Cells live in communities where they interact with each other and their environment. By coordinating individuals, such interactions often result in collective behavior that emerge on scales larger than the individuals that are beneficial to the population. At the same time, populations of individuals, even isogenic ones, display phenotypic heterogeneity, which diversifies individual behavior and enhances the resilience of the population in unexpected situations. This raises a dilemma: although individuality provides advantages, it also tends to reduce coordination. I will report on our experimental and theoretical efforts that use bacterial chemotaxis as a model system to quantify information processing and navigational performance in individual cells, and to understand how populations of cells reconcile individuality with group behavior.

This study was supported by the National Institutes of Health grants R01GM106189 and R01GM138533, by the Allen Distinguished Investigator Program (grant 11562) through The Paul G. Allen Frontiers Group, and by the James S. McDonnell Foundation grant on Complexity.

Wednesday, Dec 16th, 2020 at 2:15 pm

MPIDS, video conference at www.zoom.us
Meeting ID: 959 2774 3389
Passcode: 651129, direct link