

Examples of the Range of Research Accomplishments, Recognition and Impacts Valued at McGill

This document reflects the diversity of research accomplishments, recognitions and impacts valued within our University community. It is expected to serve as a living document that will expand over time to reflect evolutions and innovations in academic research. Examples enumerated here are intended to be illustrative, providing guidance to those preparing and evaluating research portfolios. These examples do not constitute an exhaustive or definitive list of recognized and valued research activities and outcomes. Moreover, no example cited here will, by itself, necessarily be determinative of a reappointment, tenure or promotion application.

Publications

- Over a series of three publications in leading journals, I advanced a feminist theory of contractual negotiation that has had substantial impact on the field, as evidenced by the [XXX] citations these publications have garnered in just [YY] years.
- In what has become a text now widely used in the curricula of PhD programs in my field, I challenged prevailing orthodoxy as regards the role of artists in social movements, drawing on an in-depth case study of HIV/AIDS activism. The book is well cited, with [XXX] citations since [YYYY].
- My research on ecosystem services has resulted in multiple articles published in *Nature* and was incorporated into several chapters in the [YYYY] Millennium Ecosystem Assessment.
- The open-source software developed by my group to implement and compare reinforcement learning algorithms is available on GitHub and has a base of more than [XXX] users and [YYY developers] who are now contributing to it.
- My book is the leading ethnographic study demonstrating the rich and complex social, economic and political systems of the [XXXX] nation in the pre-contact period.
- On the strength of my publications on the specific regulation of domestic work, I was named the International Labour Organization's lead on international standard setting on decent work for domestic workers.
- My publications on innovative, problem-based teaching and learning in electrical engineering have spurred the reform of undergraduate Engineering curricula across various universities. I have guided professors at institutions such as [XXXX] as they have adopted problem-based pedagogical approaches in their courses.

Research prizes or awards

- One of my publications received the "Best Paper of [YYYY]" award from the leading journal in which it was published.
- In [YYYY], I was awarded a prestigious Killam Prize by the Canada Council for the Arts.
- In [YYYY], I was awarded the prestigious Rutherford Memorial Medal in Physics by the Royal Society of Canada.
- In [YYYY], I received the Pathfinder Award from the Canadian Association of Black Lawyers.
- In [YYYY], I was awarded the NSERC Synergy Award for Innovation resulting from a partnership with [ABC Co] – a collaborative arrangement that yielded commercial benefits in addition to ground-breaking research that formed the basis of several publications in leading journals.

- In [YYYY], I was awarded the prestigious [XXX] Fellow recognition by the International Society of [...], the main scholarly society in my field of research.

A research discovery or invention

- My laboratory is credited with the development of a novel method for studying genomic DNA methylation in wild organisms – a technique that opens new research frontiers at the intersection of ecology and epigenetics. Our method has been the focus of a series of publications in leading journals in my field, and has been widely adopted by other research teams.

An artistic production or performance

- With funding from a collection of industry partners in the arts, my institute, together with a theatre group, the Schulich School of Music and Opera McGill, conducted a yearlong performance, research and teaching project with a focus on Shakespeare.

Industry grants and contracts

- In tandem with McGill's commercialization team and based on a patented technology, I applied to Phase I of NSERC's Idea to Innovation (NSERC I2I) Program together with an industrial partner and was awarded a grant that allowed me to further develop a new technology. We were successful enough to move to Phase II of the same program, which resulted in cash contributions from the industrial partner to prepare the invention for market.
- I received funding from various NSERC technology partnership programs, including Collaborative Research Development (CRD) and strategic grants. This funding allowed me to prototype materials and processes related to an invention in photonics. This step provided industry validation for the technology, leading to the creation of a spin-off company and a partnership with a Montreal photonics firm.
- I received NSERC Strategic Grant funding for research into new materials to make optical devices for telecommunications through collaboration with a Laval University spin-off.
- My institute received a SSHRC grant, which we are using to design and develop adaptive musical instruments for children with disabilities. These instruments are being integrated into pedagogic, therapeutic and recreational contexts via a partnership with a specialized school in Montreal.
- My lab was awarded a significant grant from the Bill and Melinda Gates Foundation and Merck Canada to work together with researchers at the University of Toronto to discover new and improved drug treatments for tuberculosis, malaria and neglected tropical diseases.

