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McGILL INTERDISCIPLINARY INITIATIVE
IN INFECTION AND IMMUNITY

JUNE 1, 2020 – MAY 31, 2021
ANNUAL REPORT
The McGill Interdisciplinary Initiative in Infection and Immunity (MI4) supports the rapid and strategic response to infectious and immune threats to human health.
DIRECTORS’ MESSAGE

The past year has taught us that the race to beat COVID-19 is a marathon rather than a sprint. Fortunately, MI4 researchers have hit their stride in meeting this challenge. Our initial success in rapidly and strategically mobilizing the energy and talents of our community has led to our members playing an integral and sustained role in the response to the pandemic. As outlined in this report, our researchers have led efforts to develop wastewater surveillance methods to more rapidly detect outbreaks of the virus; identified genetic markers that predict susceptibility to severe COVID-19, worked to support local communities in dealing with the many challenges the pandemic has brought, and tackled vaccine hesitancy head on.

Our members have emerged as leaders in the Canadian response to the pandemic, including providing advice to policy makers as members of the Canadian COVID-19 Therapeutics Task Force, the COVID-19 Immunity Task Force, and the Quebec and Canadian Vaccine Advisory groups. Our investments in level 3 biosafety laboratories have positioned us as the Canadian leaders in biosecurity and in the national effort to track the emergence of SARS-CoV-2 variants. MI4 investigators have appeared daily on television, radio and in national newspapers to help explain the evolving science behind COVID-19 to the public.

In addition to combatting the pandemic, MI4 has been hard at work developing other initiatives. With generous support from Pfizer, we have initiated an Early Career Investigator support program to foster innovative new research programs in immuno-oncology and respiratory viral diseases. We launched two new flagship programs that will explore the mechanisms of autoimmune-mediated lung diseases and develop better ways to treat rheumatoid arthritis. Our scientific community continues to grow with the inauguration of the McGill Centre for Viral Diseases, and the continued development of the McGill Microbiome and McGill Antimicrobial Resistance Centres.

The past year has been a challenging one for all of us, but MI4 has emerged from this phase of the pandemic stronger than ever. In the coming year, with the continued support of our generous donors, we look forward to continuing to grow, innovate and communicate to meet the challenges that infectious and immune threats pose to human health.

Don Sheppard
Director, MI4

Marie Hudson
Co-Director (Immunity), MI4

Marcel Behr
Co-Director (Infectious Diseases), MI4
Thanks to invaluable support from the Hewitt Family Foundation, the Doggone Foundation and the Trottier Family Foundation, MI4 played an integral role in the early and effective response by the McGill scientific community COVID-19. In the months since the COVID-19 pandemic began, MI4 has supported 67 innovative research platforms and projects to fight the virus; ranging from the study of new treatments, to made-in-Canada COVID-19 diagnostic tests to combatting vaccine hesitancy. The investment of $4M in philanthropic support has led to follow up funding from provincial and federal agencies in excess of $12M – more than a 3:1 return on investment. Please see below some examples of the many COVID-19 related research activities that are being led by MI4 community members.

Widespread testing is key to controlling COVID-19. Knowing who has the virus and how it is being transmitted allows public health agencies to stop the disease and save lives. But the chemical reagents required to test for COVID-19 were scarce. As a result, Canada and many other countries focused on testing people presenting symptoms of the virus. Two Montreal scientists are changing this.

With the help of start-up funds provided by ECRF, MI4 scientists Dr. Don van Meyel and Dr. Martin Schmeing are making COVID-19 tests right here in Montreal. Within two months, the researchers had developed gold-standard COVID-19 test kits and supplied 15,000 tests to the MUHC clinical laboratory to support COVID testing in Montreal. They have now teamed up with the National Research Council of Canada to ramp up production and produce millions of tests for distribution across Canada.

Through the success of this program, additional donor funds made other projects possible such as COVID-19 Targeted Testing in Montreal North.
COVID-19 Targeted Community Testing

Drs. Dick Menzies and Jonathon Campbell

Montreal North was the hardest hit region in the province of Quebec at the start of the COVID-19 pandemic. Lead investigators Dick Menzies and Jonathon Campbell selected the borough for a mass-testing pilot project, with the use of saliva saline-solution samples, a less invasive method of testing and more efficient than the nasopharyngeal swabs used in Quebec testing centres. The researchers calculated the costs, staffing needs and laboratory capacity required for systematic testing of contacts of people who were positive for SARS-CoV-2, hospital employees, community healthcare workers and people in long-term care facilities, essential business employees, and schoolchildren and staff. Widespread testing permitted early detection and isolation of asymptomatic people infected with SARS-CoV-2. Drs. Menzies and Campbell demonstrated this testing strategy was feasible and affordable in Canada and was effective in reducing community transmission. This work helped guide the widespread use of COVID-19 screening in schools and workplaces during the fourth wave of the pandemic in Quebec.
MI4’S COVID-19 IMPACT

