



Centre for
Heart Lung Innovation
UBC and St. Paul's Hospital



January 3, 2022

Dear Friends and Colleagues @ HLI;

I hope that you had a nice Christmas break and enjoyed your precious time with your family and friends.

First of all, I would like to thank all of you for making HLI a special place to work, think and grow as clinicians and scientists. Despite the pandemic, HLI still ranks as the top heart/lung translational centre in Canada for innovation and research. Annually, HLI brings in ~\$16 million in research funding and publishes ~380 papers in high-calibre peer-reviewed journals¹. HLI is the home to 21 named research chairs, representing 9 UBC and SFU departments. In 2021, HLI added 3 new prestigious Canada Research Chair (CRC) positions (Tier 1 CRC in Airway Pathobiology—Dr. Tillie Hackett, UBC Department of Anesthesia, Pharmacology and Therapeutics; Tier 2 CRC in Airway Translational Biology—Dr. Janice Leung, UBC Department of Medicine; and Tier 2 CRC in Public Health Omics—Dr. Graeme Koelwyn, SFU Faculty of Health Sciences). In total, HLI is now the home to 6 CRCs including 2 Tier 1 CRCs.

In 2021, we significantly upgraded our infrastructure. To the 3 existing cores (Core 1, Molecular Phenotyping; Core 2, Ultrastructural Imaging; Core 3, Dynamic Cellular Imaging and Biophysics), we added Core 4 (Organ Imaging) with the installation of a brand 3Tesla Magnetic Resonance Imaging (MRI) scanner. This was possible through the generous investment by the Canada Foundation for Innovation (2017 CFI Innovation Fund) and our donors (St. Paul's Foundation). Special thanks goes out to Dr. Jonathon Leipsic (UBC Dept of Radiology) and Ms. Teija Beck and Ms Cecilia Tupper of St. Paul's Foundation for their incredible fund-raising efforts and to Dr. Rachel Eddy for becoming the inaugural Associate Director for this new core. Together, these technologies will enable HLI investigators to exquisitely phenotype their cardiorespiratory patients and research volunteers and migrate their novel molecular discoveries to a clinical platform for clinical implementation. Ultimately, these technologies and research programs will allow us to fulfill our ultimate mission of providing “**exceptional care through exceptional science**” for our patients with heart and lung disorders¹.

We are entering Year 3 of the Pandemic. Over the past 2 years, we have lost over 30,280 Canadians (and 5.44 million individuals worldwide) from COVID-19². Thousands of Canadians have been displaced from their workplace and at its peak, the Canadian economy lost over 15% of its total gross domestic product (GDP)³. To address the economic and public health challenges of the pandemic, federal and provincial governments have spent enormously. The public debt now stands at nearly \$3 trillion (or ~\$80,000 per each Canadian), the largest in Canadian history⁴. Although the economy has opened up, inflation is reaching record levels owing to supply chain problems, leading to delays in procurements of goods especially from overseas, and a scarcity in the labor and raw materials markets.

On the positive side (and there are a plenty of good news during the pandemic), we have made unprecedented progress in science. In 2020, three very effective COVID-19 vaccines, which reduced hospitalization and mortality rates by 90 to 95%, were developed, mass produced and deployed. To date, ~85% of Canadian adults have received at least one vaccination dose and 77% have received both doses⁵. Rapid antigen tests, which detect the SARS-CoV-2, the virus responsible for COVID-19, are available with self-administrated home kits on their way within the next few weeks. Therapeutics including dexamethasone, tocilizumab, and baricitinib (for the very sick hospitalized patients), remdesivir (for viral control of hospitalized patients) and monoclonal antibodies (for early symptomatic patients) have been developed to treat patients at various stages of the disease. Repurposed drugs such as inhaled corticosteroids (e.g. budesonide, ciclesonide) and fluvoxamine have also been shown to be effective in reducing morbidity in patients with COVID-19 when taken in the first 5 days of illness. Over the next few months, Health Canada will likely approve Paxlovid, a highly effective, novel oral protease inhibitor, for outpatient treatment of highly symptomatic COVID-19 patients. Together, these therapeutics have and will save millions of lives in Canada and throughout the world.

Unfortunately, despite this progress, the pandemic remains undefeated. Over the past 7 days, our Province has experienced 17,837 new cases of COVID-19 (and over 4,000 cases in just the previous 24 hours), representing the highest case count since the start of the Pandemic². Hospitalization rates are also rising, albeit at a much slower rate, reflecting the relatively mild effects of the Omicron variant and the high vaccination rates in the community.

At HLI, the health of our staff, PIs and trainees is a priority. As such, we will continue conducting most of our meetings and educational rounds virtually. We will continue to practice good public health measures such as masking and social distancing on-site and strongly encourage everyone to receive a booster shot (I got mine a few weeks ago). Although most of our staff will be on-site, for those personnel whose work can be performed remotely, we will recommend work-from-home.

This year offers to be an exciting and important one for HLI. We will shortly complete our “Strategic Plan”, which will set our course for the next 5 years. We will also be part of Providence Research’s CSRC. The Research Centre at the New St. Paul’s campus will be a once-in-a-generation, purpose-built research unit that promises to be state-of-the-art and bring HLI to the leading frontiers of translational research in the world. We will also work with St. Paul’s Foundation to fund-raise (for the new building and for several research endowments/chairs) to bring the next generation of translational researchers in heart and lung to the Centre and support our current early and mid-career investigators for years to come.

To this end, I wish to thank the Foundation and our academic leadership and partners at Providence Research, Providence Health, the UBC Faculty of Medicine, and SFU Faculty of

Health Sciences for their unwavering support of the Centre and its many investigators. Special thanks also to our wonderful HLI personnel; the core managers and technicians, the bioregistry and administrative staff including HR, finance and the grants team, who in their quiet, humble and effective way, have provided their time and expertise in supporting our endeavors and enabling our success. A big final thanks goes to our IT team, who during the pandemic have kept us connected and working from everywhere. The supply chain issues have delayed many IT initiatives at HLI; however, we expect some major IT implementations to occur later this year.

In 2022, HLI is poised to make significant contributions to respiratory and cardiovascular sciences that will be disruptive and impactful. At the forefront of our research enterprise are our patients, who provide both the inspiration and materials required for all that we do. We are deeply indebted to our patient volunteers, who selflessly give their time, energy and resources to the Centre and commit themselves non-stop to our research endeavors. I'm confident that together in 2022, "***we will bring new solutions for our patients with heart, lung and blood vessel diseases***".

Yours sincerely,



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