McMaster powers up cohort research

Niagara campus earns star award
ICU patients start cycling in bed
A tribute to Bill Walsh
It has been a remarkable start to 2017 in McMaster University’s Faculty of Health Sciences. As you will read in this edition of Network, we have had much to celebrate over the past few months, and during spring, a time of rejuvenation in nature, we sparked our collective ambition for research and scholarly and clinical excellence.

Our extraordinary faculty, staff, students and alumni continue to garner impressive recognitions for their work in several important fields of study, including new Order of Ontario inductions, Canada Research Chairs and other noteworthy awards and honours. We have also established two new endowed research chairs, garnered international praise for the Niagara Regional Campus of the Michael G. DeGroote School of Medicine, and obtained new funding for the Offord Centre to find tools and strategies to help students in classrooms across Ontario.

Some of our recent research successes include new insights into autism spectrum disorders that will guide identification of new medications for people with this disease. Another discovery found that bacteria in the gut impacts both intestinal and behavioural symptoms in patients suffering from irritable bowel syndrome. Research from our School of Rehabilitation Science revealed that early bicycle exercise while in a hospital intensive care unit may help some patients recover more quickly, while other researchers found a new way to treat the world’s worst infectious diseases, the superbugs that are resistant to all known antibiotics.

Moreover, our Faculty was recognized by Clarivate Analytics’ Highly Cited Research List that measures the most referenced research worldwide. This reputable metric included 14 scientists from McMaster’s Michael G. DeGroote School of Medicine, in departments including medicine; health research methods, evidence, and impact and pathology and molecular medicine, among others. Our position on this ranking comes as no surprise, as our researchers are recognized internationally for the depth and quality of their studies and for asking fundamental questions that can have a far-reaching impact.

This issue of Network also puts a heightened focus on some of our most extraordinary work deriving from a scientific method that measures the effects of a suspected risk factor over a prolonged period of time. Referred to as cohort studies, they follow a group of people who share a defining characteristic, such as birth or location, to thoroughly investigate an association between life events, exposures in life, genes you are born with, and the development of disease over time.

Based on our collaboration and collegial engagement, the Faculty of Health Sciences is expertly positioned to become a world centre of excellence for these cohort studies that allow us to focus on pressing health questions faced around the world.

Our challenge is to keep these studies alive and flourishing. By combining the efforts of our cohort experts and leaders we can effectively establish a long-range funding model that will encourage shared research efforts, help us create and maintain these studies, develop a shared repository where data from researchers at McMaster and around the world is collected, analyzed and stored, and make a substantial impact on current health issues.

Finally, this issue pays tribute to Dr. Bill Walsh, one of the five “founding fathers” of the McMaster University Michael G. DeGroote School of Medicine, who died on Jan. 7 at the age of 92. Dr. Walsh’s impact on the foundation of the Michael G. DeGroote School of Medicine was extraordinary, as he helped set the pioneering medical education system for which McMaster is internationally renowned. I’m sure you will enjoy reading a fitting tribute to Dr. Walsh written by dean emeritus of the Michael G. DeGroote School of Medicine, Dr. John Kelton.

I hope you enjoy our latest issue of Network and I encourage you to stay up-to-date on all of our advances, latest news and success stories by visiting the Faculty of Health Sciences website at fhs.mcmaster.ca.
Carolyn Byrne says her second time leaving the School of Nursing at McMaster University is her last. “It’s hard to say goodbye to McMaster. It’s a fabulous faculty of health sciences. I am sure I will stay connected in a small way,” said Byrne. The associate dean, health sciences (nursing) and director of the School of Nursing retired on June 30.

The first time Byrne left McMaster was in 2002. She was an associate professor who had been a faculty member of the nursing school since 1981. She went to Oshawa as the founding dean of health sciences at the University of Ontario Institute of Technology. Then, from 2010 to 2012 she was in Qatar as the dean, professor and chief executive officer at the University of Calgary’s nursing school.

In 2014, John Kelton, then dean and vice-president of health sciences, asked Byrne to return to McMaster as associate dean and director of the nursing school. During the past few years in this role, Byrne’s work has included collaborating on a strategic plan for the future of the successful consortium with Conestoga and Mohawk colleges. She also oversaw the development of a strategic research plan and the creation of a new endowed chair. “I am proud of the work that we have achieved,” she said.

Byrne started her career by training as a nurse at Hamilton General Hospital, graduating in 1971. Her first job was in the adolescent ward at Hamilton Psychiatric Hospital. “It was a fabulous place to learn, working with kids, with teenagers,” she said. “I love mental health nursing. That’s what I have always done.”

She started teaching at McMaster after earning her PhD in 1981. She remembers well working with nursing students who set up outreach services to help people living in poverty in downtown Hamilton.

In retirement, Byrne will continue as a member of the board of St. Joseph’s Healthcare Hamilton, and she plans to volunteer again with a social service program helping homeless people. She also plans to travel the world with her husband and read the fiction books now piled in bookcases at her home.

Associate professor of nursing Sandra Carroll, known for her achievements in cardiovascular nursing research, will be the acting associate dean and director of McMaster’s School of Nursing, beginning July 1.
Dutch royalty return for visit

International university collaborations were the focus of the visit to McMaster University by Her Royal Highness Princess Margriet of the Netherlands and her husband Professor Pieter van Vollenhoven on May 15.

Besides overseeing an agreement between McMaster and Vrije University of the Netherlands, Princess Margriet met with students of the Master of Global Health Program. She is the honorary chair of the advisory board for the program which is offered in partnership by Maastricht University in the Netherlands and McMaster.

The princess also opened a symposium about antimicrobial resistance with scientists and officials of McMaster, the Public Health Agency of Canada and scientists of Maastricht and the University of Utrecht of the Netherlands, and then toured the Centre for Microbial Chemical Biology with Gerry Wright, director of the Michael G. DeGroote Institute for Infectious Disease Research.

“We regard Her Royal Highness Princess Margriet as a great friend of McMaster, and it is a pleasure to once again welcome her and Professor Pieter van Vollenhoven to our campus,” said McMaster President Patrick Deane.

It was Princess Margriet’s second visit to the campus. She received an honorary degree in 2012 for her lifelong dedication to international humanitarian work. She has many ties to Canada as she was born in Ottawa during the Second World War while her mother and sisters took refuge in the Canadian capital.

Ottawa invests in healthy aging research

McMaster University has received $417,500 from the Canadian Institutes of Health Research for research projects that analyze data from the Canadian Longitudinal Study on Aging (CLSA).

In May, Jane Philpott, federal minister of health, announced a total of $1.7 million to support 25 projects to be carried out by researchers across the country to use baseline CLSA data to answer important health questions.

McMaster University, the host institution of the CLSA, received the largest allocation of funding, with support going to six research teams.

The CLSA is 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.

Launched in 2010, the CLSA is led by principal investigator Parminder Raina, a professor in the Department of Health Research Methods, Evidence, and Impact. Susan Kirkland of Dalhousie University and Christina Wolfson of McGill University are co-principal investigators.

“The Canadian Longitudinal Study on Aging is thankful to the Government of Canada for its ongoing support of research that will improve the health of Canadians,” said Raina, who also holds the Raymond and Margaret Labarge Chair in Research and Knowledge Application for Optimal Aging and the Canada Research Chair in Geroscience.

The CLSA is collecting data from more than 50,000 participants across Canada over 20 years to better understand the underpinnings of healthy aging. The initial baseline data set is now available for use by researchers working in all areas of health and psychosocial research.
Research chairs highlight thrombosis, cardiology strengths

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 University’s Michael G. DeGroote School of Medicine.

The faculty positions were each established with a $1-million 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. He’s a world-class researcher and a hematologist for Hamilton Health Sciences. He has co-authored more than 500 articles in peer-reviewed journals.

Jeff Healey, associate professor of cardiology, director of arrhythmia services, and trailblazer in atrial fibrillation research, has been appointed to the new PHRI Cardiology Chair.

“McMaster has had considerable strength in thrombosis and atherosclerosis research and cardiology research for the past 40 years, and these scientists work will continue this leadership,” said Paul O’Byrne, dean and vice-president of the Faculty of Health Sciences.

Eikelboom received his training in internal medicine and hematology in Perth, Australia, and additional training in epidemiology and thrombosis medicine at McMaster. He joined McMaster faculty in 2005.

Healey completed his clinical training in cardiology and electrophysiology at the University of Ottawa Heart Institute, followed by a master’s degree in health research methodology at McMaster. He became a faculty member in 2005.

