



Dr. Julio Montaner Honoured as Groundbreaking Physician by Canada Post

This September, the BC-CfE's Executive Director & Physician-in-Chief Dr. Julio Montaner was honoured by Canada Post as part of their Medical Groundbreakers stamp series.

The new stamps honour groundbreaking contributions to medicine and include six Canadian physicians and researchers who revolutionized their fields of health care.

Alongside Dr. Montaner, those chosen by Canada Post include Drs. Bruce Chown, Balfour Mount, M. Vera Peters, James Till and Ernest McCulloch.

Dr. Montaner's work, for which he's dedicated four decades of his life, has helped transform HIV/AIDS into a manageable condition with a near-normal life expectancy and has also drastically reduced HIV transmission.

He led the development of highly active antiretroviral therapy (HAART), now considered the global standard of care and also pioneered **Treatment as Prevention**[®] (TasP[®]), a strategy that has markedly reduced HIV transmission and has the potential to end the HIV/AIDS epidemic worldwide.

Fiona Dalton, President and CEO, Providence Health Care, said, "I think there are real lessons we can learn now from how we managed a different virus, HIV, in the early '80s – a virus that was really scary that we didn't know anything about, which we had no treatment for, and we can see that again with COVID now." Dalton added, "We are really benefiting from that work in terms of HIV/AIDS and how we can apply that to our new pandemic."

Eric Harris, the board chair at Providence Health Care, praised Dr. Montaner, and said, "He is brilliantly fearless, to the point of being breathtaking on occasion, but it's always backed up by organization, discipline, and clinical work."

Those organizational skills were on full display as Dr. Montaner worked as a guiding force behind the 1996 International AIDS Society Conference, where he introduced HAART as a new global standard of care for HIV. The 1996 conference is widely seen as a turning point in HIV/AIDS history thanks to this revolutionary treatment.

Within a year of implementing HAART in BC, AIDS deaths decreased by over 80%. As BC saw success in its HIV treatment approach, Dr. Montaner recognized gaps in care among those with socio-economic, cultural, or disease-related challenges, and his research informed harm reduction strategies in Vancouver including at InSite in the Downtown Eastside, North America's first supervised injection site.

In 2006 Dr. Montaner demonstrated through models and a wealth of research findings from BC's experience that universal coverage with HAART could lead to the control and possible elimination of HIV within a generation. This, along with a landmark paper published in *The Lancet* in 2010, formed the basis for the BC-CfE's TasP[®] strategy, which has since been formally adopted in many countries around the world and by the World Health Organization and Joint United Nations Programme on HIV/AIDS (UNAIDS).

TasP[®] then became the cornerstone of UNAIDS' 90-90-90 strategy in 2014, and recently helped inspire another game-changing initiative, U=U. The U=U campaign informs the public, healthcare professionals and policy-makers about the tenets of TasP[®], that those living with HIV who are successfully on HAART treatment and have an undetectable viral load are untransmittable.

The continued success of TasP[®] in reducing new diagnoses led St. Paul's Hospital to repurpose their AIDS Ward in 2014 and Dr. Montaner to declare the end of the AIDS epidemic in BC in 2019. The province, once the hardest hit by HIV/AIDS in Canada, now sees the disease as a chronic but manageable condition.

Dr. Montaner continues to see patients, lead BC-CfE HIV treatment & research efforts, advocate for access to care, harm reduction & safe supply, and established the Hope to Health Centre in the DTES to ensure no one goes without the care they deserve.

Having previously been invested in the Order of Canada and inducted into the Canadian Medical Hall of Fame, Dr. Montaner said, "This particular honour has unique significance because I view it as the recognition from the people of my adopted country, Canada."

The image on Dr. Montaner's stamp was designed by Vancouver's Mike Savage and Dale Kilian at Signals including photography by BC-CfE Website and Digital Strategy Coordinator Fernando Prado.

The Permanent™ domestic rate stamps are available in a booklet of 10 and can be purchased at canadapost.ca/shop.

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— PHC President & CEO Fiona Dalton



BC-CfE and SFU researchers uncover viral features that may contribute to global differences in HIV pathogenesis



Photo courtesy of SFU Faculty of Health Sciences

Laboratory research teams of Drs. Mark Brockman and Zabrina Brumme (front row, 2nd and 3rd from the left)

» The result of a longstanding collaboration between SFU and the BC-CfE, new research from the laboratories of Drs. Mark Brockman and Zabrina Brumme was recently published in the respected scientific journal *PLoS Pathogens*.

The paper entitled “*Variation in HIV-1 Nef function within and among viral subtypes reveals genetically separable antagonism of SERINC3 and SERINC5*” looks at the genetic and functional diversity of the HIV protein Nef, and how this key viral protein interacts with proteins inside human cells. The research was led by BC-CfE Scientific Associate Mark Brockman, who is also an Associate Professor in the Faculty of Health Sciences and the Department of Molecular Biology and Biochemistry in the Faculty of Sciences at Simon Fraser University.

