVENTOR's normal duties as an employee of the ASSIGNEE and in circumstances such that, as between the INVENTOR and the ASSIGNEE, all rights in the INVENTION have been taken to be owned by the ASSIGNEE.
- C. The ASSIGNEE has filed or wishes to file a patent application(s) in respect of the INVENTION (the "APPLICATION") in its own name, which the INVENTOR accepts that the ASSIGNEE is fully entitled to do.
- D. For the avoidance of doubt and so as to confirm the ASSIGNEE's legal title to the same, the parties have agreed to execute this Agreement for the purpose of ensuring that all rights in the INVENTION (including the APPLICATION and all other intellectual property rights) are vested in the ASSIGNEE.

OPERATIVE TERMS:

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1. Assignment

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 - (a) the APPLICATION and all patent applications and patents which may now or in the future derive or claim priority from any thereof or otherwise relate in whole or in part to the INVENTION including all divisionals, continuations, continuations-in-part, reissues, extensions, supplementary protection certificates, renewals and registrations in relation to any thereof and all and any other rights in the INVENTION (the "PATENT RIGHTS"), including the right to apply for any of the same;
 - (b) the benefit of all priority rights;
 - (c) the right to seek and obtain registrations in other countries;
 - (d) all other intellectual property rights and know-how including without limitation any copyrights and design rights (whether or not registrable) relating in any way to the INVENTION;
 - (e) the right to sue for and obtain injunctive relief, damages and all other relief in respect of any infringement or misuse (whether past present or future) of any of the rights hereby transferred.
- The INVENTOR confirms that the INVENTOR's contribution to the INVENTION was made in the circumstances set out in Recital B and that the ASSIGNEE has accordingly at all relevant times been the owner of all the INVENTORS' rights in the INVENTION, including being entitled to file the APPLICATION and any other applications included in the PATENT RIGHTS in the name of the ASSIGNEE or permit a third party to file any of the same in its own name and to transfer any rights in the INVENTION and/or the PATENT RIGHTS to any third party without reference to the INVENTOR.

2. Covenants

The INVENTOR covenants with the ASSIGNEE as follows:

Assignment (EmployEATENT REEL: 043676 FRAME: 0274

- (a) that the INVENTOR has not done or omitted to do any act or thing whatsoever whereby any patents or other intellectual property rights relating to the INVENTION might be invalidated or otherwise prejudicially affected or the due performance of this Agreement hindered or prevented;
- (b) that the INVENTOR has not given any permission to any third party to use the INVENTION and has not otherwise assigned or granted to any third party any rights in or under the INVENTION (including the PATENT RIGHTS)
- (c) that the INVENTOR is not aware of any infringement or unauthorised use of any of the rights confirmed in, transferred or intended to be transferred to the ASSIGNEE under this Agreement.

3. Further Assurance

- 3.1 The INVENTOR undertakes at the ASSIGNEE's expense to execute any further documents and do all things which the ASSIGNEE may reasonably require in order to ensure the vesting in the ASSIGNEE (or the ASSIGNEE's successors in title or nominees as the case may be) of all property rights title and interests intended to be confirmed in, assigned transferred or granted to the ASSIGNEE hereunder (including the PATENT RIGHTS) and to give the ASSIGNEE the full benefit of this Agreement including doing all acts which may be necessary or desirable in connection with:
 - the filing and prosecution of any of the PATENT RIGHTS anywhere in the world and obtaining grant in relation thereto;
 - (b) protecting and enforcing the PATENT RIGHTS and other intellectual property rights relating to the INVENTION;
 - (c) recording any PATENT RIGHTS in the name of the ASSIGNEE or the ASSIGNEE's successors in title or nominees as sole applicant or registered proprietor as the case may be:
 - (d) assisting in the resolution of any question concerning the INVENTION or any of the PATENT RIGHTS.
- 3.2 The INVENTOR hereby authorises the officers from time to time of the ASSIGNEE and the ASSIGNEE's agents to do or authorise the doing of all such acts (including the signing of all such documents) on behalf of the INVENTOR as the ASSIGNEE may consider appropriate for the purpose of giving effect to the provisions of clause 3.1, including but not limited to the annotation of this Agreement with any reference information regarding any of the PATENT RIGHTS as may be required by any relevant Patent Office.

