COLLOQUIA IN MEMBRANE TRANSPORT

Venue: Medical University Vienna, Center for Physiology and Pharmacology, Institute of Pharmacology, Waehringerstrasse 13a, 1090 Vienna, "**Leseraum**".

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Friday 04.10.2013 14:00 s.t. **Igor Stagljar** (host: K. Kuchler)

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"Navigating the landscape of membrane Protein interactions: applications for human health and disease"

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Abstract.
A focus of my lab is to understand the function of the majority of "druggable" yeast and human integral membrane proteins involved in cell signaling and membrane transport at a systems level. Despite extensive research in the past decade, there is a lack of in-depth understanding of protein networks associated with these integral membrane proteins because of their unique biochemical features, enormous complexity and multiplicity. This is a major obstacle for designing improved and more targeted therapies, and importantly, understanding the biology of deregulation of these integral membrane proteins which leads to numerous human diseases. To address this challenge, we are applying an in vivo genetic system previously developed in my lab, called the membrane yeast two-hybrid (MYTH) assay, to identify and characterize protein interactors of all yeast ABC transporters and human receptor tyrosine kinases (RTKs), as well as selected cancer stem cell receptors (CSCRs) and G-protein coupled receptors (GPCRs). During my talk, I will discuss exciting new findings indicating that the newly identified interactors of these various proteins play novel roles in regulating their activity both in vivo and in vitro. I will also be reporting on the development of the Mammalian Membrane Two-Hybrid (MaMTH) technology and its applications in analyzing the dynamic protein interaction networks regulating cell signaling in humans. In summary, our systematic MYTH and MaMTH approaches offer an unbiased systems level view that facilitates the identification of novel drug targets, thereby promising significant contributions to therapeutic research.