

COLLABORATIVE RESEARCH AGREEMENT

between

McMaster University

1280 Main Street West
Hamilton, Ontario
L8S 4L8

and

FendX Technologies Inc.

400-725 Granville Street
Vancouver, British Columbia
V7Y 1G5



COLLABORATIVE RESEARCH AGREEMENT

- A *Date of Agreement* July 7, 2021
- B
McMaster University
1280 Main Street West
Hamilton, Ontario L8S 4L8
(the 'University')
- C *Name of Academic* Leyla Soleymani and Tohid Didar
(the 'Principal Investigator' or their successor)
- D *Insert full legal Name and Address of Company* FendX Technologies Inc.
400-725 Granville Street
Vancouver, British Columbia
V7Y 1G5
(the 'Sponsor')
- E *Name and Contact Information of Company Project Representative* Carolyn Myers
carolyn@fendxtech.com
Phone: 908-672-9611
(the 'Sponsor's Supervisor' or their successor)
- F *The Project* The work described in Schedule 1, as may be amended by agreement of the parties.
(the 'Project')
- G *Funding Payments* The Financial Contribution is defined in Schedule 1.
(the 'Financial Contribution')
- H *Date Agreement is to take Effect* August 1, 2021
(the 'Effective Date')
- I *The Project Period* The Project Period is defined in Clause 9.1.
(the 'Project Period')

1. DEFINITIONS

In this Agreement the following expressions have the meaning set opposite:

Academic Publication:	the publication of an abstract, article or paper in a journal, or its presentation at a conference or seminar, or the presentation of a student thesis for academic credit; and in clauses 5 and 6 "to Publish" and "Publication" are to be construed accordingly;
this Agreement:	this document, including its Schedules, as amended from time to time in accordance with clause 10.10;
Background :	information, techniques, Know-how, software and materials (regardless of the form or medium in which they are disclosed or stored) that are not Results and that are provided by one party to the other for use in the Project (whether before or after the date of this Agreement, except any Result).
a Business Day:	Monday to Friday (inclusive) except bank or public holidays in the Province of Ontario;
Confidential Information:	means information, including Background, disclosed by a party ("Disclosing Party") and received by the other party ("Recipient") for use in the Project and which is designated in writing by said Disclosing Party as confidential at the time of disclosure or within two days of oral disclosure, including all materials, ideas, financial data, pricing, profit or cost information, policies, business plans, personal information, customer lists, trade secrets, documentation, knowledge, know-how, software, research data, technical data, specifications, instructions, manuals, trade secrets, and other industrial;
External Funding:	any funding or assistance provided for the Project, or to any party for use in the Project by any third party that is not a "Sponsor" as defined in the Standard License Agreement between the parties dated as of February

5th, 2021 (the "Master Agreement"), including without limitation, any government or public body;

the Financial Contribution: the financial contribution to be provided by the Sponsor set out in Schedule 1;

a Group Company: any 'holding body corporate' or 'affiliated body corporate' as those terms are defined by sections 1(3) and 1(4), respectively in the Ontario *Business Corporations Act*, R.S.O. 1990, c. B.16 ;

Intellectual Property: patents, trade marks, service marks, registered designs, copyrights, database rights, design rights, confidential information, applications for any of the above, and any similar right recognised from time to time in any jurisdiction, that has been disclosed by the Principal Investigator to the McMaster Industry Liaison Office, together with all rights of action in relation to the infringement of any of the above;

the Key Personnel: the Principal Investigator and any other key personnel identified in Schedule 1;

Know-how: unpatented technical information (including, without limitation, information relating to inventions, discoveries, concepts, methodologies, models, research, development and testing procedures, the results of experiments, tests and trials, manufacturing processes, techniques and specifications, quality control data, analyses, reports and submissions) that is not in the public domain;

the Location: the location(s) at which the Project will be carried out as set out in Schedule 1;

the Project: the programme of work, activities and services described in Schedule 1, as amended from time to time in accordance with clause 10.10;

the Results: all information, Know-how, results, inventions, software and other Intellectual Property identified or first reduced to practice or writing in the course of the Project.

