Research Centres & Institutes

2025 Annual Aggregated Report

Brighter World

McMaster University

An overview of 2025

The 2025 Annual Report offers an opportunity to recognize the work taking place across McMaster University's Research Centres and Institutes (RCIs). These communities serve as catalysts for innovation, bringing together diverse perspectives to advance knowledge and address complex challenges.

Over the past year, our RCIs have continued to demonstrate the strength of collaborative, multidisciplinary research. The breadth and quality of their contributions reflect not only academic excellence but also a shared commitment to discovery and real-world impact. This progress is made possible through the leadership of our directors and the ongoing efforts of faculty, staff, and students whose work drives these initiatives.

The Office of the Vice-President, Research continues to champion the RCI Undergraduate Summer Research Program, which has provided invaluable research opportunities to more than 60 undergraduate students across various faculties since its inception in 2021.

This year's report highlights both the measurable impact and broader contributions of our 71 RCIs to academia and society. Beyond producing over 4,800 publications, 79 intellectual property disclosures, 62 patents, and 650 licences, our RCIs have strengthened interdisciplinary collaboration and supported innovation across sectors.

They also provided training opportunities for over 5,700 students and fostered partnerships with over 1,300 external organizations spanning industry, non-profits, and government.

Thank you for your continued support in sustaining a vibrant research ecosystem at McMaster University.

Martin Horn
Deputy Vice-President, Research
Office of the Vice-President, Research

Indigenous Research Day 2025, hosted by the McMaster Indigenous Research Institute.

By the numbers

Interactions with RCIs

2084

FACULTY

Number of faculty member interactions with RCIs.

541

POSTDOCTORAL FELLOWS

Number of postdoctoral fellow interactions with RCIs.

3089

GRADUATE STUDENTS

Number of graduate student interactions with RCIs.

2710

UNDERGRADUATE STUDENTS

Number of undergraduate student interactions with RCIs.

2280

OTHER ACADEMIC RESEARCHERS

Number of non-McMaster academic researcher interactions with RCIs.

1308

OTHER NON-ACADEMIC RESEARCHERS

Number of external collaborator (industry, not-for-profits, government, etc.) interactions with RCIs.

By the numbers

Enabled by RCIs

4870
PEER-REVIEWED JOURNAL PUBLICATIONS

580
CONFERENCE PROCEEDINGS

1950
CONFERENCE PRESENTATIONS

292
GRADUATE DEGREE COMPLETIONS

642
UNDERGRADUATE SENIOR PROJECTS

285
REPORTS FOR EXTERNAL PARTNER ORGANIZATIONS

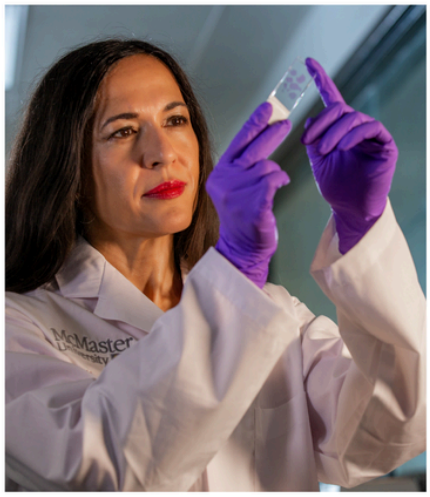
79
IP DISCLOSURES

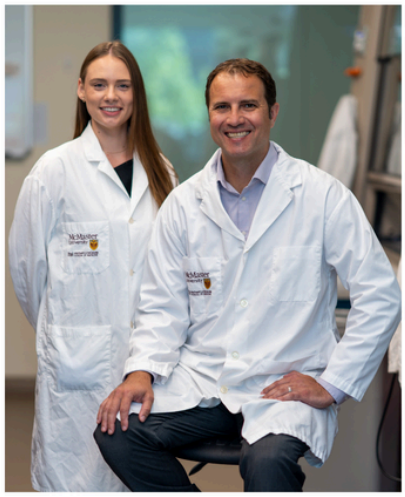
62
PATENTS

651
LICENSES TO EXTERNAL ORGANIZATIONS

Research Impact & Influence

Developing new therapies for metastatic lung cancer





Left: Shelia Singh. Right: Agata Kieliszek and Jakob Magolan.

