

Molecular Epidemiology of Infectious Disease



This senior seminar course will provide a broad overview of the application of modern molecular and genomics methods to infectious disease epidemiology. Topics will include the identification, classification, characterization, and monitoring of pathogens in human populations; the application of molecular methods to screening, prevention and treatment of infectious diseases; and the analysis of molecular and genomics data for disease. Globally relevant diseases such as salmonellosis, TB, COVID, and influenza will be highlighted.

Topics

- pandemic response
- outbreak investigation
- genomic epidemiology
- high-throughput sequencing
- microbial population structure
- microbial genomics
- outbreak investigation
- bioinformatics
- molecular diagnosis
- molecular typing
- public health surveillance
- disease control and prevention

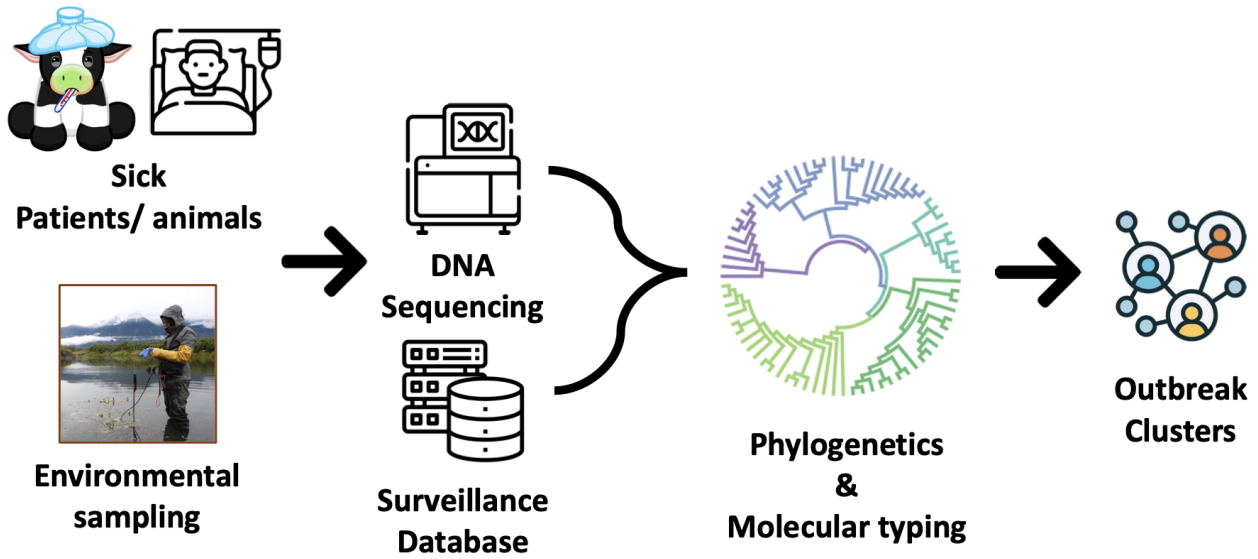
INSTRUCTOR:

