

TWENTY



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HEALTH SCIENCES



Dean's message

"Together, advancing health through learning and discovery."



Each year, we reflect and celebrate our successes of the year before, and although the beginning of 2020 has been met with great challenges and uncertainties, it is important to continue to feel pride in our many advances that protect our world, safeguard our health and make a meaningful and sustainable impact today and into the future.

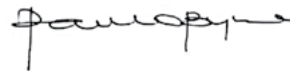
Indeed, the year 2019 in McMaster's Faculty of Health Sciences was one of tremendous celebration. We celebrated special anniversaries for our midwifery program, School of Rehabilitation Science and the Michael G. DeGroot School of Medicine, which marked 25, 30 and 50 years of excellence, respectively. We celebrated the generous support of many of McMaster's friends, including a legacy gift from Hamilton philanthropists Charles and Margaret Juravinski, who pledged an endowment of more than \$100 million to support researchers across Hamilton Health Sciences, McMaster University and St. Joseph's Healthcare Hamilton. Recently, this extraordinary couple announced another \$3 million gift to fund five major studies directly related to COVID-19, all led by FHS principal investigators.

In addition to the studies funded by the Juravinski donation, FHS researchers are involved in many projects aimed at managing COVID-19, from coming up with effective replacements for N95 masks and improved ventilators, to investigating whether convalescent blood of COVID-19 survivors may help others, to looking into the transmission dynamics of the pandemic disease.

The good news stories from the last calendar year have fueled us to push forward with new developments in education, research and service in response to the current pandemic. In this time of great uncertainty, the caring and thoughtful nature of our faculty, staff, students, alumni and friends has allowed us to prevail and show our determination to take care of each other and our communities. The COVID-19 pandemic has required many changes at McMaster, and brought our institution, and all other organizations, to uncharted territory. By coming together as a community, and working from strengths in the Faculty, we are demonstrating the power of this culture.

As Charles and Margaret Juravinski say in a recent letter to the community: "There is more than enough ingenuity and goodwill in the world to defeat this pandemic."

Their inspiring words remind us of the power of hope in trying times. In looking back at the accomplishments achieved by our Faculty in 2019, we can trust that our future will once again be bright, as we continue to make meaningful contributions that can protect our world today, and our generations to come.



Paul O'Byrne, MB, FRCP(C), FRSC
Dean and Vice-President
Faculty of Health Sciences
McMaster University

NEWS

McMaster selects new president

David Farrar has been appointed McMaster University's 8th president.

"At the Faculty of Health Sciences we have been very impressed with Dr. Farrar since we began working with him after he arrived as provost and vice-president, academic, and even more recently in his role as the acting president," said Paul O'Byrne, dean and vice-president of the Faculty of Health Sciences.



"We know he understands McMaster's culture of interdisciplinary collaboration and focus on innovation and excellence, and we greatly look forward to working with him in his new role."

Farrar's appointment was approved by both the Senate and the university's Board of Governors after an international search spanning more than nine months.

Farrar says it's time to find out exactly what we want the university to look like over the next five years and beyond.

"McMaster's success is rooted in taking chances. Our greatest leaps forward have happened when people came together and imagined something totally new like problem-based learning. Even more importantly they were encouraged to exercise their creativity, take a chance and do something astonishing. That's pretty remarkable and is exactly where we need to focus our collective expertise and energy."

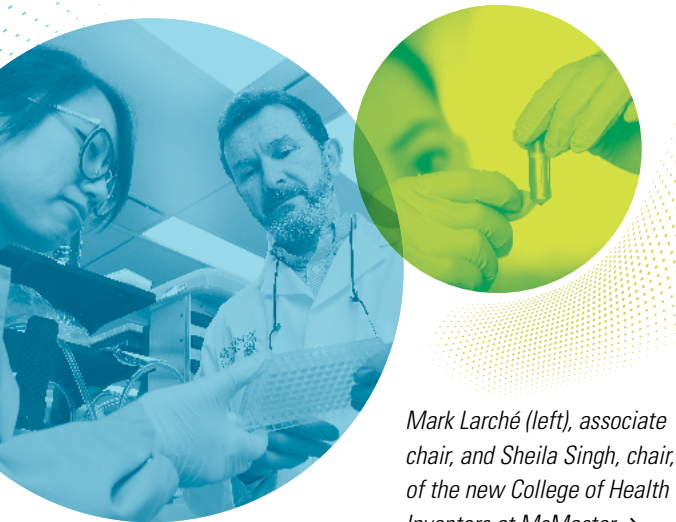
College of health inventors boosts culture of innovation

