SFB 1078

Protonation Dynamics in Protein Function

Mon, **May 20**, 2019

**15:15 – 17:30**

Freie Universität Berlin
Physics Department
Lecture Hall B

(Arnimallee 14, 14195 Berlin-Dahlem)

# Colloquium

**Prof. Peter Hamm** – University of Zurich, Switzerland

***A nonequilibrium approach to allosteric communication***

With the term ``allostery'' one describes the coupling of two separated sites of a protein, where binding of a ligand at the so-called allosteric site changes the function of the protein at a remote active site. Allostery is one of the fundamental mechanisms of regulatory processes in life. The very question of how these two sites communicate with each other remains an intriguing and controversial problem, with the ultimate question of how an allosteric signal ``propagates'' through a protein. Transient IR spectroscopy provides the time resolution combined with the chemical selectivity necessary to study these nonequilibrium processes. In these experiments, an allosteric protein is light-trigger with the help of a photo-isomerizing azobenzene moiety, which is incorporated into the protein in a way that it mimics an allosteric process, and the response of the protein is recorded by transient IR spectroscopy. I will discuss a variety of protein systems that we have designed for that purpose, as well as ongoing experiments.

**Dr. Gregor Hagelueken** – Rheinische Friedrich-Wilhelms-Universität Bonn, Germany

***Towards structure and function of sialic acid TRAP transporters involved in lipopolysaccharide sialylation of pathogenic bacteria***

Pathogenic bacteria such as *V. cholerae* and *H. influenzae* use complex lipopolysaccharides (LPS) in their outer membrane to protect themselves against the innate immune response during infection. To decrease the antigenicity of the LPS, it is decorated with host derived sialic acid molecules. The bacteria use sialic acid TRAP transporters to scavenge this highly abundant carbohydrate from the host tissue and import it into their cytosol, where it is attached to nascent LPS molecules. TRAP transporters are an interesting functional and structural mix between the well-studied ABC transporters and secondary active transporters. We use an integrated approach of EPR distance measurements and X-ray crystallography to investigate the structure, conformational dynamics and function of TRAP transporters.

*Coffee and tea are ready at 15:00 and during the break from 16:15 – 16:30.* www.sfb1078.de

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