Pathogen Genomic Epidemiology 2025

Faculty: Angela McLaughlin, Emma Griffiths, Finlay Maguire, Gary Van Domselaar, Idowu Olaw

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Workshop Info

Welcome to the 2025 Pathogen Genomic Epidemiology Canadian Bioinformatics
Workshop webpage!

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1.2   Class Photo

Coming soon!

1.3   Schedule

Chapter 2

Meet Your Faculty

2.0.0.1 Angela McLaughlin

Postdoctoral Fellow Dalhousie University and University of Guelph
Burnaby, BC, Canada

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Angela McLaughlin is a postdoctoral fellow in Dr. Finlay Maguire's lab at Dalhousie University, in collaboration with Dr. Zvonimir Poljak at University of Guelph. Her research interests span viral phylogenetics (HIV-1, SARS-CoV-2, and influenza virus), genomic epidemiology, bioinformatics, public health, wildlife surveillance, and statistical/machine learning/mathematical models of pathogen transmission. Her current project aims to predict host specificity of avian influenza virus H5Nx using machine learning models of viral genomic features with phylogenetics-informed cross-validation and hierarchical segment to whole genome ensemble models.

2.0.0.2 Emma Griffiths

Research Associate, Faculty of Health Sciences Simon Fraser University Vancouver, BC, Canada

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Emma Griffiths is a research associate at the Centre for Infectious Disease Genomics and One Health (CIDGOH) in the Faculty of Health Sciences at Simon Fraser University in Vancouver, Canada. Her work focuses on developing and implementing ontologies and data standards for public health and food safety genomics to help improve data harmonization and integration. She is a member of the Standards Council of Canada and leads the Public Health Alliance for Genomic Epidemiology (PHA4GE) Data Structures Working Group.

2.0.0.3   Finlay Maguire

Assistant Professor, Faculty of Computer Science and Department of Community Health & Epidemiology, Dalhousie University Halifax, MS, Canada

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Finlay Maguire is a genomic epidemiologist whose work centers on leveraging data in innovative ways to answer questions related to applied health and social issues. This includes developing bioinformatics methods to more effectively use genomic data to mitigate infectious diseases and broad interdisciplinary collaborations in areas such as refugee healthcare provision and online radicalisation. They are an active contributor to the national and international public health responses to emerging viral zoonoses and antimicrobial resistance, co-chair of the PHA4GE data structures working group, and act as a Pathogenomics Bioinformatics Lead for Sunnybrook's Shared Hospital Laboratory.

2.0.0.4   Gary Van Domselaar

Chief, Bioinformatics, National Microbiology Laboratory Public Health Agency of Canada Winnipeg, MB, Canada

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Dr. Gary Van Domselaar, PhD (University of Alberta, 2003) is the Chief of the Bioinformatics Section at the National Microbiology Laboratory in Winnipeg Canada and Associate Professor in the Department of Medical Microbiology and Infectious Diseases at the University of Manitoba. Dr. Van Domselaar's lab develops bioinformatics methods and pipelines to understand, track, and control circulating infectious diseases in Canada and globally. His research and development activities span metagenomics, infectious disease genomic epidemiology, genome annotation, population structure analysis, and microbial genome wide association studies.

2.0.0.5   Idowu Olawoye

Postdoctoral Associate University of Western Ontario London, ON, Canada

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Idowu is a postdoctoral associate in the Guthrie Lab at the University of Western Ontario. His research focuses on utilizing computational biology to understand transmission patterns, genomic evolution, and antimicrobial resistance of bacterial pathogens. He has been involved in numerous bioinformatics workshops and trainings across Africa and most recently in Canada.

2.0.0.6 Jennifer Guthrie

Assistant Professor University of Western Ontario London, ON, Canada

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Dr. Jennifer Guthrie is a Canada Research Chair in Pathogen Genomics and Bioinformatics and Assistant Professor in the Departments of Microbiology & Immunology and Epidemiology & Biostatistics at Western University; she also serves as an Adjunct Scientist at Public Health Ontario. A genomic epidemiologist by training, in her research Dr. Guthrie uses interdisciplinary approaches combining principles from data science and bioinformatics, and more traditional epidemiology and microbiology methods to further our understanding of disease transmission dynamics, antimicrobial resistance, and epidemiological characteristics of pathogens. Her research involves pathogens of public health importance such as SARS-CoV-2, influenza, Mycobacterium tuberculosis, and methicillin resistant Staphylococcus aureus.

2.0.0.7 Charlie Barclay

MSc Graduate Student Researcher University of British Columbia Vancouver, BC, Canada

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Charlie is an ontology curator at the Centre for Infectious Disease Genomics and One Health (CIDGOH), focusing on data standards for contextual data of genomic epidemiology, including wastewater surveillance. With five years of experience in data management, specializing in biodiversity and genomics data, she also actively contributes to the Public Health Alliance for Genomic Epidemiology (PHA4GE) and the Global Alliance for Genomics and Health (GA4GH).

Chapter 3

Data and Compute Setup

3.0.0.1 Course data downloads

Coming soon!

3.0.0.2 Compute setup

Coming soon!

Chapter 4

Module 1 Data Curation and Data Sharing

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4.2 Lab

Chapter 5

Module 2 Emerging Pathogen Detection and Identification

5.1 Lecture

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Chapter 6

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