**Abstract**

Title: The effect of rugose small colony variants on *Pseudomonas aeruginosa* biofilm dispersion

Authors: Angel Reddy, Dr. Courtney Kleeshulte, Dr. Matthew Parsek

One of the most common sources of hospital-acquired infections and the leading cause of chronic infections in cystic fibrosis patients is the opportunistic pathogen *Pseudomonas aeruginosa*. Pathogens such as *P. aeruginosa* exist in structured, bacterial communities encased in a self-produced matrix known as biofilms. These biofilms provide protection to the bacteria, which is largely why *P. aeruginosa* is so difficult to treat . There are several stages to biofilm development with the final stage being dispersion. During dispersion, bacteria leave the biofilm. Dispersion is a growing area of interest for researchers as dispersed cells are more susceptible to antibiotic treatment and immune cell clearance than biofilm cells. A unique phenotype called the rugose small colony variant (RSCV) develops in *P. aeruginosa*. This phenotype is characterized by an overproduction of the polysaccharides that make up the matrix. Studies reveal that this phenotype arises in cystic fibrosis patients. Little information is known about RSCVs and dispersion. My research focused on finding out if RSCVs disperse from their biofilms. To investigate this question, biofilms were grown over the course of five days using a tube reactor system. This apparatus supplies bacteria with a constant source of nutrients and flushes out their waste products to create an ideal environment for biofilms to grow. To induce dispersion, the flow of nutrients to the biofilm is stopped. RSCV forming strains were grown in the reactor to compare their dispersion responses to control strains. Samples were collected from the reactor, serial diluted, and colony forming units (CFUs) were counted. I found that biofilms formed from RSCVs release less bacteria when dispersion was induced. The data suggests that RSCVs do not disperse. Future work may be directed towards understanding what aspects about RSCVs cause them to release less bacteria even when signaled to disperse.