IRTG 914 - Advanced Methods Course – winter semester 2019/2020

"Cell migration studies in a chemotactic environment using *in vitro* 2D chemotaxis chamber"

Neutrophils are part of the first line of immune defense during acute inflammatory processes. Chemokines and their G-protein coupled receptors are central players in neutrophil recruitment. They initiate signal transduction events that lead to many different cellular responses, among them activation of β2 integrins, resulting in firm neutrophil adhesion. Additionally, they directly affect the transmigration process and mediate VLA-3, VLA6 and NE translocation to the cellular surface, thereby facilitating penetration of the basement membrane. Within the tissue, chemokines act as chemoattractants, guiding polarized neutrophils within the inflamed tissue.
The aim of the Advanced Method Course is to give the students a general overview on different chemotaxis assays and their advantages/disadvantages in answering diverse scientific questions. We will study cell migration in a chemotactic microenvironment using a novel 2D chemotactic chamber. Within this chamber, we are able to establish a stable gradient over time; we will perform live cell imaging and track individual cells throughout the entire experiment. The acquired images will be analyzed using ImageJ (Fiji).

Speaker/Supervisor: Monika Prünster (Project B11)

Literature:

1. Pruenster M, Kurz AR et al. Extracellular MRP8/14 is a regulator of β2 integrin-dependent neutrophil slow rolling and adhesion. Nature commun. 2015
2. Kurz AR, Pruenster M et al. MST1-dependent vesicle trafficking regulates neutrophil transmigration through the vascular basement membrane. J Clin Invest. 2016