McMaster has formed a networking think-tank focused on fostering success in entrepreneurship and innovation. Called the College of Health Inventors, it is an initiative of the Michael G. DeGroot Initiative for Innovation in Healthcare (MGDII).

The College of Health Inventors was developed by Sheila Singh, professor of the Department of Surgery; Mark Larché, professor of the Department of Medicine; and, John Kelton, professor of the Department of Medicine and the executive director of the MGDII.

The group will meet several times during the year, both formally and informally, for discussions and presentations by invited speakers. Working together, this group will foster greater insight into commercial and entrepreneurial topics.

The College already has close to 30 full members who have demonstrated both interest and success in entrepreneurship, commercialization, and innovation. In addition, the College will have an associate group of members who have an interest in commercialization, licensing and company development, and are working to bring those to fruition.



Mark Larché (left), associate chair, and Sheila Singh, chair, of the new College of Health Inventors at McMaster. >



Collaborative workspace for health sciences library

Construction is underway at the Health Sciences Library in the Health Sciences Centre to make room for an innovative learning space for healthcare students and professionals to intermingle, collaborate and learn in an interdisciplinary setting using the latest advances in learning.

John Kelton, executive director of the Michael G. DeGroot Initiative for Innovation in Healthcare says the space, dubbed “The Clinic”, encourages a culture of entrepreneurship and innovation, which will be built around teams and individuals with different skill sets, often led by students.

“This beautiful space, which was enabled by a generous gift from the Heersink family will serve as a place where students, staff, and faculty can come together to develop solutions to health problems,” Kelton said.

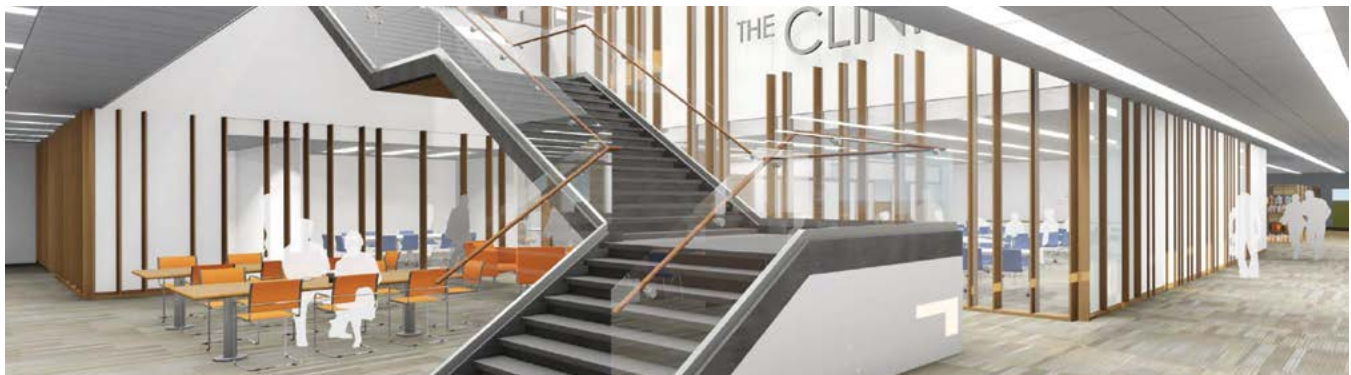
In 2008, the Heersink family made a \$1.3-million donation to fund the revitalization of the Health Sciences Library at

McMaster University. In 2019, they made another \$1.5-million donation to honour John Kelton, who was instrumental in the design and development of the Health Sciences Library. Their recent gift supports construction of the “The Clinic”.