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 efforts such as high-quality professional learning, local leadership, and promoting implementation of social and emotional learning.

“We hope our evidence will inform.”

– Kathy Georgiades

“We hope our evidence will inform,” says Kathy Georgiades, associate professor of the Department of Psychiatry and Behavioural Neurosciences and the Offord Centre for Child Studies.

“Educators have so many demands. We will look at what is manageable and how to promote student well-being without over-burdening educators,” she said.

The knowledge network aligns with the four areas of focus in the Ministry of Education’s student well-being strategy: positive mental health, healthy schools, safe and accepting schools, and equity and inclusive education.

Offord is a multi-disciplinary research institute focused on studying ways to improve the lives, health and development of children and youth. It is a joint research institute of McMaster University and the McMaster Children’s Hospital.
Niagara regional campus earns star award

An intense focus on research by medical students has earned international praise for the Niagara Regional Campus of the Michael G. DeGroote School of Medicine. The Association of American Medical Colleges recently 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.”

“The real stars for research innovation here is the faculty, led by Matt Greenway, and also all the medical students involved in research projects,” said Karl Stobbe, regional assistant dean of the Niagara Regional Campus. “From practical projects to find ways of ensuring better health care to using theatre to solve the problems of Niagara’s homeless people accessing the health system, the culture here is to advance care.”

The regional medical school campus of Hamilton’s McMaster University opened in 2008. In 2010, a pilot program began to encourage students to participate in research and in the first year, 10 per cent of medical students participated in research. Today, 90 per cent of the students are researchers. Of the 28 students in the class of 2016, 26 conducted research projects, in the school, local hospitals and in the community.

Susan Birnie takes President’s Lifetime Achievement Award

Susan Birnie says there are many McMaster people who deserve the honour of the President’s Lifetime Achievement Award, so she is especially humbled that she was chosen.

The President’s Lifetime Achievement Award is annually presented to an individual employee who exemplifies outstanding performance and accomplishment and is considered a role model.

“There were a number of other tremendously talented people nominated who have done such great things at McMaster,” said Birnie, who is director of education services for the Faculty of Health Sciences. “To know I’m the one chosen is incredibly gratifying.”

A McMaster alumna, Birnie graduated in 1975 with a BA in geography. In 1977, she returned to McMaster as a research associate of the Faculty of Social Sciences and, while working full-time, Birnie completed an MBA in finance at the DeGroote School of Business.

Birnie taught at the business school before joining McMaster’s new School of Rehabilitation Science as a program administrator for the occupational therapy and physiotherapy programs in 1990, becoming the school’s senior administrator in 1996.

She was responsible for the move of the school to a purpose-built facility, the Institute for Applied Health Sciences, in 2001. Birnie also served as a clinical professor for the school from 1993 to 2010.

She was the senior administrator for the clinical Department of Psychiatry and Behavioural Neurosciences from 2002 to 2007.

Since 2007, she has been the director of education services for the Faculty of Health Sciences.

Birnie has received other awards, including a President’s Award for Outstanding Service in 2001 and a McMaster Students Union Teaching Award in 1986.
One-two punch may stop worst infections

McMaster researchers have found a new way to treat the world’s worst infectious diseases, the superbugs that are resistant to all known antibiotics.

The discovery of an effective combination therapy has the potential to change medical practice for the treatment of the drug resistant infections which the World Health Organization (WHO) recently identified as “critical priority” for their threat to human health.

“We looked for compounds that would mess with these bacteria, and I think we’re nailing it,” said Eric Brown, senior author of the paper published in the journal Nature Microbiology. His team focused on Gram-negative bacteria which are resistant to all antibiotics including last resort drugs, such as colistin, and lead to pneumonia, wound or surgical site and bloodstream infections, as well as meningitis in health care settings.

“These pathogens are really hard nuts to crack, but we found a molecule that shreds that shell and allows antibiotics to enter and be effective,” said Brown.

The scientists discovered the antiprotozoal drug pentamidine disrupts the cell surface of Gram-negative bacteria, even the most resistant. The anti-fungal medication was particularly potent when used with antibiotics against multidrug resistant bacteria.

Pentamidine, when used with other antibiotics, was found to be particularly effective against two of the three pathogens which the WHO has identified as having the most critical priority for development of new antibiotics.

Those were Acinetobacter baumannii and enterobacteriaceae. The combo therapy also had some impact on the third most critical bacteria, Pseudomonas aeruginosa. The discovery was found to be effective in the lab and in mice, but more work is needed to offset potential side effects and ensure human safety.

A McMaster study has found that bacteria in the gut impacts both intestinal and behavioural symptoms in patients suffering from irritable bowel syndrome (IBS), a finding which could lead to new microbiota-directed treatments.

Published in Science Translational Medicine, the study was led by researchers from the Farncombe Family Digestive Health Research Institute at McMaster, in collaboration with researchers from the University of Waterloo.

IBS is the most common gastrointestinal disorder in the world. It affects the large intestine and patients suffer from abdominal pain and altered bowel habits like diarrhea and constipation, which are often accompanied by chronic anxiety or depression. Current treatments aimed at improving symptoms have limited effectiveness because the underlying causes are unknown.

The researchers found that aspects of the illness that were impacted through fecal transplants included gastrointestinal transit (the time it takes for food to leave the stomach and travel through the intestine); intestinal barrier dysfunction; low grade inflammation; and anxiety-like behaviour.

“This is a landmark study because it moves the field beyond a simple association, and towards evidence that changes in the microbiota impact both intestinal and behavioral responses in IBS,” said Giada De Palma, the study’s first author and research associate with the Farncombe Family Digestive Health Research Institute.

“Our findings provide the basis for developing therapies aimed at the intestinal microbiota, and for finding biomarkers for the diagnosis of IBS,” said Premysl Bercik, the study’s senior author, associate professor of medicine at McMaster and a gastroenterologist with Hamilton Health Sciences.

The authors conclude that their findings raise the possibility that "microbiota-directed therapies, including pre- or probiotic treatment, may be beneficial in treating not only intestinal symptoms but also components of the behavioural manifestations of IBS.”

The study was supported by grants from CIHR and Nestle Switzerland.
**Cycling in bed may benefit ICU patients**

**Early bicycle exercise** while in a hospital intensive care unit (ICU) may help some patients recover more quickly.

Researchers at McMaster University and 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.

“People may think that ICU patients are too sick for physical activity, but we know that if patients start in-bed cycling two weeks into their ICU stay, they will walk farther at hospital discharge,” says the study’s lead author Michelle Kho. She is an assistant professor with the School of Rehabilitation Science at McMaster and physiotherapist at St. Joseph’s Healthcare Hamilton.

It is safe and feasible to systematically start in-bed cycling within the first four days of mechanical ventilation and continue throughout a patient’s ICU stay, she said.

For more than a year Kho and her team studied 33 patients in the ICU at St. Joseph’s Healthcare Hamilton. They were at least 18 years old, receiving ventilation, and walking independently prior to ICU admission. They cycled about nine kilometres on average during their ICU stay. The special in-bed, supine cycling equipment was provided by St. Joseph’s Healthcare Foundation.

Patients who survive their ICU stay are at high risk for muscle weakness and disability. Cycling exercises the legs, especially the hip flexors, which are most vulnerable during bed rest. By strengthening their muscles and overall health, patients may go home sooner, stronger and happier.

Along with benefitting the patient, cycling could help lower the costs of critical care in the health system.

TryCYCLE is the first of a series of studies that will determine the effects of early in-bed cycling with critically ill patients. This work was supported by the Canadian Institutes of Health Research, Institute of Musculoskeletal Health and the national Canada Research Chairs program.
Scientists at the McMaster Stem Cell and Cancer Research Institute (SSC-RI) in collaboration with the Hospital for Sick Children in Toronto and the University of Toronto have discovered genetic alterations in the gene DIXDC1 in individuals with autism spectrum disorders (ASD).

This gene was found to change the way brain cells grow and communicate.

The finding provides new insights into ASD that will guide identification of new medications for people with ASD. This is critical because there are no medications that target the core symptoms of the complex disorder that affects one in 68 individuals.

The study was led by Karun Singh, a scientist with the SSC-RI and an assistant professor of biochemistry and biomedical sciences at McMaster’s Michael G. DeGroote School of Medicine.

The researchers discovered an important “on” button in DIXDC1 protein that instructs brain cells to form mature connections called synapses with other brain cells during development.

