$1.9M for Research Infrastructure Funding to Support Manitoba's Research Leaders and Enhance Technology and Business Innovation

August 13, 2021 - Today, Research Manitoba announced a $1.9M research infrastructure funding investment for 11, state-of-the-art projects at the University of Manitoba and Red River College. These projects are also supported through the Canada Foundation for Innovation (CFI) College-Industry Innovation Fund and the John R. Evans Leaders Fund and leverage $5.6M into Manitoba's research enterprise.

These leading-edge projects will advance local, national, and global research areas such as: additive manufacturing (AM) capability; application-based robotics; sustainable, wireless infrastructure and technologies; agronomic production and the impacts on crops and livestock; crop resilience; fast electronics; flood impacts; and novel treatments and therapeutics for cancer and other diseases.

"Support for innovative research projects and infrastructure that will enhance innovation in key sectors and industries in Manitoba is critical," said Jon Reyes, Minister of Economic Development and Jobs. I am pleased that Manitoba's researchers have access to forward-looking resources, facilities, and technologies through this important funding. I congratulate all of the recipients of the College-Industry Innovation Fund and the John R. Evans Leaders Fund."

"Manitoba's leading researchers will make ground-breaking contributions with this important infrastructure funding, said Karen Dunlop, Chief Executive Officer at Research Manitoba. "The impact of their world-class efforts will strengthen Manitoba's research community and create social, health, and economic benefits for all Canadians."

Here is a listing of the College-Industry Innovation Fund and the John R. Evans Leadership Fund recipients supported by Research Manitoba.

College-Industry Innovation Fund

- *Red River College,* $895,454
  Enhancement of Smart Factory Digital and Composite Manufacturing Technologies - An expansion of metals additive manufacturing (AM) capability, application-based robotics, composite manufacturing capabilities, and industrial network infrastructure. The industrial X-Ray CT system at the Smart Factory is used to support the inspection of high-value AM products in collaboration with Precision ADM (a Manitoba SME) and University West, Sweden (an international collaborator), with additional projects in the pipeline.

John R. Evans Leaders Fund

- *Faouzi Belili and Amine Mezghani,* $172,500, *Price Faculty of Engineering*
  Towards a Unified Radio Infrastructure: Design and Proof of Concept - Future cities and urban facilities pose several challenges for the design of a sustainable wireless infrastructure. This research will devise a unified radio platform that enables joint communication and sensing (JCS)

at wide frequency ranges. Advanced equipment will be used to establish a unique wireless laboratory in Manitoba that promotes multidisciplinary JCS research and develops technologies with a revolutionary effect on the future wireless and civil infrastructure in the province, e.g., ubiquitous wireless connectivity in remote areas, environmental monitoring, and agricultural/wetland remote sensing.

- *Marcos Cunha-Cordeiro, $68,046, Faculty of Agricultural and Food Sciences*
  Advanced research computing (ARC) to drive forth the digital agriculture revolution in Canada
  Agriculture is an important sector for Manitoba's economy and this research program will assess agriculture's current and future agronomic and environmental sustainability at the provincial level and assess opportunities and threats to agriculture in Manitoba. Outcomes will offer a balanced perspective between agronomic production and environmental sustainability that minimizes the long-term risk of the crop and livestock industries and supports science-based policy development. This research builds on Manitoba's capacity and positions our province as a major player in the Digital Agriculture arena at national and global levels.

- *Wouter Deconinck, $43,127, Faculty of Science*
  Subatomic Physics Detector Development Infrastructure
  This funding will support the purchase of infrastructure to develop novel detectors, simulation and data analysis software, and data acquisition electronics for subatomic physics experiments which complement existing infrastructure at the University of Manitoba and develop Manitoba's technological workforce on state-of-the-art equipment.

- *Paul Durkin, $60,792, Clayton H. Riddell Faculty of Environment, Earth, and Resources*
  Flood Impacts Research System
  Floods are the costliest and most common natural disaster in Manitoba and have negatively impacted infrastructure, agriculture, and human lives for over a century. This research program will study the Assiniboine River and establish an innovative Flood Impacts Research System (FIRS) at the University of Manitoba. The FIRS will provide infrastructure to measure river flow, bathymetry, sediment characteristics, and floodplain topography using classic and novel techniques. This research will inform mitigation strategies and results will have implications for flood-prone rivers and surrounding low-lying areas that are common in Manitoba and across Canada.

- *Jody Haigh, $80,000, Rady Faculty of Health Sciences*
  An Integrated In Vivo Imaging Platform for Translational Cancer Research
  A large number of cancers remain resistant to treatment and contribute to many social and economic impacts associated with death and disease; therefore, accurate preclinical models of cancer are more important than ever. This platform supports research that will identify novel therapeutics not only for acute leukemia, but other aggressive diseases such as ovarian, lung, and brain cancers - improving both the survivability and quality of life for all Manitobans living with cancer.

