COLLOQUIA IN MEMBRANE TRANSPORT

Venue: Medical University Vienna, Center for Physiology and Pharmacology,
Institute of Pharmacology, Waehringerstrasse 13a, 1090 Vienna, "**Leseraum**"
(Harald Sitte, Tel.: (01) 40160 31323, *harald.sitte@meduniwien.ac.at*,
Michael Freissmuth, Tel.: (01) 40160 31371, *michael.freissmuth@meduniwien.ac.at)*

Monday 16.12.2013 14.30 s.t. **Dimitrios Stamou** (host: M. Freissmuth)

Head of the Bio-Nanotechnology Laboratory and
Co-director of the Lundbeck Center Biomembranes
in Nanomedicine
Department of Chemistry and
Nano-Science Center
University of Copenhagen
Denmark

"Structure function of transmembrane proteins at the single molecule level"

Dimitrios Stamou (stamou@nano.ku.dk)

Abstract.
The main research theme at the Bio-Nanotechnology Laboratory is the nanoscale spatio-temporal organization of biological systems and its impact on normal and aberrant biological functions. We use quantitative fluorescence microscopy and characterize with single molecule resolution a number of processes taking place within or at the interface of biological membranes including membrane deformation, rafts, interfacially activated enzymes, SNAREs, transporters, GPCRs. We aim at identifying unifying biophysical mechanisms that control on the nanometer scale the structure and function of proteins and membranes. Here I introduce briefly few examples of past work and then focus on our recent unpublished work characterizing conformational dynamics and oligomerization of the b2AR at the single molecule level.

Selected References

1 **Journal of the American Chemical Society, 2012.** 134 (22): p. 9296–9302
Single enzyme studies reveal the existence of discrete functional states for monomeric enzymes and how they are "selected" by allosteric interactions.
Hatzakis, Nikos; Wei, Li; Jorgensen, Sune; Kunding, Andreas; Bolinger, Pierre-Yves; Ehrlich, Nicky; Makarov, Ivan; Skjøt, Michael; Svendsen, Allan; Hedegård, Per; Stamou, Dimitrios

2 **Nature Nanotechnology, 2011.** 7 (1): p. 51–55
Mixing sub-attolitre volumes in a quantitative and highly parallel manner with soft matter nanofluidics.
S. M. Christensen; P.Y. Bolinger; N.S. Hatzakis; M.W. Mortensen and D. Stamou

3 **FEBS Letters**, **2010.** 584: p. 1848, **Invited Review** BAR Domains, Amphipathic Helices and Membrane-Anchored Proteins use the same mechanism to sense membrane curvature. K.L Madsen, V.K. Bhatia, U. Gether and D. Stamou

4 **Nature Chemical Biology, 2009.** 5 (11): p. 835 *How Curved Membranes Recognize Amphipathic Helices and Protein Anchoring Motifs*. N. S. Hatzakis*, V. K. Bhatia*, J. Larsen, K. L. Madsen, P. Y. Bolinger, A. H. Kunding, J. Castillo, U. Gether, P. Hedegård and D. Stamou.

5 **EMBO Journal,** 2009, 28 (21), p. 3303 *Amphipathic motifs in BAR domains are essential for membrane curvature sensing.* V. K. Bhatia, K. L. Madsen, P. Y. Bolinger, P. Hedegård, U. Gether, D. Stamou.

6 **Proceedings of the National Academy of Sciences. 2009**. 106 (30): p. 12341 *Quantification of nano-scale intermembrane contact areas using fluorescence resonance energy transfer*. P. M. Bendix, M. S. Pedersen and D. Stamou.