MEMBRANES & MOLECULES

Attention date et heure exceptionnelles :

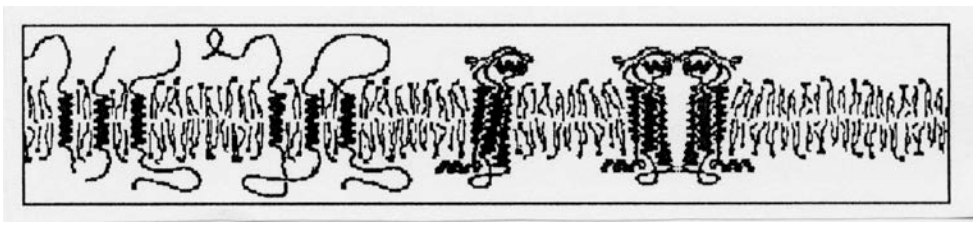
Mercredi 29 mai 2019, 14h00

Robert Tampé

ERC Investigator Life Sciences
Institute of Biochemistry, Biocenter, Goethe University Frankfurt
Research Center CRC 807 – Membrane Transport and Communication

Catch me if you can – Macromolecular complexes in action shaping adaptive immunity

Institut de Biologie Physico-Chimique
Bibliothèque RdC
13, rue Pierre et Marie Curie
75005 PARIS
Invité par Martin.Picard@ibpc.fr



Catch me if you can – Macromolecular complexes in action shaping adaptive immunity

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Identifying and eliminating infected or malignantly transformed cells are fundamental tasks of our adaptive immune system. For immune surveillance, the cell's metastable proteome is displayed as broken bits (peptides) on major histocompatibility complex class I (MHC I) molecules to cytotoxic T-lymphocytes. Our knowledge about the track from the cellular proteome to the presentation of peptides has greatly expanded, leading to a quite comprehensive understanding of the antigen processing pathway. The seminar will report on the mechanism of antigen translocation, chaperoning, editing, and ER quality control. Following on an integrative approach, the conformation landscape of ABC transporters, the structure of the MHC I peptide-loading complex (PLC) and other MHC I chaperone complexes, also in the context of viral immune evasion, will be addressed. The seminar provides the framework for understanding of the conformational landscape of heterodimeric/asymmetric ABC transporters, the ER quality control, and the onset of an adaptive immune response.

Robert Tampé is a biochemist at the Biocenter of Goethe University Frankfurt, known for his contributions in the mechanistic understanding of antigen processing and viral immune evasion. He also discovered the molecular machinery of ribosome recycling and provided structural and mechanistic insights into ribosome splitting and mRNA surveillance. His major passions are macromolecular complexes, membrane biology, control of mRNA translation, as well as chemical and synthetic biology.

Robert Tampé is full professor at Goethe University Frankfurt and director of the Institute of Biochemistry and the Research Center SFB 807 *Membrane Transport and Communication*. He initiated the Cluster of Excellence *Macromolecular Complexes*. Before assuming his position in Frankfurt, he was director of the Institute of Physiological Chemistry, Medical School at the University of Marburg, independent group leader at the Max Planck Institute of Biochemistry Martinsried, and assistant professor at the Technical University Munich. As Max Kade Fellow, he worked with Harden M. McConnell at Stanford University. He was awarded with an honorary professorship from Kyoto University and was Visiting Research Fellow at Merton College and Department of Biochemistry, Oxford.

References:

1) Blees A, Januliene D, Hofmann T, Koller N, Schmidt C, Trowitzsch S, Moeller A, Tampé R (2017) Structure of the human MHC-I peptide-loading complex. ***Nature*** 551, 525-8.
2) Thomas C, Tampé R (2017) Structure of the TAPBPR-MHC I complex defines the mechanism of peptide loading and editing. ***Science*** 358, 1060-4.
3) Nöll *et al.* (2017) Structure and mechanistic basis of a functional homolog of the antigen transporter TAP. ***PNAS*** 114, 438.
4) Kim *et al.* (2015) Subnanometer cryo-EM structure of a nucleotide free heterodimeric ABC exporter. ***Nature*** 517, 396-400.