Research that has yielded

Patents, copyrighted material, software

- My research led to the development of software that reconciles medication for admitted hospital patients. The system is presently running in several hospital units and data collected from the pilot rollout indicates a significant reduction in confusion and delays related to patient medication.
- My discoveries related to photonics technologies are now protected by a US patent.

- I have several patents pending to protect technologies associated with a “green” technology production and use of forest products materials for personal care and print products.
- Research conducted at my companies by McGill graduates has generated numerous technology patents.

Policy innovations implemented in practice

- My research into the legal implications of genetic inventions led me to act as the lead expert in drafting new OECD Guidelines on the licensing of genetic inventions.
- My expertise in nanocrystalline structures allowed me to draft a component of a policy document which is now part of a standard protocol to assess properties of nanocrystalline cellulose.
- Because my research focuses on the intersection between intellectual property policy and the life sciences, I was invited to act as the lead expert in an OECD publication on collaborative mechanisms for using intellectual property in the life sciences.
- Because of my research and expertise on the topic of intellectual property, I was invited to participate on an expert panel established by NSERC to revise its intellectual property policy.
- My qualitative research on the lending practices of private, high-risk lenders to credit-poor borrowers prompted more protectionist oversight policies, which have been adopted in provincial legislation in Quebec and several other provinces.

Commercial activity

- I developed the basis for a new drug to treat cystic fibrosis which has been patented and subsequently licensed to a spin-off company. I am the chief scientific officer for the company and I collaborated on the scientific analysis that was completed in parallel with a clinical trial to elucidate the drug’s mechanism of action.
- I developed and patented advanced sensors for real time analysis, improving the way people perform measurements. My team entered McGill’s Dobson Cup competition with my invention and we won \$10,000. Using these funds, we incorporated a company which licensed the patents from McGill. The company entered into an exclusive distribution agreement and we shipped our first order a year ago. The company is now developing a flow system together with an international distributor based in Europe. One of the company’s industrial partners received a substantial governmental grant (NSERC I2I) to further develop our technology and we are currently applying to the Industrial Research Assistance Program (IRAP).
- I am working with pharmaceutical companies to develop a novel antibody-conjugated drug for the treatment of different cancers and to identify a gene signature corresponding to the breast cancer endothelium.

Social ventures

- I developed an app that together with a low-cost over the counter self-test can detect HIV without the need for a doctor’s visit.
- I launched a pro bono legal consultancy for start-ups and social ventures in Montreal.

Consultancies

For industry

- As an expert in my field, I have participated in numerous industry round-table discussions to help define the future directions and evolution of cancer treatment.
- I consult widely for industry in telecommunications and sustainable technologies.
- I have been appointed to chair, or participate in, the technology advisory boards of a McGill University spin-off and a Bishops University spin-off.
- I consulted pro bono with lawyers arguing patent cases at the Supreme Court of Canada.

For government

- I led several teams drafting reports for Industry Canada, Environment Canada, Justice Canada, and Health Canada on technology transfer, gene patents and intellectual property policy.
- My expertise has led me to be invited to chair or participate in, several NSERC technology or industry partnerships programs, including I2I, and the US department of Energy.
- Given my research in migration and human rights law, I was called to give expert testimony before a Parliamentary committee deliberating proposed legislative amendments that would redefine Canada's temporary foreign worker program.
- Given my research theorizing issues of governance and multiculturalism, I was a member of a team commissioned to redesign the province's primary school curriculum on ethics, culture and religion.

For non-governmental organizations

- I am chair of a prominent national research network's Knowledge and Technology Exploitation Committee.

