

The University of Winnipeg CRC/CFI Strategic Research (2023-2025)

Introduction

The University of Winnipeg (UW) is a comprehensive academic institution with a strong history of research, training, and teaching excellence that spans the natural

- x Enhancing the number of successful interdisciplinary research teams or clusters of scholars drawn from diverse areas of expertise who will develop research strategies and applications that improves success rates.
- x Increasing the number of scholars who play significant roles in major national and international research programs, conferences and scholarly meetings, grant review panels and editorial boards.
- x Building and strengthening relationships with a variety of external organizations (e.g. other universities, NCEs) and other constituencies (e.g. governments, industry, NGOs, community) will be deepened and enhanced.
- x Growing our reach in knowledge mobilization and the transfer of intellectual property outside of the university via traditional academic means (enhanced publication records) and to the general public.
- x Encouraging and supporting a research environment that is committed to principles that will guide research teams, Chairs and how infrastructure projects are developed and support faculty growth.

Research Areas

The University of Winnipeg has identified the research areas which to develop or maintain excellence

1. Applied Health and Medical Research
2. Cultural Studies
3. Environmental Studies and Freshwater Ecology and Hydrology
4. Experimental Physics
5. Advanced Research Computing and Data Analytics
6. Indigenous Development and Studies
7. Evolutionary Science
8. Planetary Science
9. Urban Studies
10. Justice and Information

Research Area Descriptions

1. Applied Health and Medical Research

By bringing together different disciplines, often in interdisciplinary configurations and using mixed methods, applied health research recognizes the factors that influence health and disease and supports and measures evidence-based public health interventions. Applied health research seeks to understand fundamental processes in humans and animal models, the mechanistic structures and functions of the body that support health, and any relevant sex or gender differences through a variety of approaches, including developmental origins of health and disease, health informatics, and integrative approaches. Applied health research also emphasizes the identification of priority health problems, scientific evaluation of the effectiveness of health programs and policies, and managing the optimal use of available resources to meet the demands of increasingly complex health needs. In addition, this research looks for ways to prevent, diagnose, and manage illness and disease and promote health in humans with consideration given to relevant sex or gender differences, systemic health inequities, and social determinants of health.

2. Cultural Studies

Large capacity, low cost storage coupled with inexpensive sensors have led to an enormous growth of data in many fields. Advanced research computing hardware is needed to analyze, model, extract patterns of interest, and develop algorithms from these large datasets. GPU computing, for example, is essential for machine learning and artificial intelligence development and applications. The University of Winnipeg established a GPU teaching centre in 2014, followed by the Ezzat A. Ibrahim GPU Educational Lab in 2018. Researchers in the departments of Applied Computer Science, Biology, Chemistry, Mathematics, and Physics have benefited immensely from such support, leading to many interdisciplinary, collaborative projects. The TerraByte Research Group, established in 2017, develops automated methods for generating and labeling large amounts of image data that are in turn used to develop data decision making and machine learning applications for agriculture. Their data is publicly available via the Digital Research Alliance of Canada's digital object storage system, and the group has taken a lead role in the process of analyzing, curating, and maintaining large datasets that can be accessed by other Canadian researchers and innovators. This is just one example of how research and real world applications rely more and more on massive data sets. Through its investment in advanced research computing and data analysis, the University of Winnipeg has positioned itself at the forefront of data research.

6. Indigenous Development and Studies

The University of Winnipeg is proud to have launched its Indigenous Cdr4.6 (a)-1.6 ()10.ch prou-4.7 (op)10.9 ()-1

within these research centers has resulted in a number of potentially

[Agreement](#) This plan is part of the CRC Equity Plan that is published and reviewed annually for progress and posted on the Research Office website.

For Canada Research Chairs, a nomination selection committee consisting of faculty members elected by their peers, the appropriate faculty Dean, the Vice President, Research and Innovation and the Provost and Vice President, Academic is formed. This committee puts forward a call for nominees which are then vetted and interviewed before a final applicant who will be put forward as the institutional nominee is selected. It is important to note that the committee structure, training and resources are expanded within our CRC Equity Plan.

For CFI opportunities, the Vice President, Research and Innovation initiates an open invitation to faculty members to submit a letter of interest to apply for CFI funds. This letter includes a summary of the proposed infrastructure and project, and a budget justification and an EDI statement. An ad hoc internal committee reviews all proposals and determines which will be asked to prepare an external application. Final approval comes from the Vice President, Research and Innovation and the President.

Postscript
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