Message from the Dean and Vice-President

McMaster University’s Faculty of Health Sciences is home to many of the world’s most innovative researchers, whose laboratories are incubators for ideas that have substantive potential to make a difference in the world’s health. These ideas are truly the ‘heart’ of drug discovery; yet, many remain at the lab bench due to regulatory or funding hurdles that are commonplace in basic science translation.

In this issue of Network, we highlight the ingenuity and entrepreneurial spirit of our researchers who are crossing the translational divide from lab to clinic by disseminating their innovations through commercialization efforts with industry partners. In fact, over the past five years, our researchers have filed more than 200 patent applications for ideas that hold tremendous commercial promise. This includes the development of immunotherapies to fight various forms of cancer, as well as therapies that are safer and more effective than current cancer treatments, and commercializing initiatives that promote antibiotic discovery and development. You can read about these and other Faculty of Health Sciences’ commercialization initiatives starting on page 10.

At the same time, we are preparing our future biomedical scientists to bring fresh insights and solutions that can help them cross the divide from bench to bedside. Through our novel Biomedical Discovery and Commercialization program, we are exposing our students to new ways of commercializing ideas with an emphasis on drug discovery and development. The program, which launched in January 2015, has already proved to be highly successful with every master’s student placed as an intern in industry, and the graduation, so far, of 108 bachelor and 25 master students.

In addition to our excellent progress in research commercialization, this issue of Network highlights other success stories of our Faculty over the past few months. For example, we recently launched a new research centre that is addressing the epidemic of obesity and related health consequences. Entitled the Centre for Metabolism, Obesity and Diabetes Research, it focuses on translating world-leading basic science into clinical practice to improve the diagnosis, prevention and treatment of metabolic diseases in children and adults.

Our researchers have also published many innovative findings, including a study from the McMaster Stem Cell and Cancer Research Institute, that provides evidence of new cancerous cells they have termed cancer regenerating cells, which are responsible for the return of acute myeloid leukemia after remission.

Moreover, we highlight a few of our faculty members whose efforts have been recognized by some of our nation’s highest awards, including appointments into the Order of Canada, Royal Society of Canada and Canadian Academy of Health Sciences. These are all clear indications of our Faculty’s important standing among the world’s top innovators.

McMaster’s Faculty of Health Sciences continues to make outstanding contributions, in both basic and translational research and in our teaching and clinical impact. I encourage you to visit our website at https://fhs.mcmaster.ca/ to stay abreast of all of our developments and achievements that are making exceptional contributions in many facets of health and well-being.

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

On the cover

Jonathan Bramson (middle), co-founder and chief scientific officer of Triumvira Immunologics Inc., with Christopher Helsen (left), co-founder, director of research and development and head of platform development and Danielle Hayes (right), researcher in engineering and process development.
McMaster University is growing its commitment to addressing the epidemic of obesity and related health consequences with the establishment of the Centre for Metabolism, Obesity and Diabetes Research (MODR).

The centre is focused on translating world-leading basic science into clinical practice to improve the diagnosis, prevention and treatment of metabolic diseases in children and adults.

Two renowned McMaster researchers, Katherine Morrison and Gregory Steinberg, are serving as its co-directors.

“We want to use our multidisciplinary expertise, ranging from cellular systems to patient populations, to develop new preventative and treatment strategies to help people with chronic metabolic diseases,” said Morrison, professor in the Department of Pediatrics at McMaster and a pediatric endocrinologist with Hamilton Health Sciences.

Morrison and Steinberg have led the Metabolism and Childhood Obesity (MAC-Obesity) research program for the past six years. The new centre is a progression of MAC-Obesity based on its growth and success.

The scope of MODR is expanding to include research on obesity and adverse health consequences across the life span – from fetal life, through childhood and into adulthood.

A team of researchers and clinicians from McMaster and Hamilton Health Sciences will work under the umbrella of MODR.

These researchers represent such disciplines as pediatrics, medicine, obstetrics and midwifery with research interests in diverse fields including obesity, diabetes, cardiovascular disease, gastrointestinal disorders and cancer.

“We want to use our multidisciplinary expertise, ranging from cellular systems to patient populations, to develop new preventative and treatment strategies to help people with chronic metabolic diseases.”

– Katherine Morrison

“The MODR researchers’ expertise, complemented by state-of-the-art equipment, unique genetic models, and platforms for studying metabolism makes them world-leaders in biomedical discovery,” said Steinberg, professor in the Department of Medicine at McMaster and the Canada Research Chair in Metabolic Diseases.

Obesity, type 2 diabetes and non-alcoholic fatty liver disease are prevalent conditions that impact more than 25 per cent of adults in Canada.

The direct cost on the Canadian healthcare system is estimated to be more than $30 billion annually, with real costs much higher given the increased incidence of cardiovascular disease, associated cancers and other diseases.

“Adding to these challenges of the healthcare system is that the prevalence of overweight and obesity among Canadian children is now 32 per cent,” said Morrison.

“This, together with the recognition of the influence of obesity in childhood on increased disease and death across the lifespan, has resulted in urgent calls to action.”

A specific focus of the MODR team is discovering the biological drivers leading to energy imbalance and metabolic disturbance; understanding the mechanisms for mediators of energy balance such as nutrient intake and physical activity, and evaluating and treating associated adverse health outcomes.

“While weight loss is known to be an effective treatment for alleviating some of these chronic metabolic diseases, current treatment options such as dietary interventions and exercise unfortunately have limited long term success,” said Steinberg. “Discovering and implementing new, effective strategies to reduce the impact of these diseases is guiding the work we are doing at MODR.”

For more information about MODR, visit https://healthsci.mcmaster.ca/metabolism-research.
VR anatomy app combines old and new technologies

McMaster students are using a new, virtual reality app to hone their anatomy expertise outside of the classroom.

A savvy group of professors and students at the university worked together to create the app, called MacAnatomy Virtual Reality Bell Ringer, or MacAnatomy VRBR for short.

The app uses a Google Cardboard virtual reality headset to deliver stereoscopic 3D images that serve as the basis for practice questions for undergraduate anatomy and physiology students.

“One of the major challenges of our course is the bell ringer exam, where students sit down in front of a real dissection and identify what it is and what its function is,” said Bruce Wainman, professor of pathology and molecular medicine and director of the McMaster Education Program in Anatomy.

“The exam can be difficult, but this app gives students the ability to learn when and where they want to, in a very cool way.”

While the app — created by Josh Mitchell, a software engineering student in his final year of studies, and Anthony Saraco, a master’s student in the Faculty of Health Sciences — is brand new, the images featured within are anything but.

In fact, they are from the 1962 publication A Stereoscopic Atlas of Human Anatomy by David Bassett, an American physician, and William Gruber, inventor of the View-Master system. The atlas features a 25-volume collection that includes 1,500 stereo pairs of exquisite cadaveric dissections originally meant for the View-Master 3D viewing system.

McMaster’s copy of the atlas and the slides were archived in the storage closet of the anatomy program office by Alexander Ball, a professor in pathology and molecular medicine in the anatomy division. He had saved them from several attempts to clean out unused teaching resources over the years.

“They have basically been buried since the 1960s,” said Ball, who noted that he was taught with the slides in medical school at Dalhousie University. “When I first came to McMaster in the 1980s, the View-Master projector was here and the screen was on the back wall, but no one ever used the slides because they are so complicated to sort through.”

Ball and Wainman wanted to find a new way to use the images for instruction, and the seed of the idea for an app was planted.

MacAnatomy VRBR features a series of labs focused on specific topics, ranging from gastrointestinal to respiratory anatomy. The quizzes in each lab and the answers, including rationale and where you can find the information in the course, have been crafted by the app team and made available on McMaster’s web-based course management system, Avenue to Learn.

The app doubles as a study for Wainman, whose research focuses on virtual and augmented reality. He will be conducting qualitative analysis on how students rank their experience of using the app, as well as investigating whether 2D or 3D learning is superior.

Wainman says that to his knowledge, McMaster is the first medical school to take the Bassett slides and turn them into a 3D stereoscopic virtual reality app for learning.

MacAnatomy Virtual Reality Bell Ringer is available at no cost on Android and iOS from the App Store.

Searching for antibiotics with a $200, 3D-printed box

A small, black box developed in a McMaster University lab could change the way scientists search for new antibiotics. The Printed Fluorescence Imaging Box — or PFIbox, for short — is capable of collecting massive amounts of data that will help researchers in the Michael G. DeGroote Institute for Infectious Disease Research in their quest to discover new antibiotics.

