

Abstract Submitted
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Epithelial Proliferation on Curved Toroidal Surfaces. YA-WEN CHANG, RICARDO CRUZ, ALEXANDROS FRAGKOPOULOS, Georgia Institute of Technology, SAMANTHA MARQUEZ, Yale University, ANDRES GARCIA, ALBERTO FERNANDEZ-NIEVES, Georgia Institute of Technology — Cellular environment influences a multitude of cellular functions by providing chemical and physical signals that modulate cell behavior, dynamics, development, and eventually survival. In strongly interacting epithelial cells, cells coordinate their behavior to respond to mechanical constraints in 2D. Local differences in tissue tension has also been shown to impact cell reproduction within an epithelial-cell sheet. Much less is known about how cells respond to out-of-plane curvatures. Here, we describe the proliferation of MDCK on toroidal hydrogel substrates, which unlike spheres or planes, have regions of both positive and negative Gaussian curvature. Additionally, the range of curvatures can be controlled by varying the size and aspect ratio of the torus, allowing us to quantify the relation between substrate curvature and cell proliferation.

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