Bacterial locomotion

Nicholas Darnton
Swarming bacteria

- High-density motion of bacteria on a surface
  - Treat swarming using stat. mech.
    - Measure correlation lengths, etc.
    - Model as a 2D self-propelled gas
  - Ultimately want to understand bulk flow rates, jamming and multiple layer formation
Flagellar polymorphism

• Bacteria swim by rotating helical flagella
  • Flagella change form under stress
  • The shape is understood (each flagellin monomer reversibly transforms between two shapes), but not the energy.
• Repeatedly pulling on a single flagellum in an optical trap gives a force-displacement curve.
  • Ultimate aim is the thermodynamics.