EMERGENCY COVID-19 RESEARCH FUND (ECRF) AND COVID PLATFORMS

BIOBANK

**Biobanque Québec COVID-19**

Drs. Brent Richards and Vincent Mooser

The Biobanque Québec COVID-19 (BQC19) is a decentralized biobank with samples from 11 different centres across Quebec. Researchers require data and samples to better understand the pandemic and to meet the challenges brought upon us by COVID-19, such as how is the virus infecting our cells, how long does it remain in our bodies or why does it lead to severe disease in some or asymptomatic infections in others? This initiative, led by Drs. Vincent Mooser and Brent Richards, provided hundreds of samples from COVID-19 patients to help answer these questions. MI4 helped to manage access to these samples, and the resulting data to enable timely COVID-19 research.

In addition to core funding from FRQS, Génome Québec and Public Health Agency of Canada, which provided the crucial resources needed to gather and store samples, MI4 funding allowed Dr. Richards and a team of international scientists to conduct a study to identify which proteins within our cells govern how well we fare when infected with COVID-19. The team discovered evidence that high levels of a protein known as OAS1 were associated with lower COVID-19 infection rates and less severe disease. Interestingly, in people with European ancestry, this protection is linked to a form of this viral defense protein which was inherited from Neanderthals. This finding may help in the identification of individuals at high risk for severe COVID-19, and even guide the development of novel therapeutics.

WASTEWATER

**Sequencing approaches of SARS-CoV-2 in wastewater to optimize population-level surveillance and enhance epidemiology of COVID-19 (CanCOVID)**

Dr. Dominic Frigon

Following the discovery that SARS-CoV-2 is shed in feces before the onset of symptoms, researchers have been exploring the idea that wastewater samples can be used as early predictors of future COVID-19 outbreaks. In partnership with researchers at the Polytechnique Montréal, McGill Engineering Professor Dominic Frigon has developed and validated tools for screening COVID-19 wastewater samples. He and his team are using wastewater samples from municipalities in 5 regions of Quebec (Montréal, Laval, Québec, Mauricie-Centre-du-Québec and Bas-St-Laurent) to track the spread of SARS-CoV-2 in order to identify community surges before the rise of clinically-detected cases of COVID-19. Wastewater sampling is now in wide use around the country, and has even been deployed in the residences at McGill University as a tool for the early detection of outbreaks before they have a chance to spread. The initial funds provided by MI4 have since led to further funding through the Fonds de Recherche Québec - Santé, highlighting the effectiveness of MI4 catalytic funding in launching innovative, competitive programs.
**COVIVRE**

**COVID-19 Outreach and Communications for Marginalized Communities in Montreal (CanCOVID)**

Drs. Cécile Rousseau and Alexandra de Pokomandy

CoVivre, led by Drs. Cecile Rousseau and Alexandra de Pokomandy from the MUHC in collaboration with Dr. Sarah Gallagher (University of Western Ontario) is another example of MI4’s ambitious reach. This project seeks to strengthen the response to COVID-19 in at-risk communities by partnering with community organizations and supporting them with educational tools tailored to their needs. This outreach initiative has worked with local organizations to help communities disproportionately affected by COVID-19. The goals of the program are not only to reduce the risks of infection and transmission, but also to mitigate the psychosocial and mental health consequences of the pandemic in this vulnerable population. This impactful project also aims to correct perceptions of COVID-19 on social media in order to increase adherence to public health measures and reduce the scapegoating of specific communities. CoVivre is now making an impact Canada-wide through its partnership with the CanCOVID network.
MI4’S COVID-19 IMPACT

EMERGENCY COVID-19 RESEARCH FUND (ECRF) AND COVID PLATFORMS

COVID PLATFORM

MI4 Level 3 Containment Laboratories

Drs. Marcel Behr, Silvia Vidal, Chen Liang and Maziar Divangahi

MI4 investigators studying infectious diseases need to work with dangerous microorganisms that make millions of people sick worldwide. To ensure that the people working with these bugs stay healthy, and that these organisms stay contained in the lab, MI4 supported the rapid conversion of two level 3 containment labs originally created to support research in tuberculosis, influenza, and HIV into SARS-CoV-2 labs. These facilities, located at the MUHC and McGill University, allow researchers to safely work with SARS-CoV-2, in order to accelerate the development of new tests, treatments and vaccines for COVID-19.