The box allows scientists to analyze more than 6,000 samples of bacteria at a time. The tool uses LED lights to excite fluorescent proteins found in bacteria. It then wirelessly sends data to researchers studying how cells respond to antibiotics over time.

The PFIbox’s nine structural parts can be 3D printed in about a day, can snap together in minutes, and cost about $200.

“3D printing is allowing us to create tools and instrumentation that simply don’t exist yet,” said infectious disease researcher Eric Brown, who led the work on the project, along with Shawn French and Brittney Coutts. “Here, we have designed and built an absolutely cutting-edge lab instrument for about $200. It’s simply game-changing for our work to discover new antibiotics.”

The researchers have made the PFIbox’s code open source and available to anyone who wants to use them.
Dina Brooks appointed executive director of Rehabilitation Science

Dina Brooks, a long-time University of Toronto faculty member and researcher, has been named the vice-dean of the Faculty of Health Sciences at McMaster University and executive director of the School of Rehabilitation Science. Her five-year appointment began January 1, 2019.

“I have always admired the innovation at McMaster,” said Brooks. “I am excited to be part of it now.”

Brooks is an alumnus of the University of Toronto, completing a Bachelor of Science degree in physiotherapy in 1988, a Master of Science degree in 1990 and a PhD in 1997. She joined the faculty at the University of Toronto as an associate professor in 1999 and has been full professor since 2011.

She is a long-time scientist at the Toronto Rehabilitation Institute, and senior scientist in respiratory medicine at West Park Healthcare Centre in Toronto.

Brooks held a Canada Research Chair in Rehabilitation in Chronic Obstructive Pulmonary Disease for 10 years, and is known internationally for her research in respiratory rehabilitation.

Her research has been recognized with a Queen’s Jubilee Medal for its impact on those living with lung disease. She is a Fellow in the Canadian Academy of Health Sciences, and recipient of the Enid Graham Award, which is the highest honour bestowed upon by the Canadian Physiotherapy Association.

Margo Mountjoy new lead of Waterloo medical school campus

Margo Mountjoy is the new regional assistant dean of the Waterloo Regional Campus of the Michael G. DeGroote School of Medicine.

A faculty member of McMaster University since 2009, Mountjoy started her new role in July 2018.

“It is a privilege to lead the Waterloo Regional Campus team to best engage, equip and empower future physicians,” said Mountjoy. “I am excited about the opportunity to expand the solid foundation of medical education in the region with new and innovative programs.”

The associate clinical professor of family medicine has served as the chair of admissions for the Michael G. DeGroote School of Medicine, as well as the accreditation lead and director of student and resident affairs at the medical school’s Waterloo Regional Campus.

She is also a member of the Future of Medical Education: Learner Education Handover Group, and the McMaster Professionalism Committee.

Mountjoy completed her medical degree and Family Medicine Residency training at McMaster, and a PhD in sport medicine from Vrije University in the Netherlands. She has a Diploma of Sport Medicine from the Canadian Academy of Sport and Exercise Medicine, and is a Fellow of the American College of Sports Medicine.

Mountjoy has a well-established reputation in sport medicine research, as well as in academic medical education.

Mountjoy succeeds Cathy Morris, founding regional assistant dean of the Waterloo Regional Campus.

Sandra Carroll named vice-dean and executive director of School of Nursing

Sandra Carroll has been appointed as vice-dean, Faculty of Health Sciences and executive director of the School of Nursing at McMaster University.

Carroll formally started her five-year term on July 1, 2018, after serving as the acting associate dean and director of the School of Nursing since July 2017.

“I am thrilled to have the opportunity to lead the School of Nursing for the next five years,” said Carroll. “Together we will advance health and well-being through excellence in nursing.”

As vice-dean and executive director, Carroll will continue to oversee the School of Nursing, its internationally-recognized research and education programs with more than 2,000 students, including the McMaster-Mohawk-Conestoga Consortium BScN Program.

After practising as a registered nurse, Carroll earned a Bachelor of Science from the University of Toronto in 1991, and her PhD from McMaster in 2010. She completed a Canadian Institutes of Health Research Strategic Training Fellowship in the FUTURE Program for Cardiovascular Nurse Scientists, followed by a postdoctoral fellowship through the Heart and Stroke Foundation/Michael G. DeGroote Chair in Cardiovascular Nursing Research.

Carroll has taught undergraduate BScN students across all sites and program streams, and supervised students of the school’s graduate nursing programs.

“Together we will advance health and well-being through excellence in nursing.” – Sandra Carroll
McMaster University researchers have provided evidence of new cancerous cells they have termed cancer regenerating cells, which are responsible for the return of acute myeloid leukemia after remission.

Current therapy is effective at inducing remission in adult patients with acute myeloid leukemia, but most patients later succumb after a relapse. That relapse has been thought to be caused by rare and dormant cancer stem cells that escape chemotherapy. The study published in the journal Cancer Cell suggests that leukemia cells change in unique ways in response to the chemotherapy, allowing them to masquerade for a short time so they are able to start disease regeneration.

The research involved combined efforts from both scientists and physicians and spanned more than five years in development. The team took on the challenge of hunting down the rare leukemic cells that remain right after chemotherapy treatment. The surprise was that the most resilient cells left behind after the treatment did not fit the profile of cancer stem cells.

“Many cancer researchers, including our team, have thought it was dormant cancer stem cells that can resist chemotherapy treatment which go on to cause relapse,” said Mick Bhatia, lead author and director of the McMaster Stem Cell and Cancer Research Institute.

Bhatia noted that, until now, the initial aftermath immediately after chemotherapy treatment has been largely unexplored, because leftover leukemia cells easily blend into the body and go undetected amid the chaos caused by the therapy itself.

“Chemotherapy is not entirely specific and destroys a lot of other tissues, making the patient’s body a difficult place to do the detective work to find cells responsible for relapse.” – Mick Bhatia

To overcome these hurdles, the team turned to a model where patient leukemic disease is established in laboratory mice, and chemotherapy can be administered to match the way patients are treated in the clinic.

The team’s key finding was to identify the point at which the disease retaliates by becoming highly regenerative, setting the stage for eventual relapse. This offered a new roadmap to identify the camouflaged cancer cells that hide out in the bone marrow of leukemia patients shortly after chemotherapy treatment. Importantly, similar patterns of leukemic regeneration could be seen across a spectrum of different patient subtypes, providing a common thread to guide the development of new therapies at the critical time point after chemotherapy.

The researchers hope that this new understanding of leukemic regeneration will provide physicians the opportunity to introduce additional drugs in combination with chemotherapy treatment. This will take advantage of chemotherapy’s benefits while counteracting its shortcomings at the same time by targeting these altered cancer cells, said Bhatia.
Internal bleeding in cardiovascular disease patients may signal cancer

Patients with cardiovascular disease who develop major internal bleeding are much more likely to be diagnosed with cancer, a large international clinical trial has found.

Patients with gastrointestinal (GI) bleeding are 18 times more likely to be diagnosed with GI tract cancer, and those who have major genitourinary (GU) tract bleeding are 80-fold more likely to be diagnosed with GU cancer, than patients without internal GI or GU bleeding, respectively.

The study results were part of a presentation at the European Society of Cardiology Congress in Munich, Germany. The clinical trial, called Cardiovascular Outcomes for People Using Anticoagulation Strategies (COMPASS), is led by the Population Health Research Institute (PHRI), a joint institute of McMaster University and Hamilton Health Sciences.

“The new analyses demonstrate that patients who developed bleeding were more likely to be diagnosed with cancer, particularly when the bleeding occurred in the GI or GU tracts. One in five of all new cancer diagnoses during the trial were in patients who had experienced bleeding.

“This startling insight should stimulate a search for occult cancers in patients with cardiovascular disease who develop bleeding,” said John Eikelboom, co-principal investigator of COMPASS, an associate professor of medicine at McMaster’s Michael G. DeGroote School of Medicine, and a hematologist at Hamilton Health Sciences.

Stuart Connolly, co-principal investigator of the COMPASS trial, added: “Bleeding has become a key focus in cardiovascular disease prevention. Most of our efforts have been focused on discovering better ways to prevent and treat bleeding, but if bleeding allows us to diagnose cancer earlier, it may lead to an unexpected benefit.”

Connolly is a professor of medicine at McMaster and a cardiac electrophysiologist at Hamilton Health Sciences.

