

# President's Report to McMaster University's Board of Governors December 15, 2022

## **Spotlight on Research and Scholarship**

At our Board retreat in September, Karen Mossman, Vice-President, Research, and I shared an overview of McMaster's strategic goals related to research and scholarship and highlighted some of the initiatives that have been developed to address this important institutional priority. Key to these efforts are sustained and strategic activities to build McMaster's Innovation Ecosystem, along with continued work to support McMaster's excellence in pandemic research and preparedness through Canada's Global Nexus for Pandemics and Biological Threats.

From supports like the McMaster Industry Liaison Office and other targeted investments and resources to help researchers commercialize their research; to programming like [The Forge](#) and [The Clinic](#) designed to support student and faculty entrepreneurs; to strengthening McMaster's capacity as a biotech leader in our community and region through the McMaster Innovation Park, the University has been intentional about building our Innovation Ecosystem to ensure McMaster research has maximum societal impact.

Similarly, Canada's Global Nexus has continued to gain momentum and, through new investments, initiatives and programming, is well positioned to make McMaster a global destination for pandemic research and education.

I would like to highlight and provide updates on both these priority areas.

## **Building McMaster's Innovation Ecosystem**

### **McMaster Innovation Park**

The centrepiece of McMaster's Innovation Ecosystem and its vision of becoming a premier hub for biotech and advanced manufacturing innovation is the McMaster Innovation Park (MIP).

Currently, MIP is home to a host of successful, cutting-edge McMaster biotech and advanced manufacturing spinoff companies including [Fusion Pharmaceuticals](#), [Triumvira Immunologies](#) Inc. and [Enedym Inc.](#) The expansion of the McMaster Innovation Park will be a key driver in further positioning the University to become a national and global leader in the critical area.

During the Board meeting, there will be an update on plans to expand MIP including a discussion on funding the future home of Canada's Global Nexus for Pandemics and Biological Threats, which will be part of this expansion.

### **McMaster Seed Fund Projects**

This fall, McMaster launched the second round of the [McMaster Seed Fund](#), an important component of McMaster's strategy to support the commercialization of research and build the University's innovation ecosystem. Led by the Office of the Vice-President Research in collaboration with the McMaster Industry Liaison Office (MILO), the fund is an early-stage investment vehicle designed to foster startup companies

from McMaster research that have the potential for significant economic and societal impact in the Hamilton region and beyond.

Second round Seed Fund recipients were awarded a combined total of \$1.27 million in investment. Companies include:

- [AIMA Laboratories](#): received \$468,500 to advance its blood-testing technology that can be used for at-home screening of endometriosis.
- [LLIF Healthcare](#): received \$381,500 to further its cloud-based platform which provides doctors and hospitals with data to improve patient care and reduce healthcare costs.
- [20/20 OptimEyes Technologies](#): received \$428,000 to de-risk their patented mucoadhesive micelle nanoparticle (MNP) technology, initially targeted for the treatment of glaucoma.

This second round of funding was highly successful in engaging McMaster researchers, resulting in 21 proposals from startups commercializing research across a range of disciplines. Fifteen companies were invited to pitch to the investment committee and three were selected for investment.

This latest round of the McMaster Seed Fund builds on the success of the first, which saw [startups Synmedix and Insight Medbotics receive a combined \\$735,000](#) in funding.

### **Search for the AVP Research, Commercialization and Entrepreneurship**

In the coming weeks, the office of the Vice-President, Research will be launching a search for the University's first Associate Vice-President, Commercialization and Entrepreneurship.

This strategic role will be instrumental in advancing McMaster's goals to advance knowledge translation, and in building a culture of commercialization and entrepreneurship across the University. This position will work closely with Deans, Associate Deans (Research) and other leaders in the office of the Vice-President (Research) and will identify and promote the coordination of entrepreneurial initiatives taking place campus-wide. The role will also work closely with the McMaster Industry Liaison Office to develop relationships with commercial partners.

This role is a significant step forward in developing McMaster's innovation ecosystem and I look forward to updating Board members as this search progresses.

### **The Innovation Showcase**

In November, McMaster hosted its [12<sup>th</sup> annual Innovation Showcase](#), which featured panel discussions and presentations by McMaster researchers about their discoveries and how they are bringing their innovations to market. The showcase was also an opportunity to recognize outstanding McMaster researcher-entrepreneurs for their innovations. Honourees included:

- Gina Agarwal, a professor in the department of family medicine received the Innovator of the Year award for her chronic disease prevention, management, and health promotion program [CP@Clinic](#), which seeks to improve older adults' health and quality of life by better connecting them with primary care and community resources.

