COLLOQUIA IN CELLULAR SIGNALLING

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

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Friday 08.04.2016 11.00 s.t. **Markus Rüegg (host:** E. Casanova**)**

Biozentrum
University of Basel
Klingelbergstrasse 50 / 70
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"Characterization of a new mechanism involved in synaptic plasticity"

Markus Rüegg (markus-a.ruegg@unibas.ch)

Abstract: Hippocampal long-term potentiation (LTP) represents the cellular response of excitatory synapses to specific patterns of high neuronal activity and is required for learning and memory. In my talk, I will present a mechanism that requires the poorly characterized calcium-binding protein Copine-6 to translate the initial calcium signals into changes in spine structure. I will present as to how we identified Copine-6 and will show that Copine-6 is recruited from the cytosol of dendrites to postsynaptic spine membranes by calcium transients that precede LTP. Mice deficient for Copine-6 have learning deficits and lack structural spine plasticity as do wild-type neurons that express a Copine-6 calcium mutant. The function of Copine-6 is based on its binding, activating and recruiting the Rho GTPase Rac1 to cell membranes. Consistently, the LTP deficit of Cpne6 knockout mice is rescued by the actin stabilizer jasplakinolide. These data show that Copine-6 links activity-triggered calcium signals to structural spine plasticity necessary for learning and memory.