

Annual Report of the Dean and Vice-President, Faculty of Health Sciences

2016



Dean's message



McMaster University's Faculty of Health Sciences is among the world's best in the areas of education, research and clinical care. This is reflected in the many prestigious national and international rankings that recognize the breadth and scope

of the accomplishments of our faculty, staff and students who are continually advancing health, learning, discovery and care on a global scale.

As the new dean and vice-president of this remarkable Faculty, it gives me great pleasure to reflect on our successes in 2016, made possible by some of Canada's best and brightest minds. I look forward to many successful years at the helm of this dedicated and committed group as we continue to advance our mission.

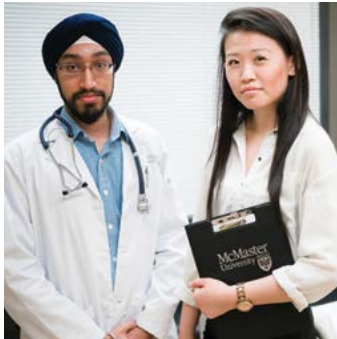
Among our numerous achievements this past year were innovations in new educational offerings, namely the Health Leadership Academy at the Ron Joyce Centre in Burlington, offered jointly by our faculties of business and health sciences and generously supported by our benefactor Michael G. DeGroot. We also launched an Integrated Biomedical Engineering and Health Sciences Program, a five-year biomedical program that integrates engineering and health sciences.

We made dramatic discoveries throughout all of our schools and programs on many fronts, namely community responsive research, partnerships in the clinical community and highly impactful research that are both ground-breaking and paradigm-shifting.

This annual report provides a recap of some of our Faculty's outstanding endeavours in 2016. I hope you enjoy reading this report and I look forward to another exciting and impactful year as dean and vice-president of one the world's most preeminent institutes for health sciences research, education and innovation.

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





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Spotlights



^ Pictured at the CIHR announcement of SPOR are (from left): Norm Buckley, principal investigator for the Chronic Pain Network; Lynn Cooper, patient representative for the Chronic Pain Network; Alain Beaudet, president of the Canadian Institutes of Health Research; Patrick Deane, president and vice-chancellor of McMaster University; Jane Philpott, Canada's health minister; Filomena Tassi, MP for Hamilton West-Ancaster-Dundas; John Kelton, former dean and vice-president of McMaster's Faculty of Health Sciences; Megan Henry, patient representative of SPOR IMAGINE; and Paul Moayyedi, principal investigator for the SPOR IMAGINE network.

► Feds support patient-oriented research networks

McMaster University received two of five large federal grants worth \$12.5 million each for a Chronic Pain Network, led by Norm Buckley, and an IMAGINE-SPOR Chronic Disease Network, led by Paul Moayyedi. The grants are from the Canadian Institutes of Health Research (CIHR) under Canada's Strategy for Patient-Oriented Research (SPOR).

The objective of the SPOR networks is to be patient-centered, focusing on improved health outcomes for Canadians. Each network involves a wide range of partners from across Canada with a focus on identifying new treatments, more effective ways of delivering health care services and an improved patient experience.

Both the Chronic Pain Network and Imagine Networks are national collaborations of patients, researchers, health care professionals, educators and government policy advisors to direct new research and increase care, either for chronic pain or digestive health.

► Government invests in BEAM research facility

The federal government has invested almost \$12 million to develop McMaster's new Biomedical Engineering and Advanced Manufacturing Centre: The Fraunhofer Project Centre for Biomedical Engineering and Advanced Manufacturing (BEAM). The research facility will be home to several of McMaster's leading researchers operating from a state-of-the-art facility to

be constructed at the McMaster Innovation Park.

In this 20,000-square-foot state-of-the-art facility, slated to open late next year, researchers will work to improve the quality of life of Canadians and those all over the world. This will include the development of novel technologies for eye care, point-of-care medical devices and cancer treatments. The project is expected to create at least 74 full-time jobs, produce 35 new industrial collaborations bringing together several partners, including small businesses and multi-national enterprises, university-based researchers, and the German-based Fraunhofer Institute for Cell Therapy and Immunology IZI.

► Most cited research in the world

In Thomson Reuters' annual publication *The World's Most Influential Scientific Minds*, nine researchers from the Michael G. DeGroot School of Medicine were named as scientists whose work is among the most referenced by other researchers worldwide.

Under the clinical medicine category, Stuart Connolly, John Eikelboom, Koon Teo and Salim Yusuf from the Department of Medicine and Gord Guyatt and the late Janice Pogue from the Department of Clinical Epidemiology and Biostatistics were named. McMaster's researchers represented over one-third of the Canadians named as the most influential scientists in clinical medicine, and McMaster was also the only Canadian school that appeared more than once in the category.

