

# ***In-silico and In-vitro Analysis of Resource Allocation in Biofilm Consortia***

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Biofilms are ubiquitous in medical, environmental, and engineered microbial systems. The majority of naturally occurring microbes grow as mixed species biofilms. These complicated consortia are comprised of a large number of cell phenotypes with complex interactions and self-organize into three-dimensional structures. While foundational to the vast majority of microbial life on the planet, the basic design principles including resource allocation strategies of consortia biofilms are still poorly understood. Our research focuses on multiple experimental consortia including a medically-relevant, three species, bacterial chronic wound consortium and synthetic consortia comprised of engineered *Escherichia coli* strains. These distinct, yet tractable, systems are remarkably similar, following similar principles that provide insight into basic consortia structure-function relationships and the competitive partitioning of limiting resources between interacting microbial cells. The studied ecological theories and design principles are believed relevant to many consortia.

**Dr. Ross Carlson** is a professor in the Department of Chemical and Biological Engineering and the Center of Biofilm Engineering at Montana State University, Bozeman. He earned a PhD in Chemical Engineering from the University of Minnesota, Twin Cities and began his faculty position at MSU in 2005. His interdisciplinary research explores the engineering and the control of natural and artificial microbial communities with a focus on medical, environmental and bioprocess applications. His research efforts are split between in silico systems biology and laboratory experiments.

**When: Tuesday, November 28, 2017 at 4 pm**

**Where: EP#252**