- Ali Emadi, Chair of McMaster's [CERC@MARC](#) program – one of the world's leading academic research programs in transportation electrification and smart mobility – and founder, president and CEO of Enedym Inc. and [Menlolab Inc.](#), received the Lifetime Innovator award, which recognizes career-spanning achievements in research innovation.

### **The Marnix E. Heersink School of Biomedical Innovation and Entrepreneurship**

Last February, McMaster's Faculty of Health Sciences received a \$32 million gift from Marnix and Mary Heersink to establish the Marnix E. Heersink School of Biomedical Innovation and Entrepreneurship. The school will educate emerging health innovators in the Faculty's schools of medicine, nursing and rehabilitation science and will include immersive clinical experiences to identify problems, form solutions and drive innovation through collaboration.

Since receiving Board approval in June, the Heersink School has been working to cluster together programs of complimentary activity within McMaster and is exploring and leveraging strengths with international partners at the University of Alabama Birmingham. Further, a proposal to establish a new master's level program in biomedical innovation has been submitted to the University for approval. Planning is also underway to renovate an area of the Michael DeGroote Centre for Learning and Discovery to serve as the initial home of the Master's program under the banner of the Heersink School.

### **Global Entrepreneurship Week**

Last month, 180 countries worldwide celebrated Global Entrepreneurship Week, a recognition of the innovation, creativity and accomplishments of the global entrepreneur community. This provided an opportunity for McMaster, led by the Communications, Marketing and Public Affairs team, to showcase student and faculty entrepreneurs through a series of stories, which were posted on the Daily News and shared nationally and globally via McMaster's social media channels and other digital communications platforms.

Highlights included:

- McMaster engineering graduate Swaleh Owais and business partner Yang Cheng who recently won the prestigious [2022 James Dyson Global Sustainability Award](#) for Polyformer, an open-source machine that turns used plastic bottles into 3D printer filament.
- [Triumviria Immunologies Inc, a biotech firm co-founded by Prof. Jonathan Bramson](#), which is developing an immunotherapy treatment to tackle solid-cell cancers. The firm has already raised more than \$100 million in venture capital funding.
- [A student startup, Universole Fit](#), that uses 3D modelling and AI technology to help online shoppers find the best-fitting shoe won the \$15,000 grand prize at the Forge business incubator's Startup Survivor pitch competition.
- [A new partnership between researchers Sheila Singh and Jacob Magolan and adMare BioInnovations](#) – a Canadian non-profit company – to develop and commercialize a targeted therapy that could prevent the spread of cancer in patients with brain cancer.

## **Global Nexus for Pandemic and Biological Threats**

### **More than \$8.5M for Canada's Global Nexus**

In November, Canada's Global Nexus received \$8.6 million from Canada Foundation for Innovation's Biosciences Research Infrastructure Fund (BRIF), a fund which supports upgrades to biocontainment facilities across the country.

The funding will be used to expand a laboratory at McMaster where Canada's Global Nexus researchers are developing new antimicrobials, antivirals, vaccines and diagnostics to combat a range of pathogens, including influenza virus, West Nile virus, tuberculosis, and SARS-CoV-2.

### **Stephen A. Jarislowsky Chair for Pandemic Research and Prevention**

[Cameron Currie](#) has been named the inaugural Stephen A. Jarislowsky Chair in Pandemic Research and Prevention, which sits jointly with Canada's Global Nexus and the Department of Biochemistry and Biomedical Sciences. Dr. Currie's research focuses on isolating bacteria from ants to determine if their microbes could be used to develop new antibiotics and medicine for drug-resistant bacteria and fungi.

Dr. Currie comes to McMaster from the University of Wisconsin-Madison, where he co-founded the Wisconsin Antimicrobial Drug Discovery Research Center. He is an internationally acclaimed researcher with many accolades, including a fellowship in the American Academy of Microbiology; grant support from the National Institutes of Health's Centers of Excellence program; and the Presidential Early Career Award for Scientists and Engineers (PECASE) awarded in 2008 and bestowed by then U.S. President Barack Obama, the highest honour given by the United States government to outstanding scientists early in their research careers.

I am so pleased that Dr. Currie has joined McMaster and I look forward to seeing his future contributions to pandemic research, prevention and preparedness.

