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Virgile Viasnoff is a biophysicist holding a CNRS/NUS professor appointment. He is the Head of a joint CNRS/National University of Singapore lab. His group at the Mechanobiology Institute of Singapore studies how environmental sensing influences cell-cell interactions. In particular, combining microfabrication technics, original optical detection and biophysical approaches, they study the role of mechanical forces in the establishment/homeostasis/loss of epithelial polarization in the context of liver development and cancer progression.

ABSTRACT

From Microdishes to optic friendly-microniches: 3D micro-environmental control around single hepatocytes to induce apico basal polarization and lumenogenesis

The influence of the microenvironment on cell behaviour is increasingly recognized. New imaging techniques for cells in their 3D environment are essential to understand the processes by which they probe and respond to the cues received from their microniches. Here, we present an approach that allows transforming microwells into artificial microniches where the chemical coating, the rheological properties and the topographical properties are differentially controlled on the top, sides and bottom of the wells and assembled in a combinatorial way. We show the benefits of this approach in terms of imaging cell polarity development in the context of liver regeneration.

Reference:

Li et al Nature Cell Biology 2016

Galland et al Nature Methods 2015

Stoecklin et al Advanced Bioengineering Systems. 2018