Engineering and Analysis of Extracellular Matrix Interactions

Prof. Dr. Tilo Pompe

The group of Prof. Pompe has two major research interests. At first they construct biofunctional interfaces and matrices to accommodate regulating cues of the extracellular matrix by the usage of synthetic and bio-polymers. The control of structure, topology, and composition of the matrices allows the researchers to modulate features like matrix stiffness, ligand affinity, and growth factor presentation. The biomimetic scaffolds are used to investigate in vivo mechanisms of adhesion, proliferation, and differentiation of cells in in vitro setups. By that the research group is able to affect cell fate in an in vivo-like manner for different cell systems, including endothelial cells, hematopoietic stem and progenitor cells, and cells of the immune system. Besides the engineering of in vivo-like cellular microenvironments, the group around Prof. Pompe is interested in the analysis of biophysical and biochemical signaling of the cells within these scaffolds. They focus on the dynamics of ligands, receptors, and signaling molecules of the cell adhesion apparatus, including reorganization, clustering, phosphorylation, as well as force generation. Additionally, they use single cell tracking of cell dynamics over long time periods in these biomimetic microenvironments.

Keywords

- Biomaterials
- Matrix Engineering
- Cell Adhesion Signaling
- Single Cell Tracking

Contact

Prof. Dr. Tilo Pompe
Professor for Biophysical Chemistry
UNIVERSITÄT LEIPZIG
Fakultät für Biowissenschaften, Pharmazie und Psychologie
Institut für Biochemie
Johannisallee 23
04103 Leipzig
fon +49 341 97-36931
fax +49 341 97-36909
tilo.pompe@uni-leipzig.de
www.biochemie.uni-leipzig.de/agpompe/home.php