### **Antimicrobial Resistance (AMR) Symposium**

In October, Global Nexus researchers welcomed infectious disease experts from around the world to McMaster for a symposium marking global Antimicrobial Resistance (AMR) Week. Called by many, the "slow-moving pandemic," AMR happens when infections stop responding to the drugs designed to treat them. In 2018, it was estimated that more than a quarter of all infections in Canada were resistant to frontline drugs, a number that's continuing to climb.

The symposium highlighted the need for a multidisciplinary and cross-sector response to complex infectious disease threats and included presenters from diverse disciplines, speaking on a range of topics including how Indigenous communities are being impacted by AMR, the relationship between AMR and climate change, how refugee camps drive AMR, and the economics of antibiotics.

The symposium was an excellent opportunity for the McMaster community to connect with and learn from global experts, and for McMaster researchers from all Faculties to consider how their research programs could align with Canada's Global Nexus.

## **McMaster's Inhaled COVID-19 Vaccine**

As Prof. Dawn Bowdish noted at our last Board meeting, a McMaster research team affiliated with Canada's Global Nexus, is developing a second-generation COVID-19 vaccine that will offer a better defence against variants of concern and future coronavirus outbreaks.

McMaster's vaccine, which has just wrapped up Phase 1 clinical trials, is inhaled through the mouth to deliver the vaccine directly to the respiratory tract. The McMaster team has proven that delivering vaccine by inhalation is far more effective than both injected and nasal spray vaccine delivery systems. By inhaling the vaccine directly into the lungs, a large proportion of cells stay localized in the lungs and upper airways, providing protection where it is needed most. This inhaled-vaccine technology could have far-reaching impacts as it could be used to fight off other respiratory infections, including the common cold, flu and tuberculosis.

Phase two clinical trials are expected to begin early in 2023. I will continue to keep Board members updated as the clinical trial progresses.

## **Undergraduate Academic Programming**

In addition to its robust research programs, Canada's Global Nexus is also developing undergraduate academic programming. Canada's Global Nexus is leading the development of a new interdisciplinary minor that examines the impacts of infectious disease on individuals and society.

The minor will be open to students from a range of disciplines and is the first in what will be a suite of undergraduate programming designed to engage students in pandemic education and research.

## **CAMPUS UPDATES**

### **McMaster's Rhodes Scholar**

I am pleased to share that Rishi Bansal, a graduate of the Arts and Science program and a final year McMaster medical student, has been awarded a 2023 Rhodes Scholarship. Rishi is one of only eleven students in Canada to receive this prestigious honour this year and is the fourth McMaster student to be awarded the distinction since 2011.

The scholarship enables students to pursue their area of study at Oxford University and, as a physician scientist, Rishi will investigate ways of improving care integration across a person's lifespan to improve health outcomes and better support patients throughout their care.

Rishi is a truly extraordinary student whose commitment to the greater good through healthcare reform exemplifies McMaster's vision of advancing societal health and well-being. I have no doubt we'll see great things from Rishi in the future. [Learn more about Rishi](#)

## **INCLUSIVE EXCELLENCE**

### **International Day of Persons with Disabilities**

December 3 was International Day of Persons with Disabilities. To celebrate this important day, campus and community partners, including the Equity and Inclusion AccessMac Program, the MacPerson

Institute, the PACBIC DIMAND Working Group, MSU Maccess, the Employee Accessibility Network and the Faculty of Science launched two weeks of events and training. Topics include digital and social media accessibility, assistive technology use and applications and accessibility in teaching and learning design and delivery.

### **[Meet the first scholars in McMaster’s new Diversity-in-STEM program](#)**

McMaster’s Biochemistry & Biomedical Sciences Summer Scholars Program has brought a diverse group of Ontario-based scholars who self-identify as Black, Indigenous, and/or 2SLGBTQIA+ to McMaster on fully funded research scholarships. Run in partnership with the Michael G. DeGroot Institute for Infectious Disease Research (IIDR) and the Global Nexus for Pandemics and Biological Threats, the SSP provided the cohort with intensive research skills training, close mentorship and guidance, and experiential learning opportunities in an array of McMaster laboratories.

## **TEACHING AND LEARNING**

### **[McMaster Invests in teaching and learning innovation and implementation projects](#)**

The Office of the Vice-Provost, Teaching and Learning and the Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching will distribute over \$340,000 in funding to the inaugural cohort of Partnered in Teaching and Learning grant recipients. Faculty and staff from across the six faculties will collaborate on 31 grant projects to implement the Partnered in Teaching and Learning Strategy. The goal of the grants is to support innovative thinking and novel approaches to teaching and learning within and beyond classrooms and within and across disciplines.