The team identified genetic changes that keep DIXDC1 turned “off” in a group of individuals with autism. That’s predicted to cause brain synapses to remain immature, and reduce brain activity.

Pinpointing why DIXDC1 is turned off in some forms of autism allows the search to begin for drugs that will turn it back on and correct synaptic connections, said Singh. “This is exciting because such a drug would have the potential to be a new treatment for autism.”

While this discovery holds promise, mutations in DIXDC1 account for only a small number of individuals with autism and related psychiatric conditions, Singh said. There is, however, “strong evidence” that many other autism genes disrupt synapses in a similar way – and may be treated in a similar way.

This work was supported by grants from the Natural Sciences and Engineering Research Council, Bickell Medical Foundation, Scottish Rite Charitable Foundation, Krembil Foundation, Brain Canada Platform Support Grant, the Ontario Brain Institute, the Canadian Institutes of Health Research and the Ontario Institute of Cancer Research.

14 McMaster researchers among world’s most highly cited

The 2016 listing of the world’s most highly cited researchers includes 14 scientists from McMaster’s Michael G. DeGroote School of Medicine.

Nine McMaster researchers were listed in the clinical medicine category, five in social sciences, and one in psychiatry/psychology, in Clarivate Analytics’ Highly Cited Researchers list, formerly known as Thomson Reuters’ annual publication, The World’s Most Influential Scientists.

Their work is rated as among the most referenced by other researchers worldwide.

They include: Stuart Connolly, John Eikelboom, Walter Reinisch, Koon Teo and Salim Yusuf from the Department of Medicine; P.J. Devereaux, Gordon Guyatt, and Janice Pogue from the Department of Health Research Methods, Evidence, and Impact (HEI); and Mark Crowther from the Department of Pathology and Molecular Medicine.

For social sciences, Holger Schünemann, Kristian Thorlund, Jan Brozek and Gordon Guyatt from HEI, and Roman Jaeschke from the Department of Medicine were listed.

Flavio Kapczinski from the Department of Psychiatry and Behavioural Neurosciences was named under the psychiatry/psychology category.

Paul O’Byrne, dean and vice-president of the Faculty of Health Sciences, said he was not surprised that so many McMaster researchers were highly cited.

“Having others cite your research study in their work is not just flattering; it is a confirmation of the depth and quality of those studies. I’m very proud of our researchers and what they have accomplished.”
McMaster University researchers are used to thinking big, asking health questions while tracking hundreds of thousands of people across Canada and around the globe.

Why is one child likely to develop asthma, but not another? Why are some people born with a higher risk of diabetes and heart disease? What are long-term health effects of living in cities around the world? How does the variety of gut bacteria impact overall health? What's safer: Home or hospital births? What are early predictors that a young person risks certain health troubles as they age – and what should they do minimize them?

Those are all questions being asked at McMaster, which is among the top research-intensive Canadian universities with an annual budget for health research of $133 million. Add in the research by faculty members at academic hospital partners Hamilton Health Sciences and St. Joseph’s Healthcare Hamilton, the research mandate tops $267 million a year.

“Cohort studies are extremely impactful because they allow for a thorough investigation of association between life events, exposures in life, genes you are born with, and the development of disease over time.”

– Paul O’Byrne

McMaster has the opportunity to build on that foundation, growing into a world centre of excellence in cohort and longitudinal studies, says the dean and vice-president of the Faculty of Health Sciences. Dr. Paul O’Byrne’s goal is to attract more health research for pressing health questions faced around the world.

“If it can be done anywhere, it can be done here. McMaster is the best place for collaboration and collegial engagement. It’s part of our culture. We really do believe in this,” O’Byrne said.

“The idea is to take something we are already doing really well and make it into something that is even better.”

In a cohort study, a pool of people gives researchers an opportunity to look for correlations between risk factors and disease. A prospective study moves forward in time, collecting data at specific intervals. A retrospective cohort uses data already collected in, say, government medical records, connecting causes with outcomes. In a longitudinal study, observations or measurement over time is the key. The same group is followed for years – sometimes decades, lifetimes or generations – to link causes and effects.

When researchers follow thousands of people over time, they mine wisdom from the bounty of data collected, said O’Byrne. It’s the kind of evidence politicians can use in setting priorities for health spending, for example.

“Cohort studies are extremely impactful because they allow for a
thorough investigation of association between life events, exposures in life, genes you are born with, and the development of disease over time. It’s not a single snapshot you’re looking at: you’re looking at an entire movie when you follow it along longitudinally,” O’Byrne said.

The big challenge running observational cohort and longitudinal studies is the cost. They are expensive to create and maintain, produce massive amounts of data that must be analyzed and stored, and require ongoing efforts to keep track of the people under study. Annual costs easily run into the millions of dollars for individual studies, but it’s rare for granting agencies to commit funding of more than a few years. That leaves researchers under continual pressure to put the money together year after year to keep their studies alive.

O’Byrne envisions a better way. Combine the efforts of McMaster’s cohort experts and leaders at a central cohort powerhouse, encourage shared research efforts, and establish a long-range funding model.

Imagine a place where study design experts are ready to help researchers shape the path to answer questions, while offering advice to manage bias. A repository where data is electronically collected, analyzed and stored, at perhaps half the cost of current cohort studies. A place where data from multiple cohort studies is combined and available to researchers across Canada and around the world.

O’Byrne’s first focus is funding stability for existing cohort studies then working towards a new research vision for cohort studies.

Writer Kevin Swayze talked to nine McMaster researchers who have built platforms for cohort studies that provide a bigger picture into current health issues.

Nine cohort studies revolutionizing global health:

**THE SOUTH ASIAN BIRTH STUDY**

Babies in both South Asian and First Nations communities in Canada are at high risk of diabetes and heart disease, perhaps from before they’re born.

Moms in both communities are at high risk for gestational diabetes, which leads to a greater risk of babies born with high amounts of body fat, says Dr. Sonia Anand, professor of medicine and epidemiology at McMaster University who is studying both groups in cohort studies.

Extra fat early in life is a risk factor of diabetes and heart disease later in life.

Genetics apparently play a big part, but the babies in each community are physically different because of their heritage, despite similar health risk factors, Anand said.

South Asian babies tend to be born small, but have a high percentage of body fat. Aboriginal babies, in comparison, tend to be born bigger with extra body fat.

“By setting these two groups at opposite ends of the spectrum, that are at risk for the same conditions, I hope to understand why,” Anand said.

Along with biological information, she’s also collecting data about food, environmental and socio-economic status and parent-child interaction in early years of a baby’s life.

The South Asian Birth Cohort study started in 2013, with a goal of collecting data from babies until they are at least five years old. In all, 1,012 pregnant moms of South Asian heritage were recruited in Peel Region, and a comparable number in the Bangalore area of India.

“The are high risk for everything and they really need this information to improve their health.”

— Sonia Anand

Initial data confirms the need to carefully screen moms of South Asian heritage for gestational diabetes, helping them avoid excessive weight gain in pregnancy. Healthy eating and physical activity is also encouraged through childhood.

The Aboriginal Birth Cohort also started in 2013, with a goal of recruiting 300 moms from Six Nations. So far, 120 have joined the study for annual exams and data collection for three years.

In First Nations communities, which have underlying economic and social challenges, it’s not as simple as preaching “eat better and exercise more” to improve health, Anand said. A key part of the Aboriginal study is investigating barriers to activity and healthy eating for children in those communities. There’s a specific goal of developing health interventions built with community input and support, so they are more likely to be adopted across First Nations communities.

“They are high risk for everything and they really need this information to improve their health,” Anand said.

**THE VISION STUDY**

Too many people die after successful surgery, says Dr. PJ Devereaux, a cardiologist and professor of the Department of Health Research Methods, Evidence, and Impact.

“If deaths within 30 days after surgery was its own category of death, it would be the third leading cause of death in the U.S., despite the fact that only 1.5 per cent of people having surgery will die,” Devereaux said.

“Where we have failed patients is in the medical management of patients after surgery. People die from medical complications. They get heart attacks. They get infections. They get bleeding. They get these things that kill them and we need to do a better job.”
A century ago, one in 1,500 people died from anesthesia in the operating theatre. Now it’s one in 200,000.

“It’s very uncommon that someone will die in an operating room,” Devereaux said. “What I want to see happen is that we make the same advances in recovery that happened in the last century in the operating room, but I want to see it happen in a decade.”

Devereaux is leading perioperative research at the Population Health Research Institute of McMaster University and Hamilton Health Sciences. The VISION family of studies examines how the body reacts to the “ultimate stress test” that is surgery.

