

Abstract Submitted
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Computational Modeling of Two-dimensional Tissues ALEXANDRA SIGNORIELLO, Yale University, MARK SHATTUCK, CUNY, MARCUS BOSENBERG, COREY O'HERN, Yale University — Structural and mechanical properties regulate cell migration, interaction forces, and packing geometry during tissue development. We have developed a new model for tissue development in two spatial dimensions (2D) that includes different rates for cell growth, cell-cell interactions, and extracellular matrix. Cells are represented as polygons and the total energy of the system includes contributions from cell elasticity, contraction and excluded volume. We study the formation of tissues by slowly increasing cell sizes followed by energy minimization. We then measure the structural and mechanical properties of the tissue as a function of the cell density. The results from our simulations will be compared to experiments that are able visualize the spatiotemporal evolution of monolayers of keratinocytes.

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