Initially supported by a modest grant from the MI4 Emergency COVID-19 Research Fund, McGill’s CL3 facilities have generated an impressive return on investment, receiving $2.25 million from the Canada Foundation for Innovation (CFI). Led by Drs. Behr and Vidal, the CFI provided the funding needed to upgrade these safe spaces to enable cutting-edge research for the development of new tools to combat the pandemic, in Canada and beyond. This relatively small investment has now positioned our researchers as leaders in biosafety with a state-of-the-art platform, and has helped them take a leadership role in CoVaRR-Net—a pan-Canadian study monitoring and studying the emergence of new variants.
COVID PLATFORM

MI4 Clinical Research Platform (MI4–CRP)

Dr. Marina Klein

As the COVID-19 epidemic expanded, there was an urgent need to ramp up capacity to support the conduct of clinical trials across the McGill Health System. The goal of the MI4 Clinical Research Platform (MI4–CRP), was to support world-class investigator-initiated and industry-sponsored research studies in order to promptly address COVID-19 and offer therapeutic options to patients. In the last 12 months the MI4–CRP’s Steering Committee continued to provide strategic planning and support for clinical research priorities through reviewing clinical requests and assigning priority scores based on need, promise, feasibility, and competition with similar patient populations. There were more than 100 inquiries, 92 protocols submitted, including 83 related to COVID-19, 46 fully reviewed protocols including 39 related to COVID-19 and 17 protocols accepted including 13 related to COVID-19. In total 10 investigators have used MI4–CRP to lead novel studies and 94 patients were enrolled in clinical trials offering therapeutic options for COVID-19.

▸ Among these trials, MI4–CRP acted as the Quebec sponsor of CATCO, the Canadian arm of the WHO Solidarity Trial, recruiting 57 patients, the largest of any single site in Canada.
(Results available at https://www.nejm.org/doi/full/10.1056/nejmoa2023184)

▸ They were also active contributors to CONCOR-1 to evaluate convalescent plasma in the treatment of hospitalized patients with COVID-19.
(Results available at https://www.nature.com/articles/s41591-021-01488-2)

Future directions for the MI4–CRP include supporting therapeutic, translational and clinical research through studies of infectious and immune diseases.
Tackling Vaccine Hesitancy

Vaccination is our most powerful tool to end the COVID-19 pandemic, but there are multiple challenges to achieving an effective and equitable vaccine rollout. Concerns about vaccine efficacy and safety, cultural attitudes towards vaccination, and gaps in scientific communication have hindered vaccine uptake in many communities. In December 2020, even before vaccines were available in Canada, MI4 was working to find solutions to these challenges and launched a call for proposals to develop strategies to overcome these barriers in a real-world setting. Six projects received grants of up to $100,000 each in the Overcoming Barriers to COVID-19 Vaccination Research Funding Program. Support for this program was provided by the McGill University Health Centre Foundation, the Doggone Foundation donation to McGill University and the Jewish General Hospital Foundation.

The six projects explore multiple educational and communication interventions to increase COVID-19 vaccine confidence and uptake across a range of Canadian populations.

COVID-19 Vaccine Tracker

Providing Canadians with up to the minute information on vaccine development, the COVID-19 Vaccine Tracker was designed to provide clear, accessible, and comprehensive updates about COVID-19 vaccine development, safety, efficacy and worldwide approval status. Led by Professors Nicole Basta and Erica Moodie from the Department of Epidemiology and Biostatistics in the School of Population and Global Health at McGill University, the tracker employs a team of experts in epidemiology, vaccinology, public health, infectious diseases, biostatistics and related fields and now has gone “viral” with over 2M users worldwide.

View Vaccine Grant Winners

More Info
MI4 by the Numbers

118
Projects and Initiatives

198
MI4-funded Researchers

$31,481,894
Funds Raised in Support of Research

23
Centres / Groups / Partners

Program Progress | Research Support

MI4 Seed Fund Grant (SFG) Program: Round 3

The SFG program seeks to establish new, interdisciplinary teams across multiple McGill sites to seed innovative research. In March 2021, MI4 announced support for four awards from a total of 16 applications in SFG Round 3, awarding each project up to $150,000 over an 18-month grant period. MI4 was also pleased to collaborate with the Montreal Neurological Institute (MNI) and the Montreal General Hospital Foundation (MGHF) to fund two additional collaborative Seed Fund Grants in neuroinflammation and post-orthopedic surgical infections, respectively.

More Info
Linking researchers with different expertise and perspectives is critical to developing innovative approaches to health challenges. MI4 has therefore partnered with other groups within the McGill research and health care community to develop five new interdisciplinary initiatives.

**MRM-MI4 COLLABORATIVE SEED FUND**

The McGill Regenerative Medicine Network (MRM) - MI4 Collaborative Seed Fund Grant competition aims to support a new health research project focused on stem cell or regenerative medicine within the domains of either infection or immunity. The intent of the MRM-MI4 SFG was to provide initial funding to help position a new project to become competitive for sustained external funding. This opportunity provided one-time funding of up to $50,000 for a 12-month project.