The VISION registry started in 2008, examining risks, causes and frequency of post-surgical complications and death. It includes 40,000 patients at 28 sites in 15 countries. VISION is built on a co-operative philosophy that invites researchers around the world to work together in building and sharing data from large cohorts of surgical patients.

VISION includes research into early warning signs of post-operative complications. Of special interest is the first few days after surgery, when patients are often immobile. It’s a time when any pain or symptoms caused by complications are hidden in a haze of lingering anesthesia and narcotic medications. Already, VISION research has found elevated troponin protein levels in a patient’s blood after surgery point to hidden cardiac damage that increases the risk of dying within 30 days. Research continues into clarifying troponin thresholds so doctors know when medical intervention is required.

In 2013, VISION Cardiac began, to further investigate the relationship between troponin levels and the 30-day risk of death, and post-cardiac surgery complications in general. The study recruited 15,000 cardiac surgery patients at 15 sites in 12 countries. Results are expected later in 2017.

The NeuroVISION study started in 2014, investigating the incidence and risk factors of hidden “covert strokes” in the days immediately after non-cardiac surgery. The cohort includes 1,500 patients at 15 sites in 10 countries. They undergo MRI brain scans within nine days of surgery, looking for evidence of stroke. Cognitive and physical function are tested at 30 days and a year. Results are expected in 2018.

“Our group’s philosophy is we want to change health. I believe the fundamental way we make advances, is to understand what is going on. We need large, international studies,” Devereaux said. “If it takes a village to raise a child, I put forward it takes a planet to answer a good clinical question.”

THE HOME BIRTH STUDY

There’s no increased risk for babies born at home under the care of a midwife in Ontario.

The results were no surprise to Eileen Hutton, assistant dean of the Midwifery Education Program at McMaster University. South of the border, so much.

“Home birth always pushes buttons, so it always feels like a bit of an unfair advantage when it’s introduced to the news world,” Hutton said, recalling the December 2015 publicity around her retrospective cohort study of 18,000 planned home births and the same number of births in hospitals.

The rate of stillbirth or death after delivery was low and similar to the outcomes of a related number of low-risk pregnancies ending with hospital births, as recorded in provincial health records. The results support similar studies in British Columbia, England and the Netherlands, where midwifery is also integrated into the health care system, she said.

Ten days after Hutton’s study was published in the Canadian Medical Association Journal, another home birth cohort study out of Oregon was published in the New England Journal of Medicine. It showed a home birth death which was double the hospital rate – and this pulled Hutton’s research into the often-acrimonious home birth debate in the U.S. The professor of obstetrics and gynecology wasn’t surprised at the U.S. results. Midwives there often are far less regulated – if at all – across the U.S., compared to Canada and Europe. Health insurance isn’t universal south of the border, so some moms may have little financial choice but to stay at home, when they might be better in a hospital.

“It’s not about supporting home birth. It’s about being able to give people who are needing to make decisions about their care the best information possible.”

– Eileen Hutton
compared to caesarian section birth; when weaned from breast milk; and what kind of solid food is given at what age.

Researchers in many areas of McMaster are examining the gut microbiome, looking for the impact of adversely impacting the variety of gut bacteria plays in overall health, inflammation, disease, allergies, and obesity.

THE HUTTERITE STUDY
It’s hard to find a better place to test the real-world effectiveness of influenza vaccinations than socially isolated Hutterite colonies on the Canadian prairie, says Dr. Mark Loeb, professor, Department of Pathology and Molecular Medicine.

Loeb has made headlines with results from vaccine studies undertaken in rural Hutterite settlements, places where approximately 100 people live communally and rarely interact with nearby cities and towns.

In fall 2008, children were vaccinated in 25 of 49 colonies. Children in the other 24 received an injection of hepatitis A vaccine, as a placebo control. When influenza infection rates were tallied in June 2008, vaccination proved its worth. In vaccinated colonies, five per cent of the adults and children were infected at some time over the winter. In colonies where children weren’t vaccinated, 10 per cent of adults and were infected.

It’s long been believed that vaccinating some people was enough to slow the spread of influenza in a community, but it’s an elusive proof. The Hutterite study results offered clear evidence of “herd immunity” from vaccinations, neatly proven in an isolated population that’s difficult to create anywhere else, Loeb said.

In 2015, Loeb published results from a three-year study in 52 Hutterite colonies, looking at the effectiveness of injected flu vaccine compared to nasal sprays in children. He found no difference in effectiveness protecting the entire communities.

The study results challenged the position of the U.S. Centers for Disease Control Advisory Committee on Immunization Practices. Recommendations released at the same time by that group recommended against nasal flu vaccines for children across the U.S.

Loeb’s ongoing Hutterite vaccination effectiveness studies are cluster randomized trials. Now, he’s using data collected in those investigations to build a cohort for a longitudinal study running in parallel with short-term studies. Longer-range research is looking at vaccine response over multiple years, the effects of repeated vaccinations and the effect of repeated vaccinations on the immune system. “As we continued to do studies, we thought this was a great population, a great platform to answer questions,” he said. “We took advantage of a foundation we had put in place over a number of years.”

THE AGING STUDY
It’s about time Canadians learned how they are growing older — and what can be done to promote aging well.

One in five Canadians will be 65 years or older by 2030. And population aging is poised to become one of the most transformative shifts of this century says Parminder Raina, principal investigator of the Canadian Longitudinal Study on Aging (CLSA) based at McMaster University.

“There is an urgent need for data, and there is a huge gap in that data, to understand why some Canadians age in a healthy fashion and others don’t,” said Raina, a professor in the Department of Health Research Methods, Evidence, and Impact.

“There is an urgent need for data, and there is a huge gap in that data, to understand why some Canadians age in a healthy fashion and others don’t.”

– Parminder Raina

The CLSA is the largest study on aging ever undertaken in Canada. The study has recruited 51,000 participants aged 45 to 85 years and was set up to follow participants every three years until 2033, recording biological, psychological, medical, social, lifestyle and economic aspects of their lives. Baseline data collection was completed in 2015 and, the following year, data for all 51,000 participants became available to the research community.

Among the projects underway, there is research being carried out using CLSA blood samples to create an “epigenetic clock” to compare biological age to calendar age. Raina said.

“Each one of us knows what our age is, but generally chronological age is not a precise predictor of what happens to us,” Raina said. “An epigenetic clock will be able to tell us the real biological age of a person, and could indicate resilience and resistance to disease, as well as predict the various trajectories of aging.”

There’s also work on determining a normal cognitive score tied to age. Think of it like a growth chart for children, but tied to memory and cognitive function.

“When you go see your doctor and they do a cognitive assessment, they will be able to compare your results to a normal value developed using Canadian data,” said Raina. “Aging is a developmental process.
At the early ages, there are a lot more gains and few losses, and in old age, there are a lot more losses than gains.”

CLSA is set up as a partnership of 160 experts and researchers across Canada in varied disciplines, at 26 universities. Everybody shares in collecting the data, but nobody has ownership of any part of it, Raina said. All researchers – even him – must apply to access data for specific projects, he said.

“It’s a misnomer to call it a study. It’s really a platform for research. It’s available to any researcher in this country or globally to access these data and ask any kind of research questions,” Raina said.

“This is public money. This is going to be a $250M study over the next 25 years. It cannot belong to a few people or belong to McMaster. It is a public resource aimed at improving the health and well-being of Canadians.”

THE PREEMIE STUDY
What’s going to happen to my very premature baby?

Four decades ago, Dr. Saroj Saigal didn’t have a good answer as she faced parents inside the neonatal intensive care unit of the McMaster Medical Centre.

Today, she does, after spending most of her medical career keeping track of a small cohort of some of her tiniest – and toughest – patients. She knows that extremely low birth weight (ELBW) babies face challenges ahead, but they’re likely not going to grow up greatly different from their normal birth weight peers.

“I tell parents with confidence now, because of all our studies. I tell them with a confidence we didn’t have before,” Saigal said. “You have to tell them what the future holds, you have to give them hope. I think it’s made a very important impact.”

Saigal started working in the McMaster neonatal intensive care unit when it opened in 1973. It was a time when about 10 per cent of such babies survived if their birth weight was less than a kilogram. Within five years, the survival rate at McMaster was 55 per cent. Today, it’s 85 per cent.

