



PhD or PostDoc position at the Charité University Medicine Berlin - Cellular Morphodynamics -

The Rocks lab (Systemic Cell Dynamics rockslab.org) has moved to the Charité Berlin, Institute of Biochemistry, and is looking for an enthusiastic candidate for a DFG-funded PostDoc or PhD position.

We study fundamental mechanisms guiding self-organised cell morphogenesis. Cell shape changes and movement rely on Rho GTPase proteins that direct the cytoskeleton to generate mechanical forces. Fundamental gaps exist between our understanding of individual cytoskeletal regulators and of how they function as a system to enable dynamic mesoscale structures. We aim to understand how feedback interactions of the involved players at the plasma membrane create local signalling patterns that coordinate phenomena such as cell polarization or directed migration. Our focus is on the RhoGEF and RhoGAP regulatory proteins, for which we have generated unique tools for family-wide studies and have shown a key function in the control of cytoskeletal dynamics. Combined with state-of-the-art microscopy (optogenetics, biosensors, single molecule imaging), synthetic biology and proteomics, we aim to quantify, perturb and rewire the underlying signalling processes in space and time.

Project options include (see [here](#))

1. Feedback interplay between phosphoinositides, Rho GTPase and actin governing cell polarity
2. Role of protein condensates/phase separation in cytoskeletal dynamics
3. Collective control of protrusion-retraction dynamics by focal adhesion-associated RhoGEFs/RhoGAPs
4. Single molecule analysis of Rho GTPase membrane dynamics and signalling zone nano-organisation
5. Endolysosomal targeting of Protein Kinase A by ARHGAP36

Sufficient preliminary data has been collected in all projects, making successful outcomes likely.

The position is fully funded for at least 3 years and open immediately.

You will:

- be part of vibrant institute located on the [Campus Mitte](#) in the heart of Berlin – a scientific environment that provides numerous opportunities for collaborations connecting basic and biomedical research
- have access to the excellent infrastructure and state-of-the-art facilities on the Charité campus
- benefit from established collaborations

Applicants should have a PhD degree (PostDoc applicants) or Master's degree (PhD applicants) in Biochemistry, Cell Biology or related subjects (or soon to be finished), experience in advanced live cell imaging and cell biology, a keen interest in understanding the spatio-temporal control of signalling processes and, most importantly, a passion for science. Previous work in the field of cytoskeletal dynamics and computational skills are an advantage.

Your application: Please send your application (CV incl. certificates, motivation letter and two reference contacts) as one pdf file to mail@rockslab.org. In the motivation letter, please plausibly delineate how your skills can be applied to the work in this lab. Please note that only short-listed candidates will be contacted.

References:

1. Müller PM et al. [Systems-analysis of RhoGEF/RhoGAP regulatory proteins reveals spatially organized RAC1 signalling from integrin adhesions.](#) *Nature Cell Biology* 2020
2. Eccles RL et al. [Bimodal antagonism of PKA signalling by ARHGAP36.](#) *Nature Communications* 2016
3. Rocks O et al. [The palmitoylation machinery is a spatially organizing system for peripheral membrane proteins.](#) *Cell* 2010