Bacterial Population Genomics Special Topics Course

PLP 512: Special Topics in Plant Pathology (1 unit)

Will be offered jointly with a SBS course code

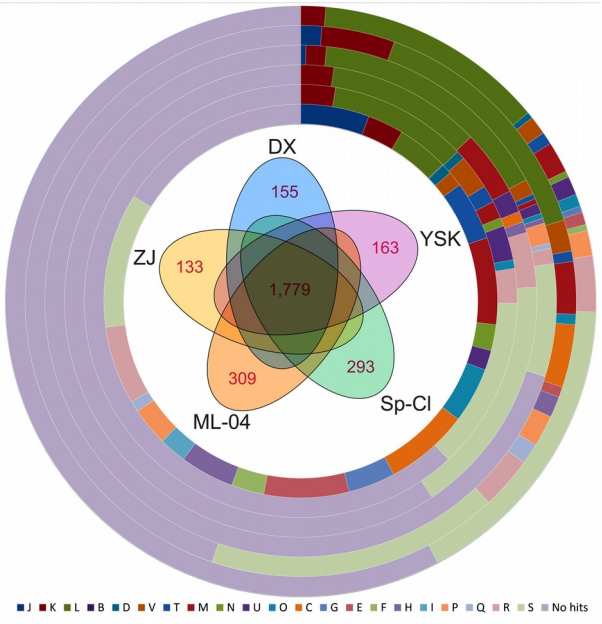
Fall, 2019

→ Tuesdays 4:30-6pm ←

Spark 335

First meeting: August 27th

Maren L. Friesen (Pullman; lead for PLP credit) m.friesen@wsu.edu
Richard Allen White III (Pullman) raw937@gmail.com
Stephanie S. Porter (WSUV) stephanie.porter@wsu.edu



LINK

The plummeting cost of DNA sequencing has revolutionized our understanding of bacteria, particularly those that make a living as pathogens or symbionts of plants. In particular, we have learned that the bacterial genes involved in adapting to their hosts are often on transmissible elements that can evolve differently than the rest of the genome. This special topics course will offer a practical introduction to bacterial draft genome sequencing using low-cost Illumina technology, including hands-on bioinformatics skills to assemble, annotate, and analyze genomic sequencing data. The course will also involve engaging with the primary literature and formulating novel scientific hypotheses that students will be able to test with existing datasets.

Weekly Plan

1: Intro, overview: local adaptation, accessory genome, biogeography of microbes

2: Overview of existing pipeline/data analysis: Assembly

3: Overview of existing pipeline/data analysis: Annotation

4: Overview of existing pipeline/data analysis: Orthologs

5: Discuss one seminal paper: Jessie Shapiro paper

6: Each student presents a paper of their choice to the group: Brainstorm hypotheses to test with our data

7: Discuss one seminal paper on accessory and mobile elements

8: Each student presents a paper of their choice to the group: Brainstorm hypotheses to test with our data

9: Analyses part I

10: Analyses part II

11: Analyses part III

12: Individual analyses of existing data in pairs

13: Presentations!

PLEASE NOTE: Syllabus is subject to change due to timing and coverage of the material at the instructors discretion in order to adjust material for better comprehension and understanding. Any changes of content or material will be provided during the course.