

Faculty of Health Sciences



Annual
Report
2017

Office of the Dean
and Vice-President

Dean's message



It has been another remarkable year in McMaster University's Faculty of Health Sciences and as you will read in this 2017 annual report, the many great accomplishments among all of our schools and departments are indeed worth celebrating.

From prestigious awards and honours, to innovative new programs and ongoing excellence in research and clinical impact, it is no wonder the Faculty of Health Sciences continues to be a driving force in McMaster's ranking among the top universities in the world. For example, in 2017, McMaster was named Canada's most research-intensive university by *Research Infosource* and we ranked second in Canada for post-secondary institutions offering clinical, pre-clinical and health programs by *Times Higher Education*.

Our high standing comes as no surprise, as collectively we continue to set the bar for excellence with contributions that have far-reaching influence.

Our extraordinary faculty, staff, students and alumni continue to garner impressive recognitions for their work. These include new Order of Canada inductions, Canada Research Chairs and other noteworthy awards and honours. We have also established two new endowed research chairs, garnered international praise for many of our programs and research endeavours and continue to attract support from government agencies, non-profit foundations and industry.

This annual report provides a snapshot of our many advances and success stories of 2017; yet, I encourage you to visit the Faculty's website regularly to stay up-to-date on all of our ongoing accomplishments in research, education and innovation at fhs.mcmaster.ca.

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



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News

Making headlines

Cultivating medicinal cannabis research

A new research centre launched by McMaster University and St. Joseph's Healthcare Hamilton seeks to understand the use of medicinal cannabis in managing pain, and other clinical indications, as well as its potential for addiction and other adverse events. The multidisciplinary Michael G. DeGroot Centre for Medicinal Cannabis Research will focus on conducting research, sharing evidence-based information and creating a network of professionals interested in further understanding medicinal cannabis. Leading this initiative are co-directors James MacKillop and Jason Busse and medical advisor, Dr. Ramesh Zacharias.

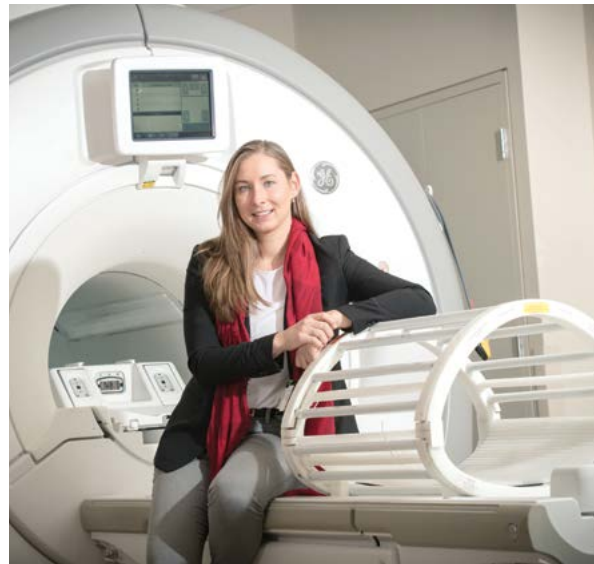
More information may be found at:
cannabisresearch.mcmaster.ca



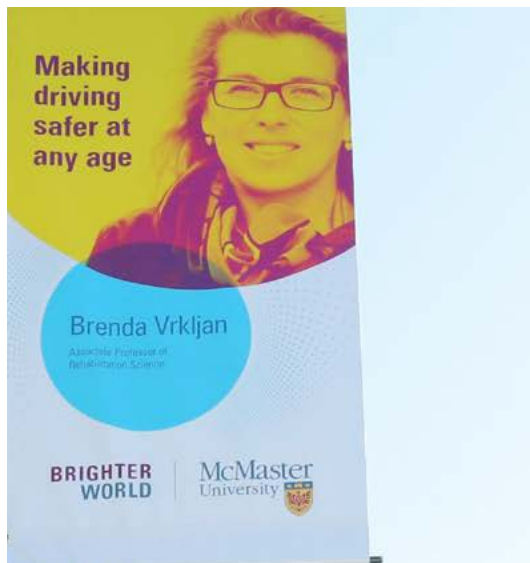
Leadership team (from left) James MacKillop, Jason Busse and Ramesh Zacharias.

