# PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT3359902

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

**CONVEYING PARTY DATA**

| Name | Execution Date |
|---|---|
| BRIAN MARK | 06/06/2014 |

**RECEIVING PARTY DATA**

| | |
|---|---|
| **Name:** | THE UNIVERSITY OF MANITOBA |
| **Street Address:** | ROOM 631 DRAKE CENTRE |
| **Internal Address:** | TECHNOLOGY TRANSFER OFFICE |
| **City:** | WINNIPEG |
| **State/Country:** | CANADA |
| **Postal Code:** | R3T 5V4 |

**PROPERTY NUMBERS Total: 1**

| Property Type | Number |
|---|---|
| **Application Number:** | 14660412 |

**CORRESPONDENCE DATA**

**Fax Number:**

***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.***

| | |
|---|---|
| **Email:** | docketing@pdsdlaw.com |
| **Correspondent Name:** | PAULY, DEVRIES SMITH & DEFFNER, L.L.C. |
| **Address Line 1:** | 121 SOUTH 8TH STREET |
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| **Address Line 4:** | MINNEAPOLIS, MAINE 55402 |

| | |
|---|---|
| **ATTORNEY DOCKET NUMBER:** | 386.0001USU1 |
| **NAME OF SUBMITTER:** | MARK E. DEFFNER |
| **SIGNATURE:** | /Mark E. Deffner/ |
| **DATE SIGNED:** | 05/19/2015 |

**Total Attachments: 10**

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# ASSIGNMENT AGREEMENT

**THIS AGREEMENT** is effective as of this 6th day of June, 2014 (the "Effective Date").

**BETWEEN:**

**THE UNIVERSITY OF MANITOBA**

(the "University")

- and -

**Dr. Brian Mark**

(the "Inventor")

(if there is more than one Inventor, they shall collectively be referred to as the "Inventor")

**WHEREAS:**

A. The Inventor is an academic staff member of the University and is covered by the Collective Agreement between the University and the University of Manitoba Faculty Association ("UMFA");

B. The Inventor has developed and invented a stable homodimer of human hexosaiminidase (HexM) that is capable of hydrolysing GM2 Gangliosides as claimed in US patent application 61/954098 ;

C. The Inventor made the invention as an academic staff member of the University, in the course of research involving use of the University's premises, equipment and resources;

D. The Collective Agreement between the University and UMFA (the "Collective Agreement") sets out the rights and interests of the University and its academic staff members who are members of UMFA with respect to intellectual property;

E. The University is willing to provide such support and assistance to the Inventor, and is desirous of entering into this Agreement to support the assignment and commercialization of the Technology on the terms and conditions described hereinafter.

**NOW THEREFORE** in consideration of the mutual covenants and conditions contained herein, the receipt and sufficiency of which is acknowledged by the parties, the parties hereto agree as follows:

## ARTICLE 1 - DEFINITIONS

1.1 "Agreement" shall mean this Assignment Agreement.

1.2 "Copyright" means the rights described in the *Copyright* Act (Canada), as amended from time to time, that are inherent to the Technology.

1.3 "Direct Costs" means the reasonable costs and fees (including but not limited to legal fees and agents' fees) associated with the acquisition, management and commercialization of the Technology, including costs of evaluating it, obtaining and maintaining intellectual property protection, preventing unauthorized use or infringement, prototype development funds, negotiating and implementing licences or other agreements with third parties, but does not include university research office or other overhead costs incurred prior to the initiation of commercialization.

1.4 "Improvements" means any direct improvement, alteration, extension, modification or discovery, whether patentable or not, that falls within the scope of or dominates the Invention.

1.5 "Invention" means a stable homodimer of human hexosaiminidase (HexM) that is capable of hydrolysing GM2 Gangliosides. This construct and its use is the subject of patent application; U.S. US 61/954098. To further define the invention, the construct solves technical problems described in the inventor's publication: Sinici I, et al. (2013) PLoS One 8: e57908.8; as described in Schedule "A" attached hereto.