“Our vision, as encouraged by Dean Paul O’Byrne, would be that a culture of innovation and commercialization develop within the Faculty of Health Sciences. In the long term we anticipate these activities leading to innovations which will benefit people and potentially the creation of good jobs for people in Hamilton and its surrounding cities,” Kelton said. The new area on the library’s first floor will incorporate collaborative workspaces to be used in building a culture of health entrepreneurship at McMaster.

The renovated and new space will open in June 2020.

An artist’s rendering of ‘The Clinic’, under construction on the first floor of the Health Sciences Library. ∨



2019 Gairdner symposium

Each year, the Gairdner Foundation invites universities, organizations and research institutes across Ontario to submit proposals to host a partnered international symposium on the frontiers of biomedicine.

McMaster University was the most recently awarded the honour and, in the fall, the Michael G. DeGroote Institute for Infectious Disease Research and David Braley Centre for Antibiotic Discovery at McMaster University hosted the 2019 Gairdner event on the growing global crisis of antimicrobial resistance (AMR).

Drawing on the Canada Gairdner Awards' history of recognizing the best in biomedical science, this two-day symposium brought together leading experts from across the world to present on the state of the international AMR challenge and to showcase recent global advances in AMR research and discovery.

More than 300 researchers, students, industry professionals, and members of the public attended the symposium on November 14th and 15th. The event began with a panel discussion on the findings of a new report from the Council of Canadian Academies and followed with scientific and public talks, poster presentations, and open discussions.

Dame Sally Davies, a British medical doctor and academic administrator, was among the 11 lecturers at the Gairdner symposium to present on the state of the international AMR challenge. >

Inaugural chair

Inaugural Heather M. Arthur chair



Diana Sherifali, a clinician scientist of the School of Nursing, has been named the inaugural Heather M. Arthur Population

Health Research Institute/Hamilton Health Sciences Chair in Inter-Professional Health Research at McMaster University.

Sherifali is an associate professor in the School of Nursing at McMaster, and a registered nurse. She is a clinical nurse specialist in the Diabetes Care and Research Program at Hamilton Health Sciences. She is also director of the McMaster Evidence Review and Synthesis Team, based in the School of Nursing at McMaster.

The chair honours the late Heather Arthur, a McMaster nurse scientist who pioneered cardiac rehabilitation research in Canada.

A McMaster School of Nursing alumna, Arthur had joined the faculty in 1981 and retired in late 2013 as a professor emerita.





Studying chronic diseases in Indigenous communities

Indigenous researchers are working together with their non-Indigenous academic partners to analyze a major health study at a Hamilton-based research institute.

Eight First Nations communities from across Canada are involved in directing the large study into the factors leading to the development of chronic disease in Indigenous communities.

The research project is called the Canadian Alliance of Healthy Hearts and Minds (CAHHM) – First Nations Cohort study and is coordinated by the Population Health Research Institute (PHRI) of McMaster University and Hamilton Health Sciences.

“This is the first cohort, multi-community study in Canada where we are having our Indigenous partners develop the research questions and work with us as peers to understand the results through the data analysis,” said Sonia Anand, principal investigator of the study. She is a McMaster professor of medicine, a senior scientist of PHRI and a vascular medicine specialist at Hamilton Health Sciences.

< *Sonia Anand, pictured second from left, meets with families involved with her studies at McMaster’s Population Health Research Institute.*