Polanyi Prize-winner sets sight on targeted asthma treatment

Targeted, personalized treatment may soon be on the way for some of Canada's 2.4-million asthma sufferers, thanks to McMaster post-doctoral fellow Sarah Svenningsen. Using magnetic resonance imaging and sophisticated computer programming, Svenningsen is paving the way for personalized treatment techniques that could dramatically improve the quality of life for those suffering with the chronic lung disease. Svenningsen - whose fellowship is with both McMaster's Department of Medicine and Western's Robarts Research Institute - is currently investigating the potential for MRI to improve the delivery of bronchial thermoplasty. Svenningsen is this year's recipient of the prestigious Polanyi Prize, a \$20,000 award that recognizes researchers in the early stages of their careers in physics, chemistry, physiology or medicine, literature and economic science.



Sarah Svenningsen – McMaster post-doctoral fellow.



McMaster launches a new brand

As part of McMaster University's new #BrighterWorld brand introduction, 13 researchers from the Faculty are among those showcased on banners across campus. The banners, which include photos and short descriptions of the researchers and their work, were installed on campus light posts. Pictured with her banner, left, is Brenda Vrkljan, associate professor of rehabilitation science.

Investment in healthy aging research

McMaster received \$417,500 from the Canadian Institutes of Health Research for research projects that analyze data from the Canadian Longitudinal Study on Aging, a national research platform that focuses on health and aging. The platform allows researchers to answer critical questions on the biological, medical, psychological, social, lifestyle and economic aspects of aging, disability and disease.

Offord Centre shares \$1.3 million to boost student well-being

Child-focused research will transform into tools and strategies to help students in classrooms across Ontario, with \$1.3 million in provincial funding awarded to McMaster's Offord Centre and the Hamilton-Wentworth District School Board.

The Hamilton-based Knowledge Network for Student Well-Being has the objective of mobilizing the most up-to-date research evidence to improve student well being. The network is a four-year, collaborative effort connecting front-line educators with child experts. Its goal is improving educational achievement through high-quality professional learning, local leadership, and promoting implementation of social and emotional learning.

Canada's most research-intensive university

McMaster continues to lead in university rankings – this time being recognized as Canada's most research-intensive university in the 2017 *Research Infosource* rankings.

With a total research income of \$354.6 million, up from \$324.6 million last year, McMaster outpaced its peers in research-intensity, averaging \$405,300 per faculty member – more than double the national average.

Looking at corporate research income over a five-year period (2012-2016), McMaster earned the top spot in total research income among medical/doctoral schools, bringing in close to \$480 million. Over that same time period, it placed first in the category measuring corporate research income as a percentage of total income, with more than 29 per cent from corporate investments.

New research chairs focus on thrombosis and atherosclerosis; cardiology



Jeff Healey



John Eikelboom

An international search for two senior scientists with outstanding reputations in thrombosis and atherosclerosis research, and cardiology research, found the best candidates at home at McMaster's Michael G. DeGroot School of Medicine. The faculty positions were each established with \$1 million in endowment from the Population Health Research Institute (PHRI) and \$40,000 in annual matching funds from the Department of Medicine.

The new Jack Hirsh/PHRI Chair in Thrombosis and Atherosclerosis Research is held by John Eikelboom, an associate professor of hematology and thromboembolism of McMaster's Department of Medicine. Jeff Healey, associate professor of cardiology, director of arrhythmia services, and trailblazer in atrial fibrillation research, has been appointed to the new PHRI Chair in Cardiology Research.

Niagara region campus receives star award

An intense focus on research by medical students has earned international praise for the Niagara Regional Campus of the Michael G. DeGroot School of Medicine. The Association of American Medical Colleges awarded "The Star of Education Innovation" to the McMaster University medical school campus in St. Catharines. The award recognizes the school's efforts in "promoting scholarship through development of a positive research culture."

Pictured right, medical students Sarah Hanik and Shane Freeman engaged in research at the Niagara Regional Campus of McMaster University's Michael G. DeGroot School of Medicine.



Funding boosts genomic research

McMaster researcher Jonathan Bramson received \$2.3 million in funding under Genome Canada's Genomic Applications Partnership Program for a project that will validate a new white blood cell therapy for cancer.