### **[Foresight Lab embraces uncertainty as it looks to the future](#)**

The Foresight Lab in the DeGroot School of Business is providing valuable learning opportunities inside and outside the classroom through foresight courses – classes that focus on training students to anticipate future challenges. Programming in the lab also includes opportunities to network with external executives and policymakers and provides a range of professional development activities.

### **[New apprenticeship program launches careers for Humanities grads](#)**

McMaster’s Faculty of Humanities is working with the City of Hamilton on an innovative program to help new graduates make the transition from university to employment. The Humanities Career Apprenticeship Program connects humanities graduates with Hamilton employers for 12-month, full-time, paid apprenticeship positions. The Faculty is also working with Hamilton’s economic development office and the Hamilton Chamber of Commerce to connect employers with the program.

## **RESEARCH AND SCHOLARSHIP**

### **[Distinguished Professor receives prestigious Einstein Award](#)**

Distinguished University Professor Gordon Guyatt, who established the gold standard for how health research should be done and evaluated, and who coined the phrase “evidence-based medicine” (EBM), recently received the Einstein Foundation Award for Promoting Quality in Research. Guyatt, who is consistently named one of the world’s most-cited living scientists, helped pioneer the development of EBM at McMaster. Now used worldwide, EBM is health care based on the best available, up-to-date evidence on medical options.

### [Sixteen McMaster Researchers Included on global list of most highly cited researchers](#)

Sixteen McMaster researchers have been included on Clarivate Analytics' 2022 list of the world's most highly cited researchers. This list recognizes science and social science researchers who have had a significant impact on their respective fields through the publication of multiple highly cited papers over the last decade. The researchers included in this list represent the top one per cent of citations in a given publication year, as outlined in the *Web of Science* citation database. In total, nearly 7,000 researchers were named to the 2022 list.

### [Eleven McMaster researcher named Canada Research Chairs](#)

Eleven McMaster University researchers from the Faculties of Health Sciences, Science and Social Sciences have been named or renewed as Canada Research Chairs, part of a national strategy to attract and retain the world's most accomplished and promising minds.

### [McMaster partners with nuclear industry leaders to advance research and education](#)

McMaster, Canada's Nuclear University, has partnered with Canadian Nuclear Laboratories and Atomic Energy of Canada Limited to advance nuclear research, education and training. The partners will use their highly specialized infrastructure – including the McMaster Nuclear Reactor and other nuclear facilities on campus – to pursue research collaborations in areas with national strategic importance, including small modular reactors, hydrogen, materials characterization, medical isotopes and radiochemistry.

### [Pilot project to deliver medical isotopes by drone](#)

McMaster has partnered with Halton Healthcare, Drone Delivery Canada (DDC), Air Canada Cargo, DSV Canada and EllisDon to create Care by Air, a project designed to revolutionize the way we transport medical isotopes. The first program of its kind in Canada, Care by Air leverages existing drone technology to ensure that hospitals, health-care workers and patients receive the life-saving medical supplies they need in a safe, reliable and efficient manner.

### [“Smart” red blood cells deliver antibiotics that target specific bacteria](#)

Physicists at McMaster University have identified a natural delivery system that can safely carry potent antibiotics throughout the body to selectively attack and kill bacteria by using red blood cells as a vehicle. Researchers have developed a way to open red blood cells and remove the inner components, leaving only a membrane which can be loaded with drug molecules and injected back into the body. The process also involves coating the outside of the membrane with antibodies, allowing it to stick to bacteria and deliver the antibody safely.

## **ENGAGING LOCAL, NATIONAL, INDIGENOUS AND GLOBAL COMMUNITIES**

### [Indigenous Research Day highlights important work being done at McMaster](#)

The first annual Indigenous Research Day at McMaster highlighted the varied, compelling and important work being done at McMaster in the field of Indigenous Studies. The day-long event featured a range of projects including using digital storytelling for intergenerational learning, creating ethical spaces of engagement in child welfare, and giving future physicians the tools to provide culturally competent care.

