

# Spring 2024

## PLP 893

# Applied Molecular Evolution and Genetics of Microbes

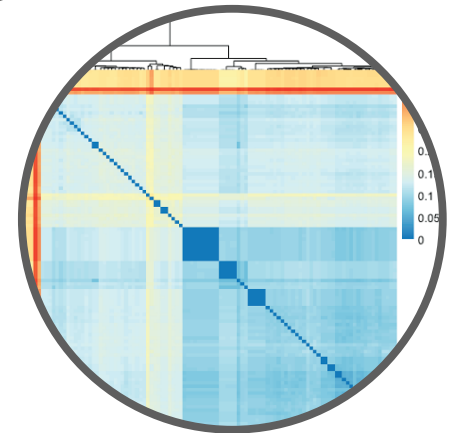
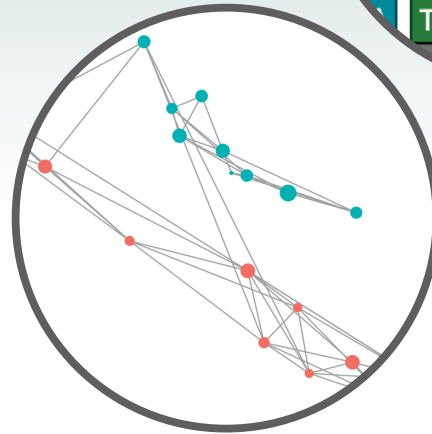
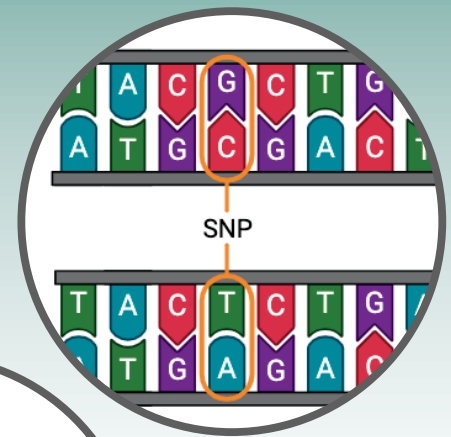
In this course, you will get an introduction to population genetics and phylogenetics as applied to plant pathology. No prior experience is required,

but it is recommended to have a general knowledge of pathogen biology and genetics. Many research projects involve questions that require an understanding of the genetic diversity of pathogens, either within a macro or microevolutionary context. This class will use DNA sequences or markers to evaluate genetic diversity and infer evolutionary processes in plant pathogens.

The course will cover topics such as sampling strategies, types of markers, estimation of genetic diversity, evolutionary forces, population evolution and demographics, and phylogenetic methods. The class will consist of lectures, literature discussions, and hands-on analysis, and students will have the opportunity to analyze their datasets. After the class, students will have a better understanding of population genetics and the genetic diversity of plant-associated microbes.

### Objectives:

- Be able to apply population genetics to answer plant pathology-related questions, including determining if pathogens are reproducing sexually, identifying recent introductions, and determining if genotypes are restricted to a specific geographic region.
- Recognize the limitations, advantages and proper use of genetic markers and population genetics tools
- Interpret data and results derived from population genetic analysis
- Employ genetic tools, including phylogenetics to understand the evolution and variation of microbial populations
- Connect concepts learned across previous courses in ecology, genetics, statistics, and evolution with population genetics



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