



Lady Davis Institute Research Newsletter



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Health Canada's COVID-19 response grants funding three LDI projects

Three researchers were among the recipients of funding as part of Health Canada's COVID-19 response:

Dr. Mark Trifiro received \$717,700 to develop a diagnostic device that could be used at the initial point-of-contact with health care professionals to determine within minutes whether a patient is infected.

"Because there are currently no anti-viral agents to treat or prevent COVID-19, our best defense is to adopt control measures, the effectiveness of which depends on verifying individuals who are infected," said Dr. Trifiro. "Our revolutionary methodology would construct a diagnostic device which is small and portable, and would help enormously with infection control management during outbreaks."

Dr. Jian Hui Wu received \$478,000 to apply computational approaches by an array of experimental assays to screen the approved drug database of the US Food and Drug Administration (FDA) in order to rapidly evaluate the best candidates to be redeployed against COVID-19. Since risk profiles have already been developed for approved drugs, the process of testing the efficacy of promising candidates could proceed more quickly and lead to faster approvals of viable drug candidates.

Dr. Chen Liang received \$480,000 to determine how COVID-19 evades the immune responses so it can spread in humans and cause fatal illness.

"Two urgent questions need to be addressed. How did these coronaviruses transmit from animals into humans? What have made them so pathogenic and lethal?" Dr. Liang said. "Our research will identify the key viral genes that suppress immune responses by blocking essential signaling pathways. The results will open new avenues for the development of effective interventions to halt the COVID-19 pandemic."

JGH participates in FRQS province-wide COVID-19 Biobank

The *Fonds de recherche du Québec – santé* (FRQS) launched the Quebec COVID Biobank, a Province-wide initiative to collect, store, and share samples and data related to the COVID-19 crisis. The task force that has been mobilized to enact this effort is led by McGill University's Dr. Vincent Mooser. Among the other leaders of the task force is **Dr. Brent Richards**, a genetic epidemiologist and endocrinologist. The Biobank began operations on April 1.

More research is critically needed to better understand COVID-19 infection and transmission in order to identify at-risk individuals, protect them, and improve treatment of this disease. Hospitals need data to be able to decide who will need admission and ventilation. Research can provide information to help make these decisions, and the first step is to collect samples and data from infected individuals. All such data collection must take place in an appropriate legal and ethical framework that fully respects the privacy of individual patients. Further complicating matters is the extreme urgency of the task, which requires the coordination of disparate data systems, the establishment of new standard operating procedures, and the securing of physical and digital infrastructure, all in an extremely compressed period of time.

"We need to be able to predict when COVID positive patients can be sent home safely; which will require ventilators; and how to use genetics and other risk factors to identify targets to develop COVID therapies," explained Dr. Richards. "We will do so by rapidly mobilizing our large research team of scientists and leading artificial intelligence teams, and sharing our data with clinical and public health teams. Given our investments in biobanking and digital information at the Jewish General Hospital, we are well-positioned to play a leadership role in helping to lessen the damage of the COVID pandemic."

Quebec institutions join forces to develop passive plasma immunization

Faced with the threat posed by COVID-19, Quebec researchers are contributing their expertise to a major project is bringing together scientists from CHU Sainte-Justine, the Université de Montréal Hospital Research Centre (CRCHUM), the Jewish General Hospital, Héma-Québec, among others, to collect and use convalescent plasma to develop a passive immunization program to treat patients hospitalized for COVID-19. The treatment will be studied as part of a major clinical trial involving some 50 centres across Canada, including 15 in Quebec.

At the JGH, the first hospital in the province to have treated patients suffering from COVID-19, a team led by **Dr. Sarit Assouline**, who specializes in blood cancers at the Segal Cancer Centre's Clinical Research Unit, will be in charge of the clinical trial.

Is it possible that the blood of those who have recovered from COVID-19 can help cure those who are now sick?

Passive immunization involves transfusing plasma from patients who have recovered from COVID-19 to patients at the onset of illness in order to transfer protective antibodies. This approach was used during major epidemics before the advent of vaccines. Older studies of other severe viral pneumonias such as Spanish flu reported reductions in mortality of up to 75%. Although encouraging, these studies showed some methodological shortcomings, and the treatment's efficacy against COVID-19 has yet to be demonstrated.

One of the advantages of passive immunization is that the number of potential donors increases as the infection progresses. If the results are conclusive, a clinical offer would be immediately put in place for the hospitalized population, using the structure developed by Héma-Québec and the blood banks set up as part of this clinical trial.

"Everyone wants to be where they can be most useful in the current crisis. While the infectious disease and critical care teams are on the front lines, our teams are making a difference by using their research expertise to advance the search for solutions." says Dr. Gerald Batist, Director of the Segal Cancer Centre.

