Tuesday, February 23, 2021
1:30 PM-2:00 PM
Bruker

Introduction to Super-Resolution Multiplexed Imaging Applications using the Vutara VXL Platform for Single-Molecule and Widefield Imaging

This talk will introduce the next generation of the Vutara imaging platform, the VXL. While the VXL has been designed and optimized for single molecule localization microscopy, most current methods for super resolution microscopy are limited due to the limited number of dyes compatible with single molecule based super resolution techniques. This talk presents methods for imaging a series of consecutive targets within a sample using single molecule localization microscopy integrated with a software-controlled automated microfluidics system for probe multiplexing. Probe multiplexing allows for the imaging of more than four different targets within a cell. During this talk we will show examples using oligoSTORM and DNA-PAINT methods. OligoSTORM allows for the direct tracing of chromosomes within cells. We will show the three-dimensional trajectory of a multiplexed oligoPAINT labeled chromosome in individual human fibroblast cells using the Vutara platform. We will also show DNA-PAINT based single molecule localization data for antibody labeled targets in cell culture. We will also show how the Vutara can be used for ORCA, a widefield imaging technique that has been developed for high throughput sequential labelling of chromosome targets for generating 3D image data and single cell chromosome conformation maps (similar to Hi-C type data). The VXL with integrated fluidics and SRX software provides a powerful suite of tools for simultaneous imaging, localization, visualization and statistical analysis of multiplexed data.

Speaker
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