



TECHNISCHE
UNIVERSITÄT
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INSTITUT FÜR
ANGEWANDTE PHYSIK
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IAP-SEMINAR

EINLADUNG

Termin: **Mittwoch, 19.5.2010 um 14:00 Uhr**
Ort: **Technische Universität Wien,
Institut für Angewandte Physik,
Seminarraum 134, Turm B (gelbe Leitfarbe), 5. OG
1040 Wien, Wiedner Hauptstraße 8-10**

Vortragender: **Robert Ros**
Center for Biological Physics, Department of Physics, Arizona State University

Thema: **Nanobiophysics: From Single Molecule Interactions to Cellular
Mechanics and Adhesion**

Kurzfassung

Forces and mechanical properties play a central role in many biological processes covering a huge range of length and time scale: from the movement of whole organisms over the adhesion, migration, proliferation of cells, down to the mechanics and interactions of single molecules. Cells are able to sense external forces (mechanosensing), translate these mechanical forces into biochemical signals (mechanotransduction) and react to these signals (mechanoreponse). Little is known about the mechanisms and dynamics of this mechanosignaling, mainly for lack of quantitative methods. Mechanics also plays an important role on the level of single biomolecules. For example, forces act between ligands and receptors, forces induce conformational changes in biomolecules, and the mechanical properties of biomolecules are often related to their function.

A powerful technique to probe mechanical properties involved in biological function is atomic force microscopy (AFM) based force spectroscopy. In my talk I will introduce force spectroscopy in general and present three applications of this technique. The first represents the investigation of a protein-RNA interaction related to posttranscriptional regulation on the single molecule level. Further, I will discuss the possibilities to use AFM in combination with confocal fluorescence microscopy to address mechanical properties of single cells in the field of cancer research. In the third example, force spectroscopy is used to investigate cellular adhesion to fibrinogen-coated surfaces related to blood clotting.

*Alle interessierten Kolleginnen und Kollegen sind zu diesem Seminar
im Rahmen des Berufungsverfahrens Biophysik
herzlich eingeladen.*

*H. Störi e.h.
(LVA-Leiter)*