

2017 – 2018

Research Support Fund

Public Acknowledgement,
Objectives & Outcomes

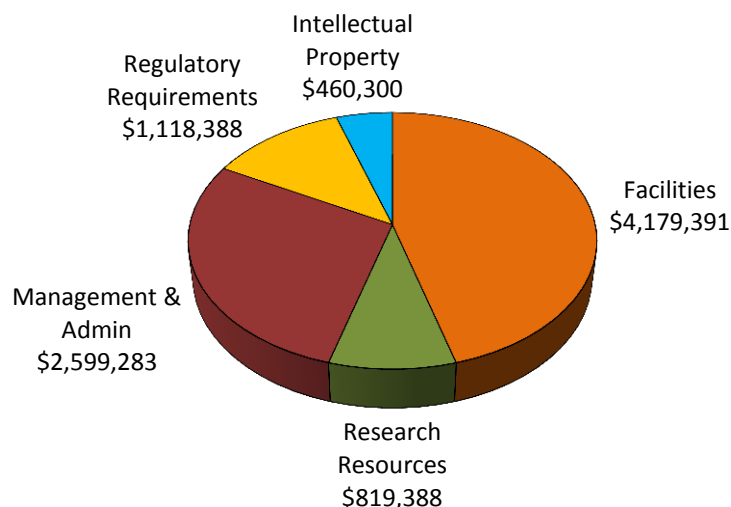
Office of the VP (Research & International)

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2017 - 2018 Research Support Fund Outcomes Report

The University of Manitoba received **\$9,176,750** in Federal RSF support.

The following chart provides an overview of how the funds were allocated under each of the five expenditure categories (including the affiliated institutions):



Research Facilities

- Renovations to Dr. Francis Lin's lab in Physics improved functionality of his immunotraficking experiments. Dr. Lin carries out photolithography work for the fabrication of microfluidic devices as well as live cell migration and flow cytometry research projects. Cell migration is critically underlying many physiological processes ranging from immune responses to tissue development and to cancer metastasis.
- Relocation of the Ultrasonics Research Laboratory in the Allen Building. Its current location is serviced by a single exit and occupancy of this level is not permissible by code. The research activities involve the investigation of the physical properties of complex, inhomogeneous materials using state-of-the-art ultrasonic, direct contact and non-contact methods. These experimental approaches discover new wave phenomena which impact our understanding of basic wave physics and investigate wide range of mesoscopic materials.

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- The MRC Sputter System in the Nano-Systems Fabrication Laboratory (NSFL) is heavily used by practically all researchers in the NSFL, and provides metal and dielectric coating of substrates. Its three 6 inch diameter magnetron sputter sources were reaching end of life. They were replaced with low maintenance and less expensive Lesker 2 inch diameter magnetrons. In addition, these smaller 2 inch magnetrons will also allow the purchase of material sources at significantly lower cost, saving research costs for NSFL users.
- The annual maintenance, service contracts of research equipment and the technical support in the research laboratories are required across the University of Manitoba. These investments are vital for researchers to maintain their ongoing research programs by preventing irreversible damage to state-of-the-art equipment, enhance their knowledge and expertise to sustain research productivity and maximize the success of faculty members.

Research Resources

- Renewal of the Gaussian license for HPCC. Gaussian 16 is the latest version of the Gaussian series of electronic structure programs used by chemists, chemical engineers, biochemists, physicists and other scientists worldwide. It provides a wide-ranging suite of the most advanced modeling capabilities available to investigate real-world chemical problems in all of their complexity, even on modest computer hardware.
- Renewal of the Elsevier Inc. SciVal research evaluation tool. It offers quick, easy access to the research performance of 9,400 research institutions and 230 nations worldwide. SciVal is a ready-to-use solution with unparalleled power and flexibility to visualize research performance, benchmark relative to peer institutions, develop strategic partnerships, identify and analyze new, emerging research trends, and create uniquely tailored reports.
- Document Delivery provides research material, not owned by the University of Manitoba, at no cost to the University faculty and graduate students who are the majority users. The Document Delivery is very dependent on the number of requests for material received from researchers and equally dependent on the Libraries being able to supply those requests from within its own collections. In

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2016, Libraries received 9,363 requests for materials not held in our collections and 2.46 million successful article requests for electronic resources.

