



Applied Super-resolution Light Microscopy

September 30th – October 2nd, 2013

Speakers

María García-Parajo, The Institute of Photonic Sciences (ICFO), Barcelona, Spain
Melike Lakadamyali, The Institute of Photonic Sciences (ICFO), Barcelona, Spain
Thomas Pengo, CRG, Barcelona, Spain
Giuseppe Vicidomini, Italian Institute of Technology, Genoa, Italy
Katrin Willig, Max-Planck-Institute of Biophysical Chemistry, Goettingen, Germany
Timo Zimmermann, CRG, Barcelona, Spain

Instructors

Raquel Garcia, CRG, Barcelona, Spain
Arrate Mallabiarrena, CRG, Barcelona, Spain
Thomas Pengo, CRG, Barcelona, Spain
Xavier Sanjuan, UPF, Barcelona, Spain
Timo Zimmermann, CRG, Barcelona, Spain

Organizer

Timo Zimmermann, CRG, Barcelona

www.crg.eu/microscopy_course_2013

Registration deadline: July 31th, 2013



Members of the Board of Trustees:



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Applied Super-resolution Light Microscopy Course

Date: 30.09.2013 - 02.10.2013

Venue: Center for Genomic Regulation

C/ Dr. Aiguader, 88, 08003 Barcelona, Spain

Abstract

In the last years several methods have been developed to overcome the intrinsic limit of resolution in optical microscopy. These approaches comprise the field of super-resolution light microscopy. It is the aim of this workshop to provide an overview of the current state of super-resolution methods and to give access to such instruments in the form of Stimulated Emission Depletion (STED) and Ground State Depletion (GSD) and Stochastic Optical Reconstruction Microscopy (STORM) techniques. A special focus will be put on the following applied aspects of these techniques:

- label properties and selection
- sample preparation
- optimization of imaging conditions
- deconvolution of STED datasets
- analysis/rendering of localization based data.

Details of Venue

Resources available for the workshop

- Lecture rooms
- Course room for data analysis session
- Advanced Light Microscopy Unit (ALMU): currently 6 confocal microscopes (1x 2P, 1x 2P/FLIM/FCS, 1x CW-STED, 1 x spinning disk/bleaching/TIRF, 2x standard confocals), 1 GSD/Multiline TIRF microscope, 1 fully automated widefield microscope, supporting staff of four imaging specialists and one analysis specialist

Workshop program

Three day workshop

Day 1:

9:15-9:30 Welcome

Morning session 1

Talk 1 (9:30–10:45) Katrin Willig: STED and RESOLFT (exact title TBA)

Coffee Break 1 (10:45-11:15)

Morning Session 2

Talk 2 (11:15-12:30) Melike Lakadamyali: STORM imaging (exact title TBA)

Talk 3 (12:30-13:00) Timo Zimmermann: “Introduction of course instruments and practical sessions overview”

Lunch Break (13:00-14:30)

Afternoon Session

Microscopy Hands-on Session 1 (14:30- 16:00): 4 parallels

Coffee Break 2 (16:00-16:30)

Microscopy Hands-on Session 2 (16:30-18:00): 4 parallels

Day 2:

Morning session 1

Talk 4 (9:30-10:45) Giuseppe Vicidomini: Gated STED (exact title TBA)

Coffee Break 1 (10:45-11:15)

Morning session 2

Talk 5 (11:15-12:30) Maria Garcia-Parajo: Single Molecule Biophotonics (exact title TBA)

Talk 6 (12:30-13:00) Timo Zimmermann: “Applied STED imaging considerations”

Lunch Break (13:00-14:30)

Afternoon Session

Microscopy Hands-on Session 1 (14:30- 16:00): 4 parallels

Coffee Break 2 (16:00-16:30)

Microscopy Hands-on Session 2 (16:30-18:00): 4 parallels

Evening Session

Sample labeling demonstration/Q&A on labeling issues (CRG Teaching Lab, 18:20-19:50)

Workshop Dinner (20:15) Location to be announced

Day 3:

Morning Session

Visit of the ICFO Super-resolution microscopy facilities (9:15-11:30)

Coffee Break (11:30-12:00)

Talk 7 (12:00-13:00) Thomas Pengo: “Generating images from localization data: Filtering, fitting and rendering the raw data”

Lunch Break (13:00-14:30)

Afternoon Session

Common analysis and discussion session (14:30-16:00)

Hands-on sessions:

- Parallel 1: CW-STED imaging
- Parallel 2: Ground State Depletion (GSD) and dSTORM
- Parallel 3: Deconvolution of super-resolution images
- Parallel 4: Analysis/rendering of single molecule localization data
- Sample labeling demonstration/Q&A on labeling issues

List of speakers/instructors

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Katrin Willig, Max-Planck-Institute of Biophysical Chemistry, Goettingen, Germany

Giuseppe Vicidomini, Italian Institute of Technology, Genoa, Italy

Melike Lakadamyali, Institute of Photonic Sciences, Barcelona, Spain

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Jordi Andilla, Institute of Photonic Sciences, Barcelona, Spain