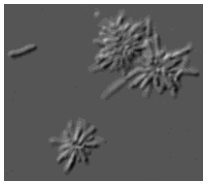
Plant-Microbe Interactions and Antibacterial Treatments

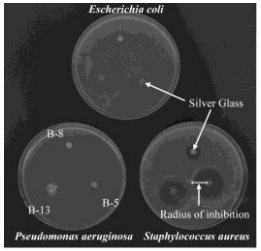
Research Topics

- Soybean/*Bradyrhizobium japonicum* symbiosis
  - Bioenergetics of nitrogen fixation
  - Drought tolerant symbiotic bacteria
- Cell-Cell communication
  - Quorum sensing in symbiotic bacteria
  - Novel quorum sensing molecules
- Plant-microbe interactions in rhizoremediation
  - Isolation of novel symbiotic bacteria
  - Rhizosphere microbiome analysis
- Anti-bacterial treatments
  - Characterization of anti-bacterial materials
  - Development of anti-bacterial materials
- Microbiology education
  - Assessment of active learning strategies in STEM education



Soybeans are a major crop for the state of Missouri and plant associated bacteria play a significant role in productivity.

Bioactive glasses can fight infections while healing wounds. Oil smoke vapors can disinfect contaminated materials.



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Keywords

- Symbiosis, Quorum sensing, Synthetic biology, Antibacterial materials

Recognitions/Significant achievements

- DAAD Research Ambassador/Humboldtian on Campus
- HHMI Biointeractive Teaching Ambassador
- Faculty Service Award
- Faculty Teaching Award
- Academy of Sciences St. Louis Science Educator Award 2017
- Distinguished Advisor Award