

# Collective Behavior in Biology

First meeting

February 25, 2016; S361 Clark Center; 11AM-2PM

Collective behavior occurs at many scales. atomic and molecular interactions give rise to bulk material properties, single cells form biofilms and tissues, social insect colonies work and reproduce together, birds flock, fish school, and humans create social networks and cities, as well as engineered distributed networks. In all cases, the dynamics of the group emerge from local interactions amongst the individuals.

Our primary goal is to bring together Stanford researchers to discuss ideas and future collaborations in collective behavior research. By identifying analogies among diverse systems, we hope to begin to develop shared tools, approaches, and methods with an emphasis on cross-talk between disciplines. For example, can similar models be used to describe groups of cells and of whole animals? What insights can materials science or the statistical physics of active matter give us into the nature of aggregations? Can ideas from control theories of networks or distributed systems help us understand collective behavior in biological systems? Please come and join us to enrich the conversation and help make this the first meeting of many!

**The plan: Short talks, lunch, and discussion**

**Speakers include:**

Nicholas Ouellette, Civil Engineering

Deborah Gordon, Biology

Dan McFarland, Sociology

Tobias Meyer, Systems Biology

Manu Prakash, Bioengineering

**Lunch will be provided. Please let us know you are coming at:**

<https://stanford.box.com/collectivebehavior2016>

(contact Daniel Cohen ([danieljc@stanford.edu](mailto:danieljc@stanford.edu)) with questions)