

Graduate School Course

Electron Microscopy Confocal
Probes Light Optimizing Sampling 3-D Imaging
Estimation Disector Tissue Fixation Tissue Processing
Fundamentals of Modern Histology
Imaging Tools **May 26-30, 2008** Immunostaining
Volume Photograph Processing

Updated 6.5.2008

Look General information
Daily program now available

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Registration:
Closed

Welcome !

This is an intensive course aimed at PhD students and researchers in life sciences.

The course provides a "start-up" package of modern histology that requires careful sample processing, optimized imaging methods, proper quantitative approaches and illustrative data presentation.

The course consists of lectures given by internationally recognized experts. Hands-on exercises on stereology and photograph processing help to bring the theory to practice in these theoretically complicated fields. For the hand-on exercises, maximum 25 participants are accepted, but more can be accepted to lectures only.

A full participation in the program will yield 3.0 ECTS.

General information

- **Bring** a calculator, ruler and digital images with you
- **Course material** will be delivered during the course
- **Lunches, coffees and social program** are free for registered participants
- **Social program** is "outdoor activity" - take with you suitable clothes !
- **Examination** is group work - there will be solved and presented problems arising from your scientific work
- **Credits:**
 - lessons + practicals + examination: 3
 - lessons + examination: 2
 - lessons: 1
- You can send your **digital images** in advance

Course locations

to [raija.torronen\(at \)uku.fi](mailto:raija.torronen@utu.fi) !

- [Canthia building, 5th floor S10](#)
- [Canthia building, 2nd floor L3](#)
- [Canthia building, 2nd floor MC4](#)

:: PROGRAM ::

Monday :: STEREOLOGY :: Canthia building ::

9.00-9.30	Welcome coffee (in front L3)
9.30-9.45 L3	Opening Prof. Hilkka Soininen Vice Director, Graduate School of Molecular Medicine
9.45-10.15 L3	Introduction Docent Riitta Miettinen Director of the course
10.15-12.00 L3	Introduction to stereology; Probes, Systematic uniform random sampling etc. Prof. Hans Jørgen Gundersen Stereological Research Laboratory, University of Aarhus, Århus, Denmark
12.00-12.45	Lunch break
12.45-14.30 L3	Volume estimation, Cavalieri principal Prof. Jens Nyengaard Electron Microscopy Laboratory, Aarhus Kommunehospital, Århus, Denmark
14.30-15.00	Coffee break
15.00-17.00 S10	Volume estimation (Bring a calculator and ruler with you)

Tuesday :: STEREOLOGY :: Canthia building ::

9.00-10.45 S10	Estimation of particle number, physical and optical disector Prof. Jens Nyengaard
10.45-11.15	Coffee break at exhibition area
11.15-13.00 S10	Optimizing sampling; how many animals and basic statistics Prof. Hans Jørgen Gundersen
13.00-14.00	Lunch break and Exhibition by Olympus at exhibition area
14.00-16.00 S10	Estimation of neuron number by physical disector Demonstration: Estimation of neuron number by optical disector, Histology laboratory (Bring a calculator and ruler with you)

Wednesday :: MICROSCOPY GOES TO DIGITAL ::

9.00-10.45 L3	Imaging tools - Theoretical overview about light, confocal and electron microscopy (resolution, limitations, image acquisition etc.) Prof. Alison North The Bio-Imaging Resource Center, The Rockefeller University, New York, USA
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- 10.45-11.15 **Coffee break at exhibition area**
- 11.15-13.00 **Fluorescence and confocal microscopy**
L3 Docent **Sinikka Eskelinen**
Imaging Core Facilities, Biocenter Oulu, Finland
- 13.00-14.00 **Lunch break**
Exhibitions at exhibition area
- 14.00-15.00 **Electron tomography for 3-D imaging**
L3 Dr. **Wim Voorhout**
FEI, Netherlands
- 15.10-15.50 **Insight into Confocal Microscope solutions and Digital**
L3 **Pathology** (Nikon Instruments & Aperio)
Dr. **Antti Kokko**, Oy G.W.Berg & Co Ab
- 16.00- **Transportation to Social Program in Blue White Resorts**
Lohimaa, Tervo