2. CONDUCT OF THE PROJECT

- 2.1 The Project will begin on the Effective Date and will continue for the term of the Project Period or until any later date agreed in writing between the parties, or until this Agreement is terminated in accordance with Clause 8 or 9. If this Agreement is executed after the Effective Date, it will apply retrospectively to work carried out in relation to the Project on or after the Effective Date.
- 2.2 The University will carry out the tasks allotted to it in Schedule 1, and will provide the human resources, materials, facilities and equipment that are designated as its responsibility in Schedule 1. The Project will be carried on under the direction and supervision of the Principal Investigator. The Project will be carried out at the Location.
- 2.3 The University will provide the Sponsor with e-mail copies of the data as generated and a report at the conclusion of the Project together with a copy of all of the Results. Any such materials and the Results shall be deemed Funded IP for purposes of the Master Agreement.
- 2.4 Except as otherwise provided in Section 2.5, the University makes no warranties, express or implied, as to any matter whatsoever including, without limitation, the condition of the work or any invention(s), result(s), or product(s), whether tangible or intangible, conceived, discovered, or developed under this Agreement; or the ownership, merchantability, or fitness for a particular purpose of the work described herein or any such invention or product; nor does the University guarantee a successful outcome.
- 2.5 The University warrants to the Sponsor that the University has full power and authority under its constitution, and has taken or will take all necessary actions and obtained all authorisations, licences, consents and approvals, to allow it to enter into this Agreement and to carry out the Project. Without limiting the foregoing, the University will enter into such agreements with its personnel as may be necessary or reasonably requested by Sponsor to convey all rights in the Results to Sponsor.
- 2.6 The University delegates management of this Agreement to the Vice-President (Research) or his/her designate; any amendment to its terms must be authorized by the Vice-President (Research) or his/her designate in writing. The Principal Investigator will have supervision of the work and will have authority to approve expenditures under this Agreement.

3. FINANCIAL CONTRIBUTION AND EXTERNAL FUNDING

- 3.1 The University will keep complete and accurate accounts of its expenditure on the Project. The Sponsor will pay the Financial Contribution to the University in accordance with Schedule 1 within 30 days after receipt by the Sponsor of any invoice.
- 3.2 Unless specified in Schedule 1, all amounts payable to the University under this Agreement are exclusive of Goods and Services Tax, Provincial Sales Tax or any similar tax which the Sponsor will pay at the rate from time to time prescribed by law.
- 3.3 If the Sponsor fails to make any payment due to the University under this Agreement, without prejudice to any other right or remedy available to the University, the University may charge interest (both before and after any judgment) on the amount outstanding, on a daily basis at the rate of three per cent per annum above the University's Bank's (currently Canadian Imperial Bank of Commerce) current lending rate from time to time in force. That interest will be calculated from the date for payment specified in this Agreement or related invoice to the actual date of payment, both dates inclusive, and will be compounded quarterly. The Sponsor will pay that interest to the University on demand.
- 3.4 The University will own all equipment purchased or constructed by it, or for it, using the Financial Contribution or any External Funding.
- 3.5 No External Funding will be used for the Project without Sponsor's express, written consent. If Sponsor agrees to any External Funding, each of the parties will comply with the terms of that External Funding, which shall be subject to Sponsor's prior written approval.

4. USE AND EXPLOITATION OF INTELLECTUAL PROPERTY

- 4.1 This Agreement does not affect the ownership of any Intellectual Property in any Background. The Intellectual Property in Background will remain the property of the party that contributes it to the Project (or its licensors). Intellectual Property ownership, other than of Results, shall be governed by the terms and conditions of the Master Agreement.
- 4.2 Each Party grants the other a royalty-free, non-exclusive licence to use its Background for the purpose of carrying out the Project but for no other purpose. Neither party may grant any sub-licence to use the other's Background except that the Sponsor may allow its Group Companies and any person working for or on behalf of or otherwise engaged or licensed by the Sponsor or any Group Company to use the University's Background for the purpose of carrying out the Project. In the event that the University's Background is necessary to exploit the Results of the Project and has not otherwise been licensed by University to Sponsor, then the University agrees

to negotiate a non-exclusive license with the Sponsor for the Background on commercially reasonable terms.

- 4.3 Ownership and exploitation of Results shall be in accordance with the terms of Schedule 2 of this Agreement.
- 4.4 Subject to the terms of the Master Agreement, Sponsor shall have the right to apply for patents in its name (or in the name of any successor in interest to Sponsor) covering the Results. The University and its investigators and other personnel will provide such information, assignments or other matters as may be reasonably requested by Sponsor to support such applications.
- 4.5 Notwithstanding the terms provided in Schedule 2, the Sponsor grants to the University or the University retains the right (as applicable) to use the Results for the University's own internal, non-commercial teaching and research purposes.