For social sciences, Jan Brozek, Gord Guyatt and Holger Schünemann from the Department of Clinical Epidemiology and Biostatistics and Roman Jaeschke from the Department of Medicine were listed. Guyatt is the only Canadian researcher whose name appears under both clinical medicine and social sciences.

The researchers were selected based on the number of highly cited papers they produced over an 11-year period from 2003 to 2013.

► **New Canada Research Chairs**

Two Faculty of Health Sciences researchers are among six new Canada Research Chairs (CRCs) awarded to the University. Another four are among six University researchers who have had their Canada Research Chairs renewed to pursue their world-leading research programs.

The Faculty's newly awarded Canada Research Chairs are: Brian Timmons, associate professor, pediatrics, awarded a Tier 2 Canada Research Chair in Child Health and Exercise Medicine to chart a new course in pediatric exercise medicine and immunology; and Hsien Seow, Canada Research Chair in Palliative Care and Health System Innovation (Tier 2), to advance the field of quality indicator development for end-of-life cancer care, and identifying the gaps that need further attention.

The following Faculty CRCs had their existing Chairs renewed: Deborah Cook, CRC in Research Transfer in Intensive Care (Tier 1); Brian Coombes, CRC in Infectious Disease Pathogenesis (Tier 2); David Meyre, CRC in Clinical Epidemiology and Biostatistics (Tier 2) and Jeffrey Weitz, CRC in Thrombosis (Tier 1).

► **BHSc program named Canada's hardest to enter**

McMaster University's Bachelor of Health Sciences Honours Program has been named the hardest undergraduate program in Canada to gain admission.

A ranking by University Hub, published by *Yahoo! Canada*, points out that only 4.5 per cent of applicants are accepted in the program as there are more than 3,500 applicants a year for 160 first-year chairs.

Stacey Ritz, assistant dean of the BHSc program, said: "We are delighted our program attracts the attention of so many of Canada's top high school graduates. We have a team of talented educators and staff who make this program very special."

► **Innovations in wireless patient monitoring and care**

A Hamilton team of researchers led by McMaster University received \$12.3 million to advance a remote monitoring and care system, called SMARtVIEW, for post-operative patients.

The Canadian Institutes of Health Research (CIHR) announced a \$750,000 grant for the project through its eHealth Innovation Partnership Program (eHIPP). An additional \$11.6 million of in-kind support is coming from industry and other partners for the development and testing of the SMARtVIEW technological system that could save people facing life-threatening complications after surgery.

Michael McGillion, an associate professor of the School of Nursing is principal investigator for the project. Co-principal investigator is P.J. Devereaux, professor of clinical epidemiology and biostatistics and medicine.



^ Students from McMaster's popular Bachelor of Health Sciences Honours Program.



^ Michael McGillion (right) and P.J. Devereaux, co-principal investigators of the eHIPP research project called SMARtVIEW.

With distinction

International rankings

🌐 Second in Canada in the clinical medicine and pharmacy category

– *Shanghai Jiaotong University Academic Ranking of World Universities 2016*

🌐 Third in Canada for post-secondary institutions offering medicine and dentistry programs

– *Times Higher Education World University Rankings 2016*

🌐 Fourth in Canada in the medicine subject ranking

– *QS World University Rankings 2016*

🌐 Fifth in Canada in a ranking measuring how universities perform on graduate employability

– *Times Higher Education Global Employability University Survey 2016*

🌐 Fourth in Canada in a ranking of scientific papers in clinical medicine

– *National Taiwan University: Performance Ranking of Scientific Papers for World Universities 2016*

Canadian rankings

🍁 Ranked in the top four Canadian universities for biomedical and health care research funding for the past decade

– *Association of Faculties of Medicine of Canada*

🍁 Rated eighth out of Canada's top 50 research universities and sixth in Canada for papers in peer-reviewed, scientific international journals

– *Research Infosource 2016*

🍁 Ranked sixth in Canada in the medical doctoral category

– *Maclean's Student Satisfaction Rankings 2016*

Research

A program developed by researchers in McMaster's Aging, Community and Health Research Unit could transform the way diabetes care is delivered to seniors, resulting in better health outcomes for patients, at no additional cost to the system. According to Maureen Markle-Reid and Jenny Ploeg who developed the model, it's a question of bringing diabetes care for these seniors out of the clinical setting and into the community. The program, which began as a pilot project funded by the Labarge Optimal Aging Initiative, brings registered nurses and registered dietitians, who are certified diabetes educators, from local diabetes clinics into a community centre – either a senior's centre or the YMCA – where they work as a team with community centre staff and volunteers to deliver a health promotion program, or 'intervention,' for seniors with diabetes and multiple chronic conditions.



