

VRTC Summer School on Advanced Microscopy 2017

June 12-16

*Jozef Schell seminar room, Fiers-Schell-Van Montagu (FSVM) building
Technology park 927, Ghent*

Day 1 – 12 June Light microscopy basics

- 10:00 – 10:30: Registration (lobby)
- 10:30 – 10:40: Introduction, **Chris Guérin, Sebastian Munck, Saskia Lippens and Peter O'Toole, co-organizers** (seminar room)
- 10:40 – 11:10: Lecture 1 – **The history, theory and basics of light microscopy: light, basic optics, diffraction, optical aberrations, and Köhler illumination**, Chris Guérin, *Microscopy Core Facility, VIB Inflammation Research Center and VIB Bio Imaging Core Gent, Ghent University, Belgium* (seminar room)
- 11:10 – 12:00: Practical 1 – Setting up Köhler illumination (small cafeteria)
- 12:00 – 12:45: Lunch (lobby)
- 12:45 – 13:15: Lecture 2 – **Contrast and imaging methods, phase contrast (PC) and differential interference contrast (DIC)**, Sebastian Munck, *Light Microscopy and Imaging Network LiMoNe, VIB Bio Imaging Core Leuven and VIB Center for the Biology of Disease, KU Leuven, Belgium* (seminar room)
- 13:15 – 13:50: Practical 2–Setting up PC (small cafeteria)
- 13:50 – 14:30: Lecture 3 – **Reflected light microscopy, fluorescence, fluorochromes and filters**, Saskia Lippens, *Microscopy Core Facility, VIB Inflammation Research Center and VIB Bio Imaging Core Gent, Ghent University, Belgium* (seminar room)
- 14:30 – 15:20: Coffee break, Practical 3 – Designing a multi-color labeling experiment (lobby/cafeteria)
- 15:20 – 16:10: Lecture 4 – **The practical uses of fluorescence: Immunocytochemistry (ICC), flow cytometry and *in situ* hybridization**, Peter O'Toole, Director of the Technology Facility and manager of the *Imaging and Cytometry Laboratory, University of York, United Kingdom* (seminar room)
- 16:10 – 16:40: Practical 4 – Designing your own ICC experiment (lobby/cafeteria)
- 16:40 – 17:20: Lecture 5 – **Lenses, the heart of the microscope**, Chris Guérin, *Microscopy Core Facility, VIB Inflammation Research Center and VIB Bio Imaging Core Gent, Ghent University, Belgium* (seminar room)

19:30 – 22:00 Dinner @ Amadeus (sponsored by)

Day 2 – 13 June Confocal, advanced and functional light microscopy

09:00 – 09:50: Lecture 6 **Live cell imaging**, Kurt Anderson, Director of light Microscopy, The Francis Crick Institute, London, UK (seminar room)

09:50 – 10:10: Lecture 7 – **Introduction to confocal microscopy**, Peter O’Toole, Director of the Technology Facility and manager of the Imaging and Cytometry Laboratory, University of York, United Kingdom (seminar room)

10:10 – 10:30: Coffee break (lobby)

10:30 – 11:15: Practical 5 – ‘Looking and seeing’ in the microscope (small cafeteria)

11:15 – 12:00: Lecture 8 – **Fluorescence confocal imaging of plants**, Daniel Van Damme, PI, Plant Systems Biology, VIB-UGent (seminar room)

12:00 – 12:45: Sandwich lunch (lobby)

12:45 – 13:30: Lecture 9, **Karin Aumayr, Making the unseen appear spectral unmixing, deconvolution, structured illumination**. Head of Bio Optics Facility, IMP/IMBA, Vienna Biocenter Core Facilities, Vienna. (seminar room)

13:30 – 14:15: Lecture 10 – **Functional microscopy, FRET/FLIM**, Eef Parthoens, Senior light microscopist, *Microscopy Core Facility, VIB Inflammation Research Center and VIB Bio Imaging Core Gent, Ghent University, Belgium* (seminar room)