MILESTONES

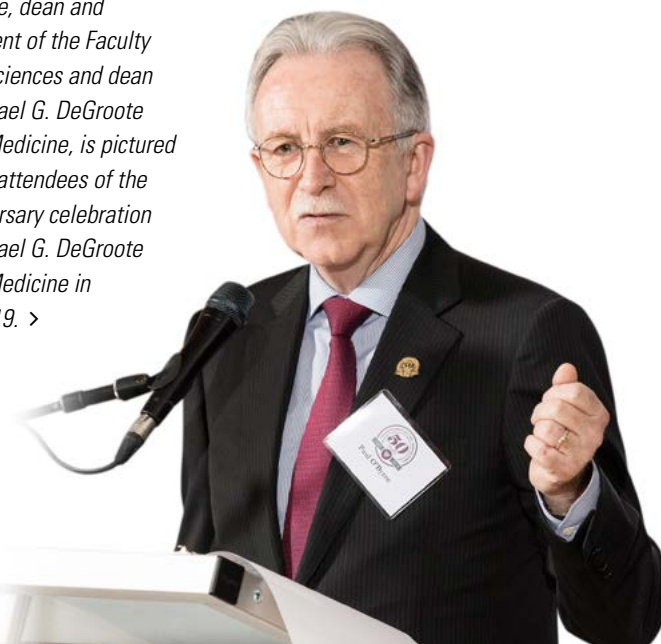
Golden anniversary for Medicine

In 2019, the Michael G. DeGroot School of Medicine celebrated 50 years since the first class started, and its five decades of deep impact in education, research and care innovation at local, provincial, national and global levels.

“McMaster has much to be proud of at this golden anniversary,” said Paul O’Byrne, dean and vice-president of the Faculty of Health Sciences and dean of the Michael G. DeGroot School of Medicine. “Our pioneering education advances and our excellence in world-class research has consistently placed McMaster among the top 50 universities in the world for health and medicine. That must be credited to the hundreds of innovative faculty members, the dedicated staff and the success of our creative alumni who have ensured McMaster’s place among the best.”



Paul O’Byrne, dean and vice-president of the Faculty of Health Sciences and dean of the Michael G. DeGroot School of Medicine, is pictured addressing attendees of the 50th anniversary celebration of the Michael G. DeGroot School of Medicine in October 2019. >



Three decades for Rehabilitation Science and CanChild

The School of Rehabilitation Science and the CanChild Centre for Childhood Disability Research at McMaster both celebrated their 30th anniversaries in 2019.



Starting from humble beginnings three decades ago, the school and the research centre have both grown their reputations internationally, boasting innovative faculty members and scientists who are leaders in their respective fields.

Today, McMaster's School of Rehabilitation Science has 578 students in many graduate programs including occupational therapy, physiotherapy, speech language pathology, rehabilitation science, and health management.

CanChild has become a world-leader in the field of childhood disability, with a core group of 15 scientists at McMaster and an additional 65 associate members worldwide.

Silver year for Midwifery

Twenty-five years ago, McMaster University's midwifery program welcomed its first students, and today, it remains a model to other programs across Canada.

Founded in 1993, McMaster is the lead of a consortium with Laurentian and Ryerson universities to offer the midwifery education program. It was the first such program of its kind in the country. It has grown significantly over the years, and now admits 90 students per year with 30 students per site. Since its first year through to May 2019, there have been 616 students admitted to the McMaster program, with 419 graduates.



In 2019, the program released the first instalment of a three-volume suite of online textbooks entitled *"Comprehensive Midwifery: An Interactive Approach to the Theory & Evidence of Practice"*. The e-books comprise Canada's first midwifery textbook for midwifery students and midwives.

PHILANTHROPY

Centre aimed at combatting antimicrobial resistance

David Braley has invested \$7 million in the new David Braley Centre for Antibiotic Discovery (DBCAD) dedicated specifically to tackling the growing global threat of antimicrobial resistance. The funding comes from a portion of Braley's 2007 gift that had been designated for emerging health-care research priorities.

The centre, which represents one of those emerging priorities, operates from the Michael G. DeGroot Institute for Infectious Disease Research (IIDR), whose labs and offices are located on campus in the Michael G. DeGroot Centre for Learning and Discovery.

The DBCAD is home to McMaster's leading researchers in the field of antimicrobial resistance. The new resources will allow the team to concentrate more specific effort on that problem.

