



MPI-NAT SEMINAR SERIES

Carien Niessen

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Biomechanical regulation of cell shape and fate in epithelial barrier formation, homeostasis and disease

How cell shape and mechanics controls epithelial barrier morphogenesis and regeneration is still poorly understood. In the squamous stratifying epithelium of the skin, the epidermis, stereotypic changes in cell shape guide the differentiation and upward migration of cells to form a barrier that is robustly renewed in the face of multiple challenges including mechanical stress. Combining cell and mechanobiology, genetics, the Niessen lab asks how cell shape, fate and position are coordinated to control the formation and renewal of spatially defined functional compartments within the epidermis. I will discuss how adhesive junctions and associated cytoskeletons control tissue mechanics and how dynamic changes in junctions and signalling locally alter cell mechanics to coordinate cell fate, shape and position in the epidermis that enable renewal while maintaining epithelial barrier function. Furthermore we address how changes in these mechanochemical networks disturb tissue homeostasis and promote disease.

Thursday, 27 March 2025, 1:00 pm

Host: Jochen Rink / Melina Schuh



Fassberg Campus
Ludwig Prandtl Hall

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