^ Maureen Markle-Reid, left and Jenny Ploeg.

Children with autism have a wide range of ability to talk with other people, but it has been difficult to group children by their specific skills. Now researchers at the CanChild Centre for Childhood Disability Research have developed an autism classification system that defines levels of social communications ability among those with autism spectrum disorder (ASD). This new system will allow the child's care team to understand



^ Peter Rosenbaum, left, and Briano Di Rezze.

and work to improve the child's communication with others in everyday life. The work was led by Briano Di Rezze, a scientist with CanChild and the lead author for the paper published by the international journal *Developmental Medicine and Child Neurology*. The system is expected to be as influential as the Gross Motor Function Classification System, says Peter Rosenbaum, one of the developers of that system and co-founder of CanChild.

Research from the McMaster Stem Cell and Cancer Research Institute (SCC-RI) is forming a better understanding of stem cells of the human blood system. A discovery, published in the scientific journal *Nature*, illustrates how a protein called Musashi-2 regulates the function and development of important blood stem cells and provides new strategies that can be used to control the growth of these cells — cells that can be used as therapeutics for a range of life-threatening diseases but are, in general, in very short supply. The study was led by Kristin Hope, principal investigator at the SCC-RI.



^ Kristin Hope, principal investigator at the SCC-RI.

A cross-national research consortia co-led by McMaster's Andrew McArthur received two of 16 federal grants to further develop a big data solution to the growing problem of antimicrobial resistance. The government's investment, totaling more than \$4M, is the result of Genome Canada's 2015 Bioinformatics and Computational Biology Competition, a partnership with the Canadian Institutes of Health Research. McArthur and his colleagues will receive \$500,000 over four years.



^ Andrew McArthur, associate professor, Biochemistry and Biomedical Sciences.

Awards and honours

★ **Denise Marshall**, an associate professor of family medicine for the Michael G. DeGroot School of Medicine, received the 2016 Elizabeth J. Latimer Prize in Palliative Care.

★ **Bruce Wainman**, director, Anatomy Education Program, and associate professor, Department of Pathology and Molecular Medicine, received a 3M National Teaching Fellowship. He was one of 10 winners across Canada to receive the award in recognition of excellence in university teaching and educational leadership.

★ **Gerry Wright**, professor of biochemistry and biomedical sciences, **Andrea Baumann**, associate vice-president of global health, and **Salim Yusuf**, professor of medicine, were named Distinguished University Professors for having demonstrated an outstanding research record with international impact and recognition along with a sustained record of excellence in teaching and service.

★ **Cathy Morris**, the founding assistant dean of the Waterloo Regional Campus of the Michael G. DeGroot School of Medicine, is the 2016 recipient of the John C. Sibley Award for excellence in education by part-time faculty.

★ **Judah Denburg** and **Warren Foster** have joined 19 other Faculty of Health Sciences faculty members as fellows of the Canadian Academy of Health Sciences. Denburg is the founding scientific director and CEO of the Allergy, Genes & Environment Network (AllerGen). Foster is a professor in the Reproductive Biology Division of the Department of Obstetrics & Gynecology.

★ Two McMaster faculty are among the newest Fellows of the Royal Society of Canada. **Jeffrey Weitz**, professor of medicine and biochemistry, has been elected to the Academy of Science, and **Barry Allen**, professor of philosophy, has been elected to the Academy of Arts & Humanities. The pair brings the total number of McMaster-affiliated Fellows of the Royal Society to 72.

Innovations in learning



^ Pictured are some of the first undergraduate students to complete a two-week Emerging Health Leaders Program at McMaster's new Health Leadership Academy at McMaster's Ron Joyce Centre in Burlington.

Through the generous financial support of Michael G. DeGroot, McMaster has launched a new Health Leadership Academy in McMaster University's Ron Joyce Centre in Burlington. The Academy provides a pathway for health care students and professionals to earn an accelerated MBA. The Academy will also offer a number of certificate and diploma programs, with a general focus on developing world-class leadership capabilities in the health sector, with a particular focus on emerging health leaders.

Could superheroes, animated characters, mythical creatures, zombies or the animals of the Pokémon Universe be real? What would have to happen biologically and psychologically for them to exist in our world? That's the challenge given to students who are learning concepts of biology and psychology in a new third-year Bachelor of Health Sciences course called 'The Biopsychology of Fictional Characters'.