Management and Administration

- The RSF contributes towards the considerable amount of salaries, maintenance of information systems, financial and auditing costs and research planning. We use RSF to support promotional costs of sharing research and knowledge mobilization activities with external and internal communities, and to support costs of development of grant applications and research proposals for the University's research enterprise as a whole.
- The Research Life Magazine is a publication of the Office of the Vice-President (Research & International). The magazine highlights the quest for knowledge that artists, engineers, scholars, scientists and students at the University of Manitoba explore every day. It is published twice annually with winter (January) and summer (July) issues. RSF supports the costs associated with its publication.
- The Faculty of Architecture's Centre for Architectural Structures and Technology (C.A.S.T) is an interdisciplinary research laboratory embracing technical and poetic dimensions of making. It provides unique conditions for critical and creative experimentation with technologies germane to the design, construction and performance of the built environment. C.A.S.T. employs a coordinator to manage the use of the workspace, help ensure a safe working environment, maintain tools and equipment and source leads for new projects and collaborators.
- The continued management and administrative support in the Office of Research Services, Office of Legal Counsel, Central Administration and the Technology Transfer Office along with the efforts of the Research Facilitators are part of the success at securing large collaborative contracts and research grants.

Regulatory Requirements and Accreditation

- Research Support funding was used to perform animal facility upgrades at the Glenlea Research Station, University of Manitoba, to support scientists from several faculties who engage in coordinated, collaborative, integrated research for improving the economic and environmental sustainability of livestock production systems.

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1. The large ruminant handling systems were successfully enhanced to provide improved footing for safe movement and restraint for the research animals. The new system has a more stable entrance and holding area for the animals thus reducing the probability of slips and falls.
2. The automated ventilation system was installed to provide a more consistent internal research environment for the laying hens. In addition, the new system can be monitored via a cell phone so staff and researchers can be in constant contact with the internal environment and make adjustments remotely as needed to meet Code of Practice requirements.
3. The updated electrical system allows for a more thorough washing of the broiler facility thus reducing the probability of disease and a better environment for the research birds as outlined in the Code of Practice.

These animal facility upgrades were performed to ensure that the University meets or exceeds standards set by the Canadian Council on Animal Care, their Codes of Practice and national and provincial worker safety regulations.

- Research Support Funds has permitted the University of Manitoba to address laboratory support systems, safety concerns, failing infrastructure, limited capabilities, and building deficiency issues that were previously not possible to complete using existing budgets.

Intellectual Property

- The continuous support towards the salary and operating costs of the Technology Transfer Office and an employee in the Office of Fair Practices and Legal Affairs has been critical to the high quality prudent management of the university's intellectual property.

The Technology Transfer Office (TTO) oversees an Intellectual Property estate of over 400 patents covering 300 university developed technologies. They manage over one-hundred technology-based alliances with local and global partners.

The Game Changer Competition is designed to increase the amount of entrepreneurial activity across the University by problems identification and figuring out their solutions. Game Changer is intended to be an annual

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competition and expanded to include other Manitoba post-secondary institutions, and citizens of Manitoba.

The Office of Fair Practices and Legal Affairs drafts technology commercialization agreements in consultation with the Technology Transfer Office. The University receives royalties for inventions and works with TTO to prepare and negotiate technology commercialization agreements and incorporate start-up companies.

Metrics 2017-2018:

- 48 Invention Disclosures
- 18 Patents filed; 2 issued patents
- 1 non-exclusive license issued
- 100 Agreements signed
- \$0.92M in Royalty Revenue

Affiliated Institutions

The University of Manitoba and the network of affiliated institutions have a mutual interest in achieving excellence in research activities.

This integration establishes the basic principles and objectives of an affiliation regarding the administration, regulation and accountability of research carried out by various groups of individuals with University appointments, and by others associated with the University, including students.

A comprehensive list of affiliated institutions includes:

- Cancer Care Manitoba www.cancercare.mb.ca
- St. Andrew's College (MB) https://www.umanitoba.ca/colleges/st_andrews/
- St. John's College http://umanitoba.ca/colleges/st_johns/
- St. Paul's College http://umanitoba.ca/colleges/st_pauls/
- University College (UofM) <http://umanitoba.ca/colleges/uc/>
- St. Boniface General Hospital <https://www.saintboniface.ca/>
- Winnipeg Regional Health Authority <http://www.wrha.mb.ca/>

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2017 - 2018 Performance Indicators and Outcomes