The funding, which is part of a \$24.5-million investment in genomic research being done across Canada, will assist Bramson and Triumphira in engineering and commercializing new immunotherapies based on T-cells, which are cells of the immune system, to treat terminal cancers.

Pictured right, McMaster researcher Jonathan Bramson gives Kate Young, parliamentary secretary for science, a tour of his lab.



The Niagara Regional Campus of the Michael G. DeGroot School of Medicine has been recognized for "promoting scholarship through development of a positive research culture."

Spotlights

Features

DONATION SUPPORTS 'OMICS' HEALTH RESEARCH

Philanthropist and local businessman Alfred (Fred) Voytek is helping support health research at McMaster University with a donation in excess of \$500,000 towards research in the area of 'omics', which includes the use of new technologies to uncover the genomic, metabolomic and gut microbiomic signatures of future disease development.



Dean and Vice-President of the Faculty of Health Sciences Paul O'Byrne, left, is pictured with Alfred (Fred) Voytek during a visit to campus.

McMASTER-MOHAWK COLLABORATION ENLIVENS THE ANATOMY EXPERIENCE



For some Mohawk College students, anatomy class is filled with anticipation and plenty of "a-ha" moments. That's because, for the first time, these students are studying the human body in McMaster University's anatomy labs. Through a partnership between the two institutions, an updated

anatomy curriculum (including lab time as well as a custom-built, interactive lab manual) is available to roughly 200 first-year students in Mohawk's practical nursing and pharmacy technician programs. The goal is to facilitate learning that extends beyond textbooks and lecture halls to as many as 1,000 college students in a variety of health sciences disciplines.



Heather Arthur

NEW RESEARCH CHAIR HONOURS HEATHER ARTHUR

A legacy has been established for Heather Arthur, a McMaster University nurse scientist who pioneered cardiac rehabilitation research in Canada. An endowed research chair named the Heather M. Arthur Population Health

Research Institute/Hamilton Health Sciences Chair in Inter-Professional Health Research will further interdisciplinary health research. Arthur, who pioneered cardiac rehabilitation research in Canada, died July 27, 2017 from cancer.

CLIMATE CHANGE AND HEALTH INNOVATION AWARD SET UP AT MCMASTER

A unique student award has been established at McMaster University to recognize innovative solutions to complex sustainability challenges. The Climate Change and Health Innovation Award was created through a contribution from two anonymous alumni of the Michael G. DeGroot School of Medicine. The award is open to any group of two or more students from different Faculties who have completed an experiential learning project as part of their participation in a program offered through McMaster's Academic Sustainability Programs (ASP). The ASP office focuses on providing opportunities for students to work in interdisciplinary teams to tackle real-world sustainability problems, as well as to develop and implement solutions. Their \$15,000 gift will be divided into \$5,000 awards, one per year for the next three years.



McMaster students, left to right, Erin Sinclair, Tyler Marr and Angela Xie were part of a team that worked with the City of Hamilton and SoBi Hamilton to improve on-campus bike share as their project for a third-year sustainability course.

NEW NAME FOR PERD

The Program for Research and Development (PERD) has been renamed the McMaster program for Education Research, Innovation and Theory (MERIT). MERIT is collaborating with faculty to engage in high-impact, high-value education scholarship. There are new initiatives and events, as well as a drive for more scholars and scientists to join its ranks.

MEDICAL STUDENTS VOLUNTEER TIME AND CARE

For Matei Stoian and Nisha Kansal, pictured right, the field of medicine means providing medical assistance to marginalized communities and helping decrease the disparity that exists in health care. These second-year McMaster medical students, and active members of the MacHealth DNA group, helped organize a Family Portrait and Health Promotion day at the Hamilton Urban Core Community Health Centre (HUCCHC). The event was for families and clients of HUCCHC and involved a variety of health promotion activities, as well as family portrait sessions for those who would otherwise be unable to afford the experience. MacHealth DNA is an organization supported by the MD Program of the Michael G. DeGroote School of Medicine.