- Creation of a patient-derived enteroid biobank to study the role of intestinal stem cells in inflammatory bowel disease.
  Dr. Alex Gregorieff

**GHP-MI4 STEINBERG SEED FUND GRANT**

The McGill Global Health Programs (GHP)-MI4 Seed Fund Grant with support from the Steinberg Fund for Interdisciplinary Global Health Research aims to support a new, interdisciplinary global health research project focused on infection or immunity. The research had to be conducted in a low- or middle-income country, or in a resource-poor setting within Canada. Proposals had to be forward thinking and aimed at addressing global health issues that were emerging and would increase in importance over the coming decade. This opportunity provided one-time funding of up to $50,000 for an 18-month project.

- The contribution of stigma among sexual minority men to HIV transmission in sub-Saharan Africa.
  Dr. Mathieu Maheu-Giroux
MICM RESEARCH MATCH 4.0

This seed funding envelope aims at building connections between infection and immunity researchers and those in data sciences to help realize the potential of computational medicine. MI4 funds helped support three projects in 2021:

- Deep mining electronic health record data to guide COVID-19 care
- Molecular mechanisms during allergic lung disease
- Transcription factor networks in circulating monocytes during active viral lung infection

MORE INFO

CLIC AWARDS- MI4 INNOVATION PRIZE

The MI4 Innovation Prize, sponsored by MI4, was one of four prizes in the 2021 McGill Clinical Innovation Competition (CLIC). The prize aims to support innovative solutions for infectious and immune threats to human health. LFAnt Medical was chosen as the winner by the CLIC panel. LFAnt Medical is a Canadian biotechnology startup dedicated to revolutionizing point-of-care diagnostics for at-home detection of sexually transmitted infections (STIs). The second-place prize was awarded to Sensoreal for the development of a prototype of a point-of-care blood test that can differentiate between bacterial/viral respiratory infections.

MORE INFO

MCGILL 24 FUNDING FOR MUHC LUPUS CLINIC

This year for the annual McGill24 fundraiser, MI4 supported the MUHC Lupus Clinic study on home monitoring of high-risk lupus pregnancies. Funds raised were matched by the Montreal General Hospital Foundation and the first $1,000 was matched by McGill University. These funds went to support the development of a home monitoring “tool kit” with accompanying training programs to improve surveillance of high-risk lupus pregnancies.

MORE INFO
A key priority of MI4 is the development of large-scale, ambitious flagship interdisciplinary programs that bring together McGill researchers and clinicians to address major infectious and immune threats to human health. This year, thanks to a generous donation from the late Elizabeth Duthie Saunders, two projects were funded to help advance therapies for immune-mediated diseases.

**FLAGSHIP PROGRAM**

**INTERSTITIAL LUNG DISEASE IN SYSTEMIC AUTOIMMUNE RHEUMATIC DISEASES (ILD-SARDS): FROM PREDICTION TO CURE**

$\$950,000 IN DIRECT SUPPORT

Drs. Silvia Vidal, Deborah Assayag, Inés Colmegna and Christian Pineau

Systemic autoimmune rheumatic diseases, including rheumatoid arthritis, scleroderma, systemic lupus erythematosus and autoimmune myositis, are chronic, debilitating conditions that cause substantial morbidity and mortality in patients, and disproportionately affect women. They are characterized by autoimmune inflammation that can target nearly any organ in the body. The lung is a frequent target of autoimmune-mediated injury in patients with these conditions, often producing an inflammatory condition known as interstitial lung disease (ILD). There are many gaps in our understanding of ILD including: how to predict which patients will develop ILD; understanding and modulating the mechanisms responsible for ILD onset and progression; and providing therapeutic options to alter the course of ILD. Bringing together an interdisciplinary team of experts, this program will build on the strength of longstanding and well-characterized clinical cohorts, large genetic databases, novel modeling approaches, and unique expertise in animal models to unravel ways to ‘predict’ and ‘cure’ ILD in systemic autoimmune rheumatic diseases.
FLAGSHIP PROGRAM

STAND UP TO RHEUMATOID ARTHRITIS (SUPRA)

$950,000 IN DIRECT SUPPORT

Drs. Marie Hudson, Inés Colmegna and Sasha Bernatsky

Rheumatoid arthritis (RA) is a chronic inflammatory arthritis that disproportionately affects young women. The human and economic burden of RA is enormous, with the Arthritis Alliance of Canada estimating that the cost of RA will exceed $30 billion in Canada in 2040. The development of new biologics has transformed the treatment of RA in the 20th century. Although hailed as ‘game-changers’ in patient care, the inconvenient truth is that even though nine different biologics are currently available to treat RA, one third of patients will fail any particular drug, and we have no reliable way of predicting this response. SUPRA proposes a multi-pronged solution that combines innovative trial designs with deep-dive characterization of patient factors using high-dimensional computational methods to predict RA treatment responses. With a highly talented and diverse research team, SUPRA will transform the care and improve the outcomes of people living with RA, delivering on the promise of precision medicine.

