

WAVES LIKE NO OTHER: PROPULSION AND PATTERNS IN THE LIFE OF MYXOBACTERIA

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Myxobacteria are rod-shaped cells that propel themselves on surfaces by a mechanism called 'gliding'. At a certain stage of their life cycle they commence an extraordinary collective behavior that generates linear, concentric and spiral density waves. These waves are unlike any other in biology, chemistry or physics. I will present models that address both the propulsive mechanisms and cooperative behavior of these remarkable organisms. The models explain the patterns, and illustrate how the patterns can be used as a probe of intercellular signal transduction mechanisms. These organisms provide an alternate system for studying multicellular pattern formation based on direct cell contact rather than diffusible morphogens.