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# Graduate Students Seminar

Department of Chemistry

**Sunday, May 21<sup>st</sup>, 2023**

**Time 14:30**

**Bldg. 43 Room 015**

## Shaked Uzi

Under the supervision of Prof. Michael M. Meijler

### **Exploring the inter-species communication between *P. aeruginosa* and *S. aureus***

Chemical communication between competing bacteria in multi-species environments often enables both species to adapt and survive, and perhaps even thrive. *P. aeruginosa* and *S. aureus* are two bacterial pathogens found in natural biofilms, especially in the lungs of cystic fibrosis (CF) patients, where recent studies showed that there is often cooperation between the two species, leading to increased disease severity and antibiotic resistance.

However, the mechanisms behind this cooperation are poorly understood. In this study, we analyzed co-cultured biofilms in various settings, and we applied untargeted mass spectrometry-based metabolomics analyses, combined with synthetic validation of candidate compounds.



We unexpectedly discovered that *S. aureus* can convert pyochelin into pyochelin methyl ester, an analogue of pyochelin with reduced affinity for iron (III). This conversion allows *S. aureus* to coexist more readily with *P. aeruginosa* and unveils a mechanism underlying the formation of robust dual-species biofilms.