5. **ACADEMIC PUBLICATION**

- 5.1 University shall be entitled to publish or present the general scientific findings from research related to the Results in accordance with the provisions of this Section 5 and provided that such right shall not extend to any Confidential Information of the Sponsor.
- 5.2 The University shall submit to the Sponsor a copy of any research results, which it intends to publish or present, for review at least thirty (30) days in advance of such proposed publication or presentation ("Review Period"). The Sponsor shall complete the review within the Review Period. If the Sponsor does not object in writing to such publication or presentation within the Review Period, it shall be deemed to have agreed to the disclosure and the University shall be free to proceed, notwithstanding any obligations of the University under Section 6.2 hereof.
- 5.3 During the review period, the Sponsor may object to such proposed publication or presentation, including, but not limited to because the Sponsor believes that there is a disclosure of the Sponsor's Confidential Information contained in the proposed publication or presentation. If the Sponsor objects because it believes the publication or presentation contains its Confidential Information, the University agrees to remove such Confidential Information to Sponsor's satisfaction prior to making any publication or presentation. If the Company objects because of the potential for protectable subject matter, the University agrees to delay publication for up to a maximum of six (6) months for the purposes of obtaining patent or other intellectual property protection. If a graduate student's thesis contains subject matter that requires protection, the University retains the right to have graduate student theses reviewed and defended for the sole purpose of academic evaluation in accordance with the University's established procedures. This Agreement shall not impose any delays on the defence of a student's thesis.

6. **CONFIDENTIALITY**

- 6.1 Subject to clause 5, neither party will, either during the Project Period or for 3 years after the end of the Project Period, disclose to any third party, nor use for any purpose except carrying out the Project, any of the other party's Confidential Information.
- 6.2 Neither party will be in breach of any obligation to keep any Confidential Information, Results or other information confidential or not to disclose it to any other party to the extent that it:
- 6.2.1 is known to the Recipient before its disclosure by the Disclosing Party, and not already subject to any obligation of confidentiality to the Disclosing Party;
 - 6.2.2 is or becomes publicly known without any breach of this Agreement and through no fault of the Recipient;
 - 6.2.3 has been lawfully obtained by the Recipient from a third party without breach of this Agreement by the Recipient and in circumstances where the third party is not under any obligation of confidentiality owed to the Disclosing Party;
 - 6.2.4 has been independently developed by the Recipient;
 - 6.2.5 is required to be disclosed pursuant to the requirement of any law or regulation (provided, in the case of a disclosure under the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, c.F.31 (the "Act") none of the exceptions to that Act applies to the information disclosed) or the order of any Court of competent jurisdiction, and the Recipient has informed the Disclosing Party of the requirement and the information required to be disclosed; or
 - 6.2.6 is approved for release in writing by an authorised representative of the Disclosing Party.
- 6.3 The Sponsor will not be in breach of any obligation to keep any of the University's Confidential Information, confidential or not to disclose them to any third party, by making them available to any Group Company, or any person working for or on behalf of the Sponsor or a Group Company, who needs to know the same in order to exercise the rights granted in this Agreement, provided they are not used except as expressly permitted by this Agreement and the recipient undertakes to keep that Confidential Information confidential.
- 6.4 If the University receives a request under the Act to disclose any information that, under this Agreement, is the Sponsor's Confidential Information, it will notify the Sponsor and will consult with the Sponsor. The Sponsor will respond to the University within 10 days after receiving the University's notice if that notice requests the Sponsor to provide information to assist the

University to determine whether or not an exemption to the Act applies to the information requested under that Act.

- 6.5 Neither the University nor the Sponsor will use the other's name or logo in any press release or product advertising, or for any other promotional purpose, without first obtaining the other's written consent; except that the University may identify the sums received from the Sponsor in the University's Annual Report and similar publications.

7. **LIMITATION OF LIABILITY**

- 7.1 Neither of the parties makes any representation or gives any warranty to the other that any advice or information given by it or any of its employees or students who work on the Project, or the content or use of any Results, Background or materials, works or information provided in connection with the Project, will not constitute or result in any infringement of third-party rights.