Higher dairy intake linked to healthier hearts

Dairy consumption of around three servings per day is associated with lower rates of cardiovascular disease and mortality, compared to lower levels of consumption, according to a study led by a team of McMaster researchers.

The study also found that people who consumed three servings of whole fat dairy per day had lower rates of mortality and cardiovascular disease compared to those who consumed less than 0.5 serving of whole fat dairy per day.

The global observational study included more than 130,000 people in 21 countries. The results were published in The Lancet.

“Our findings support that consumption of dairy products might be beneficial for mortality and cardiovascular disease, especially in low-income and middle-income countries where dairy consumption is much lower than in North America or Europe,” said Mahshid Dehghan, lead author of the study and an investigator at the Population Health Research Institute (PHRI) of McMaster University and Hamilton Health Sciences.

The Prospective Urban Rural Epidemiological (PURE) study included data from 136,384 individuals aged 35-70 years in 21 countries. Dietary intakes were recorded at the start of the study using country-specific validated food questionnaires. Participants were followed up for an average of 9.1 years.

Sweet spot of sleep

How much you sleep is linked to your risk of developing cardiovascular disease and death, according to a McMaster-led study of more than 116,000 people in seven regions worldwide.

The researchers found people who slept for more than the recommended six to eight hours a day had an increased risk of dying or developing diseases of the heart or blood vessels in the brain.

Before adjusting for factors that might affect the results, the researchers found that for every 1,000 people sleeping six or fewer hours a night, 9.4 developed cardiovascular disease or died per year; this occurred in 7.8 of those sleeping six to eight hours, 8.4 of those sleeping eight to nine hours, 10.4 of those sleeping nine to ten hours and 14.8 of those sleeping more than ten hours.

“Our study shows that the optimal duration of estimated sleep is six to eight hours per day for adults,” said lead author Chuangshi Wang, a PhD student at McMaster and Peking Union Medical College in China. The study was published in the European Heart Journal.
Pass the salt: Study finds average consumption safe for heart health

Andrew Mente is an associate professor of the Department of Health Research Methods, Evidence and Impact.

New research shows that for the vast majority of individuals, sodium consumption does not increase health risks except for those who eat more than five grams a day, the equivalent of 2.5 teaspoons of salt.

Fewer than five per cent of individuals in developed countries exceed that level. The large, international study also shows that even for those individuals there is good news. Any health risk of sodium intake is virtually eliminated if people improve their diet quality by adding fruits, vegetables, dairy foods, potatoes, and other potassium rich foods.

The research, published in The Lancet, is by scientists of the Population Health Research Institute (PHRI) of McMaster University and Hamilton Health Sciences, along with their research colleagues from 21 countries.

The study followed 94,000 people, aged 35 to 70, for an average of eight years in communities from 18 countries around the world and found there an associated risk of cardiovascular disease and strokes only when the average intake is greater than five grams of sodium a day. China is the only country in their study where 80 per cent of communities have a sodium intake of more than five grams a day. In the other countries, the majority of the communities had an average sodium consumption of 3 to 5 grams a day (equivalent to 1.5 to 2.5 teaspoons of salt).

“The World Health Organization recommends consumption of less than two grams of sodium – that’s one teaspoon of salt – a day as a preventative measure against cardiovascular disease, but there is little evidence in terms of improved health outcomes that individuals ever achieve at such a low level,” said Andrew Mente, first author of the study and a PHRI researcher.

The information for the research article came from the ongoing, international Prospective Urban Rural Epidemiology study run by the PHRI. Mente is also an associate professor of the Department of Health Research Methods, Evidence and Impact at McMaster University.

Most previous studies relating sodium intake to heart disease and stroke were based on individual-level information, said Martin O’Donnell, co-author of the report, a PHRI researcher and an associate clinical professor of medicine at McMaster.

“Public health strategies should be based on best evidence,” said O’Donnell. “Our findings demonstrate that community-level interventions to reduce sodium intake should target communities with high sodium consumption, and should be embedded within approaches to improve overall dietary quality.”

Study suggests cannabis does not increase suicidal behaviour

Research Methods, Evidence and Impact.

Researchers have found there is no significant association between cannabis use and suicidal behaviour in people with psychiatric disorders.

The study findings contrast with pre-existing data that shows the drug is linked to an increased chance of suicidal behaviour in the general population.

However, based on a small subset of participants, researchers did note the heaviness of cannabis use increased risk of suicidal behaviour in men, suggesting a closer follow-up by medical professionals of those patients.

The study was published in the journal Biology of Sex Differences.

“In what we believe to be a first, this study seeks to understand how cannabis use impacts suicide attempts in men and women with psychiatric disorders who are already at a heightened risk of attempting suicide,” said Zainab Samaan, lead author and an associate professor in the Department of Psychiatry and Behavioural Neurosciences at McMaster.

“We know there is a high rate of cannabis use among this population and we wanted to better understand any potential correlation to suicidal behaviour.”

The team of researchers, predominantly based in Hamilton, merged data collected for two studies based in Ontario. These included a prospective cohort study of opioid use disorder using structured scales to assign psychiatric diagnoses, and a case-control study on suicidal behaviour using the same diagnostic methods to reach a psychiatric diagnosis including substance use.

Data was analyzed from a total of 909 psychiatric patients, including 465 men and 444 women. Among this group, 112 men and 158 women had attempted suicide. The average age was 40 years.

“While there was no clear link between cannabis and suicide attempts, our findings did show that among participants with psychiatric disorders, having a mood disorder or being a woman correlates with an increased risk of suicide attempt,” said Leen Naji, the study’s first author and a family medicine resident at McMaster. “Meanwhile, having a job is protective against suicide attempts.”

Naji said that further research is needed, considering Canada’s changing laws on cannabis use, and the Mental Health Action Plan of the World Health Organization which has the aim to reduce the rate of suicide by 10 per cent by 2020.
What impact do advanced driver assistance systems have on older drivers? Researchers at McMaster University are asking that question, with a new study focused specifically on rear view cameras that are among the first of this technology to be mandated for vehicles.

The study results, published in the journal Gerontechnology, suggest that while older drivers find the rear view cameras helpful, they would appreciate more education on how to use them.

"In the United States alone, more than 200 pedestrians are killed annually by drivers who are backing up their vehicles," said Ruheena Sangrar, first author of the study, an occupational therapist and PhD candidate at McMaster’s School of Rehabilitation Science.

"While on-road studies have found that rear view cameras can improve rear visibility and obstacle recognition, we want to understand how older drivers are adapting and using this technology."

McMaster researchers conducted a study with 15 licensed drivers aged 65 years and older, with an average age of 77.8 years. The study group consisted of 10 men and five women. Drivers had owned their vehicle with a rear view camera for 1.7 years on average, and drove more than four days a week.

They were interviewed about their experiences using the rear view camera in their vehicle. Among the questions asked were how they learned to use the technology, how they felt while using it, and how the system works compared to their expectations.

"From their responses, our analysis suggested they were aware of the purpose of rear view cameras before they purchased their vehicles, but that it took time and practice to understand how the cameras worked, and that the technology was indeed advantageous to their everyday driving," said Sangrar.

"Participants also shared personal stories of how they learned to judge distance behind their vehicle using this system. For example, a 76-year-old driver backed up towards pieces of wood on his driveway, while another 74-year-old driver asked her husband to stand behind the vehicle while she reversed."

Sangrar noted the study results are especially timely considering that, as of 2018, all passenger vehicles that weigh less than 10,000 pounds manufactured in Canada and the United States are required to have a rear view camera.

The study comes with a list of recommendations, one being that access to training early in the rear view camera adoption process should focus on emphasizing the purpose, operation, and limitations of the system. Another recommendation is that training and education for rear view cameras, and other advanced driver assistance systems, should extend beyond initial interactions with the technology.
Brian Lichty admits commercialization has not been easy.

While he is one of the success stories of the Faculty of Health Sciences for moving research findings into business, he says there were several false starts, from an initial misunderstanding of the intellectual property process to obtaining adequate funding.

Today, the company he helped found in 2015 is conducting three, soon to be four, phase I/II
clinical trials in Canada and the United States, with promising early results developing cancer-fighting viruses.

The company is also in talks with regulators in Europe, Australia and New Zealand about opening additional clinical trials.

“What really compelled me to put in all this time and effort was, that on some level, if you keep doing your basic research, especially if you don’t file patents to protect some aspects of it, no one else can or will develop it further and patients will never benefit from it,” he said.

“I got it in my head that I just want to cure one person and the only way you can do that is to commercialize it somehow.”

Lichty wears two hats, and that keeps his days busy.