William Hsiao

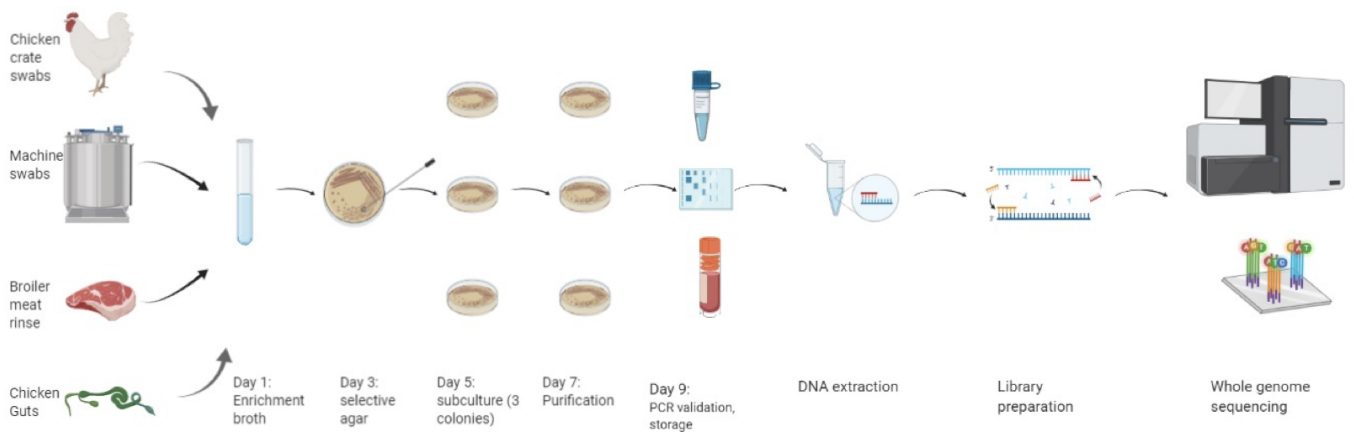


Microbial genomics and bioinformatics scientist

Outbreak Cluster Analysis with Genomics



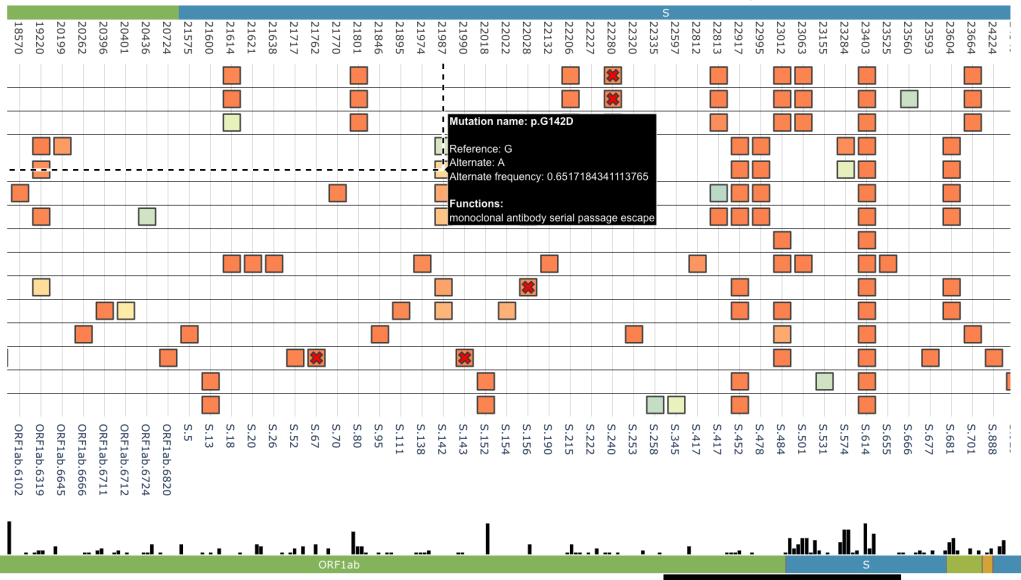
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Select lineages Upload

Clade defining

B.1.351.3 (Beta)
B.1.351.2 (Beta)
B.1.351 (Beta)
AY.3.1 (Delta)
AY.3 (Delta)
AY.2 (Delta)
AY.1 (Delta)
P.2 (Zeta)
P.1 (Gamma)
B.1.617.2 (Delta)
B.1.617.1 (Kappa)
B.1.526 (Iota)
B.1.525 (Eta)
B.1.429 (Epsilon)
B.1.427 (Epsilon)

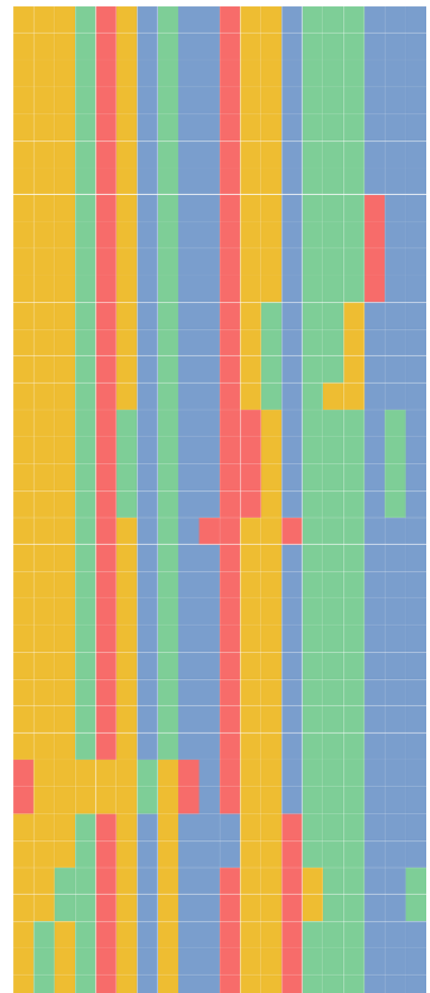
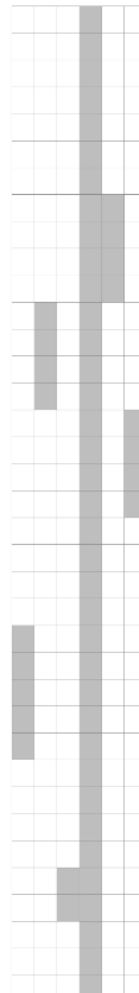
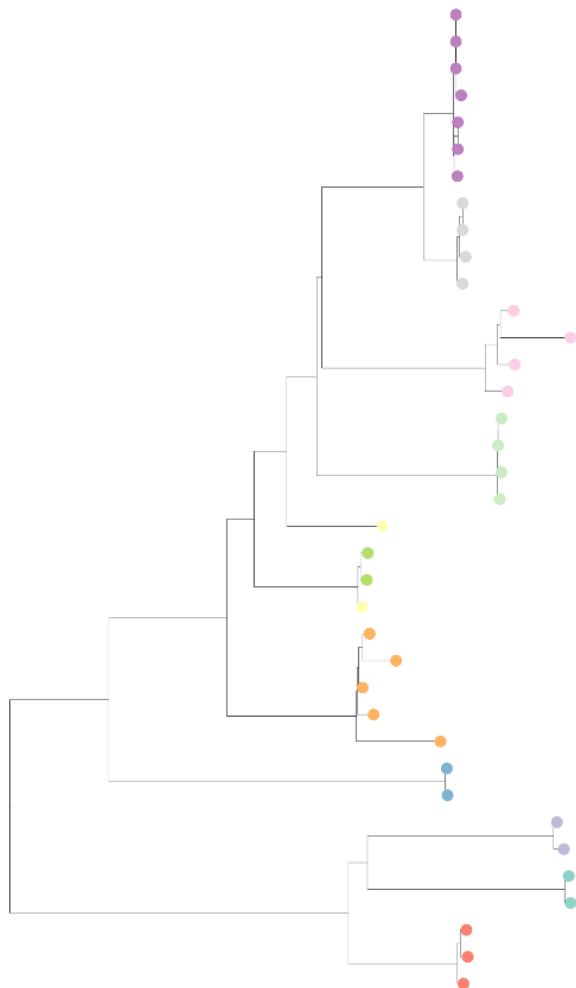


A G C T - Absence Presence CRISPR1 CRISPR2

Plasmid

CRISPR CNV

Phage SNV



CC16: Enteritidis