



ADVANCED COURSE ON LIGHT AND ELECTRON MICROSCOPY

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

Time December 12th to 13th 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.

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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 5th 2019.

PROGRAMME

Thu, Dec 12th, 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
Illi Kainalainen, BCO

14.30-14.45 Introduction to demonstrations
Veli-Pekka Ronkainen

Fri, Dec 13th, 2019.

8.45 Gathering in the meeting room 487B (Kieppi Building 4th 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, Illi Kainalainen

Hours	1 st group	2 nd group	3 rd 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