



DEFINING THE BUILDING BLOCKS OF COLLECTIVE CELL BEHAVIOR

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Essential biological processes within the human body occur through a complex chemical and physical interplay between 10^{13} - 10^{14} cells that comprise the body's tissues and organs. A fundamental question in the study of collective cell behavior is how multicellular patterns emerge from the behavior and interactions of individual cells. I will present a computational framework to measure how information propagates between single cells, highlighting how local interactions integrate across space and time to create emergent collective behavior, and demonstrate its applicability in a variety of biological systems such as long-range mechanical cell-cell communication through the extracellular matrix, multicellular signaling, and collective cell death.