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Interaction of a *P. aeruginosa* Quorum Sensing Signal with Lipid Membranes REBECCA MORRISON, AMELIA HALL, ELLEN HUTCHISON, THUC NGUYEN, BENJAMIN COOLEY, VERNITA GORDON, University of Texas at Austin — Bacteria use a signaling and regulatory system called “quorum sensing” to alter their gene expressions in response to the concentration of neighboring bacteria and to environmental conditions that make collective activity favorable for bacteria. *P. aeruginosa* is an opportunistic human pathogen that uses quorum sensing to govern processes such as virulence and biofilm formation. This organism’s two main quorum sensing circuits use two different signaling molecules that are amphiphilic and differ primarily in the length of their hydrocarbon side chain and thus in their hydrophobic physical chemistry. How these physical chemistries govern the propagation and spatial localization of signals and thus of quorum sensing is not known. We present preliminary results showing that signals preferentially sequester to amphiphilic lipid membranes, which can act as reservoirs for signal. This is promising for future characterization of how the quorum sensing signals of many bacteria and yeast partition to spatially-differentiated amphiphilic environments, in a host or biofilm.

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