He holds the title of associate professor of pathology and molecular medicine at McMaster University, with limited teaching and research responsibilities due to his other time commitments.

He is also the senior vice-president of basic research for Turnstone Biologics. The company is now based in Ottawa, New York and Hamilton.

Officially, Turnstone Biologics is developing viral immunotherapies that drive benefit through simultaneous generation of targeted immune responses and modulation of the tumour environment.

“We describe our viruses as a platform technology that is engineered to target different tumour types,” he said. “We’re testing our viruses with other immune-modulating agents that can enhance the immune attack on tumours, which is what we’re really trying to generate.”

The global biopharmaceutical company was founded on research led by Lichty, John Bell of the Ottawa Hospital Research Institute and the University of Ottawa, and David Stojdl of the Children’s Hospital of Eastern Ontario and the University of Ottawa.

“It’s unusual for a biotech company to grow to this size and the founders and the institutions to still be this involved,” Lichty said. “It is fair to say the three founders are unusually entrepreneurial as academics go, so we’ve been motivated to stay involved. It’s not the first time we’ve commercialized something and we’ve learned from our mistakes.”

Turnstone Biologics has raised $50 million in venture capital financing, brought in more than $100 million in non-dilutive funding, and received numerous biotechnology industry awards.

The company has grown to 70 employees in New York, Ottawa and Hamilton. There are 15 staff members at McMaster who will be in their newly-renovated rented lab space in the McMaster University Medical Centre by January 2019.

“We’re actually treating people and that was the whole point of this, however, we’re not there yet,” Lichty said. “Each trial is phase I, so it’s still early. However, we are starting to see some positive signals.

“We have achieved more than I thought we would, because things have gone very well and moved quickly.”

“We’re actually treating people and that was the whole point of this.”

— Brian Lichty

Gay Yuyitung, executive director of the McMaster Industry Liaison Office (MILO), cites Turnstone Biologics as a prime example of a best-case-scenario commercialization story at the university.

MILO supports the research endeavors of McMaster and its affiliated academic hospitals by facilitating collaborative research with industry partners and disseminating research results through commercialization.

“We’re here primarily to serve our faculty, staff and students to identify what is patentable, who may be interested in taking it to the next step, and to connect with those looking to sponsor research or collaborate with the university,” said Yuyitung, who has been with MILO for 16 years.

Over the past five years, more than 200 patent applications were filed by MILO on behalf of inventors in the Faculty of Health Sciences. The university has a joint intellectual property policy that outlines that revenue is divided equally between the university and the inventor. Revenues generated from licenses in the past five years, including copyright, were $22.5 million for the whole university, with $11.7 million distributed to inventors.

Another success story for McMaster is the licensing of quality of life questionnaires. These questionnaires are considered reliable tools to measure quality of life in various patient groups for a variety of conditions, and licensed by pharmaceutical companies, as well as academic and health institutions.

Yuyitung said that, in her experience, inventors are driven to see their research being used and making an impact. However, she said, there are also additional benefits.

“Commercialization is advantageous as it can generate more interest from other companies and develop new research programs in their lab,” she said. “There are also opportunities to publish more academic papers as there’s a lot of great science and research involved in what they are doing. Of course, there can be a personal financial benefit. If you commercialize, you can receive royalties.”

She said the advantages of commercialization are the same for the university.

“It provides better training opportunities for students, and it brings in more money for research,” she said. “The driver is not to create revenue, but to create impact and do public good.”

According to Statistics Canada, the main reason businesses fail is inexperienced management. Yuyitung agreed this is a major obstacle.

“I think the biggest challenge for my office is finding seasoned entrepreneurs who are willing to give their time and lend their expertise to team up with our faculty,” she said. “Researchers are often good at driving the scientific side, but there needs to be someone, especially in a startup, who needs to drive what should be done based on market needs, rather than scientific interest.”

Bill Orovan, vice-dean of clinical service and commercial enterprises for the Faculty of Health Sciences, said that there has always been some commercialization activity taking place in the Faculty, but its nature has changed over the years.
In the past, researchers would get to the proof of concept stage and outside forces would pick it up and do the work to commercialize it,” he said. “Those places don’t really exist today and drug companies aren’t interested in doing it anymore, so it has fallen on universities to do a better job of commercializing their own discoveries.

There is a strong argument to be made that there is a moral obligation of universities to ensure that the results of public funds spent on research eventually come back in terms of a commercial enterprise that will benefit the health of the general population.”

Orovan said that, as a result, universities across Canada have frameworks in place to help facilitate this new world order of commercialization, creating on-campus offices and growing philanthropy.

“The problem with commercializing medicine and health sciences is that there are huge barriers to entry that are time-consuming and expensive, and people have had to depend on their own resources and the bank of mom and dad, in some cases, to afford to make these things happen,” he said.

“Meanwhile, universities are looking into ways in which they can fund these commercialization activities. We have tremendous opportunities here at McMaster, but some of the barriers, especially financial, make it prohibitive.”

In an effort to ensure the Faculty is making the most of its research commercialization opportunities, Bloom Burton & Co has been retained.

The Toronto-based investment banking and advisory firm identifies, cultivates and creates investment opportunities in the health-care sector, on behalf of companies and investors.

“We help the Faculty’s researchers tap our network and expertise so that together we can elevate the academic research that has the most commercial potential,” said Brian Bloom, chairman and CEO of Bloom Burton. “It is the identification of the research with potential, as well as the realization of commercialization, whether it is a patent, a new company or a license that is important.”

Bloom said that while academic institutions are good at research, the same cannot be said when it comes to commercialization.

“There is great academic research being done around the world at top institutions like McMaster, but the majority seem to be challenged when it comes to commercialization, and we are trying to change this,” said Bloom, a recipient of the 2017 McMaster University Distinguished Alumni Award for Science.

“What is really lacking is the skills of those in academia and the reluctance to tap alumni networks and the private sector, to help identify and pursue what has commercial promise.”

Bloom noted only a small percentage of research in academia has commercial value. He said his team has identified about a dozen opportunities at McMaster in the past three years.

“One hundred per cent of academic science has academic value, but only one per cent of academic work has commercial value.”

― Brian Bloom

“One hundred per cent of academic science has academic value, but only one per cent of academic work has commercial value,” Bloom said. “To be clear, all academic output has value to humanity or knowledge creation.”

Jonathan Bramson, vice-dean of research for the Faculty of Health Sciences, said there is a divide between academic institutions and the private sector.

“The whole idea of commercialization and the academic world is really a case of two solitudes not talking to each other, and making assumption of what the other side is doing,” he said.

Bramson said the lack of commercialization activity by many academic researchers is largely based on a lack of understanding. Some, he said, think it is an easier way to acquire funding than winning a research grant. Still others, he added, see it as posing potential ethical dilemmas when it comes to getting involved with ‘Big Pharma’. Both are incorrect, he said.

“Most academics do not understand the value of commercialization because they have not been exposed to the private sector,” said Bramson, professor of pathology and molecular medicine. “Their entire careers are spent in academia, so this isn’t a surprise.

“The truth is most discoveries have enormous scientific value but no commercial value. It’s about the individuals who turn the discovery into something of value that can be sold. Those individuals are the ones who succeed in commercialization.”

Bramson knows because he has been there. He, Christopher Helsen and Bloom Burton partnered to create an immunotherapy company in 2015 called Triumvira Immunologics Inc. The company’s vision is to develop new T-cell therapies that are safer and more effective than current cancer treatments.

“The more I learn about commercialization, the more I can tell others and dispel the myths,” Bramson said. “The biggest thing I have learned is patience. Always be patient and learn the difference between driving your agenda and pushing your agenda. They aren’t the same.

“Commercialization is not without any financial reward, but if that’s your driver, then you will be disappointed because the financial reward is only gained from the few efforts that result in a bona fide product. Most assets will fail during the product development process.”

Bramson said while it is important to get research from the bench to the bedside, he noted it should be an avenue, rather than the end all and be all, for researchers at McMaster.

“I don’t want our outstanding basic and clinical scientists to change what they do – they are fantastic,” he said.

“We rewrite the rules for patient care on a regular basis. Do I want those individuals to stop what they are doing and focus on commercialization? No. But, if they see an opportunity or something emerges that could help to expand the enterprise through commercialization, I want those venues to be open.”
Danielle Hayes, researcher in engineering and process development with Triumvira Immunologics Inc., prepares a vessel containing engineered cells for a high-speed spin. In the background are Jonathan Bramson, co-founder and chief scientific officer of Triumvira (left) and Christopher Helsen, co-founder, director of R&D and head of platform development.
**Building a pipeline for health innovation and socioeconomic impact**

An expanding initiative at McMaster University is fostering a culture that recognizes and grows socially and economically impactful health innovations.

