

## Pathogen Genomics Workshop: Scientific Program

Day 1: Computational Resources		Venue: CIME
12:00-16:00	Preparing your computer for bioinformatics (Windows WSL) Installing and managing software: Conda,	
	Morning Tea	
	Introduction to command line navigation	
	Data transfer: FTP, rsync, wget	
	GitHub, and Docker	
	Lunch Break	
	Bash loops and basic automation	
	Afternoon Tea	
Day 2: Next Generation Sequencing		Venue: CIME
10:00-16:00	Introduction to Next Generation Sequencing theory and platforms	
	Overview of sample collection, specimen processing, and sequencing library prep	
	Morning Tea	
	Introduction to sequence data and file types	
	Navigating the NCBI sequence database & data deposition	
	Lunch Break	
	Quality control and trimming of sequencing reads	
	Sequence assembly, short read & long read	
	Genome annotation	
	Afternoon Tea	
Day 3: Variant Discovery and Phylogenetics		Venue: CIME
10:00-16:00	Reference-based sequence alignment and variant calling	
	Morning Tea	
	Introduction to phylogenetics	
	Phylogenetics methods and theory	
	Lunch Break	
	Multiple sequence alignment	
	Phylogenetics software and pipelines	
	Afternoon Tea	



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Day 4: Phylogenetics and Data Visualization		Venue: CIME
10:00-16:00	Phylodynamics	
	Morning Tea	
	Phylogeography	
	Lunch Break	
	Phylogenetic data visualization and annotation	
	Introduction to R programming for statistical analysis and visualization (ggtree)	
	Afternoon Tea	
Day 5: Data Clinic and Project Planning		Venue: CIME
10:00-16:00	Workshop recap and makeup time	
	Morning Tea	
	Data clinic (BYOD: bring your own data)	
	Lunch Break	
	Global Healthcare Detection and Response project planning and discussion	
	Afternoon Tea	