3. Law

This Agreement shall be governed by and construed and take effect in accordance with the laws of England and the parties hereby submit to the exclusive jurisdiction of the Courts of England.

IN WITNESS of which the parties have executed and delivered this Agreement as a Deed (in the case of the ASSIGNEE by authorised signatories) as of the date of the last signature.

EXECUTED and DELIVERED as a DEED by the INVENTOR:

Signatu	re:	
	GRANT	
Date:		
Witness	s Signature:	
Witness	s Name:	
Witness	s Address:	

EXECUTED	and	DELIVERED	as	а	DEED	by	the
ASSIGNEE:						-	

ACTING BY

Signature:

Name: ALEMANDER FREVENSON

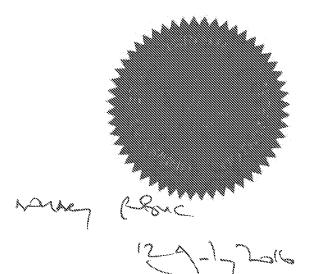
Title: Director

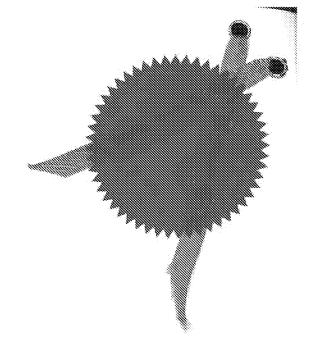
Witness Signature: CHRISTOPHER ATKINSON

Witness Name: -NOTARY PUBLIC

Suite 87-3 Josephie We Witness Address: Park Lane Londs Wasi Yeshahka LS3 1A9

7. 6113 388 4863 M. 6771 566 8747 H. 61756 716237 E. shristopher atkinson 1@virga.net VI. www.stensonnotary.com





PATENT REEL: 043676 FRAME: 0277

PARTIES:

- IMKE MULDER of Life Science Innovation Building, Cornhill Road, Aberdeen, AB25 2ZS, United Kingdom ("INVENTOR")
- (2) 4D PHARMA RESEARCH LIMITED (formerly GT Biologics Limited) (registered in Scotland with company number SC336222) of Life Sciences Innovation Building, Cornhill Road, Aberdeen, AB25.2ZS, United Kingdom ("ASSIGNEE")

RECITALS:

- A. The INVENTOR is the inventor or one of the inventors in respect of the invention(s) (the "INVENTION") which is the subject of the patent application(s) identified in the Schedule (the "APPLICATION").
- B. The INVENTOR's contribution to the INVENTION was made during the course of the INVENTOR's normal duties as an employee of the ASSIGNEE and in circumstances such that, as between the INVENTOR and the ASSIGNEE, all rights in the INVENTION have been taken to be owned by the ASSIGNEE.
- C. The ASSIGNEE has filed or wishes to file a patent application(s) in respect of the INVENTION (the "APPLICATION") in its own name, which the INVENTOR accepts that the ASSIGNEE is fully entitled to do.
- D. For the avoidance of doubt and so as to confirm the ASSIGNEE's legal title to the same, the parties have agreed to execute this Agreement for the purpose of ensuring that all rights in the INVENTION (including the APPLICATION and all other intellectual property rights) are vested in the ASSIGNEE.

OPERATIVE TERMS:

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Assignment

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 - (b) the benefit of all priority rights;
 - (c) the right to seek and obtain registrations in other countries:
 - (d) all other intellectual property rights and know-how including without limitation any copyrights and design rights (whether or not registrable) relating in any way to the INVENTION;
 - (e) the right to sue for and obtain injunctive relief, damages and all other relief in respect of any infringement or misuse (whether past present or future) of any of the rights hereby transferred.
- 1.2 The INVENTOR confirms that the INVENTOR's contribution to the INVENTION was made in the circumstances set out in Recital B and that the ASSIGNEE has accordingly at all relevant times been the owner of all the INVENTORS' rights in the INVENTION, including being entitled to file the APPLICATION and any other applications included in the PATENT RIGHTS in the name of the ASSIGNEE or permit a third party to file any of the same in its own name and to transfer any rights in the INVENTION and/or the PATENT RIGHTS to any third party without reference to the INVENTOR.