The Centre for Discovery in Cancer Research (CDCR) is accelerating the translation of fundamental cancer research into real-world solutions, including new therapies that target some of the most challenging aspects of the disease.

That impact is exemplified by the launch of Block Biosciences, a McMaster startup co-founded by Professors Sheila Singh (inaugural Director of the CDCR) and Jakob Magolan, alongside student-entrepreneur Agata Kieliszek. The company is advancing a new class of small-molecule drugs designed to prevent lung cancer from spreading to the brain – a form of metastasis associated with poor outcomes.

Building on discoveries made through CDCR-supported research, the team has identified and is targeting a key enzyme that metastatic cancer cells rely on to survive and spread. By disrupting this process, their approach aims to stop metastasis at a critical stage, offering a potential new pathway for treatment where few effective options currently exist.

With proof-of-principle studies already complete, Block Biosciences is now advancing toward first-in-human clinical trials anticipated within the next few years. The company represents a powerful example of how interdisciplinary collaboration – spanning cancer biology, medicinal chemistry and entrepreneurship – can move promising discoveries beyond the lab.

By enabling this kind of translational pipeline, CDCR continues to play a pivotal role in turning scientific insight into tangible health innovations, with the potential to improve outcomes for patients in Canada and around the world.

The new cohort of the Master of Indigenous Studies program. Each student gave a five-minute presentation about their proposed master's work.

Advancing Indigenous research through community and collaboration

The McMaster Indigenous Research Institute (MIRI) plays a leading role in advancing Indigenous scholarship at McMaster by fostering spaces for connection, dialogue and community-engaged research.

A cornerstone of this work is Indigenous Research Day, which has become a signature annual gathering at McMaster. Hosted for the first time in 2022, Indigenous Research Day brings together Indigenous faculty, students, Elders and community partners to showcase the depth and breadth of Indigenous research at

McMaster. Led by MIRI in collaboration with multiple University and community partners, including the Indigenous Studies Department, Indigenous Student Services, the Indigenous Health Learning Lodge, FEAST, and the Office of Advancement, the event reflects a strong, cross-institutional commitment to supporting Indigenous research.

The event extends beyond showcasing projects. It creates a visible and affirming space where Indigenous methodologies, community-based research, and creative scholarship are centered, fostering meaningful dialogue across disciplines and communities. Presentations span a wide range of topics, from land-based knowledge and health research to community partnerships and knowledge mobilization, highlighting both emerging and established work.

A defining feature of Indigenous Research Day is its Indigenous artisan market, which features local artists and strengthens connections between research, culture and community. Together, these elements reinforce the event's role as both an academic and cultural gathering.

By strengthening networks, raising the profile of Indigenous scholarship, and fostering collaboration, Indigenous Research Day continues to shape institutional priorities while showcasing the powerful impact of Indigenous research at McMaster and beyond.

Democratizing human rights through global dialogue and collaboration

The Centre for Human Rights and Restorative Justice (CHRRJ) is advancing critical conversations at the intersection of human rights, democracy and participation – creating space for inclusive, globally engaged dialogue.

In October 2025, CHRRJ hosted "Democratizing Human Rights: Towards an Inclusive & Participatory Human Rights Agenda," a two-day hybrid conference organized in collaboration with Participedia. Bringing together scholars, practitioners and activists from across Canada and around the world – including participants from Australia, Brazil, Ghana, India, the Philippines and South Africa – the conference created a dynamic forum for interdisciplinary exchange.

Structured around seven thematic panels, the program featured 20 selected papers spanning fields such as political science, constitutional law, children's rights, anthropology and design research. A keynote address by the Honourable Judge Chile Eboe-Osuji of the Caribbean Court of Justice anchored the event, alongside a panel on human rights, leadership and democratic principles with Bonny Ibhawoh (McMaster University), Melissa Levin (University of Toronto) and Lara Campbell (McMaster's Wilson College of Leadership and Civic Engagement).

Designed to encourage active participation, the conference incorporated workshop-style sessions, Q&As and networking opportunities, alongside podcast interviews exploring how participatory processes can shape human rights practice. Its hybrid format enabled broad access and engagement, supporting contributions from both early-career and established voices.

