

Program Committee

Prof. Dr. Helge Ewers
(Membrane Biochemistry)

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Institute of Chemistry and Biochemistry

Prof. Dr. Rainer Haag
(Organic and Macromolecular Chemistry)

Freie Universität Berlin
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Prof. Dr. Peter-Robin Hiesinger
(Neurobiology)

Freie Universität Berlin
Institute of Biology

Prof. Dr. Stephan Sigrist
(Genetics)

Freie Universität Berlin
Institute of Biology

Summer School | October 04-05, 2018

**Devices available for live demos
and hands-on sessions:**

Abberior STEDYCON
Leica Light Sheet
Leica SP8 confocal
Olympus Spinning Disc IXplore SpinSR10
Zeiss LSM880 with airy scan
Zeiss Lightsheet Z.1

Venue:

Freie Universität Berlin
Institute of Chemistry and Biochemistry
Takustr. 6, 14195 Berlin, Germany

Organization

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Registration

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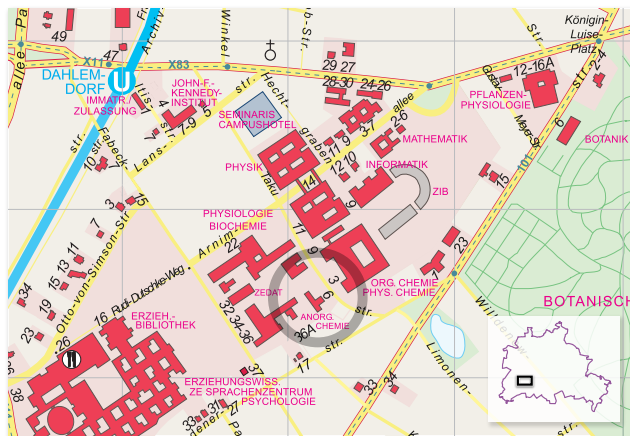
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Information and Registration at

www.biosupramol.de

Registration deadline: July 31, 2018



Flyer: Achim Wiedekind

Core Facility BioSupraMol

Advanced Optical Microscopy

Summer School | October 04-05, 2018



Summer School 2018

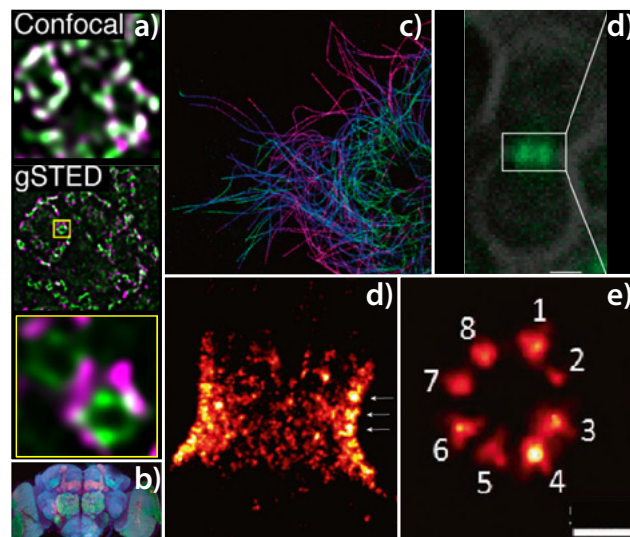
Advanced Optical Microscopy

Summer School 2018 on “Advanced Optical Microscopy” of the Core Facility BioSupraMol at Freie Universität Berlin, October 04-05, 2018.

In recent years, optical microscopy has developed rapidly and advanced fluorescence-based optical microscopy techniques such as confocal laser scanning microscopy (CLSM), total internal reflection microscopy (TIRFM), or super-resolution microscopy (e.g. SIM, STED, STORM/PALM, RESOLFT) have become widely used tools for cell and tissue as well as single molecule imaging. The new and groundbreaking super resolution microscopy techniques enable the imaging of 10-20 nm structures, even in living organisms not resolvable in conventional microscopy (“resolution revolution”).

