



McGill

**McGill Summer Institute in
Infectious Diseases and
Global Health**

MCGILL UNIVERSITY • MONTREAL • JUNE 18-22, 2018

GENOMIC EPIDEMIOLOGY OF INFECTIOUS DISEASES

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Mon • June 18	Tues • June 19	Wed • June 20	Thurs • June 21	Fri • June 22
8.00AM – 5.00PM	9.00AM – 5.00PM	9.00AM – 5.00PM	9.00AM – 5.00PM	9.00AM – 3.30PM
Introduction to Genomic Epidemiology and WGS data analysis I	WGS data analysis II	Using WGS to infer transmission of bacterial pathogens	Using WGS to predict antimicrobial resistance	Beyond bacteria: other applications & practical considerations

HOSTS



McGill



GLOBAL
HEALTH
PROGRAMS

PROGRAMMES DE
SANTÉ
MONDIALE

Centre
international
de TB McGill



**McGill
International
TB Centre**



J.D. MacLean Centre
for Tropical Diseases
Centre J.D. Maclean
pour les Maladies Tropicales

Institut de
recherche
Centre universitaire
de santé McGill



Research
Institute
McGill University
Health Centre

Infectious Diseases and Immunity in Global Health Program
Programme en maladies infectieuses et immunité en santé mondiale



McGill

Interdisciplinary
Initiative in
Infection and
Immunity

*Faculty and speaker information is available in the *Ukova* event app*

DAY 1 AGENDA

MONDAY, JUNE 18

Time	
8.00AM	Registration
8.30-9.00AM	<i>Welcome, introductions, and goals</i>
9.00-10.00AM	Introduction to genomic epidemiology and micro/molecular biology basics M Behr
10.00-10.30AM	<i>Coffee Break</i>
10.30-11.15AM	Intro to next-generation sequencing technology M Behr
11.15AM-12.00PM	Bioinformatics methods I T Seemann
12.00-12.45PM	<i>Lunch</i>
12.45-1.30PM	Bioinformatics methods II T Seemann
1.30-1.40PM	Introduction to practical workshops R Lee
1.40-2.00PM	Practical Exercises: Intro to Galaxy T Seemann
2.00-3.00PM	Practical Exercises: WGS data quality T Seemann
3.00-3.30PM	<i>Coffee Break</i>
3.30-4.45PM	Practical Exercises: Assembly T Seemann
4.45-5.00PM	Goals for tomorrow and introduction to journal clubs R Lee
5.15PM	<i>Group Picture</i>
5.30-6.30PM	<i>RECEPTION – To be confirmed</i> Venue: To be determined

DAY 2 AGENDA

TUESDAY, JUNE 19

Time

9.00-9.30AM

Laboratory considerations for genomic epidemiology

M Behr

9.30-10.00AM

Detecting contamination – Kraken

T Seemann

10.00-10.30AM

Coffee Break

10.30-11.15AM

Phylogenetics I

A Gonçalves da Silva

11.15AM-12.00PM

Journal Club

M Behr, A Gonçalves da Silva, R Lee, I Levade, T Seemann

12.00-12.45PM

Lunch

12.45-1.30PM

Phylogenetics II

A Gonçalves da Silva

1.30-3.00PM

Coffee break included

Practical Exercises: Assessing for contamination, mapping to a reference

T Seemann

3.00-3.30PM

Coffee Break

3.30-5.00PM

Practical Exercises: Building and interpreting a phylogenetic tree

A Gonçalves da Silva

DAY 3 AGENDA

WEDNESDAY, JUNE 20

Time	
9.00-10.00AM	Within-host diversity J Shapiro
10.00-10.30AM	<i>Coffee Break</i>
10.30-11.15AM	Molecular clocks and dating A Gonçalves da Silva
11.15AM-12.00PM	Journal club M Behr, A Gonçalves da Silva, R Lee, I Levade, T Seemann
12.00-12.45PM	<i>Lunch</i>
12.45-1.30PM	Making inferences about transmission and study design considerations in genomic epidemiology R Lee
1.30-3.00PM	Practical Exercise: Phylogenetic trees, SNP matrices and epi data - inferring (refuting) transmission R Lee
3.00-3.30PM	<i>Coffee Break</i>
3.30-5.00PM	Practical Exercise (continued): Phylogenetic trees, SNP matrices and epi data - inferring (refuting) transmission R Lee

DAY 4 AGENDA

THURSDAY, JUNE 21

Time	
9.00-9.30AM	Mechanisms of antimicrobial resistance M Behr
9.30-10.00AM	How we currently predict antimicrobial resistance using genomic data T Seemann
10.00-10.30AM	<i>Coffee Break</i>
10.30AM-11.15AM	Metagenomics – analysis and applications J Shapiro
11.15-12.00PM	Journal Club M Behr, A Gonçalves da Silva, R Lee, I Levade, T Seemann
12.00-12.45PM	<i>Lunch</i>
12.45-1.30PM	Practical Exercise: Predicting antimicrobial resistance T Seemann
1.30-2.00PM	Practical Exercise: Metagenomics (16S) T Seemann
2.00PM-2.45PM	Other approaches for predicting resistance W Hanage
2.45-3.15PM	<i>Coffee break</i>
3.15PM-4.00PM	Nanopore sequencing – applications L Cowley
4.00PM-5.00PM	Practical Exercises: Working with nanopore data

DAY 5 AGENDA

FRIDAY, JUNE 22

Time	
9.00-9.45AM	Application of WGS to parasites G Matlashewski
9.45-10.00AM	<i>Course evaluations</i>
10.00-10.30AM	<i>Coffee Break</i>
10.30-11.15AM	Host-pathogen interaction E Schurr
11.15-12.00PM	Incorporating WGS into the public health laboratory: Ontario's experience V Allen
12.00PM-12.45PM	<i>Lunch</i>
12.45AM-1.45PM	Panel discussion – the role (or potential role) of WGS in public health, research and clinical care V Allen, L Cowley, C Frenette, W Hanage, T Lee
1.45-2.45PM	Course summary R Lee
2.45-3.30PM	Question and answer period / continue with practical exercises (optional) All instructors