2. Covenants

The INVENTOR covenants with the ASSIGNEE as follows:

Assignment (Emple PATENT REEL: 043676 FRAME: 0278

- (a) that the INVENTOR has not done or omitted to do any act or thing whatsoever whereby any patents or other intellectual property rights relating to the INVENTION might be invalidated or otherwise prejudicially affected or the due performance of this Agreement hindered or prevented;
- (b) that the INVENTOR has not given any permission to any third party to use the INVENTION and has not otherwise assigned or granted to any third party any rights in or under the INVENTION (including the PATENT RIGHTS)
- (c) that the INVENTOR is not aware of any infringement or unauthorised use of any of the rights confirmed in, transferred or intended to be transferred to the ASSIGNEE under this Agreement.

3. Further Assurance

- 3.1 The INVENTOR undertakes at the ASSIGNEE's expense to execute any further documents and do all things which the ASSIGNEE may reasonably require in order to ensure the vesting in the ASSIGNEE (or the ASSIGNEE's successors in title or nominees as the case may be) of all property rights title and interests intended to be confirmed in, assigned transferred or granted to the ASSIGNEE hereunder (including the PATENT RIGHTS) and to give the ASSIGNEE the full benefit of this Agreement including doing all acts which may be necessary or desirable in connection with:
 - the filing and prosecution of any of the PATENT RIGHTS anywhere in the world and obtaining grant in relation thereto;
 - (b) protecting and enforcing the PATENT RIGHTS and other intellectual property rights relating to the INVENTION;
 - (c) recording any PATENT RIGHTS in the name of the ASSIGNEE or the ASSIGNEE's successors in title or nominees as sole applicant or registered proprietor as the case may be:
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- 3.2 The INVENTOR hereby authorises the officers from time to time of the ASSIGNEE and the ASSIGNEE's agents to do or authorise the doing of all such acts (including the signing of all such documents) on behalf of the INVENTOR as the ASSIGNEE may consider appropriate for the purpose of giving effect to the provisions of clause 3.1, including but not limited to the annotation of this Agreement with any reference information regarding any of the PATENT RIGHTS as may be required by any relevant Patent Office.
- Law

This Agreement shall be governed by and construed and take effect in accordance with the laws of England and the parties hereby submit to the exclusive jurisdiction of the Courts of England.

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PATENT (Employee)
REEL: 043676 FRAME: 0279

G059636PT

05.04.2016

SCHEDULE - THE INVENTION(s)

1) Bacterium for use as a probiotic for nutritional and medical applications

Country	Application No.	Filing Date	Status
GB	1117313.5	07.10.11	Abandoned
PCT	PCT/GB2012/052495	08.10.12	Completed
Australia	2012320255	08.10.12	Pending
Brazil	BR112014008044-5	08.10.12	Pending
Canada	2850000	08.10.12	Pending
China	201280054515,9	08.10.12	Pending
European	12775538.7	08.10.12	Pending
Hong Kong	15100681.7	21.01.15	Pending
India	3582/DELNP/2014	08.10.12	Pending
Japan	2014-533994	08.10.12	Pending
Mexico	MX/a/2014/004220	08.10.12	Pending
Russia	2014118464	08.10.12	Pending
US	14/349907	08.10.12	Pending
US continuation	15/070,605		Pending

2) Roseburia flagellin and immune modulation

Country	Application No.	Filing Date	Status
GB	1306536.2	10.04.13	Abandoned
PCT	PCT/GB2014/051123	10.04.14	Completed
Australia	2014202021	10.04.14	Pendina
Brazil	BR112015025854-9	10.04.14	Pendina
Canada	2848725	10.04.14	Pending
China	201480033216.6	10.04.14	Pending
European	14717823.0	10,04,14	Pending
Hong Kong	1306536.2	10.04.14	Pending
India	9399/DELNP/2015	10.04.14	Pending
Japan	2016-507061	10.04.14	Pending
Mexico	MX/a/2015/014281	10.04.14	Pending
Russia	2015147864	10,04,14	Pending
Turkey	2014/04161	10 04.14	Pending
us Ì	14/249710	10.04.14	Pending