Impacts including notable technological, clinical or policy innovations, commercial activity or social ventures

In industry

- I patented and licensed from McGill a technology that led to the first realization of the optical chip volume manufacturing paradigm for telecommunications.
- I developed an adaptive learning music recommendation system that automatically suggests songs to listeners based on past preferences, song descriptions, and personal demographic information. The technology was patented and licensed to a company that specializes in Internet applications and music recommendation tools. The technology has been incorporated into the company's flagship product, and is now the engine for a commercial product launched by one of Canada's largest media companies.
- I led development of the world's first all-plastic, LED color liquid crystal display technology based on a McGill transistor patent; the achievement was recognized by two international awards.
- I obtained a US patent to protect my discoveries related to methods of making and using skin-derived stem cells. This technology was licensed to a Canadian therapeutics company which is funding further research in the area of treating neurological disorders.

- I have spun out two companies from McGill which have yielded equity-based returns and/or returns based on licensing revenues.
- I am the founder and vice-president of scientific affairs for a Montréal and New York -based contract research organization that provides sophisticated preclinical drug development capabilities to commercial and academic customers.
- My research on tele-medicine has influenced and measurably enhanced the quality of delivery of health services to the Canadian North.

In government

- Because of my expertise on the precautionary principle, I was appointed to an advisory committee to Health Canada and Environment Canada. Over a period of four years, our deliberations and advice influenced key decisions in implementing the Canadian Environmental Protection Act.

In civil society sectors

- I developed a questionnaire, now used widely by medical practitioners, that allows individuals to give their doctors a clear understanding of the quality and intensity of pain that they are experiencing.
- I patented and licensed a novel technology for treating amblyopia (lazy eye syndrome) to a spin-off company. The company entered into a collaboration with Paris-based gaming company to develop the world's first therapeutic videogame.

Research funding

In addition to funding awarded pursuant to peer-reviewed competitions from public funding agencies (e.g., FRQ, SSHRC, CIHR, NSERC), the following are examples of recognized and valued research funding.

From industry contracts

- I received an NSERC Collaborative Research and Development grant to develop, together with a Canadian company, a new laser-based light source for use in projectors, leveraging previous research I have done in this area.
- Through the former MDEIE program, one of my companies was awarded a contract from the former *Institut des communications graphiques du Québec* to validate a manufacturing protocol.
- A company made contact with my lab in order to get help with a problem they were facing. We developed a solution to meet their immediate need and also generated a promising new technology. Now, the industry partner is supporting the development of this technology through sponsored research and my team is leveraging NSERC's Collaborative Research and Development program.
- I received an NSERC Collaborative Research and Development grant and a Technology Partnership Grant to develop, together with a Canadian company, a new optical chip technology for telecommunications.
- I received an NSERC Collaborative Research and Development grant to develop, together with a Canadian company, a new technology for avionics.

**** Note** that some industry contracts will be bound by confidentiality agreements limiting disclosure of details about associated research. In such cases, the researcher should seek guidance from their Associate Dean (Research) about presenting information about the research impact and contributions to the scientific field, without explaining details (e.g., through letters from the industry partner).

From other non-traditional sources (e.g. angel or venture funding for a start-up)

- A Montreal-based life sciences venture capital fund financed a neuro-inflammation research project I developed based on an anti-inflammation family of enzymes identified by my research team that may play a role in multiple sclerosis.
- My team receives \$1.4 million per year in funding from a US-based venture capital firm to carry out research that guides optimal clinical development strategies for novel portfolio drug candidates in oncology.
- I received funding from the Climate Change and Emissions Management Corporation (CCEMC) Grand Challenge for two projects designed to use carbon dioxide in industrial processes. One Project involves using carbon dioxide in concrete production. The other project uses solar power to transform carbon dioxide and water into hydrocarbon fuels.
- I received funding from the International Fund for Agricultural Development to support capacity-building for women's organizations involved in food conservation and food security in Africa.
- I received funding from the Bill and Melinda Gates Foundation to develop a vaccine against malaria in Cameroon.
- I received funding from World Vision to support knowledge translation in the area of mental health following a natural disaster in Peru.