Eligible Expense Category	Performance Objectives	Performance Indicators	Target Outcomes	Outcomes Reported at Year End
Research Facilities	<p>Strengthen researcher retention and quality of research by upgrading and maintaining research facilities and equipment</p> <p>Ongoing technical support for laboratories, offices and other facilities.</p>	<p>Specific lab renovations to attract potential research funding</p> <p>Annual research equipment maintenance and service contracts</p>	<p>Modern and dependable research facilities & equipment.</p> <p>Efficient and productive research activities.</p> <p>Attraction of potential research funding</p>	<ul style="list-style-type: none"> • Faculty of Science Dr. Francis Lin's lab renovations – increase functionality for immunotrafficking experiments. • Relocation of the Ultrasonics Research Laboratory in the Allen Building to be permissible by code. • Upgrading of the MRC Sputter System in the Nano-Systems Fabrication Laboratory used by all researchers in the NSFL. It provides metal and dielectric coating of substrates.
Research Resources	<p>Improve and manage research data information & analysis by upgrading databases and access to electronic resources</p>	<p>% change of data usage and downloads for research purposes</p> <p>Purchase of electronic resources, databases, online access to journals and upgrades to cables and wireless technologies</p>	<p>Enhance research with up-to-date data management systems and information</p>	<ul style="list-style-type: none"> • Library data usage annual comparison <ul style="list-style-type: none"> ○ 45% increase in page views & 5% decrease in users on the UM Digital Collections Site -Access to Historical Canadian Documents ○ 2.46M successful article requests from electronic resources (8.7% increase) • Finance & Accounting WRDS usage data <ul style="list-style-type: none"> ○ 143% increase in data extracted (1,200GB) ○ 787 in queries ○ 13% increase in users (70)
Management and Administration	<p>Provide research administrative support for processing new grants and contracts</p> <p>Monitor expenses and review processes to ensure research compliances are meeting external agency guidelines</p>	<ul style="list-style-type: none"> • # grants • # contracts • # industry partners 	<p>Maintain success rates in research grants, contracts and industry partners</p>	<ul style="list-style-type: none"> • Grants <ul style="list-style-type: none"> ○ 1,364 Applications ○ 766 Awards (7.9% increase) ○ 56.2% success rate • Contracts <ul style="list-style-type: none"> ○ 243 Applications ○ 134 Awards ○ 55.1% success rate • Industry Partners

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Eligible Expense Category	Performance Objectives	Performance Indicators	Target Outcomes	Outcomes Reported at Year End
Regulatory Requirements and Accreditation				<ul style="list-style-type: none"> ○ 108 Potential Partners ○ 62 Participating Partners ○ 57.4% success rate
	Comply with regulatory requirements <ul style="list-style-type: none"> • Upgrade and maintain research facilities • Train faculty and other research personnel in health & safety, animal care, ethics review, handling radiation & biohazards and environmental assessments • Ongoing support for staff & technician salaries 	Improved compliance with regulatory requirements as measured by laboratory inspections, incident investigations and regulator’s audits. # of certificates issued to trained faculty and research personnel	Research facilities & equipment meet regulatory requirements Trained faculty and research personnel Fewer incident investigations	<ul style="list-style-type: none"> • Animal Care <ul style="list-style-type: none"> ○ 248 new Protocols and renewals ○ 121 Wet labs were delivered (4% increase) ○ 227 people completed the animal user online training course (16% increase) ○ 570 Post Approval Monitoring (PAM) visits (includes follow-ups and 8 lab inspections)- 44% increase ○ Increasing demands for meeting guidelines and CCAC changes • Human Ethics Bannatyne Campus <ul style="list-style-type: none"> ○ 592 in new study submissions ○ 18.3% increase in annual reviews ○ 4.8% increase in amendment packages ○ 1.8% decrease in new protocols • Human Ethics Fort Gary Campus <ul style="list-style-type: none"> ○ 400 new Protocols ○ 268 Amendments ○ 427 Renewals (15% increase) ○ Increase in protocol deviations & noncompliance <p>CCAC full compliance (certificate received)</p> <ul style="list-style-type: none"> • Maintained the Certificate of Good Animal Practice

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Eligible Expense Category	Performance Objectives	Performance Indicators	Target Outcomes	Outcomes Reported at Year End
Intellectual Property	Sustain the Technology Transfer Office Increase the institution's research base by identifying collaborative research opportunities	<ul style="list-style-type: none"> • # Patents filed • # Invention Disclosures • # Licenses • % change in Startups • \$ in Royalty Revenue 	Value-added growth of new research partnerships Continued support to researchers in their commercial endeavors and industry linkages	<ul style="list-style-type: none"> • 48 Invention Disclosures • 18 Patents filed; 2 issued patents • 100 Agreements signed • 1 non-exclusive License issued • \$0.92M in Royalty Revenue Game Changer Competition- Year 3 <ul style="list-style-type: none"> • 204 Phase 1 Problem Submissions (7% increase) • 18 Phase 2 Solutions Submissions (22% increase)