- 7.2 Except under the indemnity in clause 7.3, and subject to clause 7.6, neither party accepts any responsibility for any use which may be made by the other party of any Results, nor for any reliance which may be placed by that other party on any Results, nor for advice or information given in connection with any Results.

- 7.3 The Sponsor will indemnify the University, the Principal Investigator and every other employee and student of the University (the "Indemnified Parties"), and keep them fully and effectively indemnified, against each and every claim made against any of the Indemnified Parties as a result of the Sponsor's use of any of the Results or any materials, works or information received from them pursuant to the terms of this Agreement, provided that the Indemnified Party must:

- 7.3.1 promptly notify the Sponsor of details of the claim;
- 7.3.2 not make any admission in relation to the claim;
- 7.3.3 allow the Sponsor to have the conduct of the defence or settlement of the claim; and
- 7.3.4 give the Sponsor all reasonable assistance, at the Sponsor's expense, in dealing with the claim.

The indemnity in this clause will not apply to the extent that the claim arises as a result of the Indemnified Party's negligence, knowing infringement of a third party's Intellectual Property, breach of clause 6 or the deliberate breach of this Agreement.

- 7.4 Subject to clause 7.6, and except under the indemnity in clause 7.3, the liability of either party to the other for any breach of this Agreement, any negligence or arising in any other way out of the

subject matter of this Agreement, the Project and the Results, will not extend to any indirect damages or losses, or any loss of profits, loss of revenue, loss of data, loss of contracts or opportunity, whether direct or indirect, even if the party bringing the claim has advised the other of the possibility of those losses, or if they were within the other party's contemplation.

7.5 Subject to clause 7.6, and except under the indemnity in clause 7.3, the aggregate liability of each party to the other for all and any breaches of this Agreement, any negligence or arising in any other way out of the subject matter of this Agreement, the Project and the Results, will not exceed the total of the Financial Contribution.

7.6 Nothing in this Agreement limits or excludes either party's liability for:

7.6.1 death or personal injury;

7.6.2 any fraud or for any sort of liability that, by law, cannot be limited or excluded; or

7.6.3 any loss or damage caused by a deliberate breach of clause 6.

7.7 The express undertakings and warranties given by the parties in this Agreement are in lieu of all other warranties, conditions, terms, undertakings and obligations, whether express or implied by statute, common law, custom, trade usage, course of dealing or in any other way. All of these are excluded to the fullest extent permitted by law.

8. **FORCE MAJEURE**

Neither Party shall be liable to the other or be deemed to be in breach of this Agreement for any failure or delay in rendering performance arising out of causes beyond its reasonable control and without its fault or negligence. Such causes may include, but are not limited to, governmental regulation or control, acts of nature or of a public enemy, acts of terrorism, mass-casualty event, fire, flood, local, regional or global outbreak of disease or other public health emergency, social distancing or quarantine restriction, strike, lockout or labour or civil unrest, freight embargo, unusually severe weather, failure of public utility or common carrier, or computer attacks or other malicious act, including attack on or through the internet, or any internet service, telecommunications provider or hosting facility.

The parties acknowledge that in March 2020 the World Health Organization declared a global pandemic of the virus leading to COVID-19. The Governments of Canada and the Province of Ontario responded to the pandemic with legislative amendments, controls, orders, requests of the public, and requests and requirements to the Parties to change their delivery of education in various ways (collectively, the "Governmental Response"). It is uncertain how long the pandemic, and the related Governmental Response, will continue, and it is unknown whether there may be a resurgence of the virus leading to COVID-19 or any mutation thereof (collectively, the "Virus") and resulting or supplementary renewed

Government Response. Without limiting the foregoing paragraph, neither Party shall be liable to the other or be deemed to be in breach of this Agreement or the Master Agreement for any failure or delay in rendering performance arising out of:

- a. the continued spread of the Virus;
- b. the continuation of or renewed Governmental Response to control the spread of the Virus; and
- c. a Party's decision, made on an organization-wide basis and in good faith, to control the spread of the Virus, even if exceeding the then current specific Government Response. Dates or times of performance shall be extended to the extent of delays excused by this clause, provided that the Party whose performance is affected notifies the other promptly of the existence and nature of such delay shall, so far as practicable, use commercially reasonable efforts to minimize and mitigate the extent, effect and period of any such delay or non-performance.