Supported by a Social Sciences and Humanities Research Council (SSHRC) Connection Grant led by Bonny Ibhawoh, the conference reflects CHRRJ's commitment to fostering inclusive, participatory approaches to human rights, and to co-creating new knowledge, tools and perspectives to address evolving global challenges.

Transforming how researchers study attention in group settings

The McMaster Institute for Music and the Mind (MIMM) is advancing new ways to study how people experience and respond to music and other shared environments through innovative tools developed at LIVELab.

A major milestone in this work is the creation of SocialEyes, which was featured at the influential CHI Conference on Human Factors in Computing Systems. Developed by Dr. Lauren Fink and graduate student Shreshth Saxena, the open-source system enables researchers to capture and analyze synchronized eye-tracking data from multiple participants at the same time in real-world environments.

Traditionally, eye-tracking research has focused on one participant at a time in highly controlled lab settings. SocialEyes extends this capability to group contexts, allowing gaze data to be recorded simultaneously from many individuals and aligned over shared experiences such as concerts, film screenings and lectures.

Pilot testing in LIVELab demonstrated the system's ability to capture and synchronize data across participants, enabling researchers to examine how attention shifts within groups and how individuals collectively engage with dynamic real-world events. By projecting gaze data into a shared analytical space, the system makes it possible to study patterns of collective attention that are not visible through single-user approaches.

Developed as an open-source platform, SocialEyes reflects a broader commitment within MIMM and LIVELab to making advanced research tools more widely accessible, while opening new possibilities for studying perception, attention and social interaction in everyday settings.

Driving innovation in biomanufacturing through automation and training

The Biointerfaces Institute (BI) is supporting innovation in Canada's growing bio-manufacturing sector through advanced infrastructure and industry collaboration.

At the centre of this work is the Sartorius Bioprocess Automation Lab, a 1,600-square-foot facility located within the Institute. As the first lab of its kind in Canada dedicated exclusively to automating continuous biomanufacturing processes, it plays a key role in advancing the biologics value chain. The lab was also the

first facility launched with support from Stage Two of the Biosciences Research Infrastructure Fund (BRIF), part of a $2.2 billion national initiative to strengthen Canada's biomanufacturing and life sciences sector.

Within months of opening in 2025, McMaster students, working in collaboration with scientists from Sartorius, completed their first perfusion run – a continuous way of growing and maintaining cells to produce biologic therapies. Using automated systems that monitor and adjust conditions in real time, the team was able to improve how efficiently these processes run. Their results showed approximately 70 per cent higher productivity, consistent performance across multiple stages of production, and cell viability above 95 per cent throughout, demonstrating how automation can help make biomanufacturing more stable, efficient and scalable.

Through partnerships like this, McMaster is helping to train highly qualified personnel with skills in automated control and advanced data analytics. Students also gain hands-on experience through training opportunities at Sartorius research facilities in Germany and the United States, working alongside industry experts. Together, these efforts are helping to address skills gaps and support the development of Canada's biomanufacturing sector.

