

SFB
1078



Protonation Dynamics
in Protein Function

➤ Colloquium

Mon, July 8,
2019

15:15 – 17:30

Freie Universität Berlin
Physics Department
Lecture Hall B

(Arnimallee 14, 14195 Berlin-Dahlem)

➤ Prof. Claudia Steinem – Georg-August-Universität Göttingen

Proton translocation processes across lipid bilayers: How model membranes contribute to our current understanding

A large number of biological processes is coupled to proton translocation across membranes. Hence, it is desirable to provide artificial model membranes combined with a sensitive readout scheme to monitor H⁺-transfer processes in a time resolved manner. In this talk, I will present three different systems that address the following questions: i) *Are protons the species that are transported?* During a screening approach for antibiotics using human bacterial nasal isolates, a new non-ribosomal cyclic peptide produced by *Staphylococcus lugdunensis* was discovered, called Ludgunin, which exhibits micromolar activity against methicillin-resistant *Staphylococcus aureus* (MRSA). Based on a simple vesicle assay, we were able to elucidate the mode of action of this peptide [1]. ii) *How many protons per protein are translocated?* We developed a method to quantitatively determine pH changes induced by the voltage-dependent proton channel Hv1 in vesicles using the commercially available pH-sensitive fluorophore Oregon Green 488-DHPE in a time-resolved manner [2]. iii) *What is the proton translocation rate on the single vesicle level?* We established a protocol to analyze the proton pump activity of the TF₀F₁-ATPase from a thermophilic bacterium using the Oregon Green 488-DHPE in single surface-bound vesicles [3].

[1] *Angew. Chem. Int. Ed.* **2019**, online
[2] *Anal. Bioanal. Chem.* **2018**, 410, 6497–6505.
[3] *Analyst* **2017**, 14, 2670-2677.

➤ Dr. Sabine Oldemeyer – Lawrence Berkeley National Laboratory, USA

Impact of the antenna pigment 8-HDF on red light-induced processes in the cryptochrome aCRY from C. reinhardtii

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

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