Born out of a generous donation from philanthropist Michael G. DeGroote, the Michael G. DeGroote Initiative for Innovation in Healthcare (MGDII) creates enablers of health entrepreneurship, innovation and commercialization.

“We are working to build the capacity to identify and explore opportunities for innovation, which will ultimately generate considerable socioeconomic impact,” said Sarrah Lal, senior manager of MGDII and assistant professor of medicine.

The inspiration behind MGDII, founded in 2014, is to support leading-edge research and educational activities. Interdisciplinary efforts emphasize partnerships with various faculties and health institutions, such as the Michael G. DeGroote Health Leadership Academy and the Michael G. DeGroote Centre for Medicinal Cannabis Research.

The areas of interest include: medical devices; therapeutics; research tools such as organ-on-a-chip technologies; data sciences; digital applications, and clinical programs.

Its “Innovator Series” of monthly seminars feature guest speakers who have had success in the commercialization journey. The MGDII also presents workshops for researchers, clinicians and trainees to learn about market research, intellectual property, prototyping, commercialization plans, problem identification, and stakeholder mapping.

The initiative also runs two competitions. Venture Sprints aims to develop possible solutions to a challenge, which can become a scalable health venture. Innovation Sprints focuses on developing improvements to existing programs.

The key audience is researchers, students and health professionals as well as the broader McMaster community.

McMaster’s alumni community and industry professionals are invited to engage with the MGDII.

“We are always open to new speakers; subject matter experts to help with commercialization projects and content development; judges for the competitions, and individuals interested in learning more about what we are doing,” said John Kelton, executive director of the Michael G. DeGroote Initiative for Innovation in Healthcare.

For more information, email Sarrah Lal at lals2@mcmaster.ca.
Cultivating biomedical discovery and commercialization in students

The Biomedical Discovery and Commercialization (BDC) program at McMaster University is only four years old, but the initiative is already considered to be a success.

The groundbreaking bachelor-master degree program unites passions for discovery research and the desire to understand its role in commerce.

Offered by the Department of Biochemistry and Biomedical Sciences with key contributions from the DeGroote School of Business, the program has students complete the third and fourth year of undergraduate studies as well as a 12-month course-based master’s degree. The latter includes a four- to eight-month internship in health sciences-related sectors.

“Our biochemistry department has been in place at McMaster since the dawn of the medical school, but we hadn’t done enough to connect with the local biomedical discovery and commercialization community,” said Eric Brown, founding program director and a professor of the Department of Biochemistry and Biomedical Sciences.

“We wanted to better serve our students by exposing them to this community, both through internships and through in-class visits, and help them understand the career opportunities that come with a degree in this field. This is what the program set out to do, and I believe it is what we are accomplishing.”

Since its start in January 2015, 108 bachelors’ and 25 masters’ students have graduated from the program.

A point of pride for Brown is the fact that every master’s student has been placed as an intern in industry, and that this invaluable hands-on experience translates into jobs for many of the graduates.

“We’ve seen some really fabulous outcomes in terms of our students,” he said. “They are getting jobs in the local pharmaceutical community after graduating. It’s great fun to see where this program is taking them.”

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“Areeba Athar, who hails from Mississauga, graduated from McMaster with a master of biomedical discovery and commercialization in 2017, following her bachelor of health sciences in 2016.

“The most valuable aspect of the program is the focus on experiential learning,” Athar said. “From working closely with entrepreneurs to solve real business challenges to designing innovative approaches to address challenges in health care, the program pushes students to think outside the box.”

While at McMaster, Athar completed her BDC program internship at the Canadian digital health startup, InputHealth. Today, she is working full-time at the company as a project manager.

She said the BDC program gave her real-world skills that have proven to be transferrable to life after university.

“The BDC program provided me with the intensive training to welcome challenges, adapt to diverse environments and understand the value of working with and learning from my peers,” she said.

“Once I transitioned from an academic to professional environment, I found myself constantly relying on the tools I learned from the program to approach tasks and problems critically.”

To learn more about the Biomedical Discovery and Commercialization program at McMaster, visit https://bdcprogram-mcmaster.ca.
Bernice Downey considers herself to be someone who builds relationships, is an agent of change and, above all, is an advocate for Indigenous health and well-being.

Her connection to her role as the Indigenous Health Initiative lead in the Faculty of Health Sciences at McMaster University stems from a long career in the Indigenous health research field.

“I always want to ensure my life has purpose and direction,” she says. “I believe in this initiative and I think I am at McMaster to build relationships and bring people together to make it happen.”

As Downey works with others to address systemic barriers that Indigenous people experience in the health sciences education system, she is mindful of her own family’s experiences.

Her mother, Evelyn McLaren, an Ojibwe/Saulteaux-Cree woman was born in Lake St. Martin and raised on the remote Dauphin River First Nation in Manitoba. Downey’s grandmother was a survivor of the residential school system. Her father, a member of the Canadian military, was of Celtic heritage. He died when she was four, before she had the chance to get to know him. After his death, Evelyn moved her children to places like Pembroke and Winnipeg. She remarried and the family finally settled in Hamilton, where there were opportunities for education and employment. She chose to not teach her children their native Ojibwe language. “My mom moved us away from the reserve and severed our connection to her culture because she thought we would be harmed by it,” says Downey. “When your family has been impacted by colonizing practices, that’s an intergenerational outcome.”

Downey chose to enter a diploma nursing program at Sheridan College. She spent the early years of her career in nursing in the United States. She eventually returned to Ontario and worked in a Toronto family practice clinic, and later, at the Hamilton General Hospital. She subsequently completed her BScN from the University of Ottawa as a part-time student over nine years while working full-time and raising her family.

Her career would evolve into administrative positions. She was the executive director of the Aboriginal Nurses Association of Canada, and went on to serve as a senior policy analyst, and later CEO, of the National Aboriginal Health Organization.

Her administrative work at the national level increased her awareness of the disconnect in how mainstream health systems and services for Indigenous people were not meeting their needs. “I felt that in the area of Indigenous health and research, we were missing the boat,” she says. “I believed that Indigenous people had long held their own beliefs and knowledge about how to take care of ourselves, but because of the biomedical focus in the health-care system, there was little room for that.”

Downey obtained both an MA and PhD in anthropology and health (medical anthropology) from McMaster in 2009 and 2014, respectively. She gave the valedictorian address at the convocation marking the completion of her PhD.

She was appointed the lead of the new Indigenous Health Initiative for the Faculty of Health Sciences in March 2017. She is also an assistant professor of the School of Nursing and the Department of Psychiatry and Behavioural Neurosciences.

The comprehensive Indigenous Health Initiative aims to address systemic barriers in health sciences education for Indigenous learners, as well as educate faculty and administrators regarding Indigenous health and cultural safety. It also focuses on collaboration with both internal and external partners to better integrate Indigenous knowledge and issues into educational and research programs within the Faculty.

The other half of Downey’s time at McMaster is spent on research related to systematic health-care improvements for Indigenous people. This fall, she received the Indigenous Early Career Women’s Heart and Brain Health Chair Award from the Canadian Institutes of Health Research and the Heart and Stroke Foundation of Canada.
Trading cases: from aspiring lawyer to healthcare leader

Joshua Tepper was going to be a lawyer. Born and raised in Ottawa, he was confident in his career choice as the son of parents who were wholly immersed in the realm of social sciences academia. The idea of law, and only law, appealed to him.

This career choice took him to Duke University to pursue a bachelor of arts degree in the Sanford School of Public Policy.

It was late in his final year in university, after his law school applications were submitted, when a friend jokingly challenged Tepper to sign up as a volunteer at Duke University Medical Center.

The seemingly innocuous action changed his life.

“My entire time at Duke was spent focused on getting into law school, but after a short time at the hospital, I realized I was more interested in patient care and building those relationships,” said Tepper, 47.

“I was volunteering on Sunday afternoons in the general internal medicine ward and I found tremendous joy in serving patients their dinner trays, sitting beside them and helping them eat. I also enjoyed the camaraderie with the nurses as I restocked shelves, took temperature readings, changed bedsheets and moved patients.”

Tepper said McMaster University was an easy decision when it came to selecting a medical school.

“When you spend your whole academic career training to be a lawyer, and you suddenly want to be a doctor, the best medical school for you is McMaster,” he said.