14:15 – 15:00: Coffee break/Practical 6 – Microscope maintenance (small cafeteria)

15:00 – 15:40: Lecture 11 – **Special techniques, TIRF**, Joshua Rappoport, Research Associate Professor and Director of the Center for Advanced Microscopy and Nikon Imaging Center, Northwestern University, Chicago, IL, U.S.A. (seminar room)

15:40 – 16:20: Lecture 12 – **Fluorescence Nanoscopy**, Mike Heilemann, Professor, Goethe-Universität *Frankfurt am Main* (seminar room)

16:20 – 16:30: Short break

16:30 – 17:15 Lecture 13 – **Correlative light and electron microscopy**, Lucy Collinson, Director of Electron Microscopy, The Francis Crick Institute, London, UK (seminar room)

19:00 – 21:30: Dinner @ Pakhuis (sponsored by) 

Day 3 – 14 June Advanced Microscopy Practicals-1

- 09:10 – 09:50: Lecture 13 – **Advanced Confocal microscopy, multi-photon, in vivo imaging.** Peter O’Toole, Director of the Technology Facility and manager of the Imaging and Cytometry Laboratory, University of York, United Kingdom (seminar room)
- 09:50 – 10:00: Coffee break (atrium)
- 10:00 – 11:45: Practical 7 – Confocal microscopy: Rotation 1 (see additional schedule)
- 11:45 – 12:30: Sandwich lunch (atrium)
- 12:30 –14:15 Practical 8 – Confocal microscopy: Rotation 2 (see additional schedule)
- 14:15 – 14:45 Coffee break (atrium)
- 14:45 – 16:30: Practical 9 – Confocal microscopy: Rotation 3 (see additional schedule)

Evening free to enjoy Ghent

Day 4 – 15 June Advanced Microscopy Practicals-2

- 09:00 – 09:40: Lecture 14: **Fluorescent probes and delivery strategies**. Sebastian Munck, *Light Microscopy and Imaging Network LiMoNe, VIB Bio Imaging Core Leuven and VIB Center for the Biology of Disease, KU Leuven, Belgium* (W122)
- 09:40 – 10:00: Coffee break (atrium)
- 10:00 – 11:45: Practical 10 – Confocal microscopy: Rotation 4 (see additional schedule)
- 11:45 – 12:20: Sandwich lunch (atrium)
- 12:20 – 14:05: Practical 11 – Confocal microscopy: Rotation 5 (see additional schedule)
- 14:05 – 14:15 Short break
- 14:15 – 16:00 Practical 12 – Confocal microscopy: Rotation 6 (see additional schedule)
- 16:00 – 16:30 Coffee break (atrium)
- 16:30 – 18:15 Practical 13 – Confocal microscopy: Rotation 7 (see additional schedule)
- 18:15- 19:00 Beer reception/BIC core meeting
- 19:00 – 21:30 Bar-B-Q (F.S.V.M. patio) (Sponsored by)

Day 5 – 16 June Advanced Microscopy Practicals-3/Image processing

- 09:00 – 10:45: Practical 14 – Confocal microscopy: Rotation 8 (see additional schedule)
- 10:45 – 11:15 Coffee break (lobby)
- 11:15 – 12:15 Lecture 17: **Overview on Image processing methods**, Benjamin Pavie, *VIB Bio Imaging Core* (seminar room)
- 12:15 – 13:00 Sandwich lunch (lobby)
- 13:00 – 14:30 Practical 15 – **Image processing (live demo) Examples of operations using Image J and Fiji**, Eef Parthoens, Bob Asselbergh, *VIB Bio Imaging Core Ghent, and VIB Department of Molecular Genetics, University of Antwerp, Belgium* (small cafeteria)
- 14:30 – 15:15 Practical 17 - **The code of conduct what is allowed in image processing for publishing and Q&A for Attendees problems**, Sebastian Munck, *Light Microscopy and Imaging Network LiMoNe, VIB Bio Imaging Core Leuven and VIB Center for the Biology of Disease, KU Leuven, Belgium* (seminar room)
- 15:15 Course ends