1.6 "Net Revenue" means the amount received from commercialization of the Technology, less Direct Costs (which may be carried forward from year to year to offset gross revenue) incurred in the commercialization, and includes but is not limited to, proceeds from royalties, profit-sharing, lump sum payments and sale of equity shares.

1.7 "Patents" means patent applications that have been filed to date, and patent applications hereafter to be filed by the University relating to the Invention, and any and all patents which may hereafter be issued pursuant to said patent applications (including all divisions, continuations, reissues, re-examinations and extensions thereof and all related international priority rights) whether foreign or domestic relating to the Invention.

1.8 "Technical Information" means procedures, processes, trade secrets, methods, practices, techniques, information, bills of parts, diagrams, drawings, specifications, blueprints, scientific theorems, lists of materials, models, samples, manuals and data relating to the design, manufacture, production, inspection and testing of the Invention.

1.9 "Technology" means the combination of:

(a) the Invention;

(b) Copyright;

(c) Technical Information;

(d) Patents;

(e) Improvements.

## ARTICLE 2 - ASSIGNMENT

2.1 The Inventor hereby assigns to the University the Inventor's entire right, title and interest in and to the Technology.

2.2 The Inventor hereby requests that all Patents, Copyrights and/or trademarks, which may be issued for the Technology, are issued to the University as the assignee, for the sole use of the University to the end of the term for which said Patents, Copyrights and/or trademarks may be granted, as fully and entirely as the same would have been held by the Inventor had the Inventor not entered into this Agreement.

2.3 The Inventor shall promptly, upon request and without compensation:

(a) provide all the assistance which is reasonably required by the University to prepare, prosecute and maintain Patent applications filed by or assigned to the University, to register a Copyright, and to file any application under trademark or any other form of intellectual property legislation which may be required to protect the Technology in any country, territory or jurisdiction, including:

(i) the execution of all necessary documents; and

(ii) the giving of testimony that, in the opinion of the University, may be necessary to:

(A) obtain, sustain or re-issue Patents, Copyrights and/or trademarks relating to the assignment of rights hereunder; and

(B) perfect, affirm, record and maintain the title of the University to the Technology;

(b) generally cooperate with the University to the fullest extent possible in all matters pertaining to the Technology and the University's title thereto.

## ARTICLE 3 - UNIVERSITY OBLIGATIONS

3.1 The University shall have the exclusive responsibility for causing Patents, Copyrights and/or trademarks to be filed relating to the Technology, which in its sole discretion deems advisable.

3.2 The University shall pay for the Direct Costs and shall be entitled to recover the Direct Costs as part of a royalty or license agreement, or they may be deducted from the Net Revenue, at the discretion of the University.

3.3 The University will undertake, as appropriate, one or more of the following activities with respect to the Technology:

(a) conduct a preliminary assessment of the Technology;

(b) develop, with assistance of the Inventor, a Technology transfer strategy;

(c) actively seek licensees for the Technology;

(d) assist in the transfer of the Technology to a company when appropriate;

(e) prepare and negotiate non-disclosure, option, license, and other agreements in implementing the Technology transfer strategy;

(f) administer non-disclosure, option, license, and other such agreements; and

(g) provide financial accounting and reporting services for option, license, and other such agreements.

## ARTICLE 4 - SHARING OF NET REVENUE

4.1 The Inventor acknowledges and agrees that Net Revenue to be paid by the University to the Inventor shall be distributed as follows:

| Name of Inventor | Percentage of Net Revenue |
|---|---|
| Dr. Brian Mark: | 50% |
| The University of Manitoba: | 50% |

Where there is more than one (1) Inventor, the University's share of Net Revenue shall remain fifty (50%) percent.

4.2 Payments to the Inventor will be made by the University periodically in accordance with its current policy and practice.

4.3 Payments will be made in Canadian funds or equivalent. Net Revenue received in other than Canadian funds will be recorded at the rate of exchange in effect at the date of receipt.