3) Immune Modulation

G059636PT

Country	Application No.	Filing Date	Status
GB -	1423084.1	23.12.14	Abandoned
PCT	PCT/GB2015/054112	22.12.15	Pending
Argentina	20150104271	22.12.15	Pending
Taiwan	104143468	23.12.15	Pendina
Venezuela	2015001050	22.12.15	Pending

05.04.2016 PATEN ment (Employee) **REEL: 043676 FRAME: 0280**

ECZA LES

EXECUTED and DELIVERED as a DEED by the INVENTOR:	EXECUTED and DELIVERED as a DEED by the ASSIGNEE:
Signature:	Signature:
Imke MULDER	
Date: <u>21-0-3-2016</u>	Name:
	Title: Director
Witness Signature:	Date:
Witness Name: <u>QDZ, AQ</u> ANGES 47	
Witness Address: Finger Masous	Witness Signature:
2 Came Lace	Witness Name:
	Witness Address:
GARLETPERT, COMMON	
united king out	

PARTIES:

- (1) IMKE MULDER of Life Science Innovation Building, Cornhill Road, Aberdeen, AB25 2ZS, United Kingdom ("INVENTOR")
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2. Covenants

The INVENTOR covenants with the ASSIGNEE as follows:

Assignment (Emplo) RATENT REEL: 043676 FRAME: 0282

- (a) that the INVENTOR has not done or omitted to do any act or thing whatsoever whereby any patents or other intellectual property rights relating to the INVENTION might be invalidated or otherwise prejudicially affected or the due performance of this Agreement hindered or prevented;
- (b) that the INVENTOR has not given any permission to any third party to use the INVENTION and has not otherwise assigned or granted to any third party any rights in or under the INVENTION (including the PATENT RIGHTS)
- (c) that the INVENTOR is not aware of any infringement or unauthorised use of any of the rights confirmed in, transferred or intended to be transferred to the ASSIGNEE under this Agreement.

3. Further Assurance

- 3.1 The INVENTOR undertakes at the ASSIGNEE's expense to execute any further documents and do all things which the ASSIGNEE may reasonably require in order to ensure the vesting in the ASSIGNEE (or the ASSIGNEE's successors in title or nominees as the case may be) of all property rights title and interests intended to be confirmed in, assigned transferred or granted to the ASSIGNEE hereunder (including the PATENT RIGHTS) and to give the ASSIGNEE the full benefit of this Agreement including doing all acts which may be necessary or desirable in connection with:
 - the filing and prosecution of any of the PATENT RIGHTS anywhere in the world and obtaining grant in relation thereto;
 - (b) protecting and enforcing the PATENT RIGHTS and other intellectual property rights relating to the INVENTION;
 - (c) recording any PATENT RIGHTS in the name of the ASSIGNEE or the ASSIGNEE's successors in title or nominees as sole applicant or registered proprietor as the case may be;
 - (d) assisting in the resolution of any question concerning the INVENTION or any of the PATENT RIGHTS.
- 3.2 The INVENTOR hereby authorises the officers from time to time of the ASSIGNEE and the ASSIGNEE's agents to do or authorise the doing of all such acts (including the signing of all such documents) on behalf of the INVENTOR as the ASSIGNEE may consider appropriate for the purpose of giving effect to the provisions of clause 3.1, including but not limited to the annotation of this Agreement with any reference information regarding any of the PATENT RIGHTS as may be required by any relevant Patent Office.

3. Law

This Agreement shall be governed by and construed and take effect in accordance with the laws of England and the parties hereby submit to the exclusive jurisdiction of the Courts of England.

IN WITNESS of which the parties have executed and delivered this Agreement as a Deed (in the case of the ASSIGNEE by authorised signatories) as of the date of the last signature.