TRANSGENDER ALUMNA SPEAKS TO MED STUDENTS

Almost 40 years ago, Robert Lancaster was an intern for chief resident Paul O’Byrne, now dean and vice-president of the Faculty of Health Sciences at McMaster University. This fall, Bobbi Lancaster, a McMaster medical graduate of 1978, family physician in Arizona, professional golfer, author and transgender woman was the keynote speaker at the annual Founders’ Dinner for the second-year students of the Michael G. DeGroote School of Medicine. Her talk about her life, the challenges, her stumbles through medical school including guidance from the late faculty member Ronald McAuley, her career success, family and her transition at age 60 was warmly received. To listen to her talk visit <http://bit.ly/2AHvCWy>.



BENCH OPENS DOOR FOR MENTAL HEALTH

McMaster’s first Friendship Bench was officially unveiled in summer 2017 in the lobby of the health sciences library. It was donated by family and friends of Robert Chu, a graduate of the Michael G. DeGroote School of Medicine. Robert took his life on Sept. 5, 2016; he was 25 years old. The Friendship Bench program of bright yellow benches was co-founded by Sam Fiorella in honour of his son Lucas, a 19-year-old Carleton University student who took his own life in 2014. The initiative continues to grow, as benches can now be found at more than 30 university and college campuses across Canada.



PLAY ADDRESSES HEALTH OF THE HOMELESS

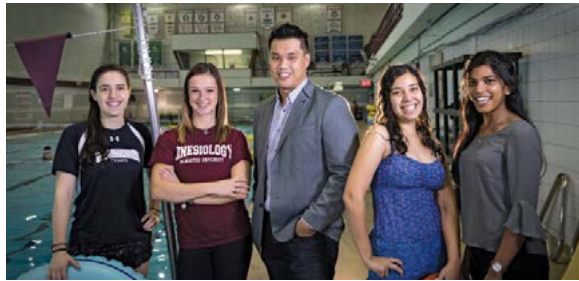
A play aimed at finding ways for people living in extreme poverty to improve their access to the Hamilton health care community was arranged by students of the Niagara Regional Campus of McMaster’s Michael G. DeGroote School of Medicine. The play, called Gerbils, is based on interviews by students with members of the homeless community. The project is part of the students’ initiative called Health and Equity through Advocacy, Research and Theatre, or HEART. Research from this project won an award at a national medical conference in 2017.



Research

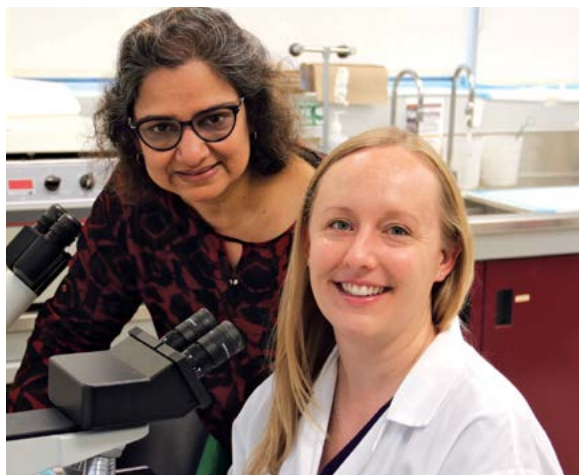
Highlights

- A 12-week “Physical Literacy intervention for first-year University Students Study” (PLUS) is focused on understanding how to prevent the decline in physical activity associated with the transition from high school to university and its impact on mental health. The study is led by Matthew Kwan, assistant professor and associate director of the Infant and Child Health Lab in the Department of Family Medicine.



Natalie Paolucci, Cierra Healey, Matthew Kwan, Selvia Margharious and Ryanne Perinpanayaagm are leading the PLUS Study.

- High-risk sexual behavior like sex work may be biologically linked to an increased risk of acquiring human immunodeficiency virus (HIV) and other sexually transmitted infections, new research has found. The paper, published in the journal *PLOS One*, was led by Charu Kaushic, professor of pathology and molecular medicine.



Charu Kaushic, professor of pathology and molecular medicine at McMaster University (left) and Jocelyn Wessels, lead author of the paper and a post-doctoral fellow in Kaushic's lab.

