



Einladung zum Kolloquium

Graduiertenkolleg 1591

“Posttranscriptional control of gene expression: mechanisms and role in pathogenesis”

Graduiertenkolleg 1026

„Conformational transitions in macromolecular interactions“

Dienstag, 26. Juni 2012, 17:00 Uhr s.t.

Prof. Dr. Nils G. Walter

University of Michigan, Ann Arbor, New York, USA

“Single Particle Super-Resolution: Of Intracellular microRNAs and Molecular Nanorobots “

Nature and Nanotechnology likewise employ nanoscale machines that self-assemble into structures of complex architecture and functionality. Fluorescence microscopy offers a non-invasive tool to probe and ultimately dissect and control these nanoassemblies in real-time. In particular, single molecule fluorescence resonance energy transfer (smFRET) allows us to measure distances at the 2-8 nm scale, whereas complementary super-resolution localization techniques based on Gaussian fitting of imaged point spread functions (PSFs) easily measure distances in the 10 nm and longer range. Here, I will describe a method for the intracellular single molecule, high-resolution localization and counting (iSHiRLoC) of microRNAs (miRNAs). Microinjected, singly-fluorophore labeled, functional miRNAs were tracked within diffusing particles. Observed mobility and mRNA dependent assembly changes suggest the existence of two kinetically distinct assembly processes, revealing the dynamic nature of an important gene regulatory pathway. In addition, I will describe how we have utilized super-resolution fluorescence microscopy to monitor the walk of molecular spider nanorobots on tracks defined by programmable DNA scaffolds called origami.

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Alle Interessenten sind herzlich eingeladen.

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Sprecher des GRK 1591; Stefan Hüttelmaier; Med. Fakultät