



## ADVANCED COURSE ON LIGHT AND ELECTRON MICROSCOPY

### *"Multiphoton and electron microscopy united"*

- Time** 14<sup>th</sup> to 15<sup>th</sup> June, 2017
- Place** Room 338B and BCO Light Microscopy (LM) and Electron Microscopy (EM) Core Facility Laboratories, the Main Building of the Medical Campus, University of Oulu, Aapistie 5A, 90220 Oulu, Finland
- Credits** 1 ETCS
- Organisers** Health and Biosciences Doctoral Programme and Biocenter Oulu Tissue Imaging Center, University of Oulu, Aapistie 5A, P.O.Box 5000, FI-90014 University of Oulu, Finland, URL: <http://www oulu fi/biocenter/tic>
- Aim** To get acquainted with multiphoton and electron microscopy imaging methods of living and fixed specimens. Learn how to apply suitable techniques for image analysis. Multiphoton section includes basics and examples of advanced applications of MP microscopy in tissue samples and the concept of intravital imaging. EM part focuses on the sample preparation and transmission/scanning electron microscopy of similar tissue samples. The course consists of lectures, microscopy/laboratory demonstrations and computer-based image analysis.
- Information** Veli-Pekka Ronkainen or Ilkka Miinalainen, Biocenter Oulu, tel: +358 294 486114 / +358 294 486145, e-mail: veli-pekka.ronkainen(at)oulu.fi / ilkka.miinalainen(at)oulu.fi
- Registration** Lectures are open for all without registration. Registration for the demonstrations is obligatory and preference will be given to Ph.D. students and researchers whose project benefits the topics carried out during the course. Due to space limitations only 18 participants can be accepted. The application with a short description of the applicant's project should be sent by email to Veli-Pekka Ronkainen (veli-pekka.ronkainen(at)oulu.fi) by **31<sup>st</sup> of May, 2017**.

## **PROGRAMME**

**Wednesday, Jun 14<sup>th</sup>, 2017.** Room 338B (Kieppi Building 3<sup>rd</sup> floor, Aapistie 5A)

### **Lectures:**

- 9.00-9.05      Opening words and introduction
- 9.05-10.00    Basics in multiphoton microscopy, label free second and third harmonic generation microscopy  
Veli-Pekka Ronkainen, BCO
- 10.00-10.15   *Coffee break*
- 10.15-11.15   Basics in electron microscopy  
Ilkka Miinalainen, BCO
- 11.15-12.15   *Lunch*
- 12.15-13.45? Advanced multiphoton microscopy techniques  
Tibor Veres, University of Turku
- 13.45-14.15   *Break*
- 14.15-15.45   Advanced electron microscopy techniques  
TBA
- 15.45-16.00   Introduction to demonstrations  
Veli-Pekka Ronkainen / Ilkka Miinalainen

**Thursday, Jun 15<sup>th</sup>, 2017.** Gathering in the meeting room 487B (Kieppi Building 4<sup>th</sup> floor, Aapistie 5A) at 8.50 for demonstrations.

9.00-16.00 Demonstrations, 3 groups

- Demo 1. Multiphoton microscopy, Room 492B  
High resolution 3D imaging of thick mesoscopic tissue samples, intravital imaging concept  
Tibor Veres / Veli-Pekka Ronkainen
- Demo 2. Transmission electron microscopy and sample preparation, Room 467B and 488B  
Selecting region of interest from semi-thin plastic sections, how to cut and stain ultrathin sections.  
Imaging of tissue samples.  
Mika Kaakinen / Sirpa Kellokumpu / Tarja Piispanen / Päivi Tyni
- Demo 3. Scanning electron microscopy and sample preparation, Room 320A and 488B  
Preparing samples for sputter coating and imaging of tissue samples using different detectors.  
Imaging serial sections on silicon wafer.  
Ilkka Miinalainen

Hours	1 <sup>st</sup> group	2 <sup>nd</sup> group	3 <sup>rd</sup> group
9.00-11.00	Demonstration 1	Demonstration 2	Demonstration 3
11.00-12.00	Lunch	Lunch	Lunch
12.00-14.00	Demonstration 2	Demonstration 3	Demonstration 1
14.00-16.00	Demonstration 3	Demonstration 1	Demonstration 2