



# Münchner Physik- Kolloquium

Winter  
2017/18

## Physical forces driving migration, division and folding in epithelial sheets

**Prof. Dr. Xavier Trepat**, *ICREA, Institute for Bioengineering of Catalonia, Barcelona, Spain*

Monday, 20 November 2017, 17:15 h  
Hörsaal 2, Physik-Department der TUM, Garching

Biological processes such as morphogenesis, tissue regeneration, and cancer invasion are driven by collective migration, division, and folding of epithelial tissues. Each of these functions is tightly regulated by mechanochemical networks and ultimately driven by physical forces. I will present maps of cell-cell and cell-extracellular matrix (ECM) forces during cell migration and division in a variety of epithelial models, from the expanding MDCK cluster to the regenerating zebrafish epicardium. These maps revealed that migration and division in growing tissues are regulated cooperatively. I will also present direct measurements of epithelial traction, tension, and luminal pressure in three-dimensional epithelia of controlled size and shape. By examining epithelial tension over time-scales of hours and for nominal strains reaching 300 %, we establish a remarkable degree of tensional homeostasis mediated by cellular adaptations.

## Student event: Meet the speaker

We invite you to a **student-only** discussion-round with Prof. Dr. Xavier Trepat before his Munich Physics Colloquium talk.

*Be curious and feel free to ask any question.*

Monday, 20 November 2017, 16:00 h  
Seminar room PH 3076 (upper floor), Physik-Department der TUM, James-Franck-Straße 1, Garching