"Antimicrobial resistance is a slow-moving catastrophe but make no mistake: within the next 30 years, it will kill millions, strangle our health-care systems and significantly alter life as we know it unless we develop new ways to attack the problem," says Gerry Wright, who heads both the DBCAD and the IIDR. "The opportunity to open this centre is a hopeful sign, and we are grateful for Mr. Braley's vision and his vote of confidence. This problem must be solved, and it can be solved."

Paul O'Byrne, dean and vice-president, Faculty of Health Sciences; Mel Hawkrigg, former McMaster chancellor and friend of David Braley, and Gerry Wright, scientific director of the new David Braley Centre for Antibiotic Discovery, unveil the centre's sign. ∨



\$100M+ endowment funds health research

Hamilton philanthropists Charles and Margaret Juravinski will create an endowment of more than \$100 million to support researchers across Hamilton Health Sciences, McMaster University and St. Joseph's Healthcare Hamilton.

Their estate gift is one of Canada's largest ever legacy gifts. A planned endowment of \$100 million or more will provide up to \$5 million a year to the institutions, in perpetuity.

"It brings us great pleasure to think that when we are gone, our legacy to this community may be measured in the good health of those who come after us," the Juravinskis said. "As a couple, our most important lesson has been this: the greatest pleasure in life and the most powerful force for good in the world is sharing."

The endowment will create the Juravinski Research Centre, which will equally support Hamilton Health Sciences, McMaster University and St. Joseph's Healthcare Hamilton by funding health research in a variety of areas including cancer, mental health, lung and respiratory care, and diseases of aging.

In their words

Hamilton philanthropists Charles and Margaret Juravinski penned a letter to the community explaining their hopes for the Juravinski Legacy. Segments of their letter are as follows:

"As a couple, our most important lesson has been this: the greatest pleasure in life and the most powerful force for good in the world is sharing."

"To be very candid, we actually underestimated how good it would feel to help build a cancer centre or to rebuild a hospital, to create new and badly needed hospice beds and to help with other aspects of health care where there was a need."

"We have one last wish: that others will share their own resources, whether great or modest, by creating their own legacy gifts. We want everyone to realize the true joy of sharing, as we have known."



The letter in its entirety can be found at: <https://dailynews.mcmaster.ca/articles/a-letter-to-the-community-from-charles-and-margaret-juravinski/>

< Charles and Margaret Juravinski at their home in Greenville.

RESEARCH

McMaster's Faculty of Health Sciences launched several new initiatives in 2019 as a result of new grant and funding opportunities. Among its successes, the Faculty received:

- **\$11.7 million** from the CIHR Foundation Grants competition in support of four projects studying stem cell regeneration to prevent acute myeloid leukemia relapse; prevention and improved management of bleeding in persons with cardiovascular disease; new medicines that specifically impact proteins to treat type 2 diabetes; and safer treatments for thrombosis.
- **\$10.5 million** in renewed federal funding for the Centre for Probe Development and Commercialization to convert research on medical isotopes into new diagnostic tests and cancer treatments.
- A **\$5-million** institute support grant and **\$2.9-million** operating grant from the Canadian Institutes of Health Research (CIHR) for the Institute of Infection and Immunity, to support research in the areas of infectious disease and the body's immune system.
- **\$3.4 million** from the Public Health Agency of Canada's Preventing Gender-Based Violence – The Health Perspective program for research evaluating positive parenting initiatives, in a drive to help end gender-based violence.
- **\$2.5 million** from the Canada 150 Research Chairs program for the Canada 150 Research Chair in Biological Dystopias. The Chair studies how the collective traits of different animal societies – including those of ants, wasps and spiders affect their survival.
- **\$2 million U.S.** from the Bill & Melinda Gates Foundation to identify novel natural product-based small molecule leads for TB and malaria, diseases that disproportionately affect the world's poorest populations.
- **\$1.5 million** from the International Development Research Centre for a project that involves and supports organizations in eleven countries individually and as a network to facilitate the use of evidence from policymakers and stakeholders in order to clarify development problems and causes, frame options to address them, and identify implementation considerations.
- **\$1.2 million** from the Canadian Cancer Society Research Institute's Impact Grants program to evaluate the role of a shorter radiation schedule to treat women in the lymph node area with node positive breast cancer.
- **\$1.1 million** from CIHR and the Heart and Stroke Foundation of Canada for the Indigenous Early Career Women's Heart and Brain Health Chair, to generate new knowledge that improves awareness, prevention and understanding of how biology and socio-cultural factors affect women's heart and brain health, focusing on barriers and external factors that can influence Indigenous women's health in Canada.
- **\$300,000** from the Ontario SPOR SUPPORT Unit (OSSU) network to establish the MIRA | Collaborative for Health & Aging, a new research platform to address the diverse needs of Ontario's older adults by supporting and advancing patient and caregiver-partnered research in aging.

