PhD Project: The mechanical assembly of stratifying skin epithelia

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The newly founded Chair of Biophysics Professor Benoit Ladoux (Alexander von Humboldt professor) is looking for a PhD candidate in biophysics or cell and molecular biology (m, f, d) to start in September. The chair is located in the new building of the Max Planck Center for Physics and Medicine in Erlangen.

Project description :
Epithelia are assemblies of multiple cells that are crucial for barrier function and tissue integrity to protect against challenges from the environment. To maintain tissue homeostasis in the face of these challenges, **epithelia balance cell renewal with cell death**. Whereas simple epithelia are monolayered, the skin epithelium, **the epidermis, is a stratified epithelium**. **Both types of epithelia renew through a continuous flow of dividing and extruding cells**, but whereas in simple epithelia those extruding cells are either lost or reinserted into the monolayer, delaminating stem cells of stratified epithelia differentiate while integrating into a suprabasal layer. Little is known about the cell- and tissue-mechanics of basal cell delamination and generation or renewal of a suprabasal layer. We would like **to address the molecular and mechanical principles that govern cell delamination and subsequent formation of an adhesive distinct suprabasal differentiated layer to generate a basal/suprabasal fate boundary.**
We will combine quantitative assessment of mechanical forces, nematic ordering, cell shape dynamics in fixed and live cell imaging image analysis, and micropatterning.

Profile: The candidate should have a master degree in biophysics or cell biology with possibly a prior experience in microscopy and quantitative imaging. The successful candidate is expected to work in an interdisciplinary and international environment. We are looking for highly motivated graduate students with an interest in multidisciplinary science. Positions will be related to experimental approaches including microscopy, cell culture, and microfabrication.

Job location: Lehrstuhl für Biophysik (Prof. Ladoux), FAU Erlangen-Nürnberg at the new building of Max-Planck-Zentrum für Physik und Medizin (https://mpzpm.mpg.de/)

Please send your application documents (application letter, CV, training and employment references) in electronic form (as ONE PDF-file) to Benoit.Ladoux@fau.de

The application deadline is: 31/07/2024