Back then Saigal and the McMaster team were in unexplored medical territory, at a time when there was medical debate over the wisdom of trying to save tiny babies. So Saigal crafted a study to follow her young patients, to learn best medical practices and understand what it is like for a preemie to grow up.

“I tell parents with confidence now, because of all our studies. I tell them with a confidence we didn’t have before.”

– Saroj Saigal

The cohort study followed ELBW babies between 500 and 1,000 grams, born between 1977 and 1982, and cared for at McMaster. Originally, there were 179 babies. For the most recent review, 100 still participated. At the same time a normal birth weight group of 144 children born at 2,500 grams or more were recruited for comparisons, and 89 are still involved.

Her most recent survey of ELBW adults in their early 30s, published last year, revealed that one in five suffer from neurosensory impairments such as blindness or cerebral palsy.

Compared to their normal birth weight counterparts, they were a bit less likely to be employed or have a full time job, and earned on average $20,000 less a year. They were more likely to be single, less likely to have children, and more likely never to have had sexual intercourse.

It wasn’t all bad news. By their early 30s, ELBW survivors have the same levels of education, family and partner relationships and report fewer risky behaviours compared to their normal birth weight peers.

“Yes, they’re earning less, but when you consider the fact so many had disabilities, I think they are doing well,” Saigal said. “It was amazing.”

Saigal wants to follow them in another decade, into their 40s, when she expects they’ll face growing age-related health troubles. What’s worrisome is ELBW babies tend to have higher blood pressure, metabolic problems and a higher incidence of anxiety and depression, compared to the normal population, she said.

As Saigal winds down her own career, she’s confident the cohort’s future is in good hands at McMaster. She predicts it will be a challenge to find the funding needed to keep the study alive, but believes effort is worth it to understand ELBW adults.

“This is a goldmine, this group of infants, because of their longitudinal follow up,” she said.

THE CHILD STUDY
When it was first suggested researchers collect dirty diapers in a Canadian child asthma and allergy study, it wasn’t an easy sell.

A decade ago, studying the human gut microbiome wasn’t anywhere near as popular as today, recalls Dr. Malcom Sears, director of the Canadian Healthy Infant Longitudinal Development (CHILD) study based at McMaster University.

“This microbial effect sounded odd when we began. We had a big debate about it. Would we even collect feces? People said: ‘It’s available, why not?’ It’s turned out to be one of the best decisions that we made,” Sears said.

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There’s long been theories that the variety and quantity of naturally occurring bacteria inhabiting the human gut affects health, physical and mental development, and risk of disease. Data from 3,500 families in CHILD is helping connect the dots.

“This is the study that links the microbiome to clinical outcome.”

– Malcolm Sears

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– Malcolm Sears
what we are really interested in," Sears said.

So far, researchers have found administering antibiotics to mom during labour alters the baby’s gut microbiome, as does delivery by caesarian section and formula feeding. Babies at three months with low levels of four specific gut bacteria have a higher risk of developing asthma. Breastfeeding repairs early gut bug disruption by 12 months and in general may decrease the baby’s obesity risk.

CHILD research also discovered artificial sweetener consumption during pregnancy may increase obesity risk in babies. Eating fruit during pregnancy boosts a baby’s cognitive development. And exposing babies to air pollution increases the risk of developing allergies by 12 months old.

CHILD, started in 2008, involves over 40 scientists at 11 universities and hospitals across Canada and follows families with children newborn to age five. Collected data ranges from blood and stool samples, to diet and home environment questionnaires. The CHILD study is funded by the Canadian Institutes of Health Research and AllerGen NCE Inc. which is based at McMaster.

In 2017, CHILD’s youngest participants will turn five, but Sears would like to keep the cohort study alive, following the same children through key development milestones of ages eight, 11 and 14.

“The grand scheme is to see them as adults, to continue for another 90 years,” Sears said.

If CHILD finds money to continue, Sears envisions expanding data collection and analysis. That would offer richer information to researchers investigating diabetes, obesity, cardiovascular development and neurodevelopment.

“These are some of the opportunities for the future built on the platform that we’ve established for examining the Developmental Origins of Health and Disease.”

THE PURE STUDY

PURE stands alone when it comes to improving the health of everyone in the world.

McMaster University is home to the Prospective Urban and Rural Epidemiological (PURE) Study, which assembled a cohort of 225,000 people in 800 communities in 25 countries. It’s a co-operative effort by researchers around the globe, examining the impact of urbanization on the development of a wide range of health risk factors.

“The multi-level nature and breadth of PURE are both unique. And then we look at the effect of the societal factors on people’s health behaviours,” said Dr. Salim Yusuf. He is a cardiologist, the principal investigator of PURE, a McMaster professor of medicine, and director of the Population Health Research Institute (PHRI) of McMaster and Hamilton Health Sciences.

“Our work provides answers that are immediately relevant and to many populations around the world. In Canada, we are a multi-ethnic society. We are a microcosm of the world, so our results are applicable to many Canadians as well.”

— Salim Yusuf

“We look at people’s health behaviours such as diets, whether they smoke or are active. Then we look at their health risk factors such as blood pressure or cholesterol and a range of other biomarkers. We examine how these exposures and risk factors interact with genetic endowment, to cause a range of diseases: Heart disease, stroke, kidney disease, lung disease, cancers, diabetes, and obesity. This is very different from what has been done before.”

Since the study began in 2002, its results have challenged common beliefs with strong evidence.

It was long assumed that the cause of high rates of heart disease and stroke in poor countries was because people there faced more risk factors. PURE uncovered the opposite. People in poor countries actually face lower risk factors. It’s the poor quality of medical care available that had the overriding affect.

“Health care is much more important than we give it credit for,” said Yusuf.

PURE also investigated why there’s so little use around the globe of older, generic, low-cost drugs to treat blood pressure and heart disease. PURE found that less than 10 per cent of patients in lower-income areas who should use proven drugs after a heart attack or stroke actually used them. It turns out that even though they are cheap by the standards of high-income countries, they remain prohibitively expensive in moderate- and low-income countries.

“If we want to reduce heart disease globally, we have to improve access and affordability to proven, inexpensive treatments,” Yusuf said.

PURE’s research also challenges the widespread opinion that reducing sodium intake to lower blood pressure is key to lowering the risk of cardiovascular disease. It’s not that simple, he found. Higher intake of sodium increases blood pressure. But the risk of heart disease and stroke do not increase in the same manner. And other research has found evidence that low sodium levels may actually cause harm, he said.

“This research is changing the way people think about salt,” Yusuf said.

When results from PURE are combined with other large population research efforts at PHRI, results offer solutions to global health problems, Yusuf said. He points to the INTERHEART study, where data from 29,000 patients found nine simple and modifiable risk factors to explain 90 per cent of all heart attacks, no matter your heritage or where you live. And the INTERSTROKE study, with data from 27,600 patients, which shows 10 risk factors account for 90 per cent of all strokes worldwide.

“These are transformative studies. You get fundamental knowledge not only from animal basic experiments but what is more relevant is they reflect fundamental observations in people and in populations,” Yusuf said.

“Our work provides answers that are immediately relevant and to many populations around the world. In Canada, we are a multi-ethnic society. We are a microcosm of the world, so our results are applicable to many Canadians as well.”
Spotlights

Lyn Turkstra (left), associate dean, Speech Language Pathology Program, with Patty Solomon, associate dean, School of Rehabilitation Science.

Professor comes home to lead speech-language program

Hamilton native Lyn Turkstra has returned home with the goal of keeping highly qualified Canadians at home to learn speech-language pathology (SLP) at McMaster University’s new program. “It’s so hard to get into Canadian programs. I am a classic example. I went and then stayed in the U.S.,” said Turkstra, the professor and assistant dean of the Speech Language Pathology Program of the School of Rehabilitation Science.

The Dundas native worked for 26 years in the U.S. as a SLP instructor and researcher, with a focus on helping people with brain injuries learn to communicate again. In 2016, she returned to Canada to help shape and then run the new, two-year graduate SLP program which opens in the fall, 2017.

Speech language pathology is an often misunderstood area of rehabilitative therapy, Turkstra said. While the critically acclaimed movie The King’s Speech in 2010 raised the profile of speech therapy, not enough is known. SLP therapists help a range of people from children with language disorders to seniors with dementia or anyone with autism struggling to organize day-to-day life activities.

“Our goal is to support communication functioning in people of all ages and with all types of disabilities,” Turkstra said. “We are the communication disorders specialists.”

The new SLP program complements the existing physiotherapy and occupational therapy programs at the School of Rehabilitation Science.

