SFB 1078

Protonation Dynamics in Protein Function

Colloquium

Mon, **February 10,** 2019

15:15 – 17:30

Freie Universität Berlin
Physics Department
Lecture Hall B

(Arnimallee 14, 14195 Berlin-Dahlem)

Dr. Stefano Santabarbara – Istituto di Biofisica Consiglio Nazionale delle Ricerche, CNR (Milan, Italy)

Steps towards a general coarse-grained modelling description of excited state energy and electron transfer in Photosystem I

Photosystem I is a large macromolecular cofactor-protein complex that is an essential component of the photosynthetic electron transport chain. It can functionally considered to be composed of two principal units, the core and the external antenna apparatus. The core complex, that act both as a light harvesting system and, crucially, as the site of primary photon conversion and successive electron transfer reactions is generally well conserved amongst species. The external antenna serves to increase the photon capture efficiency and is very diversified instead. Photosystem I is known to be very efficient at concerting sunlight with photochemical photon conversion yield approaching unit. Understanding the photochemical mechanism and the interplay between light conversion and excited state delivery to the photocatalytic centre is therefore crucial biologically and for high efficiency large-bandwidth photovoltaic devices. An approach based on coarse graining the super-complex into functional units in order to reduce the modelling description of experimental data to a manageable and intuitive set of parameters will be discussed.

Dr. Johanna Baldus– Goethe-Universität Frankfurt

Photocycle intermediates of microbial rhodopsins observed by cryo-tapping and DNP-NMR

Using solid-state NMR microbial rhodopsins can be studied in lipid bilayers at atomic resolution. Upon illumination these proteins undergo a photocycle with a number of distinct photo intermediates. We use different trapping procedures for these intermediates and enhance their NMR signal by dynamic nuclear polarization. Results will be presented on Channelrhodopsin-2 and Proteorhodopsin revealing detailed insight into different photo intermediates.

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

www.sfb1078.de

Freie Universität Berlin · berlin · Humboldt-Universität zu Berlin · Charité Universitätsmedizin Berlin · FMP Leibniz-Institut für Molekulare Pharmakologie · Justus-Liebig-Universität Gießen