SCHEDULE - THE INVENTION(s)

1) Bacterium for use as a probiotic for nutritional and medical applications

Country	Application No.	Filing Date	Status
GB	1117313.5	07.10.11	Abandoned
PCT	PCT/GB2012/052495	08.10.12	Completed
Australia	2012320255	08.10.12	Pending
Brazil	BR112014008044-5	08.10.12	Pending
Canada	2850000	08.10.12	Pending
China	201280054515.9	08.10.12	Pending
European	12775538.7	08.10.12	Pending
Hong Kong	15100681.7	21.01.15	Pending
India	3582/DELNP/2014	08.10.12	Pending
Japan	2014-533994	08.10.12	Pending
Mexico	MX/a/2014/004220	08.10.12	Pending
Russia	2014118464	08.10.12	Pending
US	14/349907	08.10.12	Pendina
US continuation	15/070,605		Pending

2) Roseburia flagellin and immune modulation

Country	Application No.	Filling Date	Status
GB	1306536.2	10.04.13	Abandoneo
PCT	PCT/GB2014/051123	10.04.14	Completed
Australia	2014202021	10.04.14	Pendina
Brazil	BR112015025854-9	10.04.14	Pending
Canada	2848725	10.04.14	Pending
China	201480033216.6	10.04.14	Pending
European	14717823.0	10.04.14	Pendina
Hong Kong	1306536.2	10.04.14	Pending
India	9399/DELNP/2015	10.04.14	Pending
Japan	2016-507061	10.04.14	Pending
Mexico	MX/a/2015/014281	10.04.14	Pending
Russia	2015147864	10.04.14	Pending
Turkey	2014/04161	10.04.14	Pending
US	14/249710	10.04.14	Pending

3) Immune Modulation

Country	Application No.	Filing Date	Status
GB .	1423084,1	23.12.14	Abandoned
PCT	PCT/GB2015/054112	22.12.15	Pending
Argentina	20150104271	22.12.15	Peridina
Taiwan	104143468	23.12.15	Pending
Venezuela	2015001050	22.12.15	Pending

EXECUTED and DELIVERED as a DEED by the INVENTOR:

Signature:
imke MULDER
Date:
Witness Signature:
Witness Name:
Wilness Address:

EXECUTED and **DELIVERED** as a **DEED** by the **ASSIGNEE**:

ACTING BY

Signature:

Name: ALEXANDER STEVENGOV

Title: Director

Date: 12 91 2016

Witness Signature:

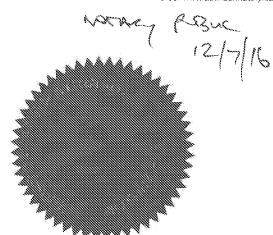
Witness Name: CHRISTOPHER ATKINSON NOTARY PUBLIC

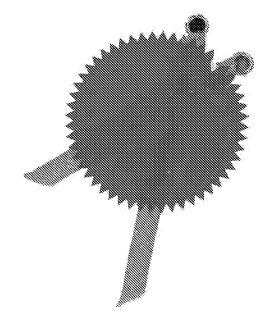
Witness Address: Suite £7.2
Joseph's Visit
Park Lene
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West Yorkshive
LS0 1AB

T. 0113 386 4862 M. 0771 560 8747

M 0771 560-8747 H. 01756 710237

E. shristopheratkinson (@virgin, net W. www.stikinsonnoisry.com





PATENT REEL: 043676 FRAME: 0286

PARTIES:

- (1) ANGELA MARGARET PATTERSON of Norwich Medical School, Faculty of Medicine and Health Sciences, University of East Anglia, Norwich NR4 7JT, United Kingdom (formerly of Life Sciences Innovation Building, Comhill Road, Aberdeen AB25 2ZS, United Kingdom) ("INVENTOR")
- (2) 4D PHARMA RESEARCH LIMITED (formerly GT Biologics Limited) (registered in Scotland with company number SC336222) of Life Sciences Innovation Building, Cornhill Road, Aberdeen, AB25 2ZS ("ASSIGNEE")

RECITALS:

