

VT15 Cellulär avbildning/Cellular Imaging 3 hp
Course within the PhD education scheme of the University of Gothenburg

Lectures: April 10 – April 17, 2015

Deadline for writing report: May 4, 2015

Lecture Hall: Ingegerd Eriksson (Academicum, Sahlgrenska Academy, Medicinaregatan 3)

Friday April 10, 2015 at Medicinaregatan 7A, Microbiology & Immunology Department entrance		
9:30-10:30	Registration/introduction and visit to the Centre for Cellular Imaging	MS/JP/JFR/CT
Monday April 13, 2015		
9:00-12:00	Basic concepts in Fluorescence microscopy	MG
13:00-16:00	How to prepare cells/tissues for light microscopy	JFR
16:00-17:00	Group discussions: Reflections on the lectures	JFR
Tuesday April 14 2015		
9:00-12:00	Live cell Imaging, probes and image perception	JP
13:00-16:00	Confocal and multiphoton laser scanning microscopy	MS
16:00-17:30	DEMOS and group discussions	MS/JP
Wednesday April 15, 2015		
9:00-11:00	Measuring mobilities and interactions – FCS, FRAP and FRET	MS
11:00-12:00	Group discussion: Reflections on the lectures	MS
13:00- 14:00	Super-resolution microscopy: STED	HGB
14:00-16:00	Super-resolution microscopy: structured illumination and single-molecule localization	RH
16:00-17:00	Group discussions: Reflections on the lectures	RH/HGB
Thursday April 16, 2015		
09:00-10:00	High content screening fluorescence microscopy for systems biology	CT
10:00-11:00	Laser capture microdissection and pressure catapulting	JP
11:00-12:00	Group discussion: Reflections on the lectures	CT/JP
13:00- 17:00	DEMOS	CT/MS/JP/JFR
Friday April 17, 2015		
09:00-10:00	Introduction to Image Analysis	KM/ST
10:00-12:00	Basics of Image Analysis I + using ImageJ I (hands-on)	KM/ST
1300-16:00	Basics of Image Analysis II + A Primer for Writing ImageJ Macros (hands-on)	KM/ST/JP/MS
16:00-17:00	Group discussions	KM/ST/JP/MS

April – June 2015		
Individual training on a microscope of choice: 4 x 3 hours		
9:00-12:00	Trainings (Confocal, Multiphoton, HCS, PALM)*	MS/JP/JFR/CT
13:00-16:00	Trainings (Confocal, Multiphoton, HCS, PALM)*	MS/JP/JFR/CT
April-May, 2015		
Reading of scientific papers, preparation for report, writing report		
4th May, 2015		
Deadline for written report**		

* Each student will get full training on one of the microscopes available at CCI. The student should discuss with his/her supervisor about which system is best suited for their research project before the start of the course.

** Report: this should be done individually in a “word” document (max 5 A4 pages!!)

1. **Name and Affiliation of the PhD candidate**
2. **Project Title**
3. **Field of science and scientific background of the research project**
4. **Detailed description of the work proposed to be conducted at the CCI, including:**
 - A full description of the imaging technology(ies) that is (are) envisaged to be used in your research project.
 - Sample preparation (e.g., fixation –or live cell imaging-, mounting the specimen, fluorophores, controls).
 - Expected results (2-4 bullets).
5. **Importance of the imaging technology(ies) in your overall research**

Lecturers:

HGB *Hans Gunnar Blom*, Advanced Light Microscopy National Facility at SciLifeLab, Stockholm, Sweden
JFR *Julia Fernandez-Rodriguez*, Centre for Cellular Imaging, University of Gothenburg, Sweden
MG *Mattias Goksör*, Dept. of Physics, University of Gothenburg, Sweden
KM *Kota Miura*, Centre for Molecular and Cellular Imaging, EMBL, Heidelberg, Germany
JP *Joanna Pylvänäinen*, Centre for Cellular Imaging, University of Gothenburg, Sweden.
RH *Professor Rainer Heintzmann*, Friedrich-Schiller-Universität Jena, Institute of Physical Chemistry, Germany
MS *Maria Smedh*, Centre for Cellular Imaging, University of Gothenburg, Sweden.
ST *Sébastien Tosi*, Advanced Digital Microscopy Institute for Research in Biomedicine, Barcelona, Spain
CT *Carolina Tängemo*, Centre for Cellular Imaging, University of Gothenburg, Sweden.