- Killing cancer cells indirectly by powering up fat cells in the bone marrow could help acute myeloid leukemia patients, according to a study from the McMaster Stem Cell and Cancer Research Institute and published in the journal *Nature Cell Biology*. The research found that boosting adipocytes, or fat cells, located in the bone marrow suppressed cancerous leukemia cells but – in a surprise to the research team – induced the regeneration of healthy blood cells at the same time.

- Decreased exposure to bullying and family problems during childhood and adolescence could help reduce adult mental illness in extremely low birth weight preemies, according to a study led by Ryan J. Van Lieshout, assistant professor of psychiatry and behavioural neurosciences. Published in *The Journal of Child Psychology and Psychiatry*, it looked at the impact of mental health risk factors on extremely low birth weight preemies during childhood and adolescence.

- Research with more than 135,000 people across five continents has shown that a diet which includes a moderate intake of fat and fruits and vegetables, and avoidance of high carbohydrates, is associated with lower risk of death. The report, published in *The Lancet*, found that the lowest risk of death was in those people who consume three to four servings of fruits, vegetables and legumes a day and consuming a higher amount of fat is associated with a lower risk of death compared to lower intakes. However, a diet high in carbohydrates is related to higher mortality, although not with the risk of cardiovascular disease. The study was led by researchers at the Population Health Research Institute.



Jennifer Stearns • Antibiotics administered during labour for Group B Streptococcus (GBS) affect the development of gut bacteria in babies, according to a study led by Jennifer Stearns, an assistant professor of medicine with the Farncombe Family Digestive Health Research Institute. Published in the journal *Scientific Reports*, the research showed that babies exposed to the antibiotics for GBS during labour had a delay in the maturation of their gut bacteria, known as microbiota. The data also showed that this delay increased with longer durations of exposure to the antibiotics.

- A major international study, called COMPASS, has found that the combination of two drugs – rivaroxaban and aspirin – is superior to aspirin alone in preventing further heart complications in people with vascular disease. The study of 27,400 people with stable coronary or peripheral artery disease from 33 countries worldwide show that the combination of 2.5 mg of rivaroxaban twice daily plus 100 mg of aspirin once daily was significantly better than only aspirin or only rivaroxaban in preventing heart attacks, strokes and death. The results were presented at the Congress of the European Society of Cardiology and published in the *New England Journal of Medicine*. Study authors were Stu Connolly, Sonia Anand and John Eikelboom.

- Respiratory researcher Jeremy Hirota has developed a new hand-sized tool for cystic fibrosis that can monitor how a gene named cystic fibrosis transmembrane conductance regulator is working. This data will help doctors prescribe individualized medication, known as precision medicine. Hirota recently received a New Investigators Research Grant for \$280,000 over three years to help advance the project from its infancy. The grant is funded by the SickKids Foundation and the Canadian Institutes of Health Research Institute of Human Development, Child and Youth Health.



Dawn Bowdish

- The immune system plays a pivotal role in the amount of pain and disease progression experienced by patients with osteoarthritis, according to research led by Dawn Bowdish, a professor of pathology and molecular medicine. This discovery could lead to new strategies for improving joint pain management and immune function in older adults with arthritis. The study was published in the medical journal *Osteoarthritis and Cartilage*.

- Researchers have found that early bicycle exercise while in a hospital intensive care unit (ICU) may help some patients recover more quickly. The study, led by Michelle Kho, an assistant professor with the School of Rehabilitation Science at McMaster and physiotherapist at St. Joseph’s Healthcare Hamilton, demonstrated that physiotherapists can safely start in-bed cycling sessions with critically ill, mechanically ventilated patients early in their ICU stay.



COMPASS study authors, from left: Stu Connolly, Sonia Anand and John Eikelboom



Dr. Michelle Kho’s research uses the RT-300 supine bicycle – which allows patients to work on strengthening their legs while they are in their hospital bed.

