Journal of the BC Centre for Excellence in HIV/AIDS

forecast

BRITISH COLUMBIA CENTRE *for* EXCELLENCE *in* HIV/AIDS

SEPT 2018 | St. Paul's Hospital, Vancouver, B.C.

Dr. Zabrina Brumme to lead world-renowned BC-CfE Laboratory Program

The first time Dr. Zabrina Brumme entered the BC Centre for Excellence in HIV/AIDS (BC-CfE), she had no idea she would one day be the director of its innovative Laboratory Program. She was only seventeen and had not yet embarked on a career in HIV research that would introduce her to many international leaders in the field. She laughs about it now, convinced that as a wide-eyed teenager she likely didn't make much of an impression on one of the luminaries in HIV research, Dr. Julio Montaner.

"I am pretty sure Julio doesn't remember that meeting," said Dr. Brumme. "But he was gracious enough to meet with a young, ambitious student interested in interviewing an expert as part of a high school essay project on HIV."

Born and raised in Vancouver, Dr. Brumme's original goal was to teach biology and English literature. While completing a bachelor of science at the University of British Columbia (UBC), a co-op work placement at the BC-CfE exposed her to a career in HIV/AIDS research, sparking a lifelong passion. After graduating from UBC, Dr. Brumme travelled and then eventually circled back to the BC-CfE to do research and help with the clinical genotyping program. Even then, her career focus remained on ultimately becoming a high school teacher.

The BC-CfE's Founding Director at the time, Dr. Michael O'Shaughnessy, had a habit of checking in with students to talk to them about career and future ambitions. "He gave me advice that drove me toward a career in science," said Dr. Brumme. O'Shaughnessy told Dr. Brumme that a path to becoming a scientist could lead to teaching; while pursuing teaching may make the path back to science difficult.

With a revised career plan, Dr. Brumme acquired a Ph.D. in experimental medicine from UBC and went on to complete a post-doctoral fellowship at the Ragon Institute of Massachusetts General Hospital (MGH), MIT and Harvard University, under the mentorship of the highly recognized HIV researcher Dr. Bruce Walker.

Under Dr. Walker's direction, Dr. Brumme had three years of exploration in science and mentorship, with access to a wealth in ideas and resources. Her former mentor sees her new role as BC-CfE Laboratory Program Director as a great fit: "Zabrina brings enormous scientific talent and creativity to this role, but equally important is her gift for stewarding effective scientific collaboration locally, nationally and internationally," said Dr. Walker, Director of the Ragon Institute.

By 2009, Dr. Brumme was back at home – this time at SFU – where HIV researchers including Drs. Bob Hogg and Jamie Scott were helping establish a vibrant interdisciplinary HIV research team in SFU's new Faculty of Health Sciences. Brumme landed her assistant professorship there in 2009, where she is now an associate professor.

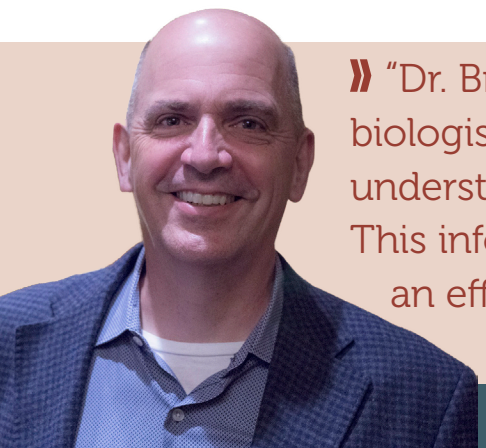
In her new role at the BC-CfE, on secondment from SFU, Dr. Brumme looks to continue the BC-CfE's outstanding clinical work in HIV genotyping and personalized medicine, as well as cutting-edge research in HIV and hepatitis C drug resistance and viral genetic diversity. She hopes to uphold the BC-CfE tradition of producing highly respected, scientifically rigorous and newsworthy research.

The BC-CfE persists as a global leader in HIV, in particular through its research and advocacy around **Treatment and Prevention** (**TasP®**) and is applying the proven effective principles of **TasP®** to its **Targeted Disease Elimination®** strategy of other blood-borne and socially contagious illnesses, such as hepatitis C and type 2 diabetes. With the addition of Dr. Brumme, the BC-CfE is further expanding in the exciting direction of HIV cure and vaccine research.

"The vision and foresight of Drs. Michael O'Shaughnessy and Julio Montaner propelled the province of BC towards becoming one of the best places in the world for HIV research and treatment," said Dr. Brumme.

Dr. Brumme and her colleagues recognize the message her appointment sends to young scientists, particularly girls and women. "Zabrina is a role model for young female scientists," said Dr. Mary Carrington of the US Frederick National Laboratory for Cancer Research. "She is an adept, approachable mentor, committed to her work and scientific progress."

