



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



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



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Interdisciplinary
Initiative in
Infection and
Immunity

Course Location: Centre Mont Royal, 2200 rue Mansfield, 3rd Floor

Faculty and speaker information is available in the [Ukova](#) event app*

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DAY 1 AGENDA

MONDAY, JUNE 18

Time	
8:00AM	<i>Registration</i>
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>
6:00-7:30PM	<i>Welcome Reception</i>

Venue: Notman House/Osmo Cafe (51 Sherbrooke St W, Montreal QC H2X 1X2)
10 min walk on Sherbrooke—Food and non-alcoholic drinks free. Alcoholic drinks for purchase.

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	<i>Coffee Break</i>
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	<i>Lunch</i>
12:45-1:30PM	Phylogenetics II A Gonçalves da Silva
1:30-3:30PM <i>Coffee break included</i>	Practical Exercises: Assessing for contamination, mapping to a reference T Seemann
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
1:30-5:00PM <i>Coffee break included</i>	Practical Exercise: Phylogenetic trees, SNP matrices and epi data - inferring (refuting) transmission, and data visualization 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>
12:45-2:00PM	Practical Exercise: Predicting antimicrobial resistance T Seemann
2:00-2:45PM	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 L Cowley

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 (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

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