



Life Sciences Seminar

From dynamic biomolecular structures to biological function using integrated NMR-based structural biology

Paul Schanda (Inst. de Biologie Structurale (IBS))

Host: Florian Schur

Living systems are inherently dynamic, and the motions and flexibility of the underlying molecular actors, biopolymers, are the basis for all biological processes. NMR spectroscopy is exquisitely sensitive to dynamics, and provides functional insights beyond static structures. We combine solution- and solid-state NMR, (cryo-)EM, MD simulations, X-ray and in-vivo experiments to address questions ranging from fundamental biophysics to biological mechanisms.

Along with new NMR methodologies, I will address fundamental aspects of protein dynamics: how do proteins exchange between various functional states? Are their motions preserved when trapped in crystal lattices? How and at which temperature are motions activated?

I introduce an approach that combines NMR and cryo-EM to obtain atomic-level 3D structures, and show its application to a 0.5 MDa-large aminopeptidase enzyme. Beyond structure, I show how dynamics control the function of this large enzymatic machinery.

Finally, I will present recent insight into the mechanisms of molecular chaperones, focusing in particular on the mechanisms by which chaperones transport highly aggregation-prone membrane proteins into mitochondria.

Tuesday, March 5, 2019 10:00am - 11:00am

IST Austria Campus Mondi Seminar Room 2, Central Building



This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage: <https://ist.ac.at/en/campus/how-to-get-here/> The IST Shuttle bus is marked IST Shuttle (#142) and has the Institute Logo printed on the side.