- *Benjamin Lindsay, $167,478, Rady Faculty of Health Sciences*
  Teleost Center for Development and Repair to Study the Mechanisms of Neural Stem/Crest Cells in Health and Disease
  The Teleost Center for Development and Repair (TCDR) will create an environment driven by discovery and innovation investigating the signals, genes, and molecules regulating tissue growth, repair, and birth defects in the nervous system and cranium. The TCDR will provide novel approaches to study developmental defects and regeneration in collaboration with local

mammalian experts. This research aligns directly with strategic health initiatives in Manitoba and will have an immediate impact on improving the health of Manitobans.

- *Susan Logue, $75,049, Rady Faculty of Health Sciences*
  Functional characterisation of the Unfolded Protein Response in Triple Negative Breast Cancer
  Over 26,000 people are diagnosed with breast cancer annually in Canada, with approximately 15-20% of cases characterized as Triple Negative Breast Cancer (TNBC). This project will help researchers better understand what sets TNBC cells apart from healthy cells, identify new selective treatment strategies, and improve outcomes for TNBC patients, benefiting both Manitobans and Canadians.

- *Ayesha Saleem, $80,000, Faculty of Kinesiology and Recreation Management*
  Extracellular vesicles in health and disease - Dr. Saleem's research program is designed to gain insight into the fundamental role of extracellular vesicles (EVs) in health and disease. This research will drive discovery-based research and lead to the development of therapeutic interventions for chronic diseases, which will ultimately reduce the burden of chronic diseases that claim numerous lives in Manitoba. The broader impacts of this research are to improve the overall health of Manitobans and alleviate the burden on our healthcare system.

- *Jillian Stobart and Jeremy Chopek, $166,170, Rady Faculty of Health Sciences*
  A functional imaging suite for interrogation of neural networks
  Drs. Stobart and Chopek are emerging leaders in neuron and astrocyte research. They will use a functional imaging suite to visualize cells within brain and spinal cord tissue. This project has the potential to improve the quality of life for Manitobans struggling with neurological disease or injury. Access to the equipment, means Manitoba's future scientists are trained in advanced techniques. Future industry partnerships have the potential to boost Manitoba's economy.

- *Olivia Wilkins, $80,000, Rady Faculty of Health Sciences*
  Climate Change Resilience Plant Systems Biology Laboratory
  This laboratory will be the first of its kind in Manitoba and will provide opportunities for recruiting and training personnel with in-demand technical and analytical skills. The research program is at the forefront of crop resilience studies and will make Manitoba a leader in agricultural biotechnology advances. The development of climate change-resilient cultivars will lead to significant benefits to Manitobans by increasing the stability and productivity of the agricultural sector, by reducing the demands of agricultural production on Manitoba's natural environment, and by promoting food security through sustainable agriculture in Canada and internationally.

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Background:
On July 26, 2021, the Honourable François-Philippe Champagne, Minister of Innovation, Science and Industry, announced investments through the Canada Foundation for Innovation (CFI) College-Industry Innovation Fund.

On August 11, the Honourable François-Philippe Champagne, Minister of Innovation, Science and Industry, announced the Canada Foundation for Innovation (CFI) John R. Evans Leaders Fund recipients.

About Research Manitoba:
Research Manitoba is a provincial funding agency, which strives to champion the Manitoba research community, supports early career researchers and graduate students in Manitoba, and coordinates funding of research in health, natural and social sciences, engineering, and the humanities. Our organization also fosters partnerships to advance and strengthen Manitoba's resources, assets, and innovations. Research Manitoba's goal is to become the most improved province in research.

About the Canada Foundation for Innovation (CFI):
The Canada Foundation for Innovation (CFI) was built on the ideals of thinking big and investing in areas that matter to Canadians. Since its creation in 1997, the CFI has ensured Canadian researchers have the tools — the cutting-edge labs, facilities, and equipment — they need to push the frontiers of knowledge in all disciplines, and to contribute to the full spectrum of research — from discovery to technology development. This has allowed our brightest minds to contribute to better health outcomes, a cleaner, greener environment, evidence-based policy-making, and the competitiveness of Canadian businesses.

About the CFI's - College-Industry Innovation Fund (CIIF):

College-Industry Innovation Fund (CIIF) seeks to enhance the capacity of colleges to support business innovation in Canada by providing them with state-of-the-art, industry-relevant research infrastructure to foster partnerships with the private sector in a specific area of strategic priority to the institution. The CIIF is intended to support substantial research infrastructure projects that will augment the existing applied research and technology development capacity of colleges and allow them to respond to important sector industry needs.

About the CFI's - John R. Evans Leaders Fund (JELF):
The John R. Evans Leaders Fund enables a select number of an institution's excellent researchers to undertake leading-edge research by providing them with the foundational research infrastructure required to be or become leaders in their field. In turn, this enables institutions to remain internationally competitive in areas of research and technology development, aligned with their strategic priorities.