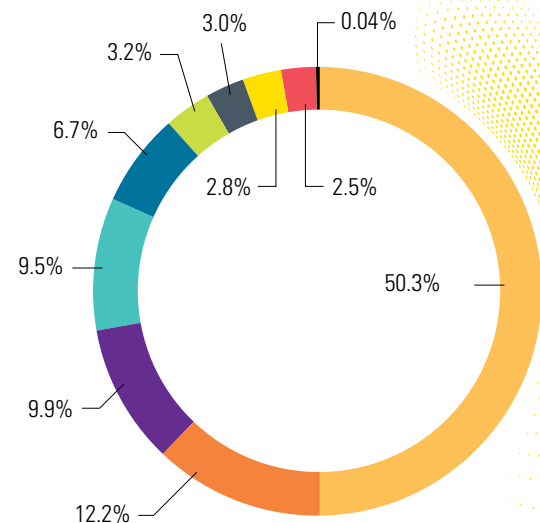


^ At the unveiling of the Canadian Institutes of Health Research (CIHR) Institute of Infection and Immunity, McMaster's first institute sponsored by the federal health research funding agency, from left, are Paul O'Byrne, dean and vice-president, Faculty of Health Sciences; Michael Strong, president, CIHR; Charu Kaushic, scientific director, CIHR Institute of Infection and Immunity; and Karen Mossman, acting vice-president, research, McMaster University.

Research Funding by Source

Summary of total amount	\$Total
Canadian Federal Government	70,531,785
Philanthropy (charitable donations)	17,081,501
Provincial and Municipal Government	13,814,790
Not-for-profit organizations	13,246,271
USA sources (including governmental and/or private sector)	9,334,494
McMaster internal	4,486,152
International sources (including governmental and/or private sector)	4,147,126
Corporate sources (including Canadian private sector and IP income)	3,954,161
Hospitals and Educational institutions	3,512,184
Other	53,060
Grand Total	\$140,161,524

The timeframe for this data is April 1, 2018 to March 31, 2019



CELEBRATE

Awards and honours

Top national prize for health research

Deborah Cook, a renowned McMaster University professor, researcher and physician, has been named the recipient of the Canadian Institutes of Health Research (CIHR) Gold Leaf Prize for Impact. The Gold Leaf Prizes are among the country's highest and most prestigious honours that can be bestowed on an individual or team for excellence in health research and making a difference in the lives of Canadians. Only four awards are made every two years.

Cook is a Distinguished University Professor at McMaster and holds the Canada Research Chair of Research Transfer in Intensive Care. She is a critical care physician at St. Joseph's Healthcare Hamilton. She is also an Officer of the Order of Canada.

Her research improves the treatment of patients who are fighting critical illnesses in hospitals or facing end-of-life situations in the intensive care unit (ICU). Her multi-disciplinary research addresses life support technology, the risk factors for critical illness, preventing ICU-acquired complications and research ethics.

She will accept the \$100,000 Gold Leaf Prize to further her research from Gov. Gen. Julie Payette at a ceremony in Ottawa in June.



Top prize for cancer research



Timothy Whelan, a McMaster University clinical researcher who has made advances in breast cancer therapies, has been honoured by the Canadian Cancer Society with the O.

Harold Warwick Prize for outstanding achievements in cancer control research. He holds a Canada Research Chair in Breast Cancer Research. He's the associate chair of research in the Department of Oncology at McMaster. He's also a scientist with the Escarpment Cancer Research Institute of McMaster and the Juravinski Cancer Centre.