In addition to these new MI4 Flagship Programs, we are pleased to continue our ongoing support for six other initiatives launched last year.

- Development and establishment of proactive surveillance tools for emerging vector-transmitted diseases in Quebec (VECTOR NET) ($350,000 in direct support)  
  Drs. Momar Ndao, David Langlais

- Montréal Sans Hep C: Eliminating Hepatitis C Virus (HCV) in Montreal ($60,000 in direct support, $270,000 leveraged support)  
  Dr. Marina Klein

- A Phase I observer-blind trial of a Haemophilus influenzae serotype A (Hia) vaccine with and without alum adjuvant ($1,000,000 in direct support)  
  Dr. Brian Ward

- Tiny Earth Antibiotic Discovery Lab ($6,909 in direct support)  
  Dr. Samantha Gruenheid

- The Transdisciplinary Center for Biological Therapies (Biologics) ($652,174 over 5 years in direct support)  
  Dr. Bruce Mazer

- Driver Somatic Mutations in Type I Diabetes ($110,000 in direct funding, $335,000 in leveraged funding)  
  Drs. Ciriaco Piccirillo, Brent Richards and Constantin Polychronakos
The Gnotobiotic Animal Research Platform, led by Dr. King (Microbiology and Immunology; Meakins-Christie Laboratories) provides the infrastructure and technical support for experiments requiring animal with specific microbiome compositions. This past year, the platform established rigorous standard operating procedures for the use and manipulation of experimental animals. In addition, the platform is establishing an in-house breeding program to accelerate research projects for McGill investigators and their collaborators. Before the end of 2021, several mouse lines will be available that can be paired with diverse pre-clinical models ranging from infection, cancer and autoimmunity to interrogate how single or diverse microbial communities directly impact disease outcomes. Finally, we have established a research pipeline that is integrated with the Microbial Genomics platform to allow for unprecedented resolution into how specific microbes function in living animals, forming the basis for studying how precision microbiome engineering can improve human health.
The Microbial Genomics Platform, with the McGill Genome Centre and the Canadian Centre for Computational Genomics, provides expertise in microbiology, genomics and bioinformatics to assess microbial content and identify key microbes associated with health and disease. Highlighting the far-reaching impacts of the microbiome, the platform initiated multiple new collaborative research projects including a study of how the microbiome contributes to post-cardiac surgery recovery (Dr. Lorraine Chalifour) and another on the effects of the breast milk microbiome on infant growth and development (Dr. Kristine Koski). The platform also provided support for a successful MGI genome sequence acceleration grant application by Dr. Daniela Quail. This project will assess the interplay between the microbiome, diet, and obesity in reducing cancer mortality. The platform has provided expertise and services to the research community of McGill and other institutions for microbiology, genomics, and bioinformatics applications.

Imaging mass cytometry (IMC) is a new, cutting-edge technology that finally gives researchers the ability to look at diseased tissues through many pinholes simultaneously, providing unprecedented knowledge that has the potential to lead to curative therapies for diseases ranging from neurodegenerative disorders, cystic fibrosis and cancer.

In the last year, SCIMAP has made progress through optimizing and validating antibody panels that have been applied to patient samples. These antibodies are now available to clients within the SCIMAP core facility for additional projects related to brain cancer, brain inflammation/ neurodegeneration, and skin malignancies. They have also optimized and validated antibodies targeting mouse immune cells, which are now available to SCIMAP clients for preclinical mouse models.
CO-FUNDING

MI4 invites researchers from within the McGill community to submit applications year-round for grant opportunities that require co-funding support. All MI4 co-funding is contingent on success in the primary funding competition. This year, MI4 co-funding support enabled the success of two Canada Foundation for Innovation (CFI) projects:

- Harnessing Microbiota Metabolism for Human Health Benefits
  ($35,267 in direct co-funding, $939,076 in leveraged funding)
  Dr. Jörg Fritz

- Centre for Applied Nanomedicine (CAN) – Studies into Extracellular Vesicle Heterogeneity, Biomarkers and Function
  ($140,000 in direct co-funding, $3,413,071 in leveraged funding)
  Dr. Janusz Rak

SUPPORTING RESEARCH EXCELLENCE

Innovation is driven by human inspiration. MI4 is committed to cultivating excellence through supporting the recruitment and retention of outstanding researchers. In the past year, thanks to the generous support of our donors, MI4 launched two new programs to support researchers.
SUPPORTING RESEARCH EXCELLENCE

PFIZER EARLY CAREER INVESTIGATOR AWARD

These awards will provide early career scientists and researchers with the opportunity to undertake high-impact, high-risk innovative research to curb the threat of infectious and immune diseases. Thanks to a generous gift of $600,000 by Pfizer Canada to MI4 via McGill University and the McGill University Health Centre (MUHC) Foundation, this program will support two early career investigators per year. The winners of the inaugural competition in 2021 were:

- Investigation of sex differences in response to immune checkpoint inhibitors in melanoma
  Ian Watson, PhD (McGill)

- Optimizing the timing of influenza vaccination in patients with heart failure: the FLU-HF randomized trial
  Abhinav Sharma, MD (MUHC)

MORE INFO

In addition to these two investigators supported by the Pfizer ECI program, MI4 was delighted to partner with the LDI and JGH Foundation to support an additional young investigator through the establishment of the LDI-JGH MI4 Early Career Investigator Award.