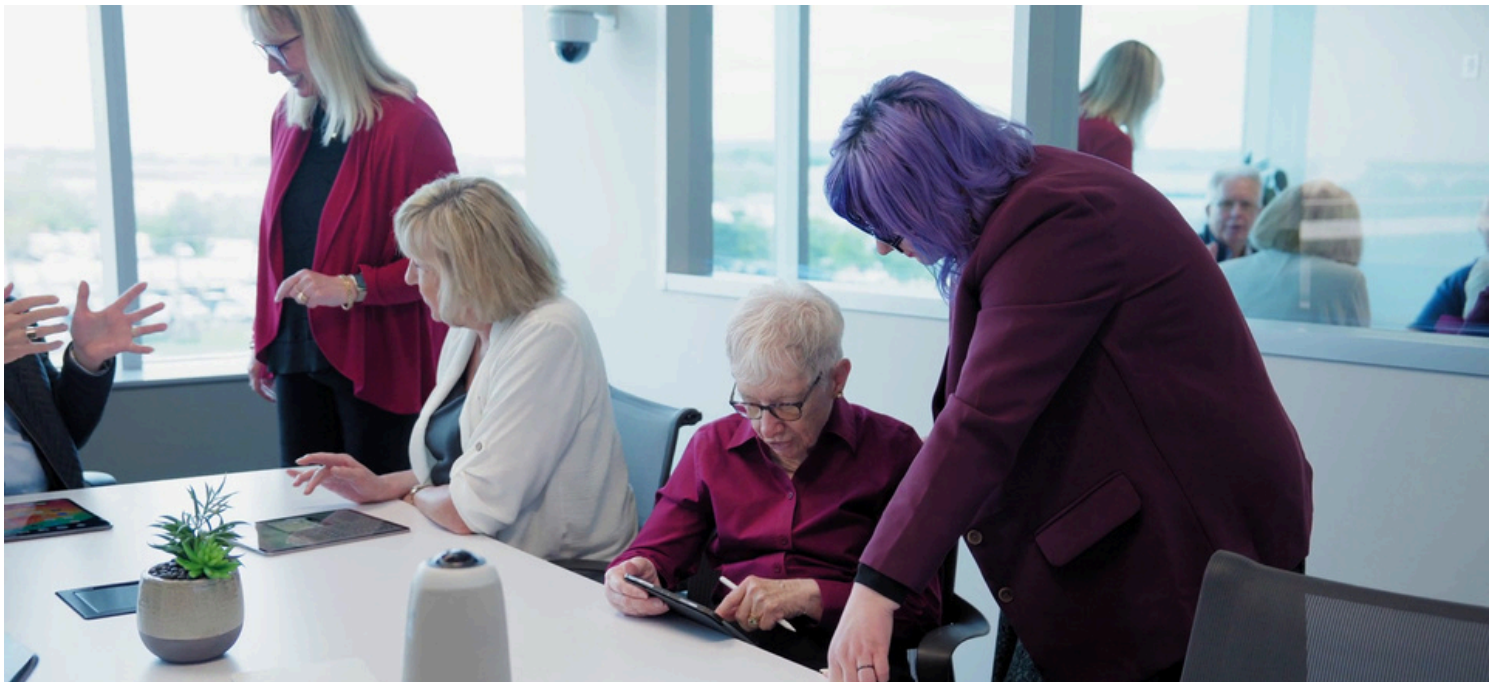
Enhancing digital inclusion for older adults through co-designed research

The McMaster Digital Transformation Research Centre (MDTRC) is advancing research to better understand and address barriers to digital participation among older adults, with a focus on real-world impact and community collaboration.

Through the MIRA-funded EMPOWrD Major Program of Research, MDTRC is examining key factors that shape digital inclusion, including mobility, health, misinformation resilience and social connection. This work spans six integrated research dimensions, enabling a comprehensive approach to understanding how older adults engage with digital technologies in everyday life.

A defining feature of the EMPOWrD program is its commitment to co-design. Older adults, care partners, and community organizations – including more than 100 stakeholders and end users to date – are actively involved in shaping research questions, technologies and interventions, ensuring that outcomes reflect lived experience and practical needs. This collaborative model supports the development of more accessible and relevant digital solutions.

One of the program's early projects brought together partners including the Hamilton Public Library and City Housing Hamilton, using the McMaster User Experience Lab (MUXL) to examine digital literacy training among older adults living in community housing. The project explored how targeted training can support greater confidence and engagement with digital tools.



By combining interdisciplinary research with community partnership and co-design, MDTRC is contributing to new approaches that support digital inclusion and participation, helping to ensure that older adults are not left behind in an increasingly digital world.

Fostering digital innovation for social impact

The Digital Society Lab is advancing interdisciplinary research to better understand and respond to the societal transformations of the digital age.

In 2025, the Lab marked a key milestone with the launch of its inaugural Social Impact Hackathon – a free, beginner-friendly competition designed to support students and alumni as they develop digital tools that can be used to address real-world challenges.

Throughout the weeklong event, participants attended a series of workshops about design thinking, wireframing, and product discovery, and participated in mentorship sessions with members of the Digital Society Lab team. The hackathon culminated in a final pitch competition at LR Wilson Hall, where projects were evaluated based on their creativity, scalability, and potential for social impact by a 3-member panel of external experts from the digital technology and social innovation sectors.