It is also expected to be a follow-on course for students completing the Cognitive Science of Language program in McMaster’s Faculty of Humanities.

“It’s a nice fit here in this interdisciplinary environment,” Turkstra said.

When Turkstra expressed interest in teaching at McMaster, “it was the stars aligning,” said Patty Solomon, associate dean of the School of Rehabilitation Science. She was already planning a problem-based learning speech language program at McMaster.

“This will be the only problem-based speech-language pathology program in North America,” Turkstra said.

There’s a pent-up demand for speech-language pathology training at McMaster, they say. By the January application cut-off date, 431 applicants had requested one of the first 28 student spaces available in September. That was the highest application rate of any SLP program in Canada.

The new program is expected to grow to 32 spaces in fall 2018.

Turkstra studied honours French at McMaster in 1984, before heading to the State University of New York at Buffalo to study science and speech-language pathology. She earned her PhD in SLP in 1990 at the University of Arizona.

She instructed at schools including at Case Western University in Cleveland and the University of Wisconsin at Madison, before returning home to McMaster and Dundas.
World-renowned McMaster professor honoured at festschrift

Former trainees of Dr. John Bienenstock, a Distinguished University Professor of medicine and pathology and molecular medicine, paid tribute to him with a day of talks on his specialty.

In December, they organized a festschrift for him at McMaster University’s David Braley Health Sciences Centre in downtown Hamilton. The day-long academic event has former students, trainees and colleagues return to honour the achievements of their mentor.

“It was a wonderful day, humbling but lots of fun. I’m very grateful to the Faculty and St. Joseph’s for supporting it and making it possible,” said Dr. Bienenstock, professor emeritus.

“I would like to thank all the people who made it possible, and who attended that day.”

Bienenstock is one of the founding fathers of mucosal immunology. He is recognized as a global authority on the gut and lung and their interaction with the brain.

“He’s been a major mover in mucosal immunology and understanding the brain, immune systems and overall integration of the host response in the body,” said Jack Gauldie, a fellow Distinguished University Professor of pathology and molecular medicine at McMaster and currently vice-president, research for St. Joseph’s Healthcare Hamilton.

Speakers invited to the festschrift included Fergus Shanahan, director of the Microbiome Institute of University College Cork, Ireland; Glenda MacQueen, vice-dean of the Faculty of Medicine at the University of Calgary; Robert Clancy, professor emeritus of biomedical sciences and pharmacy of the University of Newcastle, Australia; and Michael Zasloff, scientific director of the MedStar-Georgetown Transplant Institute of Georgetown University Hospital in the U.S.

Bienenstock came to McMaster in 1968 after graduating in London, UK, and completing post-doctoral training at Harvard and Buffalo universities.

He has continued his research program since becoming professor emeritus in 1998, and he is the director of the Brain and Body Institute at St. Joseph’s Healthcare Hamilton.

Young educator award recognizes innovator

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

Chan completed McMaster’s postgraduate emergency medicine program in 2013, after receiving medical training at Western University in 2008. She works as an emergency physician for Hamilton Health Sciences.

Since 2014, she has been the director of continuing professional development for the Division of Emergency Medicine. She is also the director of assessment for McMaster’s emergency medicine residency.

Online research, education and communication strategies are central to Chan’s work.

The award recognizes outstanding individuals within their first seven years as a faculty member.

Dean wins respiratory research award

Paul O’Byrne, dean and vice-president of the Faculty of Health Sciences, has won the 2016 Anne & Neil McArthur Research Award from St. Joseph’s Healthcare Foundation.

Since 2000, the award has been presented annually to an internationally recognized researcher whose field of study is also a focus of research at St. Joseph’s Healthcare Hamilton.

O’Byrne is world renowned for his research on asthma that is the result of allergies.

St. Joseph’s is home to the Firestone Institute for Respiratory Health, an internationally-recognized centre for respiratory research and clinical care.

Canada Research Chairs retain top leaders

Doctors P.J. Devereaux and Elena Verdú have joined 33 other Faculty of Health Sciences members as Canada Research Chairs (CRCs).

They are among six new McMaster CRCs and three renewals announced by Minister of Science Kirsty Duncan. This brings a total of $8.9 million to McMaster in federal funding aimed at attracting and retaining top research leaders. In all, 69 McMaster researchers hold this esteemed title.

Devereaux holds the Canada Research Chair in Perioperative Medicine, and is a professor of the Department of Epidemiology and Biostatistics. Devereaux will use the chair to investigate why millions of people worldwide suffer a stroke or heart attack after major, non-cardiac surgery.

Verdú continues as a Canada Research Chair in Inflammation, Microbiota and Nutrition, with a focus on celiac disease and non-autoimmune intolerance to gluten.
Gregory Steinberg, a professor of medicine of McMaster University’s Michael G. DeGroote School of Medicine, has taken two prestigious prizes recently for outstanding accomplishments. Steinberg is the first scientist to be awarded the new Gold Leaf Prize for Outstanding Achievements by an Early Career Investigator by the Canadian Institutes of Health Research. He is also the first Canadian to take the American Diabetes Association international award.

Steinberg, 41, is also a professor of biochemistry and biomedical sciences at McMaster. He holds a Canada Research Chair in Metabolism and Obesity and the J. Bruce Duncan Chair in Metabolic Diseases. He is also the co-director of the Metabolism and Childhood Obesity Research Program (MAC-Obesity) at McMaster.

His research is focused on understanding how hormones regulate the body’s storage and breakdown of fat and glucose, with the aim of developing new therapeutic strategies for the prevention and treatment of the interrelated chronic diseases of obesity, type 2 diabetes, cardiovascular disease and non-alcoholic fatty liver disease.

Steinberg obtained his PhD in 2002 from the University of Guelph and spent 2002 to 2008 in Australia at the St. Vincent’s Institute of Medical Research. He joined McMaster in 2008.

Steinberg received the Gold Leaf award, worth $100,000, from the Governor General of Canada David Johnston at an Ottawa ceremony.

This spring, Steinberg was also awarded the international 2017 Outstanding Scientific Achievement Award by the American Diabetes Association. He is the first scientist from a Canadian university to take the 60-year-old award given annually to a scientist under 50 years of age.

Dr. John Kelton, the former dean and vice-president of the Faculty of Health Sciences and a professor of pathology and molecular medicine, was conferred with the lifetime title of Distinguished University Professor at the Faculty’s convocation on May 25.

This is the highest honour bestowed by the University and recognizes extraordinary faculty members with outstanding contributions in scholarship and education.

“In medical education and research, Dr. Kelton is an administrative leader with few peers,” said McMaster President Patrick Deane.

“He oversaw the doubling of the Faculty’s enrolment, the creation of regional campuses in Waterloo and Niagara, the addition of clinical campuses in Brantford and Burlington, the development of the David Braley Health Sciences Centre, the inception of a new selection process for medical students – a system now employed across Canada – and historic investments in research.”

Kelton’s research contributions have led to numerous national and international awards for research excellence, which most recently have included the Prix Galien award for research and membership in the Order of Canada. In addition, he was awarded an honorary doctorate of laws by the University of Windsor at its 2017 spring convocation.

Earlier this year, Kelton also received a Lifelong Achievement Award from the Michael G. DeGroote School of Medicine’s Division of Geriatric Medicine and the Regional Geriatric Program Central.

Kelton is currently the executive director of the Michael G. DeGroote Initiative for Innovation in Healthcare.

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

Anvari, a professor of surgery and founding director of the Centre for Surgical Invention and Innovation at McMaster University, was one of the first surgeons in Canada to use robotics in surgery. Chan is a McMaster professor of pediatrics who has advanced the care of children with thrombosis and stroke, including the use of clot-resistant catheters which may prevent childhood thrombosis worldwide.

The two faculty members were among 26 appointees to Ontario’s highest honour, announced in December. The Order of Ontario has recognized individuals whose exceptional achievement in their field has left a lasting legacy in the province, Canada and internationally.
Bill Walsh: McMaster’s bridge builder, extraordinaire

– Written by Dr. John Kelton, Distinguished University Professor and former dean and vice-president, Faculty of Health Sciences.

When the McMaster University Medical Centre was dropped like a giant grey anvil on top of Westdale’s beloved Sunken Garden, Bill Walsh picked up the pieces and mended the fences. This was in the 1960s – halcyon days for Hamilton. The city was bustling, vibrant and full of energy. McMaster was a manufacturing powerhouse producing everything from steel to candy.