- Uncoupling the efficacy and toxicity of immune checkpoint inhibitors through the novel use of kinase inhibitors
  Khashayar Esfahani, MD (JGH)

SUPPORTING RESEARCH EXCELLENCE

LEGGE ORR LEADERSHIP AWARD

This $1 million donation supports the leadership of MI4 Director Dr. Don Sheppard, who created the initiative and is instrumental in its success. The Legge-Orrs made this eight-year commitment to supporting Dr. Sheppard’s work, and that of MI4 leaders to come.

“

I am both honoured and humbled to be the inaugural recipient of The Legge Orr MI4 Leadership Award. This transformative support will provide invaluable flexibility and resources to allow me, and future MI4 directors, to focus our energies on growing MI4’s already impressive legacy.

– Dr. Don Sheppard, Director, MI4

MORE INFO
Over the last 12 months, MI4 has supported the establishment and development of three new McGill Research Centres, bringing together researchers with common interests from across the McGill ecosystem.

**McGILL CENTRE FOR VIRAL DISEASES**

In November 2020, the McGill Centre for Viral Diseases was approved by the McGill Senate with a mandate to provide solutions to viral diseases that threaten public health by advancing research, education, and patient care through interdisciplinary efforts. With over 45 founding investigators from across the McGill community, a dynamic and productive clinical trials platform and access to cutting edge research and containment facilities, the Centre is poised to take its place as a world leader in the field of virology.

**McGILL CENTRE FOR MICROBIOME RESEARCH**

The McGill Centre for Microbiome Research provides a hub to integrate and synergize microbiome research activities, the outcomes of which will provide evidence-based knowledge for the benefit of medicine and public health. The Centre received provisional approval by the Faculty of Medicine and Health Sciences this year, and looks forward to the submission of its application for McGill Senate review in the coming year.

**McGILL ANTIMICROBIAL RESISTANCE (AMR) CENTRE**

The goal of the AMR Centre is to bring together researchers working on AMR-related topics, to foster collaborations, enable inter/multi-disciplinary research, facilitate team funding and provide training opportunities. A research centre application for approval is currently under review by the Standing Committee on Research of the Faculty of Medicine and Health Sciences.

In addition to these new centres, MI4 has continued its financial support to four other McGill research centres:

- J.D. MacLean Centre for Tropical Diseases
- McGill University Research Centre on Complex Traits
- Centre of Excellence in Translational Immunology
- McGill International Tuberculosis Centre
Over the last year, COVID-19 reshaped our personal and professional lives in ways we never anticipated. It also highlighted the critical importance of infection and immunity research in protecting our society. Despite lockdowns and Red Zones, MI4 researchers and clinicians rose to the occasion, providing the community at large with the latest news and scientific findings—standing out as a voice they could trust. Here are only a few of the hundreds of examples of MI4 researchers who spoke about COVID-19 in the media:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Source</th>
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| September 17 | **LES EFFETS PSYCHOLOGIQUES DE LA PANDEMIE : ENTREVUE AVEC CECILE ROUSSEAU**  
Radio interview featuring Cécile Rousseau  
| December 31 | **OPINION: WE NEED A SERIOUS LOCKDOWN, NOT HALF MEASURES**  
Opinion piece co-written by Dr. Marina Klein  
https://montrealgazette.com/opinion/opinion-we-need-a-serious-lockdown-not-half-measures
| January 9 | **LE DEVOIR | 21 QUEBECOIS QUI FERONT 2021**  
Article featuring Dr. Don Vinh  
| February 14 | **DES MESURES INSUFFISANTES, CRAIGNENT DES EXPERTS**  
Article featuring Dr. Anne Gatignol  
| September 29 | **COVID-19 CASES JUMP IN CANADA, PROMPTING NEW RESTRICTIONS**  
Article featuring Dr. Jesse Papenburg  
| February 24 | **VACCINE SAFETY STUDY TO EXAMINE ADVERSE REACTIONS TO COVID-19 SHOTS**  
Article featuring Dr. Nicole Basta  
| October 14 | **RESEARCH IN THE TIMES OF COVID**  
Television interview with Dr. Donald Sheppard  
https://montreal.ctvnews.ca/video?clipId=2055092&jwsource=em

**MORE MI4 IN THE NEWS**
The 2nd MI4 Scientific Symposium: New Frontiers in Immuno-Oncology, took place virtually December 4, 2020. Over 200 attendees joined us online to learn about new and exciting immuno-oncology research at McGill, to learn about MI4’s funded COVID-19 research projects and to hear powerful keynote addresses from Drs Drew Pardoll and Daniel Saltzman. Partners in support of this event included: the Rosalind and Morris Goodman Cancer Research Centre, the Cedars Cancer Centre, the Segal Cancer Centre and the McGill Centre for Translational Research in Cancer at the Lady Davis Institute.