The first-place $1,000 prize went to the “Hackstreet Boys,” a team of McMaster Engineering students, for their app idea that helps users track their personal carbon footprint. As part of their prize, the team worked closely with the Digital Society Lab during the summer semester to build and evaluate a prototype based on their winning idea.

By creating opportunities for students and alumni to develop and share ideas, the hackathon reflects the Lab’s commitment to connecting research with practice. Through initiatives like this, the Digital Society Lab is supporting the development of evidence-based digital applications that respond to complex societal needs.

List of Research Centres & Institutes

Bertrand Russell Research Centre
Director: Dr. Alex Klein
Faculty of Humanities

Biointerfaces Institute
Co-Directors: Dr. John Brennan and Dr. David Latulippe
Faculty of Engineering

Brockhouse Institute for Materials Research
Director: Dr. Alex Adronov
Office of the Vice-President, Research

Canadian Centre for Electron Microscopy
Director: Dr. Nabil Bassim
Office of the Vice-President, Research

CanChild Centre for Childhood-Onset Disability Research
Co-Directors: Dr. Olaf Kraus de Camargo and Dr. Briano Di Rezze
Faculty of Health Sciences

Centre for Advanced Research in Experimental and Applied Linguistics
Director: Dr. Ivona Kucerova
Faculty of Humanities

Centre for Advanced Research on Mental Health and Society
Director: Dr. Marisa Young
Faculty of Social Sciences

Centre for Ancient Numismatics
Director: Dr. Spencer Pope
Faculty of Humanities

Centre for Automotive Materials and Corrosion
Director: Dr. Joey Kish
Faculty of Engineering

Centre for Clinical Neuroscience
Director: Dr. Benicio Frey
Faculty of Health Sciences

Centre for Community-Engaged Narrative Arts
Director: Dr. Amber Dean
Faculty of Humanities

Centre for Discovery in Cancer Research
Director: Dr. Shelia Singh
Faculty of Health Sciences

Centre for Emerging Device Technologies
Director: Dr. Jonathan Bradley
Faculty of Engineering

Centre for Global Peace, Justice and Health
Director: Dr. Chandrima Chakraborty
Faculty of Humanities

Centre for Health Economics and Policy Analysis
Director: Dr. Emmanuel Guindon
Faculty of Health Sciences

Centre for Human Rights and Restorative Justice
Director: Dr. Juanita De Barros
Faculty of Humanities

Centre for Mechatronics and Hybrid Technologies
Director: Dr. Saied Habibi
Faculty of Engineering

Centre for Metabolism, Obesity and Diabetes Research
Co-Directors: Dr. Katherine Morrison and Dr. Gregory Steinberg
Faculty of Health Sciences

Centre for Networked Media and Performance
On hiatus
Faculty of Humanities

Centre for Research in Micro- and Nano-Systems
Director: Dr. Jamal Deen
Faculty of Engineering

Centre for Research on Community Oriented Entrepreneurship
Director: Dr. Benson Honig
DeGroote School of Business

Centre of Excellence in Protective Equipment and Materials
Director: Dr. Ravi Selvanganapthy
Faculty of Engineering

David Braley Centre for Antibiotic Discovery
Director: Dr. Matthew Miller
Faculty of Health Sciences

Digital Society Lab
Director: Dr. Clifton van der Linden
Faculty of Social Sciences

Escarpment Cancer Research Institute
Director: Dr. Gregory Pond
Faculty of Health Sciences

Farncombe Family Digestive Health Research Institute
Director: Dr. Elena Verdu
Faculty of Health Sciences

Firestone Institute for Respiratory Health
Director: Dr. Dawn Bowdish
Faculty of Health Sciences

Gilbrea Centre for Studies in Aging
Director: Dr. Nicole Dalmer
Faculty of Social Sciences

List of Research Centres & Institutes

Global-Glocal Research Centre (G2RC)
Director: Dr. Sonia Anand
Faculty of Health Sciences

Institute on Ethics and Policy for Innovation
Director: Dr. Claudia Emerson
Faculty of Humanities

Institute on Globalization and the Human Condition
Director: New Director to be confirmed
Faculty of Social Sciences

Labarge Centre for Mobility in Aging
Director: Dr. Parminder Raina
Office of the Vice-President, Research