"I do not hesitate to share my challenges and personal and professional experiences as a researcher with emerging scientists, while still pushing forward rigorous work," says Dr. Brumme. "Although there have been gains for women in the STEM fields, I would like to see more. We need to continue to create opportunities for women to take leadership roles in the advancement of science."



» "Dr. Brumme has studied HIV through the lens of a molecular biologist and epidemiologist. She has dedicated her career to understanding how HIV can adapt and evolve within populations. This information is critical to advance research towards designing an effective HIV vaccine or cure."

— Dr. Robert Hogg, BC-CfE Senior Research Scientist

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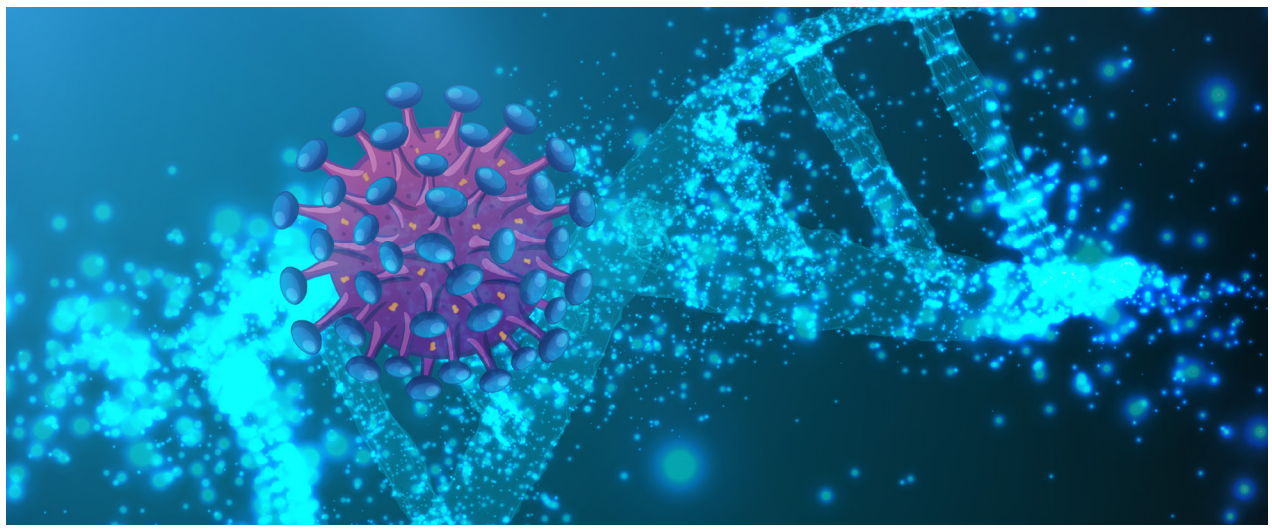
STUDY

BC-CfE Laboratory Program discovers immune-resistant HIV strains predominant in Saskatchewan



Doctors in Saskatchewan were seeing patients who had progressed to having AIDS-defining illnesses very quickly, sometimes even before having obtained a positive HIV test.

These anecdotal reports spurred researchers with the BC-CfE Laboratory Program and Simon Fraser University (SFU) to take a close look at the genome of the HIV virus being transmitted in the province. What they found was concerning, further raising the already urgent call for expanded access to HIV testing and treatment in the province. Genetic mutations in the strains of HIV being most predominantly transmitted in Saskatchewan could make some people sicker, faster—if left untreated.

Co-author Dr. Zabrina Brumme

"This is the first molecular epidemiology study of HIV in Saskatchewan and it confirms some of what we have been seeing on the ground," said Dr. Alex Wong, an infectious disease specialist in Regina with the Saskatchewan Health Authority, researcher at the University of Saskatchewan and an author on the study that was published in the scientific journal *AIDS*.

Essentially, HIV strains predominantly circulating in Saskatchewan have adapted to evade host immune responses. While HIV is constantly evolving and adapting to its host populations, these strains had exquisitely adapted to the populations most affected by the epidemic. The unprecedented study findings were presented this past July at the 2018 AIDS Conference in Amsterdam, the largest global conference on any public health issue.

HIV incidence rates in Saskatchewan are among the highest in North America, with 2016 rates in some regions more than ten times the national average. Saskatchewan's HIV epidemic is also unique in that nearly 80% of infected persons self-identify as having Indigenous ancestry.

HIV antiretroviral treatment works equally as effectively against immune-resistant HIV strains. The earlier treatment is accessed, the better treatment outcomes tend to be. The global scientific consensus is that treatment should be provided immediately upon HIV diagnosis, in keeping with the made-in-BC **Treatment as Prevention®** strategy. In the 2018-19 budget, the Government of Saskatchewan announced an additional $600,000 investment to provide universal drug coverage for HIV medications, including antiretroviral therapy and pre-exposure prophylaxis (PrEP).

