

SENTINEL NORTH RESEARCH CHAIR ON THE SURVEILLANCE OF AVIAN INFLUENZA VIRUSES IN MIGRATORY BIRDS IN NORTHERN CANADA

Faculty of Medicine

© Dominique St-Hilaire/ArcticNet

MISSION

The Sentinel North Research Chair on the Surveillance of Avian Influenza Viruses in Migratory Birds in Northern Canada aims to carry out surveillance studies on avian influenza viruses (AIV) in the northern regions of Canada (Yukon, Northwest Territories, Nunavut and northern Québec) and investigate the ecology of AIV in wild migratory birds..

CHAIR CREATION: : April 1, 2018

BACKGROUND

Highly pathogenic avian influenza (HPAI) viruses of the H5 subtype, which have been detected in poultry and wild birds of Asia and Europe in the past, were detected in North America for the first time in December 2014. The incursions of these emergent HPAI H5 viruses, which may cause severe respiratory disease in humans, are a major threat to public health. A recent, high-profile example of avian influenza virus spread is H5N8, which caused an outbreak among poultry in South Korea in early 2014 and rapidly spread to Europe and the USA via infected migratory ducks, swans and geese, causing serious outbreaks in poultry farms in these areas. The intercontinental spread of H5N8 from Asia to North America occurred through Beringia, indicating that the virus must have passed through Canada on its way to the USA. Although human infections with HPAI viruses from wild birds have not yet been documented in Canada, this virus has substantial agricultural importance and impacts food safety, as any outbreak would certainly necessitate the mass culling of poultry, resulting in heavy economic losses.

Université Laval and the Faculty of Medicine are creating the Sentinel North Research Chair on the Surveillance of Avian Influenza Viruses in Migratory Birds in Northern Canada, which reflects their sense of social responsibility and their shared concern for population health.

CHAIRHOLDER

Gary Wong is an assistant professor at the Department of Microbiology and Immunology at Université Laval's Faculty of Medicine and a principal investigator at the CHU de Québec-Université Laval Research Center. He completed his PhD in Medical Microbiology at the University of Manitoba in Winnipeg, Canada, where he developed and evaluated animal models/medical countermeasures against Biosafety Level 4 pathogens. He completed his post-doctoral fellowship at the Institute of Microbiology, Chinese Academy of Sciences in Beijing, China, where he performed field studies and characterization of influenza viruses in wild and domestic poultry.

Dr. Wong's research program is to develop a pathogen surveillance network in northern Canada, where samples will be collected in the field and processed in the laboratory. While initially focusing on studying influenza prevalence in wild birds, this network can be adapted for the surveillance of various microbes in other animal hosts to give a complete picture of pathogen circulation in northern Canada.





OBJECTIVES

The Chair will conduct surveillance of influenza viruses in wild migratory birds in northern Canada. Chair research will focus on two main objectives:

- > Establish the prevalence and isolation rates of different influenza virus subtypes in a variety of wild birds to determine the dominant circulating strains, if any
- > Analyze the virus genomes to determine whether these virus isolates have developed any mutations which enhance their virulence/transmissibility between different host species or confer resistance to anti-influenza drugs, with a view to charting virus evolution and determining the origin of novel reassortant avian influenza viruses.

PARTNERSHIP

Funded by the Canada First Research Excellence Fund, Sentinel North allows Université Laval to draw on over a half-century of northern and optics/photonics research to develop innovative new technology and improve our understanding of the northern environment and its effect on human beings and their health. This new Chair is part of the major transdisciplinary research program at Sentinel North whose mission includes training the next generation of researchers that will help address some of the complex challenges facing the changing North.



IMPACT

Against the backdrop of accelerating climate change as well as social and economic development in the arctic and subarctic regions, this work will provide critical knowledge on the microbiota, threats to food safety and challenges to industrialization/urbanization in the northern regions of Canada.

Under the guidance of the Chairholder, trainees will develop essential skills for field work (pathogen hunting in wild animals) in addition to bench work in the laboratory (molecular biology, virology).



INFORMATION

Gary Wong
 Infectious Disease Research Centre
 Centre hospitalier universitaire de Québec (CHUQ),
 Pavillon CHUL
 2705 boul. Laurier, Québec City, Québec
 Canada G1V 4G2
 Tel. : 418 654-2705
 Gary.Wong@crchudequebec.ulaval.ca