McMaster had just celebrated its 35th anniversary in Hamilton and the university was as brash as its hometown. President Harry Thode had great ambition for his school and the city, and he believed a medical school would help put Hamilton and McMaster on the international stage. That would only happen, of course, if the medical school was different enough to complement McMaster’s growing reputation for innovation.

Dr. John Evans was selected to lead the medical school. His first recruit was Dr. Bill Walsh. Bill was born in Hamilton, the great grandson of an Irishman who came to Canada to escape the Great Potato Famine of 1850. Bill went to Westdale Secondary School, and then completed his medical degree at Western before becoming a specialist in internal medicine. Bill also had the diplomatic balance of a tightrope walker. He was exactly what McMaster needed.

Bill was wise and widely trusted by Hamilton’s citizens and the local physicians who would teach in this new school. Bill was a negotiator of great integrity – a bulldog who still helped all sides find victory. He had wit and charm. He was Cary Grant handsome, charismatic and dashing. He drew people to him and he built bridges. He was a diplomat.

Long recognized as an excellent physician, Bill quickly became an academic visionary. Working with John Evans, Bill Spaulding, Fraser Mustard and others, he was part of the key team that devoted itself to making the McMaster School of Medicine completely different. If all other schools took four years to complete medical training, McMaster would do it in three. No giant lecture halls, instead, early engagement with patients.

McMaster would welcome students from all academic backgrounds, not just science...and there, the team hit a snag. In those years, the medical school regulator was the Ontario College of Physicians and Surgeons which opposed the admission of non-science students. Bill Walsh, ever the bridge builder, became McMaster’s representative to the College, and shortly, its president. Soon, McMaster was able to admit students from a range of academic disciplines.

Bill Walsh loved everything about life, particularly his family and friends. His friends spanned people from neighbourhoods across the city. But he also knew prominent Hamiltonians like Michael G. DeGroote, Joe Peller, Bill Goldberg, Ross Craig and many others. Most of all, Bill was devoted to his family: his wife Peggy, daughter Allyn, sons James and Robert, his five grandchildren and one great grandchild.

Sports and music also played important roles in his life. Before jogging became commonplace, Bill Walsh ran. He ran and he raced, often with one of his beloved dogs. At the time, his behaviour was so unusual that he and his jogging companion, Maggie the dog, had their picture in a local paper. During his medical school days, a misdiagnosed case of appendicitis had prevented him from making a run at the Olympics and almost ended his life.

Bill Walsh remained a remarkably kind, caring and perhaps above all, knowledgeable physician. He was the doctor that many of our city’s physicians went to see when they needed medical help. He was, literally, a doctors’ doctor. The man who advised McMaster’s first dean of medicine continued to provide wisdom to John Evans’s successors – us included – for four decades. We can attest that the brilliance of his perspective, insight and advice was undiminished to the end.

Bill Walsh died on Jan. 7, 2017 at age 92. He will be missed.
McMaster alumnus, rheumatologist remembered for sharing love of art

Dr. William (Bill) Bensen, a nationally recognized rheumatologist who was a McMaster alumnus, faculty member and donor, died March 15. He was 67.

Bill Bensen came from a family with a long history in Hamilton and particularly at McMaster, with his grandfather, father and son Rob all graduating with degrees from the University.

He was in the second graduating class of what is now known as the Michael G. DeGroote School of Medicine, in 1973. He became a part-time faculty member with the Department of Medicine in 1978 and had held the title of clinical professor since 2007.

Bensen worked tirelessly to improve the quality of life for people with arthritis suffering from joint pain and inflammation, and he had deeply personal reasons for taking up the fight.

His father, Dr. Harold Bensen, had been a member of the Hamilton Wildcats football team and then later, team physician for the Hamilton Tiger-Cats. In 1964, when William Bensen was just 14, his father developed rheumatoid arthritis.

Bill Bensen was a warm, friendly person who was full of ideas. He and his wife, Wynn, were passionate collectors and supporters of visual art. Many of their pieces have been displayed around the University, including exhibitions at the McMaster Museum of Art, where both had served as directors.

Bensen believed ceremony was important to the medical school experience.

He and then Dean John Kelton developed two important annual events for the school – the White Coat Ceremony for the incoming class and the Founders Dinner for the second-year class.

Bensen is survived by his wife Wynn, children Robert (Lyndsay), Ryan (Justine), and Jayson (Kate), and grandchildren William, Jack and baby Bensen.

David Inman, beyond a teacher

David Inman, a professor emeritus of biomedical sciences, died Dec. 29, 2016. He was 89.

Inman was born in Satterthwaite, England and earned a BSc in physiology and a PhD in molecular biology at the University of London.

Immigrating to Canada in 1970, Inman joined McMaster University in 1970 as a professor in the Department of Neurosciences, now called the Department of Biochemistry and Biomedical Sciences. He retired in 1992.

Inman’s son, Dr. Mark Inman, is a professor of respirology in the Department of Medicine. Outside of his teaching career, David Inman’s passions included literature, music, art, theatre and wildlife conservation organizations.

Peter George, McMaster’s longest-serving president

Peter James George, who served three terms as president and vice-chancellor of McMaster University before retiring in 2010, died at age 75 on April 27, 2017.

George oversaw a period of major growth for McMaster and the Faculty of Health Sciences, in terms of size, reach and reputation.

George, who began at McMaster as an economics lecturer in 1965, served as Dean of Social Sciences from 1980 to 1989, before becoming the university’s president from 1995 to 2010. As president he oversaw the Faculty adding new programs such as the Bachelor of Health Sciences and physician assistant;

the addition of distributed education campuses for the medical school to Waterloo and Niagara; the construction of the Michael G. DeGroote Centre for Learning and Discovery and the Institute for Applied Health Sciences; a doubling of the enrolment of the Faculty’s programs and philanthropy that resulted in dozens of endowed research chairs and several new institutes.

Among his honours, he was inducted as a member of the Faculty’s Community of Distinction in 2015, and earlier this year he received an honorary doctor of laws degree from McMaster.

In his last lecture before retirement, George said, “I gave my life to education because there is nothing better than bearing witness to the opening of the human mind and spirit.”

Nigel Baillie, an early alumnus

One of the first graduates of McMaster’s anesthesia residency program and a faculty member for almost 30 years, died Dec. 30, 2016. He was 78.

Nigel Baillie trained in his native England, came to Canada in 1964 and became a general practitioner and district coroner in the Hamilton area. He took McMaster’s then-new anesthesia residency program, graduating in 1978. He joined the McMaster faculty as a lecturer that year, and retired as an associate clinical professor in 2007. He was a pain specialist, and spent more than 50 years as a physician.
FHS alumni: Where are they now?

1970s

Paul Humphries
MD ’77
(Anesthesiology) ’79
Teaching chemistry in a Northern Ontario high school turned Dr. Paul Humphries towards a medical career caring for rural families and training new doctors.

The Toronto native graduated from the University of Waterloo in 1969 with a chemistry BSc, graduated from the University of Toronto teachers’ college in 1970, and then worked at the Attikokan high school.

When a local doctor nudged him to consider a career change from teaching to medicine, he enrolled at McMaster. Humphries went back north to Thunder Bay as a family physician, but his urge to teach remained. In 1990, he was founding director of McMaster’s family medicine program in northwestern Ontario. In 1997, he moved west as director of the residency program at the University of Alberta. His rural-urban family practice has shifted partly to palliative home care in recent years.

“Really, it’s about fulfilling the needs of the community I work with directly, and the many communities where I can improve their capacity to deliver better health,” Humphries said.

In 2016, he received both the Alberta College of Family Physicians’ Reg L. Perkin award for family physician of the year, and the College of Family Physicians Canada’s Ian McWhinney Family Medicine Education Award.

1980s

Tracy Kitch
Nursing ’86
Tracy Kitch, a graduate of McMaster’s School of Nursing, was appointed president of IWK Health Centre in Halifax in 2014. After graduating from McMaster with a nursing BSc, Kitch studied at the University of Toronto, where she earned her nursing MSc and completed the Health Executive Leadership program at the Rotman School of Management.

Before heading east to IWK – Nova Scotia’s children’s and tertiary care hospital – she worked at Mount Sinai Hospital in Toronto as executive vice-president of patient care and chief nursing executive. Kitch serves on the Board of Directors of the Canadian Association of Pediatric Health Centres, the Nova Scotia Health Employees’ Pension Plan, the United Way Halifax, and is a sitting member of the IWK Foundation’s Board of Trustees. In November, she was recipient of Canada’s 100 Most Powerful Women 2016: PwC Public Sector Leaders Award.

