



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 PhD or PostDoc position.

We study the molecular mechanisms that guide 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 whole to enable dynamic mesoscale structures. and how their feedback interplay with actin arrays and other actuators at the cell cortex gives rise to signalling patterns that drive morphodynamic cell behaviour, such as front-rear polarisation or guided migration. We have generated unique tools for family-wide studies of GEFs/GAPs that for the first time provide a systems-level view. 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. Collective control of protrusion-retraction dynamics by focal adhesion-associated Rho GTPase regulators
3. Single molecule analysis of Rho GTPase membrane dynamics and signalling zone nano-organisation
4. 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 university degree in cell biology, biochemistry, biophysics or related fields, extensive experience in 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. copies of certificates, short motivation letter detailing your research interests and suitability to this position and two reference contacts) as one pdf file to oliver.rocks@charite.de.

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