9. **TERM AND TERMINATION**

- 9.1 The term of the Project shall be for three years or such longer period as agreed in writing by the parties (the "Project Period").
- 9.2 Either party may terminate this Agreement with immediate effect by giving notice to the other party if:
 - 9.2.1 the other party is in breach of any provision of this Agreement and (if it is capable of remedy) the breach has not been remedied within 90 days after receipt of written notice specifying the breach and requiring its remedy; or
 - 9.2.2 the other party becomes insolvent, or if an order is made or a resolution is passed for its winding up (except voluntarily for the purpose of solvent amalgamation or reconstruction), or if an administrator, administrative receiver or receiver is appointed over the whole or any part of the other party's assets, or if the other party makes any arrangement with its creditors.
- 9.3 The Parties agree to negotiate in good faith to amend the Agreement as may be necessary if circumstances beyond either Party's control preclude continuation of the Project.
- 9.4 Clauses 1, 3, 4, 5, 7, 8, 9.4 and 10 will survive the expiry of the Project Period or the termination of this Agreement for any reason and will continue indefinitely. Clause 6 will survive the expiry of the Project Period or the termination of this Agreement for its prescribed period.

- 9.5 On the termination of this Agreement, the Sponsor will pay the University for all work performed by the University prior to termination including any non-cancellable commitments. .
- 9.6 Sponsor shall have the right to terminate this Agreement upon prior written notice to the University provided at least 30 days before each annual anniversary of the Effective Date, if the Sponsor, in its sole discretion, no longer approves of the Project's research aims.

10. **GENERAL**

- 10.1 **Notices:** Any notice to be given under this Agreement must be in writing, may be delivered to the other party or parties by any of the methods set out in the left hand column below, and will be deemed to be received on the corresponding day set out in the right hand column:

Method of service	Deemed day of receipt
By hand or courier	the day of delivery
By registered delivery mail	the next Business Day after mailing
By email to the recipient's last known email address	the day the email was sent

The parties' respective representatives for the receipt of project related or legal notices are, until changed by notice given in accordance with this clause, as follows:

<p>For the University: Executive Director McMaster Industry Liaison Office McMaster University McMaster Innovation Park, Suite 305 175 Longwood Road South Hamilton, Ontario L8P 0A1</p> <p>t:905-525-9140, 23164 e: yuyitun@mcmaster.ca</p>	<p>For the Sponsor: FendX Technologies Inc. c/o Clark Wilson LLP Attn : Max Portner 900-885 West Georgia Street, Vancouver, BC V6C 3H1</p> <p>f: 604.687.6314 t: 604.643.3139 e: mportner@cwilson.com</p>
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- 10.2 **Headings:** The headings in this Agreement are for ease of reference only; they do not affect its construction or interpretation.
- 10.3 **Assignment:** Neither party may assign or transfer this Agreement as a whole, or any of its rights or obligations under it, without first obtaining the written consent of the other party; provided however, that this Agreement may be assigned to a permitted assignee of the Master Agreement. That consent may not be unreasonably withheld or delayed.
- 10.4 **Illegal/unenforceable provisions:** If the whole or any part of any provision of this Agreement is void or unenforceable in any jurisdiction, the other provisions of this Agreement, and the rest of the void or unenforceable provision, will continue in force in that jurisdiction, and the validity and enforceability of that provision in any other jurisdiction will not be affected.
- 10.5 **Waiver of rights:** If a party fails to enforce, or delays in enforcing, an obligation of the other party, or fails to exercise, or delays in exercising, a right under this Agreement, that failure or delay will not affect its right to enforce that obligation or constitute a waiver of that right. Any waiver of any provision of this Agreement will not, unless expressly stated to the contrary, constitute a waiver of that provision on a future occasion.
- 10.6 **No agency:** Nothing in this Agreement creates, implies or evidences any partnership or joint venture between the parties, or the relationship between them of principal and agent. Neither party has any authority to make any representation or commitment, or to incur any liability, on behalf of the other.
- 10.7 **Entire agreement:** This Agreement and the Master Agreement to the extent it is referenced herein and all schedules thereto constitutes the entire agreement between the parties relating to its subject matter. Each party acknowledges that it has not entered into this Agreement on the basis of any warranty, representation, statement, agreement or undertaking except those expressly set out in this Agreement. Each party waives any claim for breach of this Agreement, or any right to rescind this Agreement in respect of, any representation which is not an express provision of this Agreement. However, this clause does not exclude any liability which either party may have to the other (or any right which either party may have to rescind this Agreement) in respect of any fraudulent misrepresentation or fraudulent concealment prior to the execution of this Agreement. In the event of an inconsistency the terms and conditions of the Master Agreement shall govern.
- 10.8 **Formalities:** Each party will take any action and execute any document reasonably required by the other party to give effect to any of its rights under this Agreement, or to enable their registration in any relevant territory provided the requesting party pays the other party's reasonable expenses.