### [McMaster linguistics research centre creates program for displaced scholars](#)

Olga Dvorova, who was doing her PhD in Ukraine on the Crimean Tatar language, arrived at McMaster this spring. She is the first of four Ukrainian scholars who came with the support of the Centre for Advanced Research in Experimental and Applied Linguistics' visiting researcher program. She is now a research assistant in linguistics professor Victor Kuperman's lab, and also a master's student in the Gender and Social Justice program. The program co-leads are now looking at expanding the program.

### [Canada-UK medical reserve health forum](#)

McMaster's Global Health Office, in partnership with the Canadian Armed Forces Medical Reserve, recently held a health forum with members of the United Kingdom Medical Reserve to collaborate, share knowledge and explore expert perspectives on health and health systems. Topics included some of the most pressing issues of our time including the long-term care crisis, disaster and rescue medicine, Arctic health and climate change.

### [Students and volunteers expand McMaster Carbon Sink Forest](#)

More than 125 students and community volunteers planted an additional 300 trees in the McMaster Carbon Sink Forest. The model forest is the latest research initiative by the McMaster Centre for Climate Change. The centre, led by Professor Altaf Arain from the Faculty of Science, continuously monitors how much carbon dioxide is being withdrawn from the atmosphere by each tree. That data, along with the centre's experience in growing the forest, will be shared with researchers across Canada and around the world who are growing similar forests to help mitigate the impacts of climate change.

### [McMaster grads and business owners give back to communities in need](#)

DeGroot business graduates Casey Rogan, Matt Carter and Matthew Milne are the co-founders of Toques From The Heart, a company that sells toques. For every toque sold, the company donates a toque to someone experiencing homelessness. This fall they launched the 'The Stay Warm Together Tour,' driving from Toronto to Halifax, visiting 12 non-profits and donating 4,000 toques along the way.

## **OPERATIONAL EXCELLENCE**

### [McMaster Sustainability Report 2021-22 celebrates campus initiatives](#)

McMaster's second annual Sustainability Report celebrates the voices and accomplishments of students, faculty and staff who are collaborating to create a more sustainable future. Their accomplishments include the launch of the community fridge, new accessible sustainability-focused courses, a plan to install electric boilers on campus, and world-class research that uses machine learning to map carbon storage across Canada.

### [Transforming spaces and places to create a brighter world](#)

The Design and Construction team at McMaster has been building functional, accessible, inclusive, sustainable and beautiful new spaces, both on and off campus. These construction projects are setting the stage for McMaster's learners, researchers and academics to solve challenges that advance societal health and well-being.

### [Library Impact Report highlights strategic work](#)

McMaster University Library's inaugural impact report is now available. The 2021-22 impact report offers readers an inside look at the University library's strategic work during the past year, through stories of innovative learning solutions, remarkable research support and meaningful outreach initiatives.

### **OTHER UPDATES**

#### [Federal Minister of Transport minister meets with McMaster experts](#)

Researchers at the McMaster Institute for Transportation & Logistics (MITL) recently welcomed federal Minister of Transport Omar Alghabra to their facilities at McMaster Innovation Park. The COVID-19 pandemic brought the importance of supply chain resilience and fluidity to the forefront, and researchers were eager to contribute their expertise to national policymaking. "Our team appreciated the opportunity to share some of our work and insights with the Minister," said MITL director and civil engineering professor Saiedeh Razavi.

#### [McMaster graduates are among the most employable in the world says new ranking](#)

McMaster ranked fifth in Canada and 81st internationally in the Times Higher Education 2022 Global Employability Ranking. This global ranking includes 250 universities across 44 countries. Conducted by the HR consultancy group Emerging and published by Times Higher Education, the Global Employability Ranking surveys managers and recruiters from top companies across the world to reveal which universities they believe best prepare students for the workforce.

#### [Vanier Scholars recognized for research excellence and potential](#)

Seven McMaster scholars from across the Faculties of Health Sciences, Social Sciences and Engineering have been awarded the prestigious Vanier Canada Graduate Scholarship. Vanier Scholars are selected based on academic excellence, research potential and leadership. Each of the Vanier Scholars will receive \$50,000 a year, for up to three years.

#### [Meet McMaster's fall honorary degree recipients](#)

The honorary degree recipients at this fall's convocation included Bertha Skye, a chef and Indigenous elder who has nourished the bodies and enriched the souls of generations, Allison McGeer, an infectious disease specialist who is one of Canada's most trusted policy advisors; and Salim Abdool Karim and Quarrausha Abdool Karim, two physicians whose tireless advocacy and lifelong efforts have helped shape health policy, including measures that slowed the spread of HIV/AIDS in Africa.