College of Scholars recognizes Peter Boris Chair



James MacKillop has joined the Royal Society of Canada's College of New Scholars, Artists and Scientists, the country's first national system to recognize multidisciplinary work in emerging intellectual leaders. In addition, the Peter Boris Chair in Addictions Research and professor of psychiatry and behavioural neurosciences who specializes in the causes and treatments of addictions, received the Royal-Mach-Gaensslen Prize for Mental Health Research. This prize recognizes an outstanding rising star researcher in the field of mental health.

Trio of leaders recognized



Gina Browne of the School of Nursing, Malcolm Sears of the

Department of Medicine, and the late Delsworth Harnish, vice-dean of undergraduate education for the Faculty of Health Sciences have joined the Faculty of Health Sciences Community of Distinction.

Gina Browne has been a trailblazer in advancing evidence-informed innovations in care and service delivery for vulnerable populations, Malcolm Sears has made groundbreaking contributions as a researcher and clinician on asthma, with his research particularly focused on children and Del Harnish, who was vice-dean of undergraduate education when he died in 2018, had a reputation an educator and champion of inquiry-based, student-centred pedagogy.

Highest honour in health sciences



Five professors of the Faculty of Health Sciences were elected fellows of the Canadian Academy of Health Sciences, considered one of the highest honours for members of the country's health sciences community. They have all been chosen through peer review for their demonstrated leadership, creativity, distinctive competencies, and commitment to advance academic health sciences.

The 2019 McMaster inductees are: Sonia Anand, professor of medicine and epidemiology; Hertz Gerstein, professor of medicine; John Lavis, professor of the Department of Health Research Methods, Evidence and Impact; Mark Loeb, a professor of pathology and molecular medicine and epidemiology; and Parminder Raina, professor of the Department of Health Research Methods, Evidence and Impact.

RANKINGS

McMaster is Canada's most research-intensive university for third consecutive year

For the third time in as many years, McMaster has been named Canada's most research-intensive university in the annual ranking of the country's Top 50 Research Universities.

With a total sponsored research income of \$391.6 million – up nearly \$12 million from last year, McMaster also maintained its first-place ranking in corporate research income, according to the 2019 Research Infosource rankings.

Research intensity measures research dollars per faculty member and, on average, McMaster researchers earned \$439,500 – more than double the national average. The university also placed first among its peers for graduate student research intensity, averaging \$84,000 per graduate student and, again, well over the national average.

In the Research University of the Year ranking, which measures research income and intensity, along with publications in leading journals, and publication impact and intensity, McMaster maintained its second place in the medical/doctoral category.

Research Infosource figures are based on 2018 financial data obtained from Statistics Canada



Additional rankings

1st in Canada for research intensity
– 2019 Research Infosource Inc.

4th in Canada in “medical-doctoral” category;
2nd in total research dollars
– 2019 Maclean’s University Rankings

15th in the world to study nursing and
2nd best in Canada.
– 2019 QS World University Rankings by Subject

23rd in world and second in Canada for clinical,
pre-clinical and health
– 2019 Times Higher Education World University Rankings

29th for clinical medicine
– Shanghai 2019 Global Ranking of Academic Subjects

32nd for anatomy and physiology; 43rd for medicine
– 2019 World University Rankings

34th for clinical medicine
– 2019 U.S. News & World Report for Best Global Universities

42nd in the world for clinical medicine
– 2019 National Taiwan University: Performance Ranking
of Scientific Papers for World Universities

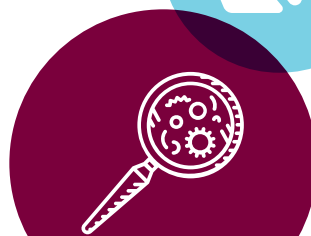
33 Canada
Research
Chairs

Thirty-one
research institutes and centres

80 endowed chairs
and professorships

research facilities **19**

6 Networks of
Centres of
Excellence



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