Research Statement

Arthur Rudolph, PhD

# Core research foci for FSHN

Disciplines:

* Analytical Chemistry (GC-MS)
* Data Analysis and Machine learning
* Microbiology
* Genetics & Evolution
* Ecology
* Analytical tools for the analysis of brewery QAQC data
* Fermentation Science & Evolution in Brewing
  + Phylogenetic analysis of brewers yeast
* Microbial Adhesin Genes
  + Flocculation
  + Biofilm formation
  + Edible films
* Microbial biocontrol methods
  + Bioprospecting
  + Biocontrol
    - Destructive organisms
    - Pathogenic organisms
* Molecular biology tools
* Food/Brewing Science!
* Bioprospecting
  + Biocontrol
  + Industrial fermentations

My Pitch

# Research Summary

I am an Evolutionary Microbial Ecologist interested in investigating the evolutionary dynamics of microbial cell surface adhesin genes and semiochemicals (inter-organismal signaling chemicals) and the role they play in the ecological processes that determine microbial dispersal. I investigate these phenotypes in an integrative fashion; I consider the gene to phenotype link, evolution of those phenotypes within populations, how these traits work to recruit dispersers and improve dispersal or colonization ability, ultimately altering dispersal patterns, having consequences at the local and landscape scales. My research involves using molecular genetic/genomic tools and analytical chemistry in combination with experimental and theoretical approaches. I emphasize the practice of open science, combining basic and