



Research Training Group 1962

Dynamic Interactions at Biological Membranes from Single Molecules to Tissue

Speaker: Prof. Dr. Rainer Böckmann, Computational Biology

Invitation to
RTG 1962 – Guest Talk

Tuesday, 18th of June 2019 at 17.00 (s.t.)

Dr. Esther Zanin
(LMU Munich)

“Patterning cortical contractility during animal development”

*During the development and lifetime of an organism trillions of cell divisions occur. During cell division the contractility of the actin cytoskeleton needs to be precisely patterned in time and space to ensure the proper segregation of the mother cell content. Failure in patterning contractility can cause developmental anomalies during embryogenesis and numerous diseases including cancer and infertility. When the chromosomes segregate in anaphase a contractile actin-myosin ring assembles and constricts at the cell equator of the mother cell and forms the two daughter cells. Two concurrent signals from the mitotic spindle pattern the contractility of the actin-myosin cortex: a stimulatory signal promotes contractility at the cell equator and an inhibitory signal prevents contractility at the cell poles. This dynamic communication between the microtubule and actin cytoskeleton ensures that the mother cell divides at the right position. The aim of my laboratory is to understand at a mechanistic level how contractility is temporally and spatially patterned during animal development. Cell division is an incredible dynamic and complex process during which the localization and activity of thousands of protein complexes have to be controlled in time and space. Due to its highly dynamic nature studying the molecular principles of cell division requires a broad range of tools with outstanding spatial and temporal resolution. Therefore my laboratory employs an interdisciplinary approach where we combine quantitative advanced imaging-based techniques, high-throughput screening, biochemistry, proteomics and genetics in tissue culture cells and the small nematode *C. elegans*.*

Guests are welcome!

gez. Prof. Dr. R. Böckmann

→ Venue: Department Biology, Seminar Room Cell Biology (00.581),
Building B1, Floor 00, Staudtstraße 5, 91058 Erlangen