

Abstract Submitted  
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**Utilizing *E. coli* Autotactic Responses to Understand Quorum Dependent Behaviors in *P. aeruginosa*** SHINJI STRAIN, SAMUEL BIENVENU, TRAVIS THATCHER, VERNITA GORDON, Center for Nonlinear Dynamics, University of Texas at Austin — Biofilms are multicellular, surface-bound communities of interacting unicellular organisms. In the initial stages of biofilm formation, cells populate the surface and eventually form microcolonies (dense surface-bound clusters of cells). How much these microcolonies arise from clonal growth and how much they arise from attraction and binding of non-clonal cells is not well-understood. A potentially important form of attraction is autotaxis, movement of cells toward like cells. Using microscopy and automated tracking and analysis algorithms, we will study how bacteria respond to each other in a spatially-dependent manner. We will determine how variations in neighbor density and arrangement stimulate changes in cell motility. *E. coli* will be our initial model system, and later we will probe early biofilm formation in *P. aeruginosa*. We will also study chemotaxis (motility toward an attractive chemical), to understand how this drives, complements, or competes with autotaxis in different settings.

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