Lewis and Ruth Sherman Centre for Digital Scholarship
Director: Dr. Catherine Grisé
Faculty of Humanities

MacData Institute
On hiatus
Office of the Vice-President, Research

McMaster Advanced Control Consortium
Director: Dr. Christopher Swartz
Faculty of Engineering

McMaster Centre for Climate Change
Director: Dr. Sean Carey
Faculty of Science

McMaster Centre for Research on Employment and Work
Director: Dr. Catherine Connelly
DeGroote School of Business

McMaster Centre for Scholarship in Public Interest
Director: Dr. Henry Giroux
Faculty of Humanities

McMaster Centre for Software Certification
Director: Dr. Mark Lawford
Faculty of Engineering

McMaster Digital Transformation Research Centre
Director: Dr. Milena Head
DeGroote School of Business

McMaster Health Education Research, Innovation and Theory Centre
Director: Dr. Jonathan Sherbino
Faculty of Health Sciences

McMaster Immunology Research Centre
On hiatus
Faculty of Health Sciences

McMaster Indigenous Research Institute
Director: Dr. Savage Bear
Office of the Vice-President, Research

McMaster Institute for Energy Studies
Director: Dr. Dave Novog
Faculty of Engineering

McMaster Institute for Health Equity
Director: Dr. James Dunn
Faculty of Social Sciences

McMaster Institute for Music and the Mind
Director: Dr. Laurel Trainor
Faculty of Science

McMaster Institute for Research on Aging
Director: Dr. Parminder Raina
Office of the Vice-President, Research

MIRA | Dixon Hall Centre
Director Dr. Marla Beauchamp
Office of the Vice-President, Research

McMaster Institute for Transportation and Logistics
Director: Dr. Motaz Mohamed
Faculty of Engineering

McMaster Manufacturing Research Institute
Director: Dr. Stephen Veldhuis
Faculty of Engineering

McMaster Midwifery Research Centre
Director: Dr. Beth Murray-Davis
Faculty of Health Sciences

McMaster Origins Institute
Director: Dr. Jonathon Stone
Faculty of Science

McMaster Physical Activity Centre of Excellence
Director: Dr. Jennifer Heisz
Faculty of Science

McMaster Steel Research Centre
Director: Dr. Joseph McDermid
Faculty of Engineering

McMaster University Centre for Buddhist Studies
Director: Dr. James Benn
Faculty of Social Sciences

McMaster University Centre for Effective Design of Structures
Co-Directors: Dr. Wael El-Dakhakhni and Dr. Mike Tait
Faculty of Engineering

List of Research Centres & Institutes

Michael G. DeGroote Centre for Medicinal Cannabis Research
Director: Dr. James MacKillop
Faculty of Health Sciences

Michael G. DeGroote Centre for Transfusion Research
Co-Directors: Dr. Donald Arnold and Dr. Issac Nazy
Faculty of Health Sciences

Michael G. DeGroote Cochrane Canada Centre at McMaster
On hiatus
Faculty of Health Sciences

Michael G. DeGroote Institute for Infectious Disease Research
Director: Dr. Matthew Miller
Faculty of Health Sciences

Michael G. DeGroote Institute for Pain Research and Care
Director: Dr. Norm Buckley
Faculty of Health Sciences

Michael G. DeGroote National Pain Centre
Director: Dr. Norm Buckley
Faculty of Health Sciences

Michael Lee-Chin and Family Institute for Strategic Business Studies
Director: Dr. Ronald J. Balvers
DeGroote School of Business

Offord Centre for Child Studies
Director: Dr. Stelios Georgiades
Faculty of Health Sciences

Population Health Research Institute
Director: Dr. Hertzel Gerstein
Faculty of Health Sciences

Schroeder Allergy and Immunology Research Institute
Director: Dr. Susan Waserman
Faculty of Health Sciences

Statistics Canada Research Data Centre at McMaster
Director: Dr. Michael Veall
Faculty of Social Sciences

Thrombosis and Atherosclerosis Research Institute
Co-Directors: Dr. Patricia Liaw and Dr. Colin Kretz
Faculty of Health Sciences

Wilson Institute for Canadian History
Director: Dr. Kristine Alexander
Faculty of Humanities