

Großes Physikalisches Kolloquium an der Universität zu Köln

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Insights into Microbial Inner Life Using Single-Molecule Microscopy

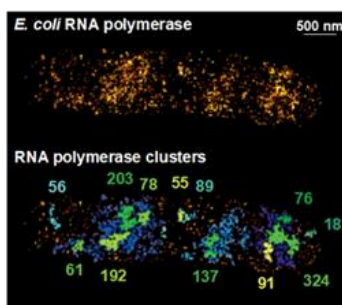
We investigate how cellular life emerges and is regulated by molecular processes, using microbes from all life domains: archaea, eukaryotes, and prokaryotes. Our interdisciplinary group focuses on cell biology, employing techniques such as molecular biology, biophysics, and computational methods, with a special emphasis on quantitative single-molecule microscopy.

We aim to understand how the spatial organization and dynamics of molecules in the cellular environment determines cell function and regulates life; e.g. by transient molecular interactions and the plasticity of complexes. By quantifying these molecular details in vivo, we create a spatially and temporally resolved picture of microbial cells.

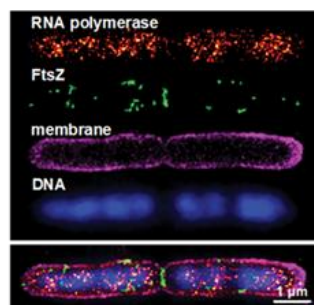
In this talk, tailored to a physics audience, I will discuss the potential of single-molecule techniques in cell biology, highlighting examples from our work and future directions. I will also emphasize our technical “fuel” - method developments in fluorescent labels, sample preparations, analysis software, and detectors.

28.01.2025
16³⁰ Uhr
HS III

Protein numbers & clustering



Molecular organisation



Single-molecule dynamics