Segal Cancer Centre responds to coronavirus pandemic

An international leader in cancer care and research, the Segal Cancer Centre has responded to the challenge of the coronavirus pandemic with compassion and innovation.

The JGH is a partner institution in an international consortium conducting research on COVID-19 and cancer. Along with 80 other cancer centres, it will study the effects of the coronavirus on cancer and vice versa. The first publication on the baseline registry is forthcoming.

"This is incredibly important," said **Dr. Gerald Batist**, director of the Segal Cancer Centre, "because we need more data on what types of cancers are most affected by COVID-19, at what stage, and whether particular therapies affect the patient's response. This international registry will help answer these questions."

Because cancer patients are more vulnerable to severe COVID-19 infection, the first priority was to limit the number of patients who come to the hospital. Whenever possible, patients are given the opportunity to do video consultations with their oncologist as an alternative to face-to-face meetings.

Cancer patients who have tested positive for COVID-19 are monitored remotely via a virtual clinic that offers personalized attention using tele-health technologies. Oncology nurse pivots contact these patients daily to assist with symptom management and to offer timely interventions in the event of changes to their condition.

"Because our hospital has been ahead of the curve as a leader in digital health, our adaptation to the pandemic was fairly smooth," said Erin Cook, Co-Director (Operations) and Clinical Administrative Coordinator at the Segal Cancer Centre, "and the pandemic, has accelerated our transition to digital health. When this is all over, I expect that we'll be able to incorporate what we've learned to change how we operate and to better the patient experience."

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Tele-health intervention to reduce isolation of older adults

One of the overlooked symptoms of the COVID-19 pandemic is an increasingly dire mental health crisis among vulnerable older adults. Fueled by measures to mitigate the spread of the novel coronavirus, social distancing has exasperated isolation and, hence, anxiety and depression.

Under the direction of **Dr. Soham Rej**, researcher and geriatric psychiatrist, and postdoctoral fellow Syeda Bukhari, the Telehealth Intervention Program for Isolated Older Adults (TIP-OA) has been introduced. Given that it encompasses the largest number of seniors in the province, the CIUSSS - West Central Montreal is the ideal venue for a data-driven assessment of new methods for delivering services to these individuals.

“We know that older adults are disproportionately affected by this crisis because they are already prone to isolation,” said Dr. Blanca Vacaflor, a geriatric psychiatry resident at the JGH. “Moreover, they are at the highest risk of mortality from COVID-19. With these factors in mind, we initiated a unique clinical trial to help alleviate the stress on this population.”

Clients referred to TIP-OA will receive weekly telephone calls from volunteers, who provide a comforting ear and an encouraging voice. The volunteers, many of whom have been recruited through the JGH Foundation, are not psychiatric professionals, nor is it their function to offer clinical advice. Their role is to relieve the client’s loneliness with a friendly talk, and to help determine if their client’s basic needs are met, such as access to medicine, food, and healthcare.

“Prior to the pandemic, vulnerable older adults could, at least, get out to exercise, shop, participate in community events, but now they are told to self-isolate, cut off from caregivers and loved ones, to safeguard their physical health,” points out Dr. Vacaflor. “So what of their mental health? This is where our volunteer outreach can be, we believe, of service.”

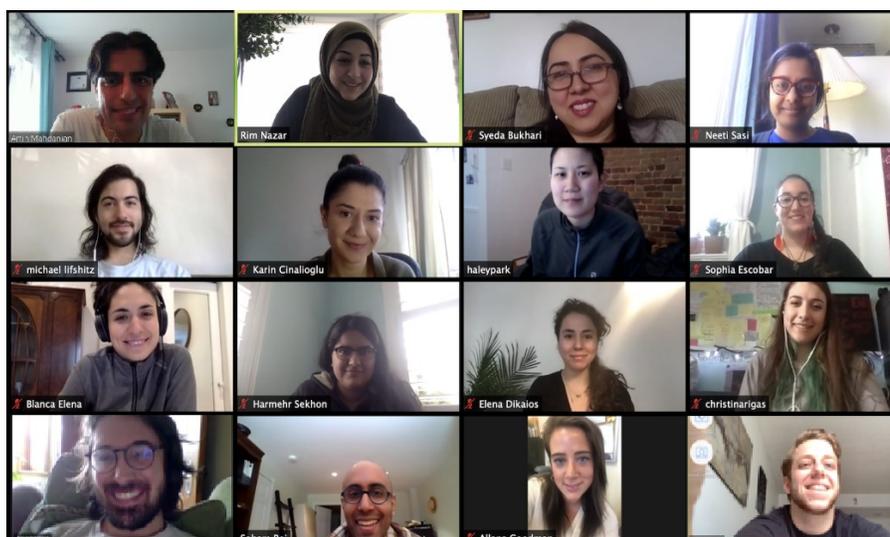
Currently, participation is through clinician referrals from throughout the CIUSSS: e.g. the COVID+ Units, other JGH inpatient units, long term care facilities and CLSCs. However, the plan is to expand the project, allowing for self-referral by anyone who feels that they could benefit, potentially even beyond West Central Montreal. Volunteers are carefully paired with clients based upon their aptitude and experience so that more sensitive cases are assigned to those who are best equipped to assist. The program aim to reach 1000 older adults, and more if funding allows.