- 10.9 **Counterparts:** This Agreement may be executed by the parties in counterparts and may be executed and delivered by facsimile or electronically by PDF and all such counterparts, facsimiles and PDF copies shall together constitute one agreement. The parties agree that facsimile or PDF copies of signatures have the same effect as original signatures.
- 10.10 **Amendments:** No variation or amendment of this Agreement will be effective unless it is made in writing and signed by each party's representative.
- 10.11 **Third parties:** No one except a party to this Agreement has any right to prevent the amendment of this Agreement or its termination, and no one except a party to this Agreement may enforce any benefit conferred by this Agreement, unless this Agreement expressly provides otherwise.
- 10.12 **Governing law:** This Agreement is governed by, and is to be construed in accordance with, the laws of the Province of Ontario and the laws of Canada applicable therein. The courts of the Province of Ontario will have exclusive jurisdiction to deal with any dispute which has arisen or may arise out of or in connection with this Agreement, except that either party may bring proceedings for an injunction in any jurisdiction.
- 10.13 **Escalation:** If the parties are unable to reach agreement on any issue concerning this Agreement or the Project within 14 days after one party has notified the other of that issue, they will refer the matter to Executive Director, McMaster Industry Liaison Office in the case of the University, and to the President or Chief Executive Officer or Director, as applicable, in the case of the Sponsor in an attempt to resolve the issue within 14 days after the referral. Either party may bring proceedings in accordance with clause 10.12 if the matter has not been resolved within that 14 day period, and either party may apply to the court for an injunction, whether or not any issue has been escalated under this clause.
- 10.14 **Currency:** All dollar amounts expressed herein and all amounts to be paid pursuant to this Agreement shall be in Canadian dollars (\$).

SIGNED for and on behalf of
McMaster University:

Name: Gay Yuyitung
Position: Executive Director, MILO

Signature: "Gay Yuyitung".....

SIGNED for and on behalf of FendX Inc.

Name: Carolyn Myers
Position: CEO.....

Signature: "Carolyn Myers".....

Acknowledgement by the Principal Investigators

I, as the Principal Investigator, having read this Agreement, hereby agree to act in accordance with all its terms and conditions, and to ensure that all Project's participants are informed of their obligations under such terms and conditions.

"Leyla Soleymani"

Signature

Aug. 24, 2021

Date

"Tohid Didar"

Signature

Aug. 24, 2021

Date

SCHEDULE 1 – Budget, Payments and Project Plan

Financial Contribution and Estimated Budget:

For the avoidance of doubt, the budget presented below is meant to provide an estimate of likely total costs associated with the Project during the first year, but any costs in excess of the budget shall require prior written approval by Sponsor.

The Sponsor's Financial Contribution for the Project Period shall be as follows:

In the first year, the contribution shall be \$350,000, in satisfaction of the obligations provided in Schedule C of the Option Agreement between the Parties dated 29 July 2020 (the "First Contribution"). In each of the second and third years, the contribution shall be \$150,000 in satisfaction of the obligations provided in Schedule C of the Master Agreement (each, an "Annual Contribution"), unless this Agreement has been terminated prior to the second or third anniversary of the execution of this Agreement. The Parties may agree to credit some or all of External Funding against Sponsor's Financial Contribution. For the avoidance of doubt, such External Funding shall not affect ownership of Results and the ownership, use and exploitation of Intellectual Property Rights in Results, which shall be governed by the terms and conditions of the Master Agreement as Funded IP.

The University will invoice the Sponsor as follows:

First Contribution:	
On signing	\$175,000
At 4 month mark	\$87,500
At 8 month mark	\$87,500
Years 2 and 3	
On anniversary dates	\$75,000
At subsequent 4 month mark	\$37,500
At subsequent 8 month mark	\$37,500

Please reference your invoice number on all invoice correspondence and payments. Invoices shall be sent via email to the following **Accounts Payable contact or delegate** at the Sponsor:

Carolyn Myers
carolyn@fendxtech.com

Sponsor agrees to pay the University promptly upon receipt of said invoices, in accordance with this Agreement.

