



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, 3rd of July 2018 at 05.00 p.m. (s.t.)

Prof. Dr. Karin Hauser
(University of Konstanz)

“Protein-membrane interaction studied with time-resolved IR-spectroscopy”

Infrared (IR)-spectroscopy is a powerful technique to analyze dynamic interactions of proteins with biomembranes. We develop time-resolved methods to simultaneously monitor vibrational modes of the protein and the lipids. In my talk I will give two examples from our research projects to demonstrate the high sensitivity of the used approaches. One example will focus on the intrinsically disordered protein α -synuclein (α S), a known pathogenic factor for Parkinson's disease, which can adopt defined secondary structures when interacting with membranes or during fibrillation. The α S-lipid interaction and the implications of this process for protein aggregation and membrane damage are still poorly understood. A comparative study of wild-type α S and the naturally occurring splicing variant α S Δ exon3 yielded new insights into the membrane's capability for altering aggregation pathways. In the second example I will present our studies on photoreceptors and the influence of the membrane environment on the photocycle. The photoreceptors were reconstituted into liposomes thereby providing an uniform biomimetic membrane, and the physical properties of the lipids were systematically varied. We could dissect the effect of membrane composition on individual proton transfer steps in the photocycle and furthermore monitored the protein conformational changes. We observed an intriguing dependence of correlated proton and protein dynamics on the membrane fluidity.

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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