Tepper graduated with his medical degree in 1998, and transformative is the word he uses when asked about his experience at McMaster.

“It was an incredibly powerful time,” he said. “Growing up in Ottawa in a middle class family, I had certain assumptions about access to care, but through my electives at McMaster that took me to places like Red Lake, Ontario, I began to see the tremendous barriers to care for patients in the rural part of Ontario and in Indigenous populations.”

Tepper’s passion for longitudinal relationships, range of practice and equity of patient care led him to a residency in rural family medicine at the University of Toronto.

Early into his career as a family physician, Tepper realized he wanted also to be part of policy changes and leadership.

“What I realized in almost every clinic, if not in every patient, is that there are huge challenges that are beyond my immediate ability to solve just as a doctor, and that has driven my ongoing participation in more system-level leadership,” he said.

“Through my electives at McMaster that took me to places like Red Lake, Ontario, I began to see the tremendous barriers to care for patients in the rural part of Ontario and in Indigenous populations.”

– Joshua Tepper

Since then, he has served in such roles as member of the Health Results Team and assistant deputy minister with the Ontario Ministry of Health and Long-Term Care, president of the Inner City Family Health Team, and medical director of medical professional practice at Sunnybrook Health Sciences Centre, to name a few. He has maintained clinical responsibilities through most of that time.

He also pursued additional education, earning a master of public health degree from Harvard University, as well as an executive master of business administration from the Richard Ivey School of Business.

After spending five years as the president and CEO of Health Quality Ontario, he officially started as the president and CEO of North York General Hospital in November 2018.

“I have not done a role like this before, but one of the things McMaster teaches you is to be a lifelong learner,” he said. “There is going to be a lot of new things, and just like tackling a new case or module in medical school, I am going to thoughtfully and intentionally approach these new challenges with an open mind.”

When Tepper is not at the hospital, he’s spending time at his other dream job – as a husband and father. Tepper and his wife reside in downtown Toronto with their three children, including a son aged 12, and two daughters aged five and two.

Tepper credits McMaster as a key factor to his success, and advises upcoming medical students at the school to make the most of their time at the university.

“I encourage them to remain curious,” he said. “Curiosity is how we find new opportunities and innovate. I want them to explore new things, find out what they are passionate about, and to be unafraid to pursue that passion.”

McMaster alumnus Joshua Tepper is the new president and CEO of North York General Hospital.
White coat, brown bear

It’s a Wednesday afternoon in a Thorold school and a medical student is applying a cast to the right arm of a teddy bear under the watchful eye of a seven-year-old girl.

Upon completion, the teddy is scooped up and kissed by the child.

“You’re going to be OK,” she says, gently cradling the fuzzy brown bear as she listens to the medical student talk about how bones heal.

“The doctor says your arm will be better soon.”

The X-ray imaging and fracture table is one of eight health stations set up around the gym at the after-school program run by the Boys and Girls Club of Niagara.

The visit is thanks to an engaging initiative called the Teddy Bear Clinic run by students at McMaster University’s Michael G. DeGroote School of Medicine Niagara Regional Campus.

The Teddy Bear Clinic allows children to role play medical scenarios using teddy bears under the guidance of medical students.

“We are teaching kids about health care in a safe and comfortable environment using teddy bears before they have to go through an experience themselves,” says Nisha Goel, a second-year McMaster medical student.

“We are talking to them about topics such as physical health, emotional health, and going to the operating room, and that these things can be fun and interesting rather than scary.”

This is the fourth Teddy Bear Clinic presented by the McMaster Niagara medical students since fall 2017 at one of the sites of the Boys and Girls Club of Niagara.

There are approximately 25 medical students from Niagara campus currently volunteering with the initiative.

The concept of using teddy bears to help reduce childhood anxiety related to health care is used in countries around the world, and it caught the attention of Franziska Miller, a 2018 physician graduate of the campus.

Last year, Miller and a team of fellow McMaster medical students established a Niagara-centric version of the Teddy Bear Clinic, incorporating a component of health promotion, including dental care, physical well-being, mental health, nutrition, hand hygiene, in addition to aspects of routine doctors’ visits and hospital settings.

“Studying at the Niagara Campus myself, I saw quite a few children during my pediatric community rotation who were afraid of doctors and of procedures in and out of the hospital, which inspired me to reach out,” says Miller. She also completed her bachelor of health sciences degree at McMaster, and is currently an anesthesiology resident at Dalhousie University in Halifax.

“The Teddy Bear Clinic was also started in Niagara to foster a close relationship between medical students at the Niagara Regional Campus of McMaster medical school and the community of Niagara, including the Boys and Girls Club Niagara as well as Niagara Region Public Health.”

Back in Thorold, eight-year-old Faithlynn Newman sits happily playing with her new teddy, named Sharlit.

“It was fun,” she says of the Teddy Bear Clinic experience. “My bear and I learned if you have a broken leg, it takes time to heal. I also learned when you break your leg and you are a kid, it heals faster than if you were an adult.”

Ben Roth, a second-year medical student, spent the afternoon talking to kids about the importance of healthy eating.

“The kids get so excited when they receive their teddy bears, and it gives them an opportunity to feel pride in caring for the health of their teddies,” says Roth, who currently has his sights set on a career in pediatrics or family medicine. “It is an incredibly rewarding thing we can do as medical students to share and help kids feel more at ease when they are interacting with health-care professionals.”

The Boys and Girls Club of Niagara offers programs to assist in the healthy educational, social and physical development of Canadian children and youth. Its staff say the Teddy Bear Clinic is a welcomed addition to its programming.

“This is a great program for our kids to see that our community health providers are helpers, and that going to places like the hospital, doctor or dentist is not scary,” says Ellen Ford, satellite supervisor of the Before and After School Kids Zone with the Boys and Girls Club of Niagara.

“They are very busy kids, and to see them all engaged and speaking with the medical students is wonderful.”

While the program is focused on kids, the medical students also benefit from the interaction.

“This has been a great opportunity to develop skills as it relates to the pediatric population,” says Goel, who is contemplating family medicine.

“Based on our schedule, we may not get exposure to pediatric patients until rotations later on in our training. The Teddy Bear Clinic allows us to gain experience explaining concepts that to an adult patient may be simple, but need to be said in a different way to help pediatric patients understand. It also allows us to get involved and give back to the community.”
A new bursary has been started in the names of Karyn Kaufman and Eileen Hutton, both former assistant deans of McMaster’s midwifery education program.

Paul O’Byrne, dean and vice-president of the Faculty of Health Sciences, said the bursary is a tribute to Kaufman who established Canada’s first midwifery program at McMaster in 1993 and directed it until late 2006, and Hutton, who led the program from 2007 until this year.

“There is high demand for midwifery care, and Karyn and Eileen have established a program here that’s become world-renowned for excellence in education and high-impact research. I’m pleased we are able to amplify the generosity of the Hutton family to further grow the bursary.”

The website regarding the bursary is at alumni.mcmaster.ca/mepbursary.

Susan Denburg elected to the Canadian Academy of Health Sciences

Susan Denburg, executive vice-dean and associate vice-president, academic in the Faculty of Health Sciences, has been elected as a Fellow to the Canadian Academy of Health Sciences (CAHS).

Induction into the CAHS as a Fellow is considered one of the highest honours within Canada’s academic community. Denburg, along with 43 other new Fellows, was celebrated in September in Vancouver.

In addition to her role as executive vice-dean and associate vice-president for the Faculty, Denburg is a professor in the Department of Psychiatry and Behavioural Neurosciences.

“I am both humbled and honoured to be selected as a Fellow by my peers,” said Denburg. “I look forward to actively volunteering my time and expertise to advance academic service and innovation at local, national and international levels and enthusiastically promote improved health, healthcare and health-related policies for the benefit of all Canadians.”

Denburg has been a faculty member since 1978, working first as a staff psychologist at St. Joseph’s Hospital, as education coordinator and vice-chair of the Department of Psychiatry and Behavioural Neurosciences, and then as associate dean education, Faculty of Health Sciences.

Among her most impactful contributions, Denburg created a clinician-educator stream for professional advancement, while offering mentorship to aspiring leaders who have gone on to hold key local, provincial and national positions. Her vision for faculty development led to the creation of influential new support programs, including the Academic Leadership Program, which is paving the way for future leaders. She collaborated with Indigenous and non-Indigenous colleagues to develop a facilitated admissions process for Indigenous applicants to the MD program and to establish the Indigenous Students Health Sciences office.

