



Research Manitoba

NEWS ANNOUNCEMENT

For Immediate Release

From Ideas To Market: Research Manitoba is advancing research and innovation in Manitoba with the IPoC Grant Over \$340K in Research Funding for Three New Innovation Proof-of-Concept Grants

Wednesday, July 26, 2023 – Winnipeg, Manitoba. Today Research Manitoba announces a total investment of \$346,500 (over two years) in research funding to support three new **Innovation Proof-of-Concept (IPoC) Grants**. Research Manitoba's investment will leverage industry funds and will support Manitoba-based projects in the areas of; Biosciences (2 projects) and Natural Sciences & Engineering (1 project).

“Manitoba researchers are trailblazing new paths and technological advancements to improve our health and the way we communicate with the world,” said Economic Development, Investment and Trade Minister Jeff Wharton. “I want to thank these researchers for bringing their ideas forward and am pleased to see Research Manitoba support their innovations with funding to help turn proof of concepts into reality.”

The **IPoC Grant** aims to strengthen Manitoba-based research innovation and development projects, by filling a funding gap in the Manitoba innovation ecosystem.

Through two independent streams, this program provides funding for innovation and pre-commercialization research that is not otherwise accessible.

Funds from this program help support activities directly related to process validation and proof-of-concept research.

- **IPoC Stream 1:** Manitoba-Based Consortium of academic researchers and local companies to support collaboration that is addressing a company-specific discovery or innovation toward market usability. This stream allows academics to use their world-class knowledge, facilities, and highly qualified personnel to close the knowledge gaps identified during the industry partner's innovation development.
- **IPoC Stream 2:** Manitoba Post-Secondary Researchers support the advancement of discoveries or innovations within an academic setting, which may result in products or technologies, towards market usability. These projects engage post-secondary students, giving them skills and opportunities to contribute to innovative solutions.

“Congratulations to all the recent Innovation Proof-of-Concept recipients,” said Karen Dunlop CEO, of Research Manitoba. “We are proud to promote research and development of innovative ideas essential for economic development through this diverse funding platform that demonstrates innovation, talent, and collaboration in Manitoba.”

Recipients for STREAM 2: Manitoba Post-Secondary Researchers

1. Name(s): **Dr. Ji Hyun Ko & Dr. Marcus Ng**

Institution: University of Manitoba, Rady Faculty of Health Sciences, Department of Human Anatomy and Cell Science (Medicine)

Funding Pillar: Biosciences/Health – Basic Biomedical

Funding Amount: \$50,000 per year for 2 years

Project Title: *A real-time electroencephalography-guided non-invasive brain stimulation to suppress epileptic seizures*

Abstract:

Our team developed a novel non-invasive brain stimulation protocol that can reduce epileptic spikes, which is related with epileptic seizures. We significantly improved the patient discharge rate from Intensive Care Unit (90% vs. 37% in standard of care). We will further optimize the protocol to improve its efficacy and make it ready to be used in patients' homes. A prototype wearable system ("Spike Buster") will be developed. Patients will wear this device during sleep and will be monitored in real time. When epileptic spikes are detected, the Spike Buster will trigger the stimulation and suppress the spikes. The stimulation parameters will be fine-tuned based on the empirical database that will be collected in the proposed clinical trial. Spike Buster will recommend the best stimulation parameters for each patient based on this database. Spike Buster has a great commercialization potential as no preventive intervention is currently available to directly stop seizures during sleep which can result in sudden unexpected death, a fear shared by more than 65 million people around the world suffering from epilepsy. Spike Buster will provide an immediate and long-term relief to dramatically increase patient throughput in our healthcare system associated with epilepsy.

2. Name: **Dr. Denice Bay**

Institution: University of Manitoba, Rady Faculty of Health Sciences, Department of Medical Microbiology (Medicine)

Industry Partner: PerioDiagnostics Inc.

Industry Contacts: Peter Taylor, Rick Reiss, and Harry Ethans

Funding Pillar: Biosciences/Health – Basic Biomedical

Funding Amount: \$75,000 per year for 2 years

Leveraged Funds: \$32,500 per year for 2 years

Project Title: *Rapid point of care strip test development to detect periodontal gum disease bacterial by-products in saliva*

Abstract:

Periodontal disease (PD) is a progressive inflammatory gum disease that affects 7 in 10 Canadians over the age of 45. PD is caused by bacteria that damage gum and bones, leading to tooth loss and serious infections. Early detection of PD is difficult to diagnose, so rapid testing is needed. In partnership with the company PerioDiagnostics Inc. (PerioDx), this 2-year project will test dyes capable of detecting chemical by-products of PD-causing bacteria as a new rapid point-of-care paper strip test device. These chemicals can be easily measured 'by eye' to quickly and accurately determine dye color changes. When the dyes are wetted in saliva, they will only change color if bacterial chemical by-products are present, indicating the user is at higher risk for PD. Our team aims to develop tests with durable and bright dyes for these tests. Saliva from adults with and without PD collected from volunteers at local Winnipeg dental clinics will be pilot tested to ensure the tests are accurate. The outcome produces a ready-to-distribute test kit for accessible rapid testing used by Canadian dental professionals, community clinics, and individuals to assess PD risk.

3. Name: **Dr. Puyan Mojabi**

Institution: University of Manitoba, Price Faculty of Engineering, Department of Electrical and Computer Engineering

Funding Pillar: Natural Sciences and Engineering

Funding Amount: \$46,500 for year 1 and \$50,000 for year 2

Project Title: *Reconfigurable Electromagnetic Metasurfaces for Smart Radio Environments*

Abstract:

The significant growth of wireless connectivity along with applications such as industrial internet of things demand strict performance criteria on data rates, security, and latency. One way to address these requirements is to go beyond the conventional "transmitter-receiver" design approach. In this conventional approach, the environment between the transmitter and receiver does not have the capability to tailor the information carrying electromagnetic (EM) waves. If EM waves can be tailored by the environment, a smart radio environment (SRE) is created. This extra degree of design freedom, which results in a "transmitter-SRE-receiver" design approach, will improve wireless communications. To this end, this research project designs low-power thin planar reconfigurable panels that can be placed in the environment similar to wall frames or billboards. Once EM waves interact with these panels, their transmission and reflection properties can be tailored, e.g., to achieve higher data rates and security. These panels are known as reconfigurable metasurfaces and consist of patterned metallic claddings and low-power electronic components such as diodes supported by thin dielectric materials. The outcome is a software package that is able to perform the design of reconfigurable metasurfaces from various forms of user-defined specifications.

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Research Manitoba:

[Research Manitoba](#) promotes, supports, and coordinates the funding of research excellence and innovation in health, natural and social sciences, engineering, and the humanities in Manitoba. Research Manitoba supports local talent development by providing research support to early career researchers and graduate students, along with fostering strategic partnerships to strengthen research and innovation in Manitoba.

To learn more about the IPoC Program:

- Visit our website at: [Innovation Proof-of-Concept \(IPoC\) Program](#), or,
- Email: helpdesk@researchmb.ca