- The INVENTOR is the inventor or one of the inventors in respect of the invention(s) (the "INVENTION") which is the subject of the patent application(s) identified in the Schedule (the "APPLICATION").
- The INVENTOR's contribution to the INVENTION was made during the course of the INVENTOR's normal duties as an employee of the ASSIGNEE and in circumstances such that, as between the INVENTOR and the ASSIGNEE, all rights in the INVENTION have been taken to be owned by the ASSIGNEE.
 - The ASSIGNEE has filed or wishes to file a patent application(s) in respect of the INVENTION (the "APPLICATION") in its own name, which the INVENTOR accepts that the ASSIGNEE is fully entitled to do.
- D. For the avoidance of doubt and so as to confirm the ASSIGNEE's legal title to the same, the parties have agreed to execute this Agreement for the purpose of ensuring that all rights in the INVENTION (including the APPLICATION and all other intellectual property rights) are vested in the ASSIGNEE.

OPERATIVE TERMS:

In consideration of the sum of £1 (one pound sterling) paid by the ASSIGNEE to the INVENTOR (the receipt and sufficiency of which is hereby acknowledged) IT IS AGREED as follows:

Assignment

- 1.1 The INVENTOR hereby confirms the assignment to the ASSIGNEE and the ASSIGNEE hereby confirms its acceptance of all the INVENTOR's intellectual property right title and interest in and to the APPLICATION for all designated states including without limitation:
 - (a) the APPLICATION and all patent applications and patents which may now or in the future derive or claim priority from any thereof or otherwise relate in whole or in part to the INVENTION including all divisionals, continuations, continuations-in-part, reissues, extensions, supplementary protection certificates, renewals and registrations in relation to any thereof and all and any other rights in the INVENTION (the "PATENT RIGHTS"), including the right to apply for any of the same;
 - (b) the benefit of all priority rights;
 - (c) the right to seek and obtain registrations in other countries;
 - (d) all other intellectual property rights and know-how including without limitation any copyrights and design rights (whether or not registrable) relating in any way to the INVENTION;
 - (e) the right to sue for and obtain injunctive relief, damages and all other relief in respect of any infringement or misuse (whether past present or future) of any of the rights hereby transferred.
- 1.2 The INVENTOR confirms that the INVENTOR's contribution to the INVENTION was made in the circumstances set out in Recital B and that the ASSIGNEE has accordingly at all relevant times been the owner of all the INVENTORS' rights in the INVENTION, including being entitled to file the APPLICATION and any other applications included in the PATENT RIGHTS in the name of the ASSIGNEE or permit a third party to file any of the same in its own name and to transfer any rights in the INVENTION and/or the PATENT RIGHTS to any third party without reference to the INVENTOR.
- 2. Covenants

The INVENTOR covenants with the ASSIGNEE as follows:

- (a) that the INVENTOR has not done or omitted to do any act or thing whatsoever whereby any patents or other intellectual property rights relating to the INVENTION might be invalidated or otherwise prejudicially affected or the due performance of this Agreement hindered or prevented;
- (b) that the INVENTOR has not given any permission to any third party to use the INVENTION and has not otherwise assigned or granted to any third party any rights in or under the INVENTION (including the PATENT RIGHTS)
- (c) that the INVENTOR is not aware of any infringement or unauthorised use of any of the rights confirmed in, transferred or intended to be transferred to the ASSIGNEE under this Agreement.

Further Assurance.

- The INVENTOR undertakes at the ASSIGNEE's expense to execute any further documents and do all things which the ASSIGNEE may reasonably require in order to ensure the vesting in the ASSIGNEE (or the ASSIGNEE's successors in title or nominees as the case may be) of all property rights title and interests intended to be confirmed in, assigned transferred or granted to the ASSIGNEE hereunder (including the PATENT RIGHTS) and to give the ASSIGNEE the full benefit of this Agreement including doing all acts which may be necessary or desirable in connection with:
 - (a) the filing and prosecution of any of the PATENT RIGHTS anywhere in the world and obtaining grant in relation thereto;
 - (b) protecting and enforcing the PATENT RIGHTS and other intellectual property rights relating to the INVENTION;
 - (c) recording any PATENT RIGHTS in the name of the ASSIGNEE or the ASSIGNEE's successors in title or nominees as sole applicant or registered proprietor as the case may be;
 - (d) assisting in the resolution of any question concerning the INVENTION or any of the PATENT RIGHTS.
- 3.2 The INVENTOR hereby authorises the officers from time to time of the ASSIGNEE and the ASSIGNEE's agents to do or authorise the doing of all such acts (including the signing of all such documents) on behalf of the INVENTOR as the ASSIGNEE may consider appropriate for the purpose of giving effect to the provisions of clause 3.1, including but not limited to the annotation of this Agreement with any reference information regarding any of the PATENT RIGHTS as may be required by any relevant Patent Office.

