GRK 2905 Ultrafast Nanoscopy

Friday, July 04, 2025
15:15 h
RUN auditorium 1st floor

Part 2: Colloquium

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A Hitchhiker's Guide to Molecular Bioimaging

Super-resolution microscopy holds the promise of visualizing molecular processes in cells with nanometer precision. However, realizing this potential requires labeling strategies that are not only bright and site-specific, but also biologically orthogonal. Many commonly used labeling approaches interfere with protein function or fail to access conformationally restricted or sterically masked epitopes in live-cell environments.

In our work, we develop and apply biochemical labeling strategies that combine genetic code expansion, bioorthogonal click chemistry, and fluorogenic dyes to overcome these limitations. By minimizing linkage errors and enabling stoichiometric labeling under native conditions, we aim to push the limits of resolution, specificity, and functional integrity in molecular imaging. This talk will provide an overview of our toolbox, recent applications, and future directions for nanoscale imaging of proteins in living systems.

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