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Abstract for an Invited Paper
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**Self-driven phase transitions in living matter**

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The soil dwelling bacterium *Myxococcus xanthus* is an amazing organism that uses collective motility to hunt in giant packs when near prey and to form beautiful and protective macroscopic structures comprising millions of cells when food is scarce. I will present an overview of how these cells move and how they regulate that motion to produce different phases of collective behavior. Inspired by recent work on of active matter, I will discuss experiments that reveal how these cells generate nematic order and how they actively tune the Péclet number of the population to drive a phase transition from a gas-like flocking state to an aggregated liquid-droplet state during starvation