Subject: Revolutionizing Live-Cell Imaging: Enhanced Resolution, Accelerated Speed, and Integrated Intelligence with Advanced SIM Technology

Abstract:
Structured Illumination Microscopy (SIM) represents a robust super-resolution fluorescence imaging technique ideally suited for dynamic live-cell applications. Utilizing structured light for illumination, SIM facilitates the acquisition of fine structural details without necessitating specialized labeling techniques. Recent advancements in optical components and algorithmic approaches have significantly extended SIM’s capabilities, overcoming previous limitations. The integration of Hessian-SIM and Sparse-SIM methodologies has ushered in enhanced performance metrics across various parameters, coupled with intelligent imaging technologies. The advanced optical design and computational methods enable our MI-SIM to resolve structures as small as 60 nm in live cells, specifically observing the dynamic ring structures of nuclear pores. Furthermore, it achieves imaging speeds of up to 564 frames per second, which is an order of magnitude faster than conventional SIM techniques. For prolonged super-resolution imaging, our system minimizes photobleaching, allowing for continuous data acquisition over periods extending up to three days. Additionally, our MI-SIM supports real-time super-resolution recording and intelligent XYZ tracking to optimize imaging efficiency.

About the Speaker:
Dr. Ke Du serves as the Product Manager at CSR Biotech. Previously, he worked in the laboratory of Professor Liangyi Chen at Peking University, where he specialized in advanced microscopy techniques. During his tenure there, Dr. Du developed many high-resolution and super-resolution imaging systems. With extensive experience in optical design, he is currently engaged in the design and development of super-resolution imaging products and related services at CSR Biotech.

Event Details:
Date: 14.06.2024
Time: 14:00
Venue: Seminar room of the Center for Biostuctural Imaging of Neurodegeneration (BIN)
Address: Von-Siebold-Straße 3a, 37075 Göttingen
Host: Stefan Jakobs