Law

This Agreement shall be governed by and construed and take effect in accordance with the laws of England and the parties hereby submit to the exclusive jurisdiction of the Courts of England.

WITNESS of which the parties have executed and delivered this Agreement as a Deed (in the case of the SSIGNEE by authorised signatories) as of the date of the last signature.

PATENTment (Employee)

REEL: 043676 FRAME: 0288

SCHEDULE - THE INVENTION(s)

1) Roseburia flagellin and immune modulation

Country	Application No.	Filing Date	Status
G8	1306536.2	10.04.13	Abandoned
PCT	PCT/GB2014/051123	10.04.14	Completed
Australia	2014202021	10.04.14	Pending
Brazil	BR112015025854-9	10.04.14	Pending
Canada	2848725	10.04.14	Pending
China	201480033216.6	10.04.14	Pending
European	14717823.0	10.04.14	Pending
Hong Kong	1306536.2	10.04.14	Pending
India	9399/DELNP/2015	10.04.14	Pending
Japan	2016-507061	10.04.14	Pending
Mexico	MX/a/2015/014281	10.04.14	Pending
Russia	2015147864	10.04.14	Pending
Turkey	2014/04161	10.04.14	Pending
US	14/249710	10.04.14	Pending

2) Immune Modulation

Country	Application No.	Filing Date	Status
G8	1423084.1	23.12.14	Abandoned
PCT	PCT/GB2015/054112	22.12.15	Pending
Argentina	20150104271	22.12.15	Pending
Taiwan	104143468	23.12.15	Pending
Venezuela	2015001050	22.12.15	Pending

PATENTent (Employee)

EXECUTED	and	DELIVERED a	is a	DEED	by	the
INVENTOR:					•	

EXECUTED and **DELIVERED** as a **DEED** by the **ASSIGNEE**:

Signature: Augustandi Ladania	Signature:
Angela Margaret PATTERSON Date: 19 To 20162	Name:
Witness Signature: <u>IEALA</u> Witness Name: <u>MERUN BATCHELOR</u>	Date:
Witness Address: Noton, Exples 66. 27 Golde Kill Rod. Norvich / NRISL. U.K.	Witness Signature: Witness Name: Witness Address:
PROTOCOL 019309 Deptoration UK.	
POTARY PUBLIC NORWICH ENGLAND Commission expires with life EXPTE	

REEL: 043676 FRAME: 0290

PARTIES:

- (1) ANGELA MARGARET PATTERSON of Norwich Medical School, Faculty of Medicine and Health Sciences, University of East Anglia, Norwich NR4 7JT, United Kingdom (formerly of Life Sciences Innovation Building, Cornhill Road, Aberdeen AB25 2ZS, United Kingdom) ("INVENTOR")
- (2) 4D PHARMA RESEARCH LIMITED (formerly GT Biologics Limited) (registered in Scotland with company number SC336222) of Life Sciences Innovation Building, Cornhill Road, Aberdeen, AB25 2ZS ("ASSIGNEE")

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- A. The INVENTOR is the inventor or one of the inventors in respect of the invention(s) (the "INVENTION") which is the subject of the patent application(s) identified in the Schedule (the "APPLICATION").
- B. The INVENTOR's contribution to the INVENTION was made during the course of the INVENTOR's normal duties as an employee of the ASSIGNEE and in circumstances such that, as between the INVENTOR and the ASSIGNEE, all rights in the INVENTION have been taken to be owned by the ASSIGNEE.
- C. The ASSIGNEE has filed or wishes to file a patent application(s) in respect of the INVENTION (the "APPLICATION") in its own name, which the INVENTOR accepts that the ASSIGNEE is fully entitled to do.
- D. For the avoidance of doubt and so as to confirm the ASSIGNEE's legal title to the same, the parties have agreed to execute this Agreement for the purpose of ensuring that all rights in the INVENTION (including the APPLICATION and all other intellectual property rights) are vested in the ASSIGNEE.

