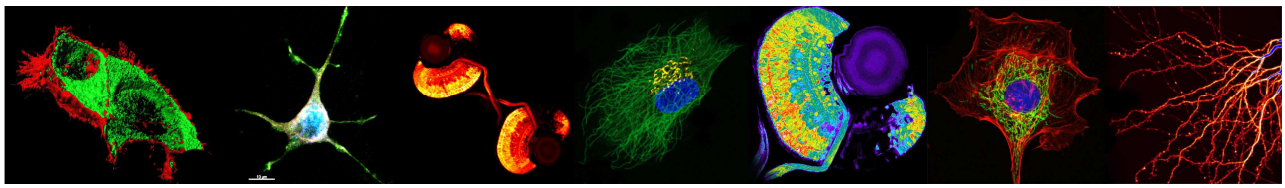


MIC
Molecular Imaging Center

Welcome to the 8th MIC confocal microscopy course at the Dept. of Biomedicine, University of Bergen 31st of January – 3rd of February 2012

The course focuses on the basic principles of confocal microscopy and the understanding of what a confocal microscope can do. We will also discuss what a digital image is made up of and present a few software you can use for improving your images and prepare them for publishing.

We are happy to present this course to you and we hope it will be both useful and interesting!

You will all receive an invoice for the course fee of NOK 4500,-. This includes dinner the first evening and one lunch (unfortunately no discount can be made if people do not join).

Information for people from outside Bergen:
There are no hotels closer to Haukeland than the ones in the center of Bergen, except from a Regines Guest house (http://www.diakonissehjemmet.no/regines-gjestehus.aspx) . Practically all hotels in the center will be quite close to the central bus stop "Gamle Brannstasjon" in Christies gate. Catch bus # 2 and 3 and get off at Haukeland Nord. The bus takes approx. 10 minutes.

MIC is situated in the 6th floor of "Bygg for Biologiske Basalfag" behind Haukeland Hospital (Jonas Lies vei 91).

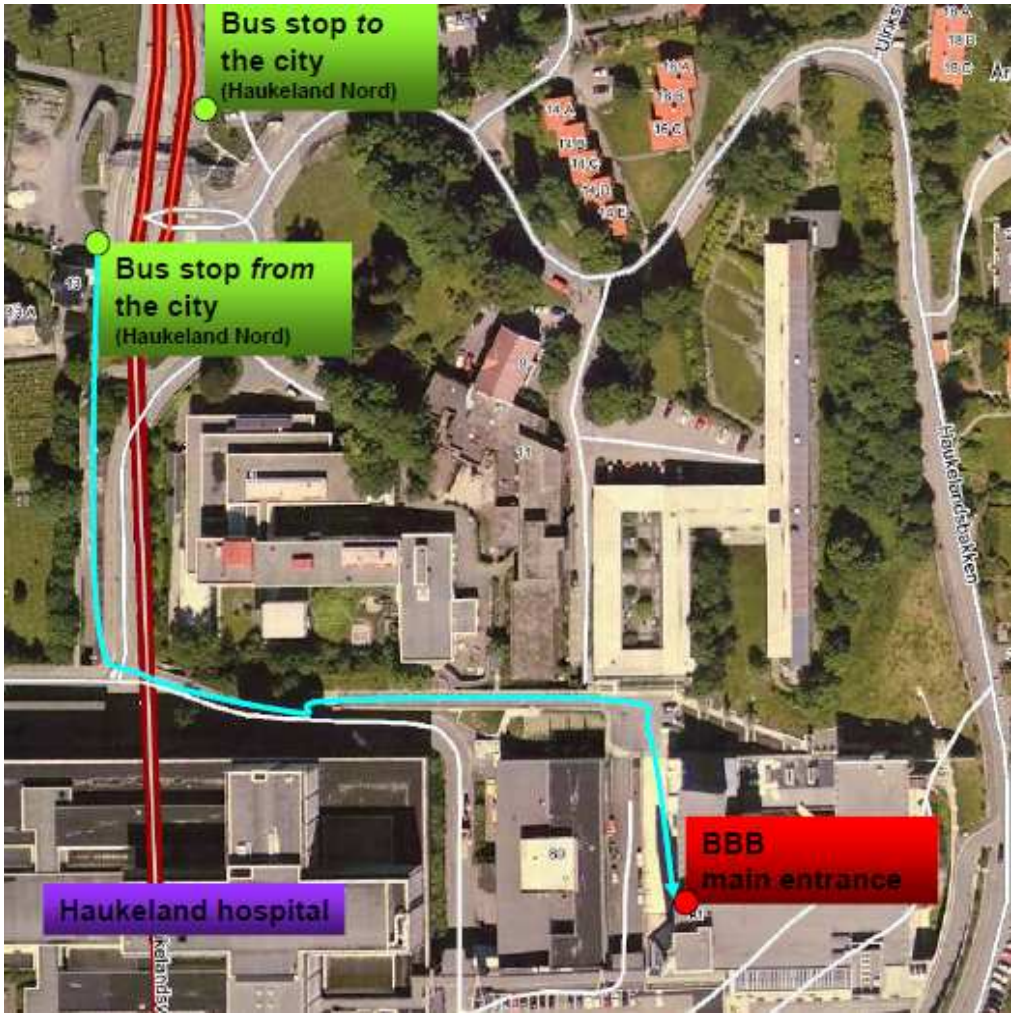
Bygg for Biologiske Basalfag (BBB)

Directions from the bus stop to BBB and MIC (see additional map)
When you get off the bus turn left when coming from the town center (or turn right when coming from Nesttun), follow the pedestrian hill toward the big, grey Haukeland building and turn left again on the top. Go straight up a quite steep road to the new building on the top. We will post further directions on the main entrance door.