Denburg spearheaded the creation of new, innovative professional programs, such as the Physician Assistant program. She also oversaw the launch of distributed medical education at McMaster, culminating in the establishment of two educational campuses in Niagara and Waterloo.

She also led the Labarge Optimal Aging Initiative, and supported the launch of the McMaster Institute for Research on Aging and Labarge Centre for Mobility in Aging.

Midwifery bursary named for first two assistant deans

Alfonso Iorio, a researcher and clinician specializing in bleeding disorders, has been named the inaugural holder of the new Bayer Chair for Clinical Epidemiology Research and Bleeding Disorders at McMaster University.

He is a professor and researcher of the Department of Health Research Methods, Evidence, and Impact and the Department of Medicine at McMaster University and a clinician for Hamilton Health Sciences.

“I am very excited about being named the inaugural chair recipient because I love this research field,” said Iorio. “I have spent more than 20 years of my career applying the principles of clinical epidemiology to research in bleeding disorders, so having the opportunity to focus on it further is rewarding.”

Iorio said his focus as the research chair will be primarily on inherited blood disorders, such as hemophilia A, hemophilia B and von Willebrand disease.

Iorio has degrees as a doctor of medicine and a doctor of philosophy from the University of Perugia in Italy. He has been a faculty member at McMaster University’s Faculty of Health Sciences since 2010.

A new bursary has been started in the names of Karyn Kaufman and Eileen Hutton, both former assistant deans of McMaster’s midwifery education program.

The website regarding the bursary is at alumni.mcmaster.ca/mepbursary.
Professor celebrated with pediatric award

Saroj Saigal, a professor emerita of pediatrics, is the 2018 Virginia Apgar Award recipient.

She is only the third Canadian to win the award, along with Robert Usher from Montreal and Jack Sinclair who was a professor of pediatrics at McMaster from 1970 to 1999.

“I worked with Dr. Usher when I first came to Canada and then with Dr. Sinclair at McMaster, so I am following in the footsteps of my mentors,” she said. “As such, I am very excited to be recognized with this award.”

The Virginia Apgar Award is presented annually to an individual whose career has had a continuing influence on the well-being of newborn infants.

Saigal was considered to be ahead of her time in child health research and neonatology, particularly babies born at less than one kilogram. She has had an illustrious career with McMaster University since arriving in 1972. Although she is formally retired, she has continued her work as a researcher at McMaster and a clinician at the McMaster Children’s Hospital.

Her focus on the study of the lives of premature infants after they survived neonatal intensive care, and her compassionate and thoughtful approach to this study has been emulated around the world. Saigal is also the author of the book, *Preemie Voices*.

Saigal was also inducted into the Community of Distinction of the Faculty of Health Sciences at McMaster in fall 2018.

“The Virginia Apgar Award is one of the highest recognitions in perinatal medicine in North America and I’m humbled to receive it,” said Saigal. “With my induction at my university – and because it is so important to be recognized by your peers at your own institution – I am doubly honoured.”

Three McMaster health sciences professors join prestigious Order of Canada

Three Faculty of Health Sciences professors are among four McMaster University faculty members appointed members of the Order of Canada. Their appointments were announced by Her Excellency the Right Honourable Julie Payette, Governor General of Canada.

Andrea Baumann is the associate vice-president, global health for the Faculty of Health Sciences; Mohit Bhandari is a professor of surgery for the Michael G. DeGroote School of Medicine; and Jack Gauldie is a professor emeritus of the Department of Pathology and Molecular Medicine.

Jamal Deen, a professor of electrical and computer engineering, was also appointed a member.

In addition, Roberta Bondar, a graduate of the Michael G. DeGroote School of Medicine and Canadian astronaut and researcher, is being promoted within the Order to the rank of companion.

Andrea Baumann is being honoured for her significant contributions and leadership in health human resource capacity-building and transdisciplinary collaboration both in Canada and around the world.

Mohit Bhandari was named for his contributions to the field of orthopedic trauma and for his pioneering research in the area of intimate partner violence.

Jack Gauldie, who is currently the vice-president, research for the St. Joseph’s Health System, was recognized for his groundbreaking discoveries as an immunologist specializing in gene therapy, aiding in the treatment of fatal diseases and contributing to the development of cancer vaccines.

Jamal Deen was appointed for his advancements in the fields of electrical engineering and applied physics, and for his leadership of multiple academic and professional institutions.

Members of the Order of Canada are noted for their outstanding contributions at the local or regional level or in a special field of activity. Companions are recognized for outstanding achievement of the highest order in the service to Canada and to humanity.

Faculty member named to Royal Society of Canada

A researcher in McMaster University’s Faculty of Health Sciences has been recognized by the Royal Society of Canada (RSC) for his scholarly and scientific accomplishments.

Guillaume Paré is a member of the incoming class of the RSC’s College of New Scholars, Arts and Scientists.

Paré is an associate professor in both the Department of Pathology and Molecular Medicine and the Department of Health Research Methods, Evidence, and Impact. He holds the Canada Research Chair in Genetic and Molecular Epidemiology.

A world-leading physician-scientist in the area of genetic and molecular epidemiology of cardiovascular disease, his research has advanced knowledge of the genetic causes of heart attack and stroke. He is establishing new ways of identifying high-risk patients, modifiable risk factors, and preventive therapies.

Paré, along with 51 other new members of the RSC’s College of New Scholars, Artists and Scientists, were welcomed into the RSC in November in Halifax, N.S.
FHS alumni: Where are they now?

1990s

SARAH (JOHNSON) EARES
BScN ’90

Sarah Earees has worked in mental health nursing for 26 years. After graduating from McMaster, she completed a master’s degree in psychology at the Adler School of Professional Psychology in Chicago. She has worked in inpatient mental health as a New York State psychologist with incarcerated sex offenders, acted as a clinical specialist for North Country Community College and recently moved to Indianapolis, Indiana where she is the lead nurse for a veteran’s addiction recovery program. She attained certification as an addictions nurse, and Indiana licensure as a clinical addiction counselor. Recently, she delivered a platform presentation at the Midwest Medication Safety Symposium on opiate rescue kit delivery and dissemination. Happily married, she shows and breeds Maine Coon cats and loves scuba diving. She credits McMaster’s innovative teaching/learning style with stimulating her passion for lifelong learning, and is completing courses towards both veterinary tech licensure and Pawpeds breeder certification.

JULIE WILSON
BHSc (Midwifery) ’98

Julie Wilson, a McMaster-trained midwife who is of Mohawk heritage, is the supervisor of the Six Nations Maternal and Child Centre (Six Nations Birthing Centre) in Ohsweken, Ont. The birth centre at Six Nations opened in 1996 and has since seen the delivery of approximately 1,300 babies. An apprenticeship program created and run by Wilson launched in 2000. There have been 15 Aboriginal midwives who have graduated from the program, which features a curriculum that combines Western and Haudenosaunee practices. Wilson is also a part-time Aboriginal midwife at the centre. The centre and Julie’s work was profiled in a large feature in The Globe and Mail in the summer of 2018. The centre has become well known as a model of excellence for Indigenous women’s reproductive health.

2000s

JAMIE DAW
BHSc ’08

Jamie Daw was recently hired as an assistant professor of health policy and management at Columbia University Mailman School of Public Health. After graduating with a Bachelor of Health Sciences (Honours) degree at McMaster, Daw earned a master’s degree in population and public health from the University of British Columbia and a PhD in health policy from Harvard. Daw’s research seeks to inform the development, implementation, and evaluation of health policy with a focus on the outcomes that patients care about most: access to care, out-of-pocket costs, quality, and health outcomes. The majority of her work focuses specifically on how policy impacts reproductive-age women, children, and families.

JENNIFER JOCKO
MD ’09

Jennifer Jocko was named a 2018 Influential Woman of Northern Ontario for her Aboriginal leadership in Sudbury focusing on improving women’s health in Northern Ontario, specifically access to care for Indigenous, rural and Northern women. Raised in Mattawa, Jocko is Algonquin from Pikwakanagan First Nation. Jocko spent 10 years as a nurse in North Bay and Mattawa, being married and having two children. She attended McMaster for her medical degree, and obstetrics and gynecology residency at the University of Ottawa. Jocko is a staff member at Health Sciences North and is the regional cervical screening and colposcopy lead for the North East. She’s a consultant at the Shkagamik-Kwe Health Centre in Sudbury where she operates a half-day weekly clinic, a monthly rural outreach clinic on Manitoulin Island. As well, she is a postgrad Indigenous health lead at Northern Ontario School of Medicine, and sits on the Aboriginal Women’s Health Committee for the Society of Obstetricians and Gynecologists of Canada.