“The objective is to provide a sense of connection that goes beyond clinical care,” said Dr. Vacaflor. “It is crucial for their well-being and quality of life that these older adults realize that they are not alone and that there is a community interested in their welfare.”

The JGH Division of Geriatric Psychiatry is also planning to pilot therapy for groups of up to a dozen participants using Zoom video-conferencing. Groups would be delivered by a clinician and adapted from in-person versions of evidence-based interventions, including: mindfulness-based cognitive therapy, life skills groups, problem solving therapy and/or supportive psychosocial groups, amongst other options. The expectation is that tele-health interventions will result in expanded access to mental health services above and beyond the demands of the current pandemic.

TIP-OA is currently accepting referrals:
referrals.telehealthmontreal@ssss.gouv.qc.ca

Below: the entire TIP-OA team consult via ZOOM



COVID-19 places added prenatal stress on mother and child

An international consortium of researchers have identified particular sources of prenatal stress, as experienced by mothers, that have a direct effect on a child's subsequent mental health. The findings emerged from the [DREAM-BIG \(Developmental Research in Environmental Adversity, Mental health, Biological susceptibility and Gender\)](#) project, and are published in the *Journal of the American Academy of Child & Adolescent Psychiatry*.

"We already understood that the foundations for life-long mental health are laid in the very first years of life, but we have further validated the idea that prenatal stress, the mother's psychological well-being during pregnancy, is an important factor," said **Dr. Ashley Wazana**, the principal investigator on DREAM-BIG and Director of the Early Childhood Disorders Day Hospital at the JGH. "With data to support the impact of prenatal stress, we can look at protective measures that could help mothers to insulate their babies."

The paper identifies four prenatal maternal factors. A general affective symptoms factor, and three specific factors: an anxiety/depression factor, a somatic factor, and a pregnancy-specific worries factor. The authors conclude, "The findings in this paper underscore the importance of intervening in the prenatal period, including for pregnancy-specific worries. Currently, there are few prenatal interventions to reduce maternal depression, anxiety, or stress, and even fewer studies that track the long-term effects in the offspring whose mothers receive such interventions."

As much as anxiety and stress factor into pregnancy during normal times, the on-going COVID-19 pandemic is an added stressor and, furthermore, causes mothers-to-be to adapt to social distancing provisions.

"Of course, there are multiple factors at play, including genetics and gender, and the environment after birth, but when you combine maternal stress with this particular environmental adversity, you have the potential for greater mental health challenges for children who are born into this post-pandemic world," said Dr. Eszter Szekely, a postdoctoral research scholar at the LDI the first author on the paper.

Health information literacy skills are desperately needed

Long before the coronavirus pandemic, graduate students supervised by **Dr. Pierre Pluye** at the Department of Family Medicine at McGill University were at work on a website to help people weed through the reams of inaccurate, and downright false, medical information that clutters the Internet to get to sites that can be trusted.

"While we imagined how useful our work would be in our age of misinformation circulating on social media, and a growing distrust in science and experts," says Reem El Sherif, a doctoral candidate in Family Medicine and Primary Care Research at McGill University, whose research was instrumental to the development of the project, "we never imagined a health emergency like this one. However, it's not a coincidence that we pushed hard for the site to be ready in the last few weeks."

The web site they developed is the [Online Health Information Aid \(OHIA\)](#), a bilingual resource teaching people to conduct better searches, evaluate the trustworthiness of sites, and use information effectively. The OHIA includes basic tips for assessing a site's legitimacy:

- the source of information should be clearly stated;
- verify that the information is evidence-based;
- check that the editorial process is transparent and that references are provided;
- determine the purpose of the site and beware of those that try to sell something;
- make sure that the information is up-to-date.

"There are no restrictions on who can produce and share health information online, so it's up to each of us to vet the sources we read, a skill that our website helps you develop," said Vera Granikov, a PhD candidate at the School of Information Studies, health librarian, and driving force behind the website. She also cautions about sharing information across social networks. Well-meaning though people may be, some information on COVID-19 that is circulating now, is not accurate, not based on facts, and potentially very dangerous. As we engage in consuming and sharing health information online, it is our individual and shared responsibility to develop health literacy skills in order to access, understand, evaluate, and communicate trustworthy information.

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