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Spatially limited growth of an epithelium MAXIME DEFORET, OLIVIER COCHET, AXEL BUGUIN, PASCAL SILBERZAN, Physico-Chimie Curie - UMR 168 - CNRS - Institut Curie, BIOLOGY INSPIRED PHYSICS AT MESO-SCALES TEAM — We present a study dealing with the growth of an epithelium on a spatially limited adhesive substrate. Adhesive patterns (typical size: 50μm to 500μm) are created by micro-fabrication techniques: A protein repellent polymeric gel homogeneously grafted on a coverslip is selectively ablated by plasma treatment through a thin layer of photoresist. The technique achieves a high resolution of patterning (around 2μm). After seeding cells (MDCK) on circular adhesive patterns, we let the monolayer grow for 30 hours after reaching the confluence. We use physical descriptors to describe migration and compaction. Two days after the confluence, we observe and characterize by confocal microscopy, the appearance of a tridimensionnal assembly of cells in the peripherical zone of the adhesive pattern (a "rim"). Moreover using other patterns, the existence of a tissue line tension and internal pressure is investigated.

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