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 - (b) the benefit of all priority rights;
 - (c) the right to seek and obtain registrations in other countries;
 - (d) all other intellectual property rights and know-how including without limitation any copyrights and design rights (whether or not registrable) relating in any way to the INVENTION;
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Covenants

Assignment (EmploPATENT REEL: 043676 FRAME: 0291

The INVENTOR covenants with the ASSIGNEE as follows:

- (a) that the INVENTOR has not done or omitted to do any act or thing whatsoever whereby any patents or other intellectual property rights relating to the INVENTION might be invalidated or otherwise prejudicially affected or the due performance of this Agreement hindered or prevented;
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- (c) that the INVENTOR is not aware of any infringement or unauthorised use of any of the rights confirmed in, transferred or intended to be transferred to the ASSIGNEE under this Agreement.

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 - (b) protecting and enforcing the PATENT RIGHTS and other intellectual property rights relating to the INVENTION;
 - recording any PATENT RIGHTS in the name of the ASSIGNEE or the ASSIGNEE's successors in title or nominees as sole applicant or registered proprietor as the case may be;
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SCHEDULE - THE INVENTION(s)

1) Roseburia flagellin and immune modulation

Country	Application No.	Filing Date	Status
GB .	1306536.2	10.04.13	Abandoned
PCT	PCT/GB2014/051123	10.04.14	Completed
Australia	2014202021	10.04.14	Pending
Brazil	BR112015025854-9	10.04.14	Pending
Canada	2848725	10.04.14	Pending
China	201480033216.6	10.04.14	Pending
European	14717823.0	10.04.14	Pending
Hong Kong	1306536.2	10.04.14	Pending
India	9399/DELNP/2015	10.04.14	Pending
Japan	2016-507061	10.04.14	Pending
Mexico	MX/a/2015/014281	10.04.14	Pending
Russia	2015147864	10.04.14	Pending
Turkey	2014/04161	10.04.14	Pending
US	14/249710	10.04.14	Pendina

2) Immune Modulation

Country	Application No.	Filing Date	Status
GB	1423084.1	23.12.14	Abandoned
PCT	PCT/GB2015/054112	22.12.15	Pending
Argentina	20150104271	22.12.15	Pending
Taiwan	104143468	23.12.15	Pendina
Venezuela	2015001050	22.12.15	Pending

EXECUTED and	DELIVERED	as	3	DEED	þγ	the
INVENITOR.						

Signature:
Angela Margaret PATTERSON
Date:
Witness Signature:
Witness Name:
Witness Address:

EXECUTED	and	DEL	.IVER	ED	88	а	DEED	by	the
ASSIGNEE-									

Signature:

Name: A Example Exevension

Title: Director

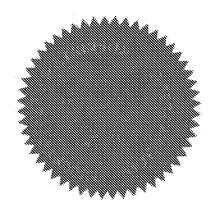
Witness Signature:

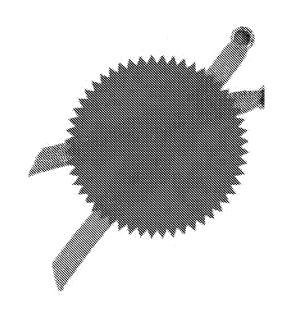
Witness Name:

CHRISTOPHER ATKINSON NOTARY PUBLIC

Witness Address: ,

Josephie Weil Park Lane West Yorkshire LS3 1AB T 0113 380 4862 M 0771 560 8747 H. 01796 710237 E. omretoeheklatkinson (@virgin.net W www.ettenerenotery.com





PATENT REEL: 043676 FRAME: 0295

RECORDED: 08/25/2017