Thursday

:: IMMUNOHISTOCHEMISTRY ::

- 9.00-10.45 **Tissue fixation - Tissue processing** (advantages and limitations
L3 of different methods, practical considerations including recognizing
artefacts on histological sections, safety in the lab)
Dr. **Irene Knuesel**, Institute of Pharmacology and Toxicology,
University of Zürich, Switzerland
- 10.45-11.15 **Coffee at exhibition area**
- 11.15- 13.00 **Tissue staining** (principles of immunohistochemistry, different
L3 detection
Prof. **Katalin Halasy**, Department of Anatomy and Histology,
Faculty of Veterinary Science, Szent István University, Budapest,
Hungary
- 13.00-14.00 **Lunch break and exhibitions at 3rd floor**
- 14.00-14.15 **Instructions to group work**
L3
- 14.15 -15.45 **Group work**
- 15.45- 17.45 **Coffee and presentations of group work**
L3

Friday

:: GET BEST OUT OF YOUR IMAGES ::

- 9.00-10.45 **Basics about photograph processing for publication**
L3 (file formats, image adjustments etc.)
Visual designer **Raija Törrönen**
Illustration and Photography, Learning Centre, University of Kuopio
- 10.45-11.30 **Lunch break**
- 11.30-14.00 **Photograph processing**
MC4 Bring your own digital images with you
To get personal advice send your digital images in advance to
raija.torronen(at)uku.fi !

**Director of
the course**

Docent **Riitta Miettinen**
Department of Neurology, Institute of Clinical Medicine, University of

	Kuopio riitta.miettinen(at)uku.fi
Course secretary	Secretary Tuija Parsons Department of Neurology, Institute of Clinical Medicine, University of Kuopio tuija.parsons(at)uku.fi +358 (0)17 162046
Teaching staff	<ul style="list-style-type: none"> ■ Prof. Hans Jørgen Gundersen Stereological Research Laboratory, University of Aarhus, Århus, Denmark ■ Prof. Jens Nyengaard Electron Microscopy Laboratory, Aarhus Kommunehospital, Århus, Denmark ■ Prof. Alison North The Bio-Imaging Resource Center, The Rockefeller University, New York, USA ■ Docent Sinikka Eskelinen Imaging Core Facilities, Biocenter Oulu, Finland ■ Dr. Wim Voorhout FEI, Netherlands ■ Dr. Irene Knuesel Institute of Pharmacology and Toxicology, University of Zürich, Switzerland ■ Prof. Katalin Halasy Department of Anatomy and Histology, Faculty of Veterinary Science, Szent István University, Budapest, Hungary ■ Visual designer Raija Törrönen Illustration and Photography, Learning Centre, University of Kuopio
See also	Study module contents
Registration and abstract submission	Link to electronic registration and abstract form: here Abstract cell: paste there max one A4 sheet of text describing your work and aims to implement the knowledge acquired during the course - do not use symbols
Registration fees	<p>Please note: Participation to hand-on exercises is full. If you still would like to participate also exercises, indicate it in the registration form above BUT do not pay registration fee before your participation has been confirmed by course secretary.</p> <p>Graduate students of - Nordic Centre of Excellence and - Graduate School of Molecular Medicine are free of registration fees !</p> <p>University students: 150 €, lectures only 50 € Other participants: 500 €, lectures only 150 €</p> <p>References: - Registration fees paid by the University of Kuopio: internal payments (no VAT included), reference: 68203 - Other participants: (including VAT 22 %), reference: 71357</p>

Banking information:
166030-110760 Nordea Bank Suomi Oyj
500001-20378053 OKO Osuuspankkien Keskuspankki
800011-47092 Sampo Pankki

Deadline of
registration

Closed.

Organized by

- Department of Neurology,
Institute of Clinical Medicine, University of Kuopio
- Graduate School of Molecular Medicine,
University of Kuopio
- Nordic Centre of Excellence
- Molecular Mechanisms of Neurodegenerative Diseases