2021 SUMMER INSTITUTE IN INFECTIOUS DISEASES AND GLOBAL HEALTH

In 2021, the McGill Summer Institute team embraced online learning and held the first-ever virtual Summer Institute. By eliminating travel and being able to offer courses at a lower price point, the Summer Institute had more participants and greater diversity than ever before. The 2021 Summer Institute had 1,516 participants, 177 faculty and guest speakers, 84 countries represented, 57% of participants from low- and middle-income countries (LMIC) and 100 individuals from LMIC countries benefitting from sponsorship for registration fees. Specifically, MI4 funding supported the attendance of 35 participants from LMIC to attend a total of 47 courses. Supported participants included students, TB prevention specialists, University lecturers in medicine, and lab microbiologists hailing from 11 different countries including Colombia, Ethiopia, Nigeria, and Ghana.
COMMUNITY

INAUGURAL ANTIMICROBIAL RESISTANCE (AMR) CENTRE AT MCGILL VIRTUAL SYMPOSIUM

In the Spring of 2021, Drs Dao Nguyen, Makeda Semret and Albert Berghuis from the AMR Centre hosted a virtual symposium. Attendees learned about the launch of the new AMR Centre, heard short talks on AMR research, attended virtual breakout rooms and participated in a Meet & Greet to share their AMR research interests and needs.

McGILL COVID-19 SYMPOSIUM

On Friday March 19, 2021, the McGill Centre for Viral Diseases and MI4 co-hosted a Virtual Symposium entitled, “Living in a Covidian world: The McGill response”. The goal was to highlight and promote the efforts from McGill in the fight against COVID-19 across the biomedical, clinical, epidemiological, and social science research fields. Dr. Don Sheppard delivered the keynote address and other distinguished speakers included: Dr. Jerry Pelletier, Dr. Don Vinh, Dr. Nadine Kronfli, Dr. Christina Wolfson, Dr. Jerry Zaharatos, Dr. Emily McDonald, Dr. Brett Thombs and Dr. Fabian Lange.

MI4-HELMHOLTZ COVID-19 SYMPOSIUM

On December 10th, 2020, MI4 hosted a joint Symposium on COVID-19 Research with the Helmholtz Institute for Infection Research. The goal of this joint symposium was to share lessons learned so far during the COVID-19 epidemic between MI4 and Helmholtz investigators and to explore areas for complementary research going forward.
LOOKING AHEAD

In the coming year, we look forward to turning our attention to new challenges beyond the COVID-19 pandemic, and growing our core programs and collaborative initiatives:

**LUDMER-MI4 COLLABORATIVE SFG**
This grant will support a new health research project focusing on the role of infection, immunity and/or the microbiome in the development, prevention or treatment of mental health disorders. It will be launched in Fall 2021 with the winner to be announced Spring 2022.

**MI4 SEED FUND GRANT – ROUND 4**
The 4th round of the MI4 SFG will be launched in Fall 2021. Up to five new SFG winners are expected to be announced in Spring 2022.

**BICENTENNIAL INFECTION AND IMMUNITY WEEK**
This year, in lieu of the MI4 Scientific Symposium, we will be hosting **Infection and Immunity Week**, which will be taking place November 29–December 3, 2021. MI4 is excited to announce that this week will be one of the first flagship events kicking off McGill’s Bicentennial anniversary. The week of virtual and hybrid activities will include an international symposium highlighting the Germany/Canada jubilee, prestigious keynote speakers, the launch of the MI4 Named Lecture, workshops and more.