With distinction



International rankings



SECOND in Canada in the clinical medicine category
Shanghai Jiaotong University Academic Ranking of World Universities 2017



SECOND in Canada for post-secondary institutions offering clinical, pre-clinical and health programs
Times Higher Education World University Rankings 2018



FOURTH in Canada in the medicine subject ranking
QS World University Rankings 2017



FIFTH in Canada in a ranking measuring how universities perform on graduate employability
Times Higher Education Global Employability University Survey 2016



FOURTH in Canada as ranked for scientific papers
National Taiwan University: Performance Ranking of Scientific Papers for World Universities 2016



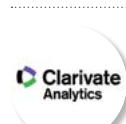
Canadian rankings



FIRST out of Canada's top 50 research universities in total research income among medical/doctoral schools
Research Infosource 2017



SIXTH in Canada for papers in peer-reviewed, scientific international journals
Research Infosource 2017



NINE scientists among most highly cited in the clinical medicine category
Clarivate Analytics' Highly Cited Researchers 2016



Canada Research Chairs



Five members of the Faculty of Health Sciences are among 10 McMaster researchers to be recognized as leaders in their fields. Altogether they have been awarded \$8.6 million from the Canada Research Chairs (CRC) Program to further their work, improve Canada's international competitiveness, and train the next generation of leaders.

This latest round includes both new and renewed chairholders:



• **Jeremy Hirota**, assistant professor, medicine, is the Canada Research Chair in Respiratory Mucosal Immunology (Tier 2).



• **Jonathan Schertzer**, assistant professor, biochemistry and biomedical sciences, is the Canada Research Chair in Metabolic Inflammation (Tier 2).



• **Ryan Van Lieshout**, assistant professor, psychiatry and behavioural neuroscience, is the Canada Research Chair in the Perinatal Programming of Mental Disorders (Tier 2).



• **Sheila Singh**, Canada Research Chair in Human Brain Cancer Stem Cell Biology (Tier 1 – advanced from Tier 2)



• **Maureen Markle-Reid**, Canada Research Chair in Person-Centred Interventions for Older Adults with Multimorbidity and their Caregivers (Tier 2).



Awards and honours

Mehran Anvari, a world-renowned surgical robotics pioneer, and **Anthony Chan**, a prominent pediatric hematologist and scientist, have been awarded the Order of Ontario.

Dr. Peter Dent, a professor emeritus of pediatrics, has been named to the Order of Canada.

Teresa Chan, assistant professor of medicine, has won the 2017 Young Educators Award from the Association of Faculties of Medicine of Canada.

The late **Maureen Andrew**, a pioneer of life-saving research in pediatric thrombosis; **Brian Haynes**, a founder of evidence-based medicine and a world leader in health informatics, and **Geoff Norman**, a world-renowned expert and researcher on problem-based learning in medical education have been inducted into the Faculty of Health Sciences' Community of Distinction.

Eileen Hutton, assistant dean of midwifery at McMaster University, is the first midwife to be inducted as a Fellow into the Canadian Academy of Health Sciences.

Nancy Heddle, professor of medicine, received the 2017 Canadian Blood Services Lifetime Achievement Award.

Mark Crowther, professor and chair of the Department of Medicine, has been elected as a Fellow of the Royal Society of Canada. He also received an Investigator Recognition Award from the International Society on Thrombosis and Haemostasis.

Deborah Cook, Canada Research Chair in Research Transfer in Intensive Care, was awarded a Killam Research Fellowship and also the 2017 Distinguished Lecturer Award in Critical Care Sciences from the Canadian Institutes of Health Research.

Felicia Vulcu, assistant professor of biochemistry and biomedical sciences, and **Sandeep Raha**, an associate professor of pediatrics, have been recognized with a President's Award for Outstanding Contributions to Teaching and Learning.

Lori Burrows, professor and associate chair of biochemistry and biomedical sciences, received a MUFA Award for Outstanding Service and was elected to the American Academy of Microbiology.

Gregory Steinberg, professor of medicine, has received many awards and honours in 2017 including the Diabetes Canada/Canadian Institutes of Health Research – Institute of Nutrition Metabolism and Diabetes Young Scientist Award; a Gold Leaf Prize for Outstanding Achievements by an Early Career Investigator by the Canadian Institutes of Health Research; the American Diabetes Association International Award; and the Richard E. Weitzman Outstanding Early Career Investigator Award.



Past Governor General of Canada David Johnston presents Gregory Steinberg with the Gold Leaf Prize for Outstanding Achievements by an Early Career Investigator at a ceremony in Ottawa.

Congratulations
to all!

HEALTH SCIENCES