4.4 In the event that a party other than the Inventor claims any right, interest, title, or ownership in the Technology, the Inventor agrees that the proven or verified rights or interest of any such party shall be accommodated out of the Inventor's share in Section 4.1.

4.5 Unclaimed shares of Net Revenue, after two (2) years, shall accrue to the University Endowment Fund.

## ARTICLE 5 - INVENTOR'S RIGHTS AND IMPROVEMENTS

5.1 The Inventor has the right to use the Technology for research and educational purposes, which may lead to further developing and improving the Technology.

5.2 The Inventor acknowledges and agrees to advise and inform the University, from time-to-time, of Improvements to the Invention which the Inventor has developed in the course of research involving use of the University's premises, equipment and resources and, when not prevented by other University contractual obligations, shall transfer and assign such Improvements to the University if requested by the University.

## ARTICLE 6 – INVENTOR'S OBLIGATIONS

6.1 The Inventor agrees that the Inventor shall promptly notify the University's Technology Transfer Office, if the Inventor acquires knowledge of any infringement claim that has or might reasonably be made with respect to the Technology.

6.2 Pending issuance of Patents, the Inventor agrees to not disclose and to maintain in confidence the Technology, unless written notice is given to the University or such information becomes part of the public domain without breach of this Agreement. In the case of written notice, the Inventor shall advise the University in writing at least sixty (60) calendar days prior to making the disclosure.

## ARTICLE 7 - INVENTOR'S WARRANTY AND REPRESENTATIONS

7.1 The undersigned Inventor hereby warrants and certifies that to the best of the Inventor's knowledge and belief, the Inventor is the sole and first creator and/or developer of the Technology, the Inventor has full and complete rights to the Technology, and that, to the best of the Inventor's knowledge and belief, the Technology does not infringe on and is not subject to any other proprietary rights of any third party.

7.2 The Inventor represents that the Inventor is the first and sole inventor of the Technology.

7.3 The Inventor represents that the Inventor has not wilfully infringed upon any patent, copyright or trade secret of a third party in the course of developing the Technology.

## ARTICLE 8 - TERM AND TERMINATION

8.1 This Agreement shall have a term which extends from the Effective Date to the date of expiry of the last Patent included in the Technology, and in the event the Technology is not patented and/or is protected under the provisions of copyright or trademark law, the term shall be a period of twenty (20) years following the Effective Date.

8.2 The University shall have the right to terminate this Agreement when, in the sole opinion of the University, there appears to be no reasonable prospect or expectation of the successful protection or commercialization of the Technology. In the event of termination pursuant to this Section 8.2, the University shall be released from its obligation to pay any further costs associated with the Technology. The University shall advise the Inventor of its intention to terminate the Agreement pursuant to this Section 8.2 by notice in writing sent to the Inventor in accordance with Article 9. Distribution of further Net Revenue shall be in accordance with the Collective Agreement.

## ARTICLE 9 - NOTICE

9.1 Any notice, report or other communication which any party may desire to give to the other, may be hand delivered or sent by prepaid courier or registered mail, or by facsimile transmission to the respective addresses as set out below, or to such other address as one party hereto might subsequently advise the other:

If to the Inventor:

Dr. B.L. Mark.
65 Agassiz Drive,
Winnipeg, Manitoba, R3T 2K9

If to the University:

The University of Manitoba
Technology Transfer Office
Room 631 Drake Centre
Winnipeg, Manitoba R3T 5V4
Telephone: (204) 474-6200
Fax: (204) 261-3475

with a copy to:

The University of Manitoba
207 Administration Building
Winnipeg, Manitoba R3T 2N2
Attention: Vice-President (Research and International)
Telephone: (204) 474-6915
Fax: (204) 474-7568

Any notice, report or other communication given shall be deemed to be received on the date of delivery by hand or by prepaid courier or by facsimile transmission as the case may be or on the fifth business day following the date of mailing.

## ARTICLE 10 - GENERAL

10.1 Nothing in this Agreement shall be construed as releasing the Inventor from responsibility and liability arising from any act or omission of the Inventor with respect to the Technology.