2000s

Yvanne Faught
Midwifery ’05
During 10 years helping moms deliver babies, Yvanne Faught never doubted her career choice. The Vancouver Island native didn’t plan on training as a midwife until she attended a lecture at Trent University in 1997 where she was studying women’s studies and French. It was about the 1994 integration of midwives into Ontario’s health care system. “It was a light bulb moment for me,” Faught says. “It was something that was always important to me: women’s health. So it was the perfect job for me.” She graduated from Trent, then applied three years in a row before acceptance into the McMaster midwifery program. After graduation, she worked two years in Kingston, delivering 35 to 40 babies a year. Then she headed home to Vancouver Island, where she opened her Magnolia Midwifery practice and averages 50 to 60 deliveries a year.

2010s

Adrian Budhram
BHSc ’11 and MD ’14
Neurology resident Adrian Budhram enjoys the challenge of solving medical mysteries, in and out of hospital. The Richmond Hill native graduated from health sciences and medicine at McMaster and is now a third-year Western University resident. He’s also a three-time winner of the Think Like a Doctor monthly feature in the New York Times, where readers diagnose ailments of real-life patients.

After residency, Budhram may pursue a fellowship in neuro-immunology and neuro-infectious diseases. “Neurology is one of the most cerebral subspecialties – pun intended – and the complexity of the nervous system makes for some fascinating clinical puzzles that we encounter on a daily basis,” he said. “It’s great to be able to apply knowledge you’ve learned to challenge clinical scenarios with the hope of positively impacting patients’ lives.”
**Surgical artist took roundabout trip to plastic surgery**

**Dr. Jen Robinson** never set out to be a doctor, let alone a reconstructive plastic surgeon helping patients reclaim their lives in British Columbia.

The McMaster University graduate reflects on her 14-year post-secondary journey and advises anyone considering a medical career to keep an open mind and give it a go. As a mentor for incoming medical students at the University of British Columbia (UBC), she says don’t worry about picking your speciality early.

“My reassurance to them is: it’s possible to change, you’re not picking the wrong thing, pursuing the wrong interest. It is possible to get what you want in the end. It’s OK to explore other things.”

Like she did.

The Komoka, Ont. native first studied biology at nearby Western University, but took a year off and headed to Africa for “a year of self exploration.” She volunteered in health clinics in Kenya and Tanzania and realized she wanted a medical career in Canada.

She returned to London, finished a degree in biology and genetics at Western before attending the Michael G. DeGroote School of Medicine at McMaster, graduating in 2004.

Then came a one-year fellowship in ocular pathology at the University of Ottawa, but she wasn’t accepted into the ophthalmology program as she planned. So she returned to Western, as a neurology resident. In summer 2008, she headed to Victoria, B.C. to visit a close friend she made in Hamilton.

“Some of my closest and most long-lasting friendships were created at McMaster. It’s amazing to still stay in touch with those people, particularly in medicine,” Robinson said.

When Robinson mused about lingering in Victoria, her friend introduced her to plastic surgeons at Royal Jubilee Hospital. It was a serendipitous chance for Robinson to learn more about the specialty she was exposed to as a neurology resident. She stayed the summer in Victoria, working as a surgical resident.

Robinson had always assumed plastic surgery wasn’t technically challenging; just face lifts and tummy tucks. Instead, she found surgical artistry and multi-disciplinary teamwork reshaping patients recovering from horrendous injury. She watched bones and tissue transplanted from legs, arms or backs and used to rebuild jaws, faces or breasts deformed by cancer.

“It wasn’t until doing a rotation in plastic surgery that I really understood the nuances of creativity in medicine and creativity in surgery. There are few other specialties where you are able to create, truly.”

That fall, she transferred to plastic surgery residency at Western and graduated in 2010. Then she headed to Houston, for sub-speciality fellowship training at M. D. Anderson Cancer Centre, at the University of Texas. In 2011, she returned to Victoria as a consultant plastic and reconstructive surgeon for the Island Health Authority. Robinson also runs a private practice offering aesthetic surgery services in British Columbia.

A year ago, she started working with surgeons expanding gender reassignment surgery services in British Columbia.

“I love every type of music, except for country. That’s the only thing not allowed in my operating room.”

Robinson’s years as a varsity high school and university athlete taught her how to focus on incrementally improving her technical surgical skills, like training for a race. Physical activity remains her antidote to work stress, especially family snowboarding trips to nearby Whistler.

Her husband was also a university athlete — they met at Western — and is now a firefighter. They have two children, a boy and a girl.

Family time is precious for Robinson. “The minute I walk in the door with a two-year-old and three-and-a-half-year-old waiting, everything fades into the background and I am completely focused on my kids. That’s the beauty of my life: I get to completely focus on my family.”

And Robinson is a surgeon who likes music as she works. She sings along to the playlists nurses pick on her iPhone. Sometimes, others in scrubs are singing, too.

“My operating room is full of music. I know the words to every song,” Robinson said.

“I love every type of music, except for country. That’s the only thing not allowed in my operating room.”

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*Dr. Jennifer Robinson talks to Rob Willems about a surgery he had to resurface damaged skin on his face at Royal Jubilee Hospital. Robinson transplanted skin from Willems’ thigh to his face. Image credit: Kendra Wong/Victoria News*
Roberta Bondar (MD ’77) doesn’t view going into space as the most important thing she has done in her life. She says becoming a doctor allowed her to save lives and accomplish everything else she has done.

Bondar, the first Canadian woman and first neurologist in space, was recently interviewed by The Canadian Press to mark the 25th anniversary of her historic trip. She told the media outlet: “Space was eight days of my life. I’m still evolving.”

Bondar flew on the NASA Space Shuttle Discovery during Mission STS-42, from Jan. 22-30, 1992. Bondar had trained for years to go into space – becoming a doctor, a neurologist, and then an astronaut. She was only the second Canadian (after Marc Garneau) onboard a space shuttle.

The launch and the mission went well, as the crew conducted a long list of experiments to study the effects of space flight and recovery on the human body. Bondar said she felt the pressure of getting good results for scientists on the ground who had spent years preparing the experiments.

After her flight, Bondar became the head of an international space medicine team working with NASA to explore various aspects of human physiology changes in space flight and on recovery.

They published a number of papers over the next 10 years, and discovered how their research could be applied to illnesses on Earth.

“Space was eight days of my life. I’m still evolving.”
– Roberta Bondar

Bondar was chancellor at Trent University for six years and started an educational foundation in her name. Bondar continues to explore the planet as a photographer, and also by writing, working with people in Africa, and doing science, including studying the migration of the whooping crane.
Reunions

The Department of Psychiatry & Behavioural Neurosciences celebrated its 50th anniversary in June. Many of the original members of the department, including its founding chair Nate Epstein (pictured right with current chair Nick Kates), joined the celebrations. To view photos from the reunion visit: http://psychiatry.mcmaster.ca/news-events/50th-anniversary.

Save the date

MD reunion weekend
21 Oct 2017
Join us for a special reunion celebration for the MD Classes of ’72, ’77, ’82, ’87, ’92, ’97, ’02, and 2007. Send your email address to intouch@mcmaster.ca to get reunion updates. Invitations will be mailed this summer. For event details visit: http://alumni.mcmaster.ca/events

Department of Biochemistry & Biomedical Sciences 50th Anniversary
14 Oct 2017
Please join us for our 50th Anniversary celebrations in the Ewart Angus Centre Foyer and room 1A1, both located in the Health Sciences Building. Talks begin at 9:30 a.m. The keynote speaker is Brian Bloom, co-founder, Chairman and CEO of Bloom Burton & Co. Talks will be followed by a buffet lunch, poster session and guided facility and lab tours until 3 p.m. Open to the public. Watch for event details at: http://www.fhs.mcmaster.ca/biochem/index.html

Department of Surgery 50th anniversary
11 Nov 2017
Join the Department of Surgery for an exciting CME and Gala Event as we celebrate 50 years of Excellence in Surgical Training, Research and Service. To find out more and to be included in our event mailing list, email Brenda Paine: paineb@mcmaster.ca or call 905-521-2100 ext. 73188

Family Medicine 50th anniversary
11-12 May 2018
Join us at the new David Braley Health Sciences Centre for an exciting alumni event to celebrate the Department of Family Medicine’s 50th year. To be included in our event mailing list, email Jennifer Gough: goughj@mcmaster.ca or call 905-525-9140 ext. 21715