

17<sup>TH</sup> HERMANN STAUDINGER LECTURE  
NOBEL PRIZE LAUREATE

ERWIN NEHER

MAX-PLANCK-INSTITUTE FOR BIOPHYSICAL  
CHEMISTRY, GÖTTINGEN

## MODULATION OF SHORT-TERM PLASTICITY AT THE CALYX OF HELD SYNAPSE

Short-term plasticity is highly modulated by second messengers, such as  $\text{Ca}^{++}$  and diacylglycerol (DAG). At the Calyx of Held, there is pronounced heterogeneity between individual synapses, some showing moderate to strong depression during stimulus trains of 100 Hz or 200 Hz, others displaying a sequence of facilitation and depression. After application of phorbol ester, mimicking the effect of DAG, EPSCs are enlarged and strong depression is observed only. Lee and colleagues showed (2013, PNAS) that application of DAG accelerates a process, which they termed 'superpriming', a slow transition of release-ready vesicles from a 'normally' primed state to a faster, 'superprimed' one. Some evidence will be shown, which suggests that the heterogeneity between synapses is due to different degrees of 'superpriming' at rest.

**Friday, September 5<sup>th</sup>, 2014**  
**6:00 pm (s.t.)**

**Lecture Hall Otto-Krayer-Haus,**  
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