MI4 is collaborating with numerous Centres and Partners to develop this exciting themed week of infection and immunity research, including:

- Helmholtz Centre for Infection Research
- J.D. MacLean Centre for Tropical Diseases
- McGill Centre for Viral Diseases
- McGill University Research Centre on Complex Traits
- Centre of Excellence in Translational Immunology
- McGill Antimicrobial Resistance Centre
- McGill Microbiome Centre
- Microbiology and Immunology Graduate Student Association
# Financial Report

McGILL INTERDISCIPLINARY INITIATIVE IN INFECTION AND IMMUNITY (MI4)

June 1, 2020 to May 31, 2021

## InfloWS

<table>
<thead>
<tr>
<th>Source</th>
<th>McGill University</th>
<th>MUHC-RI</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doggone Donation</td>
<td>$1,375,000</td>
<td>$687,500</td>
<td>$2,062,500</td>
</tr>
<tr>
<td>COVID Donations</td>
<td>$-</td>
<td>$1,753,000</td>
<td>$1,753,000</td>
</tr>
<tr>
<td>Other Donations</td>
<td>$113,605</td>
<td>$1,700,000</td>
<td>$1,813,605</td>
</tr>
<tr>
<td><strong>Total Donations</strong></td>
<td><strong>$1,488,605</strong></td>
<td><strong>$4,140,500</strong></td>
<td><strong>$5,629,105</strong></td>
</tr>
</tbody>
</table>

## Outflows

<table>
<thead>
<tr>
<th>Category</th>
<th>McGill University</th>
<th>MUHC-RI</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>$81,025</td>
<td>$-</td>
<td>$81,025</td>
</tr>
<tr>
<td>Benefits</td>
<td>$19,834</td>
<td>$-</td>
<td>$19,834</td>
</tr>
<tr>
<td><strong>Total Salaries and Benefits</strong></td>
<td><strong>$100,859</strong></td>
<td>$-</td>
<td><strong>$100,859</strong></td>
</tr>
</tbody>
</table>

## Research Support

<table>
<thead>
<tr>
<th>Program</th>
<th>McGill University</th>
<th>MUHC-RI</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flagship Programs</td>
<td>$150,000</td>
<td>$733,695</td>
<td>$883,695</td>
</tr>
<tr>
<td>Seed Grants</td>
<td>$375,000</td>
<td>$375,000</td>
<td>$750,000</td>
</tr>
<tr>
<td>Platforms</td>
<td>$443,948</td>
<td>$590,627</td>
<td>$1,034,575</td>
</tr>
<tr>
<td>Co-Funding</td>
<td>$-</td>
<td>$92,375</td>
<td>$92,375</td>
</tr>
<tr>
<td><strong>COVID Programs</strong></td>
<td><strong>$183,295</strong></td>
<td><strong>$1,814,484</strong></td>
<td><strong>$1,997,779</strong></td>
</tr>
<tr>
<td>Strategic Investments</td>
<td>$125,000</td>
<td>$-</td>
<td>$125,000</td>
</tr>
</tbody>
</table>

## General Operations

<table>
<thead>
<tr>
<th>Category</th>
<th>McGill University</th>
<th>MUHC-RI</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding for Centres</td>
<td>$80,000</td>
<td>$60,000</td>
<td>$140,000</td>
</tr>
<tr>
<td>Events/Lectures</td>
<td>$5,107</td>
<td>$-</td>
<td>$5,107</td>
</tr>
<tr>
<td>Travel</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
</tr>
<tr>
<td>General Administration</td>
<td>$1,528</td>
<td>$-</td>
<td>$1,528</td>
</tr>
<tr>
<td>Institutional Overhead</td>
<td>$-</td>
<td>$281,513</td>
<td>$281,513</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td><strong>$1,464,737</strong></td>
<td><strong>$3,947,694</strong></td>
<td><strong>$5,412,431</strong></td>
</tr>
</tbody>
</table>

**Net Surplus/(Deficit)**

<table>
<thead>
<tr>
<th></th>
<th>McGill University</th>
<th>MUHC-RI</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Surplus/(Deficit)</td>
<td>$23,868</td>
<td>$192,806</td>
<td>$216,674</td>
</tr>
</tbody>
</table>
THANK YOU TO OUR DONORS

The pandemic serves as a stark reminder: even now in the 21st century, infectious diseases pose one of the greatest threats to human health.

Thanks to our generous donors, MI4 is now one of the largest groupings of experts focused on infectious and immune-mediated diseases in the world.

Members of the McGill and McGill University Health Centre community can be proud of the swift and sustained response launched by MI4 in response to COVID-19. Outside of the current global crisis, we are also working to end infectious and immune diseases that affect the world’s most vulnerable populations. MI4 researchers are developing new solutions for antibiotic resistant infections, partnering with community organizations to eradicate hepatitis C in Montreal, and developing a vaccine for the deadly bacteria, Haemophilus influenzae type A (Hia). None of these efforts would be possible without the incredible support of our donor community.

However, there is still a great deal of work to be done. We need solutions to address for the long-term repercussions of this pandemic, we need improved access to care for society’s most vulnerable, we need to tackle growing threats such as antibiotic resistance and prepare for the next global pandemic, and we need novel models of care to optimize the outcomes of immune-mediated diseases. Thanks to your philanthropic investment, we can work to meet these challenges, and effect meaningful change on a global scale.

VIEW LIST OF OUR SUPPORTERS