Payments can be made by cheque, payable to "McMaster University" and forwarded to:

Assistant Director, Research Finance
McMaster University – Research Finance
1280 Main Street West
Gilmour Hall Room 305
Hamilton, ON L8S 4L8
905.525.9140, ext. 26144

Payments made by EFT or wire transfer, payable to "McMaster University".

Email your remittance advice including your invoice number to: resfin@mcmaster.ca.

EFT Payments: Payments in Canadian and US dollars

Project Plan

The detailed workplan included herein represents current recommendations on experiments and tests to be conducted to develop a REPEL WRAP product that will meet all Canadian and U.S. regulatory requirements for approval as a coating film to protect high-touch surfaces in healthcare and other high traffic public touchpoints. To ensure regulatory approvals in Canada and the U.S., this workplan may be modified from time to time in order to comply with requirements and standards of both Canadian and U.S. regulatory agencies.

The work plan detailed below is based on what the research team anticipates can be accomplished providing that matching funds are received from the Natural Sciences and Engineering Research Council. In the event that such funding is either not provided or that insufficient funding is provided, then the workplan will be modified to adjust the deliverables and budget accordingly.

YEAR 1

Aim 1: Stability testing

We will aim at answering the question: "Under real-life environmental conditions and wear and tear, how long will the REPEL WRAP retain its physical and pathogen repellency". All studies will be performed using the existing prototype dimensions ("Prototype").

Mechanical wear and tear: We will expose the Prototype to wear and tear caused by simulated touch, aggressive rubbing that models gripping and wiping, and scratch testing. The physical repellency study (contact and sliding angle), visual assessment, and pathogen repellency with one model organism will be used to quantify the REPEL WRAP performance as a result of mechanical wear and tear.

Cleaning and disinfection: We will expose the Prototype to cleaning and disinfection protocols commonly used in hospitals, and we will perform physical repellency study (contact and sliding angle), visual assessment, and pathogen repellency with one model organism will be to quantify the REPEL WRAP performance when exposed to cleaning and disinfection.

Environmental stress: We will expose the Prototype to varying humidity (simulating rain), cold and hot weather, and slightly corrosive conditions (salt water) to evaluate the effect of environmental stress on repellency. We will perform physical repellency study (contact and sliding angle), visual assessment, and pathogen repellency with one model organism to quantify the REPEL WRAP performance in response to environmental stress.

Real-life studies: We will assemble a scaled-up version of the Prototype (fabricated at McMaster Labs) both inside buildings on high touch surfaces (e.g., door handles) and outdoors (railings) and will assess its performance over a period of 1-2 months of positioning to assess the REPEL WRAP stability under real-life conditions. We will perform physical repellency study (contact and sliding angle), visual assessment, and pathogen repellency with one model organism will be used to quantify the REPEL WRAP performance in response to real-life handling.

Shelf life: We will determine the shelf life of the Prototype before shrinking by preparing coated shrink warps and shrinking following days, weeks, and months after coating. We will perform physical repellency study (contact and sliding angle) to quantify the shelf-life of the REPEL WRAP.

Aim 2: SARS-CoV-2 Testing

We will be testing the Prototype to reduce the transfer of SARS-CoV-2 by 99%. Experiments will be done at the McMasterCL 3 laboratory (a facility independent from our labs, one of the few facilities with access to clearance and approvals to do this type of research). Our research personnel are not allowed in this facility. The results will be verified by the Institute for Infectious Disease Research at McMaster.

Aim 3: Scale up

We will aim at answering the question: "can we scale the REPEL WRAP to dimensions needed for high volume manufacturing using economically-feasible industrial processes." The goal here is to develop rolls of REPEL WRAP.

Contract Manufacturer: We will work with FLEXcon to develop a scalable prototype as approved by FLEXcon as scalable for manufacturing in their facility.

[Banking Information redacted]

Deposition methods: We will focus on deposition methods with the highest chance of success developed by the plastic manufacturing industry to deposit the REPEL WRAP coatings. These include bulk coating within the plastic, spray coating, or flexographic printing based on advice from our manufacturing partner.

