MIAP Workshop Program 2019

3D Single-Molecule Imaging Workshop

Breaking the resolution limit of conventional microscopy opened the way to investigate cellular structures at the nanoscale, from individual proteins to entire organelles. Different approaches have been proposed from structured illumination microscopy (SIM) to stimulated emission depletion (STED) and single molecule localization microscopy approaches (SMLM). SMLM, such as fluorescence photoactivated localization microscopy (PALM) and stochastic optical reconstruction microscopy (STORM), can provide lateral localization precision down to 10 nm.

However, 3D multicolor nanoscopy is still a challenge and a lot of effort has been made by the nano-community to develop quantitative and reproducible 3D super-localization methods. In this context, abbelight developed a new nanoscope allowing precise isotropic 3D localization precision (15x15x15nm). Two different methods are used to obtain axial information: the supercritical angle fluorescence (SAF) and a strong astigmatism-based PSF measurement. These approaches give rise not only to images resolved at the nanoscale level in 3D, but also to the 3D coordinates of single molecules, opening up new avenues for spatial and temporal quantitative analysis.

May 21st – 23rd 2019

Lighthouse Core Facility – Zentrum für Translationale Zellforschung
Universitätsklinikum Freiburg
Breisacher Str. 115, 79106 Freiburg im Breisgau

Day 1: May 21st, 09:30 – 18:00	
09:30 – 11:00	**Seminar: Entering the nanoworld: imaging single molecules in 3D**
11:00 – 11:30	**COFFEE BREAK**
11:30 – 12:30	**Open microscopy session with abbelight samples**
12:30 – 13:30	**LUNCH BREAK**
13:30 – 15:00	**SLOT: Microscopy session with participant's samples on abbelight 3D nanoscope and NEO software**
15:00 – 16:30	**SLOT: Microscopy session with participant's samples on abbelight 3D nanoscope and NEO software**
16:30 – 18:00	**SLOT: Microscopy session with participant's samples on abbelight 3D nanoscope and NEO software**

Day 2/3: May 22nd/23rd, 09:30 – 18:00	
09:30 – 11:00	**SLOT: Microscopy session with participant's samples on abbelight 3D nanoscope and NEO software**
11:00 – 12:30	**SLOT: Microscopy session with participant's samples on abbelight 3D nanoscope and NEO software**
12:30 – 13:30	**LUNCH BREAK**
13:30 – 15:00	**SLOT: Microscopy session with participant's samples on abbelight 3D nanoscope and NEO software**
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