2010s

Celia Walker, an alumna of the MSc Global Health program, is working to get people to think differently about climate change by focusing on its relationship with human health. She says the relationship between climate change and human health is often misunderstood by the public and overlooked within policy-level decision-making. She created a video for a project called Climate Guides, which is used to communicate the connection between human health and the planet’s health. Walker is a research coordinator working in infectious diseases at the BC Children’s Hospital in Vancouver. In addition to serving as a mentee with Climate Guides, she is a member of the Canadian Association of Physicians for the Environment, an organization of health professionals working to protect the environment in order to protect human health.

Calling all McMaster University Faculty of Health Sciences alumni:

Do you want to let people know where you are now? Please email a write-up of no more than 150 words, along with a high-resolution digital headshot to network@mcmaster.ca with the subject line: Where are they now. Please include your first and last name, degree and year of graduation.
Del was an inspirational innovator

Delsworth Harnish, vice-dean of undergraduate education for the Faculty of Health Sciences, died in November after a short illness.

“Del was renowned for his brilliance and leadership in educational innovation,” said Paul O’Byrne, dean and vice-president of the Faculty of Health Sciences.

“He thought outside the box, but he was also collegial, collaborative and very effective. He will be deeply missed.”

A memorial service at McMaster University is being planned for early in the new year.

As vice-dean since 2015, Harnish established unique programs including the Integrated Biomedical Engineering and Health Sciences program known as iBioMed with the Faculty of Engineering, and the Health Leadership Academy with the DeGroote School of Business.

Earlier, he had a key role in developing the innovative, extremely popular, inquiry-based Bachelor of Health Sciences Honours program. He was the program’s first assistant dean when it began in 2000, a position he held for 15 years. The program he developed is renowned for its experiential and interdisciplinary curriculum.

Dr. Harnish had earned both his bachelor and master degrees in biology from Queen’s University. After receiving his PhD in biology from McMaster University in 1982, he did post-doctoral work at the University of Alberta and Harvard University before joining McMaster faculty in 1984.

His educational leadership was recognized with the prestigious 3M National Teaching Fellowship Award in 1998. He was also part of the team of instructors who won the 2005 McMaster President’s Award for Excellence in Teaching (Course or Resource Design), as well as the national Alan Blizzard award for collaborative course development and contributions to teaching from the Society for Teaching and Learning in Higher Education.

Harnish served on McMaster University’s Senate and Board of Governors, and also as a special advisor (academic affairs) to the office of the provost. His other roles at McMaster included academic director of McMaster’s Centre for Leadership in Learning (now the Paul R. MacPherson Institute for Leadership, Innovation & Excellence in Teaching) and academic director of the Learning Technologies Resource Centre. He also consulted nationally and internationally on various aspects of university education.

“Del was a mentor and friend to so many people,” said Stacey Ritz, assistant dean of the Bachelor of Health Sciences program. “He always strived to enable students, staff and faculty to be creative, experiment and never stop learning.

“So many of us will miss him personally, and his influence will persist through the program and the people he inspired.”

John Kelton, former dean and vice-president of the Faculty, added: “I consider Del the most creative educator I have ever met. He was disruptive in a wonderful way, and he valued the students above all.”

Plans are being made for a student scholarship in his honour. Information about the fund is at alumni.mcmaster.ca/delharnish.
Reunions

BScN 50th anniversary reunion
Alumni of the BScN Class of 1968 came from Australia, the United States, British Columbia, Alberta and Ontario to celebrate their reunion in Niagara-on-the-Lake from May 22-23, 2018. Participants enjoyed various productions of the Shaw Festival, toured local vineyards, and had dinner in a private venue. Pictured from left to right at the back are Isabel Haslam, Jan Kron, Marvyn Banks, Karol Grainger, Judy Johnson, Judy Loree, Roberta Reid, Nancy Robinson, Louise Scott and Charlene Evans. Front row, from left to right, are Karen Chalmers, Lorraine Paul, Florence Bonyon and Jan Hunter.

BScN 45th anniversary reunion
McMaster School of Nursing graduates of the Class of 1973 celebrated their 45th reunion in Stratford, Ontario from September 24-27, 2018. Pictured at the event are: Marilyn Lee Antkiw, Kerry Moore Blunt, Jill Goebel, Shelley Warren Taylor, Ruth Brown Pettis, Mary Joan Henderson, Lynn Cathrae Hoath, Mary Baillie, Cathy Dean, Doris Fobel Akitt, Gladys Sinclair, Isabelle Godo Mogck, Karen Belfontaine, Joanne Platek, Elaine Crabb-Shepherd, (Hodowanski), Sherine Boville (Loveless), Christine Janssen Stryker, Elizabeth Kingcott (Fletcher), Charlene Juras (Neudorf), Kathy Sharpe, Shelley Hystead Seca, Jana Blackburn, Stephanie Hamilton (McArthur), Michelle Schwarz (Van Staalduinen) Tracey Pearce-Kelly, Sandy Bates, Sheri Armstrong, Lisa Robertson (Michajduk), Shelley Lacelle (Simpson), Trish Balando (Powers), Eileen Viloria-Tan, Jeanette Wittich (Conlin), and Barbara Crawford.

BHSc (PT) 20th anniversary reunion
Graduates of McMaster’s physiotherapy program celebrated their 10th anniversary reunion at Radius Restaurant in Hamilton on October 26 and 27. Pictured front row, left to right are: Michelle De Ruiter, Diana Hatzoglou, Darlene Losier and Adrienne Nichols. Pictured back row, left to right are: Jennifer Beck, Samantha McCaffrey, Kathryn Schneider, Taffina Marley, Laurie Lynch, Natalie Lehto, Kristy Robinson, Kristen Baumann and Helen Janzen.

BScN 10th anniversary reunion
Graduates of the Bachelor of Health Sciences program celebrated their 10th Anniversary Reunion on November 24th, 2018 at the Bier Mrkt, The Esplanade, Toronto. Pictured back row, left to right, are Helen Yang, Christine Keng (with Marceline Chu), Gordon Tsang, Eugenia Poon (with Marigold Chu), Raman Mundi, Jeffrey Tolmie, Derek Chu, Savio Yu. Pictured front row, left to right, are Katy Li, Melanie Rodrigues, Sarah Mullen, Holly Lam, Jillian Alston, Patricia Lee (with Oliver Yu; wife and son of Savio).

BScN 25th anniversary reunion
Alumni of the 1993 School of Nursing celebrated their 25th anniversary reunion at McMaster’s Phoenix Craft House and Grill on October 20, 2018. Attendees included: Emily Christoffersen (Chapman), Kathy George

EVENTS
For a listing of upcoming alumni events, visit us on the web at http://alumni.mcmaster.ca/
**SAVE THE DATE**

**BScN 50th anniversary reunion**
1
June
2019

Join us as we celebrate the BScN class of 1969. This special 50th anniversary celebration will take place during Alumni Day on the McMaster University campus. For event details visit: [http://alumni.mcmaster.ca/events](http://alumni.mcmaster.ca/events)

**BScN 15th Anniversary Reunion**
22
June
2019

Plan to join your fellow alumni as they celebrate 15 years since graduation. The celebration will take place at the Phoenix Craft House and Grill on the McMaster campus. Watch for event details at: [http://alumni.mcmaster.ca/events](http://alumni.mcmaster.ca/events)

**McMaster Medical School 50th anniversary**
24-26
October
2019

Please plan to join us to celebrate the 50th anniversary of the medical school October 24 to 26, 2019 in Hamilton. Updates will be shared as more plans are solidified. Check our website [macmed50.mcmaster.ca](http://macmed50.mcmaster.ca) for the latest news and make sure that you’re receiving relevant email and mail communications by updating your information at [alumni.mcmaster.ca/macmedupdate](http://alumni.mcmaster.ca/macmedupdate). If you’d like help arranging a smaller reunion while you’re back in Hamilton for the celebration, please contact our alumni office at impacths@mcmaster.ca

**Good times reuniting!**

**25 years of nursing**

Charlene Juras (Neudorf) and Jana Blackburn recently celebrated a 25-year anniversary since graduating from McMaster’s School of Nursing.

**On a last note**

More information on these reunions will come in early 2019. To ensure you receive updates on upcoming reunions forward your preferred email address to impacths@mcmaster.ca

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