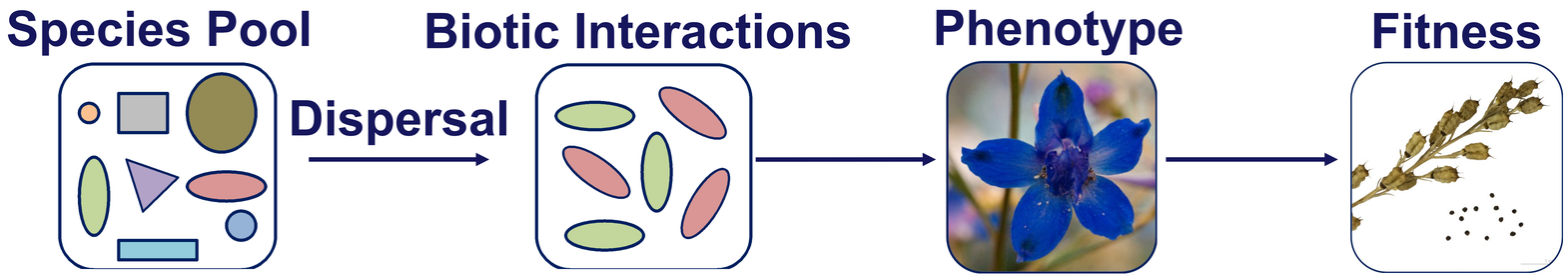
UtahStateUniversity
DEPARTMENT OF BIOLOGY

Schaeffer Lab: Basic and Applied Ecology of Plant-Microbe-Insect Interactions

Mission

Microbiomes are ubiquitous, multi-species communities found all over the globe. Increasingly, it's recognized that microbiomes are of vital importance to medicine, agriculture, and natural ecosystems. Processes governing how these communities assemble however, as well as links to their ultimate function, remain largely unknown. The Schaeffer Lab uses microbial communities associated with plants and insects as simple and tractable systems to identify the ecological and evolutionary processes that shape microbiome diversity, assembly and function.



Systems

We address both basic and applied questions on **cross-kingdom interactions** involving plants, insects, and their associated microbes. Research topics range from exploration of how microbes shape the **evolutionary ecology** of interspecific signaling between plants and pollinators, how **crop-associated microbiomes** assemble and function, as well as how they can be manipulated to improve **ecosystem services** in agricultural landscapes.

Wildflowers

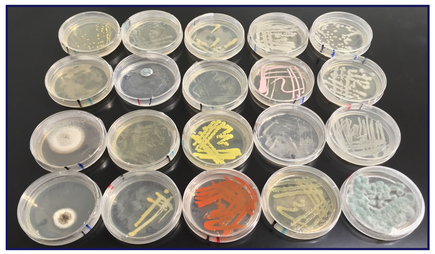
Pollinators

Tree Fruits and Pathogens

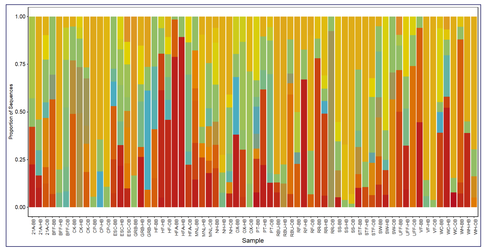
Tools

We employ empirical field and lab approaches, with microbiological, metagenomic, and analytical chemistry techniques, to identify mechanisms underlying assembly processes, as well as function, of microbiomes associated with plants and insects.

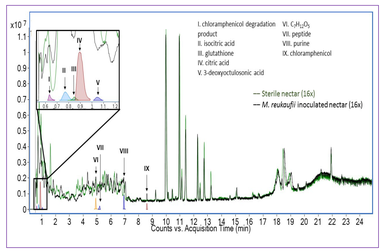
Culturing



Metagenomics



Analytic Chemistry



Behavioral Assays

Application

The primary focus of our lab is to learn about the basic biology of microbes and microbiomes associated with plants and insects. Our work however can solve **real-world problems**, such as improving the **sustainability of food production**, as well as shedding light on the importance of microbes for plant and **pollinator health**. The latter may be especially important for their conservation.

Funding

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