10.2 This Agreement may be amended by the parties as they may from time to time mutually agree in writing.

10.3 This Agreement shall enure to the benefit of the parties hereto and their respective successors and permitted assigns.

10.4 Preamble paragraphs A through E form part of this Agreement.

10.5 This Agreement contains the entire agreement between the University and the Inventor and supersedes all prior agreements, negotiations, representations and proposals, written and oral.

10.6 This Agreement shall be interpreted and governed by the laws of Canada and the Province of Manitoba. Any action taken relating to this Agreement not falling with Article 14.4.1 of the Collective Agreement shall be commenced in the Court of Queen's Bench (Winnipeg Centre) of Manitoba.

10.7 Each party to this Agreement represents and warrants to each other party that such party has read and fully understands the terms and provisions hereof, has had an opportunity to obtain independent legal advice, and has executed this Agreement based upon such party's own judgment and advice of independent legal counsel (if sought), or alternatively, has waived the right to obtain independent legal counsel.

10.8 If the Inventor is constituted by more than one person, their obligations hereunder as the Inventor are joint and severable.

10.9 If any provision of this Agreement is declared invalid, illegal or unenforceable by a court of competent jurisdiction, such provision shall be severed from this Agreement in its entirety and the remainder of the Agreement shall continue in full force and effect.

10.10 All rights and remedies of the University under this Agreement shall be cumulative. The rights, powers and remedies given to the University by this Agreement are in addition to, and not in lieu of, any other rights, powers and remedies which the University may have or acquire against the Inventor whether by the terms of any other agreement, by operation of law or otherwise. No waiver or condoning of a breach, default or non-observance by a party hereto shall operate as a waiver of any continuing or subsequent breach, default or non-observance hereunder.

10.11 This Agreement may be signed in any number of counterparts and by the parties on separate counterparts, each of which when signed shall constitute an original but all the counterparts shall together constitute but one and the same instrument. For the purposes of this clause, the delivery of a facsimile copy of a signed counterpart of this Agreement shall be deemed to be a valid signature thereof provided that the party so delivering a facsimile hereby undertakes to deliver an original copy of this Agreement forthwith following such facsimile transmission.

The Inventor and a duly authorized representative of the University have caused this Agreement to be executed as of the day and year first written above.

**THE UNIVERSITY OF MANITOBA**

Per:_____

Darren Fast
Director, Technology Transfer Office

_____

**Dr. Brian Mark, Associate Professor of Microbiology, University of Manitoba**

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## UMFA ACKNOWLEDGEMENT

1. The Collective Agreement between the University of Manitoba Faculty Association ("UMFA") and the University (the "Collective Agreement") provides that the University and the Inventor shall enter into an individual agreement respecting their respective rights, title and interest in and to the Invention.

2. The Inventor acknowledges that the Inventor has been advised of the Inventor's rights and has been given the opportunity to consult with UMFA pursuant to the Collective Agreement with respect to this Agreement.

**Dr. Brian Mark, Associate Professor of Microbiology**
**University of manitoba**

Date:_____

**Schedule A:**

**The invention and technology.**

The invention provides a modified hexosaminidase A alpha subunit that is capable of forming a stable homodimer (protein-protein interface based on the beta subunit) that is also capable of binding the GM2 activator protein and thus capable of hydrolyzing GM2 ganglioside both *in cellulo* and *in vitro*, making it useful for treating GM2 gangliosidoses including Tay-Sachs and Sandhoff Disease. This invention overcomes problems outlined in Sinici, I., *et al.*, 2013. PLoS One 8e57908.8 by engineering the beta subunit interface and GM2 activator protein binding site into the hexosaminidase A alpha subunit. The invention is described and claimed in US Patent application No: US 61/954,098; Title: β-HEXOSAMINIDASE PROTEIN VARIANTS AND ASSOCIATED METHODS FOR TREATING GM2 GANGLIOSIDOSES. Inventors: Dr. Don Mahuran & Dr. Brian Mark. Filing Date: March 17th, 2014.