



## ADVANCED COURSE ON LIGHT AND ELECTRON MICROSCOPY

*"New advanced imaging techniques at light and electron microscopy core facilities."*

- Time** December 12<sup>th</sup> to 13<sup>th</sup> 2019
- Place** 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 light and electron microscopy 3D imaging methods of optically cleared or serially sectioned samples. Learn how to apply suitable techniques for image analysis. LM introduction includes tissue optical clearing, confocal fluorescence microscopy and fluorescence lifetime imaging (FLIM). EM part focuses on sample serial section imaging and different staining methods. The course consists of lectures and microscopy demonstrations.
- Information** Veli-Pekka Ronkainen / 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 submitted to <https://link.webropolsurveys.com/S/53A3456D70ACD5DB> by December 5<sup>th</sup> 2019.

## **PROGRAMME**

**Thu, Dec 12<sup>th</sup>, 2019.** Lecture hall P117 (Pathology)

**Lectures:**

- 9.00-9.05      Opening words and introduction
- 9.05-10.00    Optical clearing of biological samples  
Veli-Pekka Ronkainen, BCO
- 10.00-10.15    *Coffee break, sponsored by HBS-DP*
- 10.15-11.15    Assessing vesicle and fluid dynamics by special staining techniques in EM  
Mika Kaakinen, BCO
- 11.15-12.15    *Lunch break*
- 12.15-13.15    Principles of Fluorescence Lifetime Imaging (FLIM)  
Veli-Pekka Ronkainen
- 13.15-13.30    *Break*
- 13.30-14.30    Methods for obtaining ultrastructural 3D data from biological samples using EM  
Ilkka Miinalainen, BCO
- 14.30-14.45    Introduction to demonstrations  
Veli-Pekka Ronkainen

**Fri, Dec 13<sup>th</sup>, 2019.**

- 8.45            Gathering in the meeting room 487B (Kieppi Building 4<sup>th</sup> floor, Aapistie 5A) for demonstrations.
- 9.00-16.00    Demonstrations, 3 groups
- Demo 1.        Laser scanning confocal, multiphoton and Fluorescence Lifetime Imaging. 3D imaging of optically cleared samples. Room 423A and 492B, Veli-Pekka Ronkainen
- Demo 2.        Transmission electron microscopy, staining techniques. Room 467B and 488B, Mika Kaakinen
- Demo 3.        Preparing serial sections with Artos 3D, imaging of serial sections with scanning electron microscope. Room 488B and 320A, 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 break	Lunch break	Lunch break
12.00-14.00	Demonstration 2	Demonstration 3	Demonstration 1
14.00-16.00	Demonstration 3	Demonstration 1	Demonstration 2