Teaching by Example

Using real world analyses to create a course on reproducible research

Zhian N. Kamvar
zkamvar@unl.edu
541-286-0187

UNIVERSITY OF **Nebraska** Lincoln®

Problem Statement

❖ The reproducibility crisis is due in part to a lack of training on reproducible research methods (Figure 1a)

❖ Current courses on genomic data analysis do not focus on reproducibility

❖ Examples of reproducible research for classroom settings do not involve large, real-world data sets

Project Goal

❖ To create a course on reproducible research in genomic data analysis using a study of local adaptation in the white mold fungus, *Sclerotinia sclerotiorum.*

Research Components

❖ 96 isolates from hierarchical sampling in temperate and tropical climates over 8 subpopulations in North America and East Asia (Figure 1b)

❖ Use reproducible methods to test the hypothesis of local adapatation

❖ Create series of modules on reproducible research on data management from research

Expected Outcomes

❖ Fine-scale knowledge of diversity across temperate regions within continents

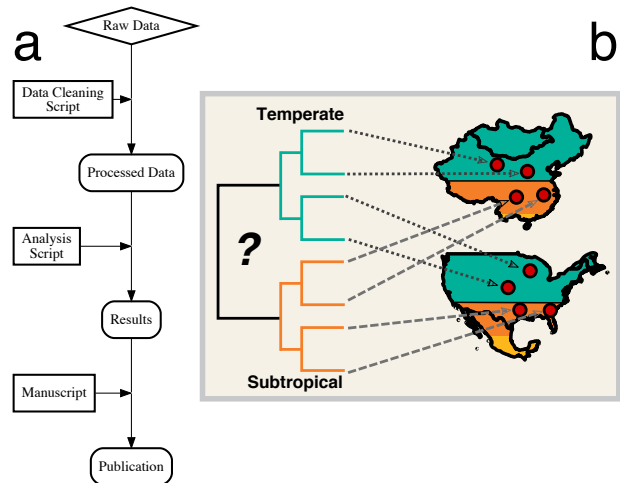❖ Future plant pathologists prepared to work in a reproducible manner

Figure 1: a) A reproducible research workflow b) A hypothesis of the evolutionary history of *Sclerotinia sclerotiorum* in temperate and subtropical regions

Professional Goals

❖ Obtain faculty postion in plant pathology with teaching, outreach, and research responsibilities, focus on teaching data and computer literacy

❖ Develop skills in evidence-based teaching and population genomic analyses

Mentoring Plan

❖ Work under the guidance of Dr. Sydney Everhart, collaborating with experts in evidence-based pedagogy.

❖ Attend Summer Institutes on Scientific Teaching

❖ Obtain certificate for Software and Data Carpentry workshop training

❖ Present research progress and results at American Phytopathological Society national meetings