

Teaching by Example

Using real world analyses to create a course on reproducible research

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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 Goals

- ❖ To create a course on reproducible research in agricultural data analysis
- ❖ Create a learning module 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 adaptation
- ❖ 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

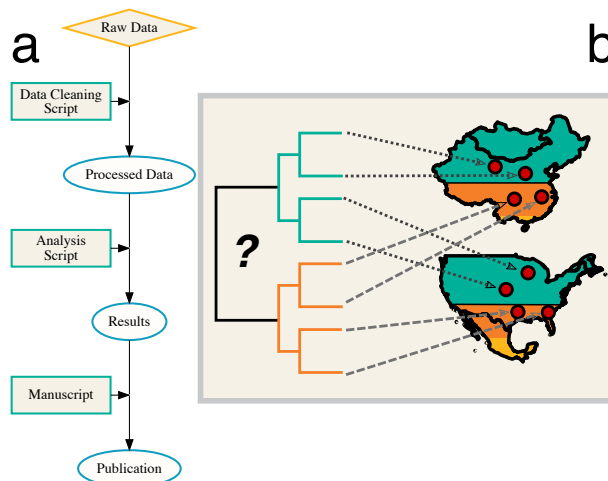


Figure 1: a) A reproducible research workflow b) A hypothesis of the evolutionary history of *Sclerotinia sclerotiorum* in temperate and subtropical regions

Professional Goals

- ❖ Obtain faculty position 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
- ❖ Attend Workshop on Molecular Biology in Woods Hole, MA
- ❖ Present research progress and results at American Phytopathological Society national meetings