Our cells are equipped with proteins called “restriction factors” that protect us from viral infection. For this reason, viruses encode proteins that block these restriction factors. HIV encodes a number of such proteins, of which the most well-studied is Nef. Nef blocks a number of restriction factors, two of which are named Serine incorporator (SERINC) protein 3 and SERINC 5. These SERINC proteins are expressed on

human cells and become incorporated into new viral particles, where they dampen HIV’s ability to infect new cells and attenuate pathogenesis. The Nef protein removes SERINC3 and SERINC5 from the infected cell surface, thereby enhancing HIV’s ability to spread.

HIV is a very genetically diverse virus, with many different strains circulating worldwide. Brockman’s team wanted to understand the impact of HIV genetic diversity on Nef’s ability to block the SERINC proteins. To address this, they isolated hundreds of HIV Nef variants from people living with HIV worldwide and tested the ability of each variant to counteract the human SERINC proteins. They discovered that Nef isolates from circulating viral strains differed markedly in their ability to antagonize SERINC3 and SERINC5. They were also able to pinpoint specific naturally occurring mutations in Nef that affected these functions.

These findings uncover viral features that may contribute to global differences in HIV pathogenesis and provide new insights that can inform future studies.

Researchers at other global institutes also contributed to this research, including the University of KwaZulu-Natal (South Africa), Mbarara University of Science and Technology (Uganda), UCSF and others.

RESEARCH



BC-CfE’s Dr. Jeffrey Joy’s vital COVID-19 research published in *Science*

» The BC-CfE’s Dr. Jeffrey Joy has joined an international team of researchers in the fight against COVID-19. Dr. Joy, a Senior Research Scientist specializing in evolutionary genetics, molecular epidemiology and bioinformatics at the BC-CfE, is also an Assistant Professor of Medicine at the University of British Columbia.

Using a grant from the Canadian Institutes of Health Research along with support and resources provided by the BC-CfE, Dr. Joy and his team are studying the genomic evolution of COVID-19 and their work was published this month in *Science*, one of the world’s top academic journals. Titled “*The emergence of SARS-CoV-2 in Europe and the US*”, the research delves into “when, where and how the earliest sustained SARS-CoV-2 transmission networks became established in Europe and North America.” The scientists working with Dr. Joy join teams around the world working to contain the current pandemic.

By studying the available genomes, Dr. Joy’s team compares them with the genomes of other coronaviruses to determine common features and evaluate patterns of viral spread.

The fight against the spread of COVID-19 is an international collaborative effort, with Dr. Joy and BC-CfE researcher’s working closely with the Chinese Centre for Disease Control as well as other Canadian teams. It is hoped this close collaboration will not only allow for a better assessment of the origins of the disease, it will also help exert control and, ultimately, elimination of the current, and future, coronavirus outbreaks.

“We are grateful to the federal government for this emergency funding, which is enabling researchers at the BC-CfE, UBC and across Canada to help find solutions to this urgent crisis,” says Dr. Joy.

Nance Cunningham chosen as a UBC Public Scholar



The BC-CfE’s Nance Cunningham, an Experimental Medicine PhD student working in the EMBARC team (Epidemiological, Mathematical and Biostatistical analysis and Research Collaboration in HIV/AIDS) has been chosen as a UBC Public Scholar. The

Public Scholars Initiative (PSI) supports creative, action-oriented research designed to address complex challenges and have meaningful public impact as part of a PhD thesis. The award will support Cunningham’s research partnerships with people affected by hepatitis C, and patient advocacy activists.

Cunningham’s PSI award supported research engages members of hepatitis C priority populations - people who would benefit most from prioritized testing and treatment - to collaborate on materials to advise present and future healthcare professionals. “The right to be treated with dignity is essential to health equity,” said Cunningham. “My thesis project brings patients’ clear voices into education, providing insight into patient experience, and giving learners advice based on real encounters.”

Cunningham’s research bridges the work of different teams at BC-CfE. She works with Dr. Lima’s EMBARC team on administrative data, with Dr. Kate Salter’s Per-SVR team to collect healthcare providers’ perspectives, and will do independent research to collect patients’ perspectives. The BC-CfE congratulates Cunningham on this scholarship as it further supports the great work she is doing at the BC-CfE!

BC Centre for Excellence in HIV/AIDS

- > Improve the health of British Columbians with HIV through comprehensive research and treatment programs;
- > Develop cost-effective research and therapeutic protocols;
- > Provide educational support programs to health-care professionals;
- > Monitor the impact of HIV/AIDS on BC and conduct analyses of the effectiveness of HIV-related programs.

Physician Drug Hotline
1.800.665.7677

St. Paul’s Hospital Pharmacy Hotline
1.888.511.6222

Website
www.bccfe.ca
E-mail
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