



TECHNISCHE
UNIVERSITÄT
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ANGEWANDTE PHYSIK
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IAP-SEMINAR

ANNOUNCEMENT

- Date: **Tuesday, 24.11.2015**
Time: **16:00 p.m.**
Location: **Technische Universität Wien, Institut für Angewandte Physik, E134**
yellow tower „B“, 5th floor, Sem.R. DB gelb 05 B (room number DB05L03)
1040 Wien, Wiedner Hauptstraße 8-10
- Lecturer: **Dr. Mario Brameshuber**
TU Wien, AG Biophysik
- Subject: **Addressing T cell receptor stoichiometry with single molecule fluorescence microscopy**
- Abstract: T lymphocytes play an important role in adaptive immune responses, where they detect antigen on the plasma membrane of antigen presenting cells (APCs) leading to subsequent elimination of foreign pathogens. Discrimination between potentially harmful foreign and self-peptides is performed by the T cell receptor (TCR) with incredibly high sensitivity and specificity. The TCR is a multi-molecular protein complex accompanied by a long lasting controversy about its stoichiometry, which is of major importance for building accurate models about initiation of T cell signaling. By using an in-house developed single molecule FRAP (fluorescence recovery after photo bleaching) approach we show that the mobile fraction of fluorescently labeled TCR is exclusively monomeric in resting primary murine T cells adhering to a lipid bilayer system mimicking APCs. This result was confirmed employing a complementary two color co-localization microscopy approach. Bulk Förster resonance energy transfer (FRET) between different single-chain-fragment (scFv) labeled TCRs in resting T-cells yielded no indication of close proximity of probes bound to TCRs within the FRET-distance of $\sim 5\text{nm}$. Stimulating T-cells with peptide-loaded major histocompatibility complexes type II (pMHC) coupled to the lipid bilayer led to clustering of TCRs on a micrometer length scale, however, we did not detect any FRET between either TCR-bound scFvs or between pMHCs.

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

*G. Schütz e.h.
(Seminar-Chairperson)*

*H. Störi e.h.
(LVA-Leiter)*