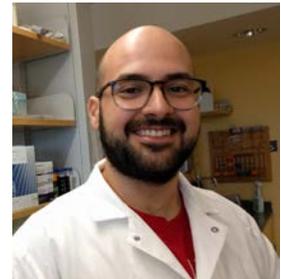


Soil and Water Sciences Graduate Student Exit Seminar

- Speaker:** Marcos de Moraes
Ph.D. Degree Candidate
- Advisor:** Dr. Max Teplitski and Dr. George Hochmuth
- Title:** **Functional and Comparative Genomic Analysis of *Salmonella enterica* in Tomatoes**
- Date:** Monday, November 28th
- Time:** 3:00 pm – 4:00 pm
- Location:** McCarty Hall D, Room G001



Human enteric pathogens, such as *Salmonella* and verotoxigenic *E. coli*, are increasingly recognized as causes of gastroenteritis outbreaks associated with the consumption of fruits and vegetables, and persistence on plants represents an important part of the life cycle of these pathogens. Our objective in this study was to create and validate an avirulent *Salmonella* surrogate strain and determine *Salmonella* sv. Typhimurium (ubiquitous) and sv. Newport (associated with vegetables) genetic requirements for colonization of tomato fruits. Our results indicated a limited role of the virulence determinants for food industry related conditions, and we constructed a *Salmonella* strain that fulfills the requisites to be used as a surrogate to safely model *Salmonella* behavior, helping to improve practices for the food industry. The transposon insertion sequence analysis in *Salmonella* sv. Typhimurium revealed a distinct plant-associated set of genes with limited overlapping with the genes required for *Salmonella* virulence in animals or phytopathogens. *Salmonella* sv. Newport shared the same metabolic functional requirements for colonization of tomatoes identified in sv. Typhimurium. Although, a new gene with unknown function (*papA*) with limited distribution to sv. Newport was required by this serovar for persistence in tomato, showing that serovars diverge in how to colonize this host. This study revealed that *Salmonella* colonization of plants is a complex process. It is influenced by *Salmonella* serovar, and it requires a unique set of metabolic functions, suggesting that this pathogen is adapted to use plants as alternative hosts. Moreover, we provided the first avirulent *Salmonella* surrogate strain constructed and validated for the development of safer practices by the food industry.

For our off-campus students, off-campus faculty, and on-campus students who cannot attend, this seminar can be viewed via live this link: [Marcos de Moraes](#). In addition, all seminars are archived for viewing at <http://soils.ifas.ufl.edu/academics/seminars.shtml>