The Core Facility BioSupraMol of the Freie Universität Berlin focuses on state of the art advanced optical high-resolution microscopy techniques including TIRFM, CLSM, multiphoton and spinning-disc microscopy and makes these techniques available to scientists and students.

In the two-day summer school, experts from academia and industry will present an overview of cutting edge research and recent technical developments in the field of optical microscopy. Hands on sessions and demos by application experts will give valuable insights in cutting edge techniques. The summer school will further provide the opportunity to discuss future trends in the field and bring the imaging community closer together.



a/b Immunofluorescence images of the fly *Drosophila Melanogaster*, **a)** 2-color confocal and STED resolved mushroom body calyx microglomeruli, **b)** 3-color maximum intensity projection of the brain. Sigrist, FUB. **c/d/e** Nanobodies as probes for superresolution microscopy: **c)** Microtubules in a cell, **d)** the septin ring in dividing yeast cells, and **e)** the eightfold symmetry of a mammalian nuclear pore. Ewers, FUB.

Program

Thursday October 04, 2018

- 08:00 Registration (Foyer, Takustr. 6, FU Berlin)
- 08:30-08:40 Welcome and opening remarks (Rainer Haag)
- 1st session: Time-lapse microscopy** (Stephan Sigrist)
- 08:40-09:15 Caren Norden (MPI of Molecular Cell Biology and Genetics, Dresden), *Making the retina: In vivo imaging of how cells get to the right place at the right time*
- 09:15-09:50 Robin Hiesinger (Neurobiology, FU Berlin), *Brain wiring on the fly*
- 09:50-10:10 Coffee break
- 2nd session: Super resolution microscopy** (Helge Ewers)
- 10:10-10:45 Alf Honigsmann (MPI of Molecular Cell Biology and Genetics, Dresden), *STED microscopy and its combination with FCS*
- 10:45-11:20 Jan Schmoranz (Core Facility AMBIO, Charité – Universitätsmedizin Berlin), *Super-resolution (SIM, STORM) in cell and neurobiology*

- 11:20-11:55 Stephan Sigrist (Genetics, FU Berlin), *Nanometer scale protein architectures in the control of synapse plasticity and diversity - A tale from the “meso-world”*
- 11:55-13:10 Lunch buffet and poster-session

3rd session: Technology trends in optical microscopy

- 13:10-13:45 Andreas Lutter (Carl Zeiss Microscopy GmbH, Jena), *New considerations in confocal imaging*
- 13:45-14:20 Karl-Heinz Koertje (Leica Microsystems GmbH, Wetzlar), *New developments in multiphoton and FLIM imaging techniques: Leica TCS SP8 DIVE and FALCON*
- 14:20-14:55 Ines Höfer (Olympus Deutschland GmbH, Hamburg), *Happy cells make happy scientists - Confocal superresolution for Live Cell Samples with the new Olympus Spin SR*
- 14:55-15:30 Matthias Reuss (Abberior Instruments GmbH, Heidelberg), *STED nanoscopy and beyond: Breaking more barriers*
- 15:30-15:45 Coffee break
- 15:45-18:45 Live demos (Abberior, Zeiss, Leica, Olympus)
- 19:00 Speakers dinner

Friday October 05, 2018

4th session: Single molecule microscopy (Robin Hiesinger)

- 08:30-09:05 Marko Lampe (Advanced Light Microscopy Facility, EMBL Heidelberg), *Single molecule localization microscopy: Principles and integration into an imaging core facility*
- 09:05-09:40 Helge Ewers (Membrane Biochemistry, FU Berlin), *Expansion STED Microscopy*
- 09:40-10:30 Coffee break and poster-session
- 10:30-11:05 Stephan Block (Bionanointerfaces, FU Berlin), *Probing complex interactions using optofluidic approaches*
- 11:05-11:40 Johannes Hohlbein (Biophysics, Wageningen University, Wageningen, NL), *From monitoring DNA polymerases in vitro to target search of CRISPR-Cas in vivo*
- 11:40-12:00 Poster awards and closing remarks (Rainer Haag)
- 13:00-18:00 Hands-on sessions