^ Students of the new IBEHS program listen to Bruce Wainman, director of McMaster's Anatomy Education Program.

A new five-year degree that combines engineering and health sciences is set to launch at McMaster in September 2017. A first-of-its-kind in Canada, the Integrated Biomedical Engineering and Health Sciences (IBEHS) program aims to solve real-world problems while providing graduates with multiple paths to careers in health, engineering and entrepreneurship.

Community engagement

Students of McMaster's Niagara Regional Campus of the Michael G. DeGroot School of Medicine got creative in November about addressing the health needs of the extremely poor in their region. As part of an initiative called "Health and Equity through Advocacy, Research and Theatre" (HEART), the students interviewed members of this marginalized group, and then worked with Toronto's Branch Out Theatre to create an audience-participation play, entitled 'Gerbils'. The students are producing a policy brief on behalf of the people living in extreme poverty.

Avi Sarker and Kevin Singh were two strangers — to each other and to the City of Hamilton — when they entered McMaster University's Michael G. DeGroot School of Medicine in 2013. Now, the tight-knit duo is changing Hamilton's downtown with a project to help marginalized populations. The two students established MacHealth DNA (Delivering Neighbourhood Advocacy), a community engagement project that partners Faculty of Health Sciences students with the Hamilton Urban Core Community Health Centre team to deliver care and health advocacy.



^ Avi Sarker and Kevin Singh established MacHealth DNA, a community engagement project that partners Faculty of Health Sciences students with the Hamilton Urban Core Community Health Centre.



^ Students of McMaster's Niagara Regional Campus who led the HEART initiative, from left are: Rahat Hossain, Michael Milo, Natalie Ramsay and Mo Moore.

Philanthropy

Preparing Canada and Canadians for the oncoming “grey tsunami” – the overwhelming, unavoidable and never-before seen aging of our population – is the focus of a new \$15-million gift from McMaster’s chancellor Suzanne Labarge. The gift funds the Labarge Centre for Mobility in Aging and invests in McMaster’s interdisciplinary research into ways seniors can live more independently through greater mobility, better health and fitness and increased social connection.



^ McMaster Chancellor Suzanne Labarge speaks with, from left, Susan Denburg, associate VP (Academic), deputy minister of accessibility, francophone affairs and seniors affairs, Marie-Lison Fougere and McMaster professor Parminder Raina.

A generous gift from the Zonta Club of Hamilton will soon help aspiring physiotherapists study at McMaster. The Frances Colter Memorial Bursary will be awarded to grad students enrolled in the School of Rehabilitation Science’s Physiotherapy program who demonstrate financial need. The bursary is in memory, and from the estate, of Zonta member Fran Colter, who was a pioneer in the field of physiotherapy at Chedoke Hospital.



^ The Frances Colter Memorial Bursary celebrated at a reception at Alumni House on the McMaster campus.

The Samuel Family Foundation and Mark Samuel and Kevin Sanford are helping bridge the gap between cancer treatment discoveries in McMaster labs and their development into therapies for clinical use. The partnership began in 2014 when the Samuel Family Foundation gave \$500,000 to enable the centre’s researchers to develop a personalized immunotherapy cancer treatment, and in 2016 added \$250,000 to the investment. Mark Samuel and Kevin Sanford have given an additional \$200,000 to develop the clinical grade manufacturing process and support Samuel Family Scholars.



^ Pictured (left to right): Ksenia Bezverbnaya, Mark Samuel, Jonathan Bramson and Ken Mwawasi. Bezverbnaya and Mwawasi are the two Samuel Scholars.

A \$250,000 philanthropic grant from the Max Bell Foundation will allow McMaster researchers to test a new app designed to support stroke survivors using home care services. Researchers from McMaster’s Aging, Community and Health Research Unit (ACHRU) in the School of Nursing have developed My Stroke Team (MyST), an app that enables home care workers to share information in real time, while also empowering stroke patients to actively participate in their own care. This pilot study is led by Maureen Markle-Reid and Ruta Valaitis, and is expected to be completed in early 2019.

A McMaster graduate has left the University a bequest valued at more than \$1.8 million, which includes his library collection, a scholarship fund, and his two-storey Westdale home to be used as a laboratory. The 100-year-old house was the family home of Ernest Kay ‘47, ‘49, who moved there with his parents in 1936. He was a lifelong supporter of his alma mater.

Together, advancing
health through learning
and discovery



