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Chiral pattern formation in a migrating multicellular system

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Abstract:

Most animals have systematic left-right asymmetry in their bodies and organs. Their chiral property should be originated from the organization of the chirality of their constituents. However, the mechanisms of how chiral information is brought from the molecular to the cell, tissue and organ scales are largely unresolved. In my talk, I will present our recent study combining experiment and theory on a large-scale chiral pattern formation that is self-organized in a population of chiral migrating cells. We studied a mutant of Dictyostelium discoideum that lacks all chemotactic activities and found that its population is organized into a large-scale multi-armed spiral pattern. The direction of the spiral pattern was always the same. A simple theoretical model reproduced the observed behavior.