IAP Seminar

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TU Wien, Institut für Angewandte Physik, E134
1040 Wien, Wiedner Hauptstraße 8-10
Yellow Tower „B“, 5th floor, SEM.R. DB gelb 05 B

Phase transitions and molecular timing in T cell signaling

Activation of T cell receptors (TCR) by agonist peptide major histocompatibility complex (pMHC) molecules is the front line of the adaptive immune response. T cells discriminate among different pMHC based on molecular binding dwell time between pMHC and TCR, and this discrimination is widely considered to utilize a kinetic proofreading mechanism. After TCR activation, activated ZAP70 kinase at the TCR phosphorylates the scaffold molecule, LAT. It has recently been realized that LAT undergoes a protein condensation phase transition on the membrane surface, in a phosphorylation dependent manner. In this talk I will focus on the mechanism of LAT condensation and possible roles for this phase transition in the context of T cell signaling.

Jay T Groves received his Ph.D. degree in Biophysics from Stanford University 1998. In 2001 he became assistant professor in Chemistry at UC Berkeley; he was promoted to tenure in 2007 and full professor in 2010. Groves research focuses on physical mechanisms of molecular signal transduction at the cell membrane. His work utilizes single molecule optical imaging and spectroscopic techniques, combined with microfabrication and synthetic material methods to gain control over and manipulate living cells with molecular precision. Prof. Groves has had a long standing interest in the roles of space and time in molecular signaling mechanisms.

All interested colleagues are welcome to this seminar lecture (45 min. presentation followed by discussion)

Friedrich Aumayr
(LVA-Leiter)

Gerhard Schütz
(Seminar Chair)