"Accessing HIV prevention, testing and treatment is important to everyone, especially individuals who are at risk of acquiring HIV," said Dr. Zabrina Brumme, Director of the BC-CfE Laboratory Program (since this August), Associate Professor in SFU's Faculty of Health Sciences and the lead author on the study. "Regardless of ethnicity, some individuals will carry the immune genes that HIV immune-resistant strains have adapted to evade—which could cause faster disease progression."

Researchers on the Saskatchewan study—from the BC-CfE, SFU and the Public Health Agency of Canada (PHAC), in partnership with Saskatchewan physician-researchers and with funding from the Canadian Institutes of Health Research (CIHR)—were startled at the prevalence of immune-resistant mutations. One key mutation was found in more than 80% of Saskatchewan HIV strains, compared with only about 25% of HIV strains found elsewhere in North America.

Co-author Dr. Jeffrey Joy

Even more concerning, the pervasiveness of such mutations is increasing over time. More than 98% of the HIV sequences collected in Saskatchewan most recently (between 2015 and 2016) harboured at least one major immune resistance mutation.

"Our finding that immune-resistant HIV strains are being commonly transmitted in Saskatchewan means that it is critical we work together to expand access to HIV testing and treatment," said Dr. Jeffrey Joy, Research Scientist with the BC-CfE and an author on the study. "We need to work together to make HIV testing routine and stigma-free."

EDUCATIONAL PROGRAM

New training program announced for nurse practitioners

The BC-CfE is pleased to announce an educational initiative, expected to launch this fall, that will expand the capacities of nurse practitioners (NPs) in British Columbia as antiretroviral (ARV) prescribers for HIV prevention and treatment.

NPs have been an integral part of the **Treatment as Prevention®** (**TasP®**) strategy, which forms the foundation of the UNAIDS 90-90-90 Target to end AIDS globally by 2030. The BC-CfE and the College of Registered Nurses of BC are working together to expand the role of NPs.

The collective aim is to improve access to ARV treatment and HIV prevention strategies, such as pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP), for people living with HIV or at risk of acquiring HIV within remote and rural areas and underserved groups. This will help to improve quality of life and longevity for more people living with HIV in British Columbia, while also increasing the provincial capacity to prevent new cases of HIV.

The BC-CfE education and training program for NPs will launch this fall with *Treatment for HIV Prevention*, which can be completed on a flexible timeline and is accessible to BC NPs regardless of their location in the province. Upon successful completion of the *Treatment for HIV Prevention* program, NPs will have the competencies to prescribe PEP and PrEP. This past January, the government of BC introduced no-cost PrEP coverage in BC for individuals at high risk of HIV infection alongside expanded coverage of PEP.

The second tier of the new initiative, *Treatment for People Living with HIV*, is focused on the prescribing of ARVs and will launch in late spring 2019.

To find out more about programs and events in the BC-CfE Education and Training Program, please sign up for our e-news updates at the following link: **www.cfenet.ubc.ca/subscribe.**

AWARD

BC-CfE Researchers receive Amgen Canada Award

Amgen Canada representatives with award recipients Dr. Marianne Harris, Dr. Greg Bondy and Faizal Samad (centre L-R)

Representatives from Amgen Canada recently visited the BC-CfE at St. Paul's Hospital to present Faizal Samad and Drs. Marianne Harris & Greg Bondy with the 2017 Amgen Award for Excellence in Clinical Research.

Awarded to the Clinical Trials team at the BC-CfE site, this commendation recognizes the quality, diligence and recruiting strength of the BC-CfE's AIDS Research Program.

The BC-CfE would like to congratulate the entire Clinical Trials team for their ongoing dedication and hard work!

LECTURES & EVENTS

HIV Care Rounds

Sexualized Drug Use, Psychosis, ADHD and Other Issues Among Patients Who Use Crystal Meth

Speaker: Dr. Julius Elefante

Wednesday, September 12, 2018, 12–1PM

Conference Room 8, Providence Level 1, St. Paul's Hospital

Forefront Lecture

The Impact of Demography on the End of AIDS

Speaker: Dr. Robert Hogg

Wednesday, September 19, 2018, 12–1PM

Hurlburt Auditorium, Providence Level 2, St. Paul's Hospital

Webinar

Bone Health of Women Living and Aging with HIV

Speakers: Dr. Neora Pick and Valerie Nicholson

Tuesday, October 9, 2018, 8–9AM

Registration: **https://attendee.gotowebinar.com/register/3687012525563182850**

For more information, contact us at **Education@cfenet.ubc.ca or visit** our website at **www.education.cfenet.ubc.ca**

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 B.C. and conduct analyses of the effectiveness of HIV-related programs.

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