Developing a streamlined process: A streamlined process will be developed that integrates a number of processes (including deposition processes discussed above along with intermediate treatments and drying steps) for large scale manufacturing of the REPEL WRAP.

Development of structures reliant on a lower amount of shrinkage: We will work on developing hierarchical coatings that work with low shrinkage to widen the areas of application.

Aim 4: Pathogen Testing

A small-scale pathogen testing will be performed in order to assess the REPEL WRAP iterations developed in Aims 2 and 3. This pathogen testing will be performed using one bacterium (*E. coli*) and one virus (human simplex virus (HSV)).

YEAR 2 & 3

Aim 5: REPEL WRAP Reformulation (Years 2-3)

Recyclable base materials: We will coat biodegradable base plastics using the REPEL WRAP formulation to develop a green REPEL WRAP product, especially important for large volume packaging materials.

Biodegradable coatings: In addition to the base plastics discussed above, we will look at biodegradable hydrophobic materials that can be used to develop the same hierarchical structure used in the original REPEL WRAP. This will allow the REPEL WRAP to be biodegradable and compatible with edible food products.

Development of omniphobic surfaces on non-shrinkable films: We will work on developing hierarchical-omniphobic materials that do not rely on shrink film as their base substrate. This will be achieved by developing a spray or pattern transfer methods to build the same type of hierarchical structuring on a wide range of substrates.

Aim 6: Process Optimization (Year 2)

We aim at optimizing the parameters of the streamlined scaled up process and the coating composition in order to reduce the product manufacturing cost.

Aim 7: Additional Pathogen Testing (Years 2-3)

In addition to the two model pathogens tested in year 1, we will test the optimized REPEL WRAP using 5-10 pathogens (viruses and bacteria) that are important both in the context of food packaging and infectious disease prevention via high touch surfaces.

Aim 8: Additional Real-life testing (Years 2-3)

We will perform another real-life testing study using the latest REPEL WRAP iteration on both high touch surfaces and for food packaging.

Aim 9: Products beyond the Wrap (Year 3)

We will aim at integrating the REPEL WRAP into products such as gloves to diversify the application of the hierarchical-omniphobic coatings developed here.

Estimated Budget

Budget item	Year 1	Year 2	Year 3
Personnel			
Technician (Chemistry)	\$ 70,000 (Aim 1)	\$ [REDACTED]	\$ [REDACTED]
Technician (Biology)	\$ 35,000 (Aim 1, 3)	\$ [REDACTED]	\$ [REDACTED]
Research Engineer	\$ 90,000 (Aim 2)	\$ [REDACTED]	\$ [REDACTED]
Postdoctoral fellow	\$ 55,000 (Aim 2)	\$ [REDACTED]	\$ [REDACTED]

dollar figures redacted

dollar figures redacted

Research Coordinator	\$ 60,000 (All Aims)	\$ [REDACTED]	\$ [REDACTED]
Consumable and User Fees			
Reagents and Materials	\$ 100,000	\$ [REDACTED]	\$ [REDACTED]
User Fees for CCEM**	\$ 15,000	\$ [REDACTED]	\$ [REDACTED]
User Fees for IIDR**	\$ 50,000	\$ [REDACTED]	\$ [REDACTED]
User Fees for BI**	\$ 20,000	\$ [REDACTED]	\$ [REDACTED]
User Fees for CEDT**	\$ 20,000	\$ [REDACTED]	\$ [REDACTED]
Equipment*			
Spray coater or another deposition equipment suitable for manufacturing	\$ 100,000		
Basic dedicated equipment (ovens, sonicators, centrifuges)	\$ 75,000		
Dedicated biological safety cabinet	\$ 15,000		
Total	\$ 705,000	\$ [REDACTED]	\$ [REDACTED]

*This is subject to change depending on the availability of equipment through manufacturing partners.

**CCEM: Canadian Center for Electron Microscopy, IIDR: Institute for Infectious Disease Research, BI: Biointerfaces Institute, CEDT: Center for Emerging Device Technologies

SCHEDULE 2

OWNERSHIP, USE AND EXPLOITATION OF INTELLECTUAL PROPERTY IN RESULTS

Ownership of Results and the ownership, use and exploitation of Intellectual Property Rights in Results shall be governed by the terms and conditions of the Master Agreement as Funded IP.

SCHEDULE 3
Background

None to be declared at the time of signing