If you arrive by plane the first morning and want to come directly to MIC, the easiest way is to go by taxi (~20 min, NOK 350 – 400). Otherwise, the second easiest way is to use the airport bus which takes you to the centre of Bergen, and take bus 2 or 3 from the old fire station (Gamle Brannstasjon). This will take you directly to the bus stop *Haukeland Nord*.

If you have any questions or particular needs don't hesitate to contact us (45279377/47751123).

Once you get off the bus, just follow the blue line to the main entrance of BBB.



Preliminary programme:

Day 1 (Histologisal 1, 3rd floor)		Day 2 (Histologisal 2, 3rd floor)		Day 3 (Histologisal 1, 3rd floor)		Day 4	
1000-1015	Welcome, intro	0900-1000	Presentation of Zeiss & Leica software	0900-1000	Fiji (E)	0900-0945	DO's and DON'Ts in image processing (M) **(Seminar rooms 5th floor)**
1015-1130	Basics of confocal microscopy (H)	1000-1015	Coffee break	1000-1015	Coffee break		
1130-1215	Lunch	1015-1145	**Workshop 1**	1015-1215	**Workshop 3**	0945-1000	Coffee break
1215-1330	Optimal image acquisition (E)	1145-1230	Lunch	1215-1300	Lunch	1000-1200	**Workshop 6**
1330-1345	Coffee break	1230-1400	**Workshop 2**	1300-1500	**Workshop 4**	1200-1245	Lunch with scientific presentation (M) **(Seminar rooms 7th floor)**
1345-1430	Fluorochromes & fluorescent proteins (H)	1400-1415	Coffee break	1500-1515	Coffee break		
1430-1445	Coffee break	1415-1515	Photoshop CS4 (M)	1515-1715	**Workshop 5**	1245-1445	**Workshop 7**
1445-1545	Sample preparation (M)	1515-1530	Coffee break			1445-1500	Coffee break
1545-1600	Break	1530-1630	Imaris (H)			1445-1645	**Workshop 8**
1600-1700	Image representation and processing (E)						
1900-	Common dinner						

E: Endy Spriet *A: Hege Avsnes Dale* *M: Michaël Marie*

Workshop 1 (90 min)	*General training Zeiss (H)*	*Generalt training Leica (E)*	*Spinning disk (M) 10:15-11:00*	
	A + E	**B + F**	**C + D**	
				Free time 11:00-11:45
				C + D
Workshop 2 (90 min)	General training Zeiss (H)	Generalt training Leica (E)	Spinning disk (M) 12:30-13:15	Free time 12:30-13:15
	C	**D**	**A + B**	**E + F**
			Spinning disk (M) 13:15-14:00	Free time 13:15-14:00
			E + F	**A + B**
Workshop 3 (120 min)	Hands on Zeiss (H)	Hands on Leica (E)	Photoshop (M)	Free time
	A	**B**	**C + D**	**E + F**
Workshop 4 (120 min)	Hands on Zeiss (H)	Hands on Leica (E)	Photoshop (M)	Free time
	C	**D**	**E + F**	**A + B**
Workshop 5 (120 min)	Hands on Zeiss (H)	Hands on Leica (E)	Photoshop (M)	Free time
	E	**F**	**A + B**	**C + D**
Workshop 6 (120 min)	Hands on Zeiss	Hands on Leica	Imaris (H)	Fiji (E)
	A	**B**	**C + D**	**E + F**
Workshop 7 (120 min)	Hands on Zeiss	Hands on Leica	Imaris (H)	Fiji (E)
	C	**D**	**E + F**	**A + B**
Workshop 8 (120 min)	Hands on Zeiss	Hands on Leica	Imaris (H)	Fiji (E)
	E	**F**	**A + B**	**C + D**

Workshop groups:

Group A (Zeiss):	Ann Kari Grindheim
	Lilia Ulanova
	Ognjen Bojovic
Group B (Leica):	Ana Jorge Finnigan
	Anne Mette Søviknes
	Naeimeh Yousefi Mesri
Group C (Zeiss):	Lill Knudsen
	Mohammad Madani Ibrahim
	Olav Sundnes
Group D (Leica):	Craig Myrum
	Margrete Hellem
	Thomas Kalvik
Group E (Zeiss):	Kirsten Rakkestad
	Halala Saed
	Espen Bækkevold
Group F (Leica):	Anette Elde
	Henriette Busengdal
	Bruno Vellutini

The lectures:

Basics of confocal microscopy:
We will compare conventional fluorescence microscopy and confocal microscopy, focusing on the basic principles of confocal imaging.

Optimal image acquisition:
What is a digital image? Resolution in 3 dimensions. What limits the resolution of confocal images? How to acquire the optimal image?

Fluorochromes and fluorescent proteins (FPs):
How to combine different fluorochromes?
An overview will be given of the many different FPs, focusing on advantages and disadvantages of the most commonly used ones.

Sample preparation:
Optimal sample preparation is the most important prerequisite of successful confocal imaging. We will focus on different strategies of preparing your samples, potential problems and tricks to try when things get tough.

Imaging representation and processing:
A digital image can be processed in many ways, either to make it look better or to carry out measurements or quantifications. We will see how simple display adjustments change the perception of an image. We will learn how to use the histogram and lookup-table to optimize image representation. We will also briefly cover the role of human perception.

Presentation of Leica/Zeiss software:
Introduction to the Leica or Zeiss hardware and software.

Presentation of Adobe® Photoshop® software:
Introduction to the commercial Adobe® Photoshop® software.

Presentation of Imaris software:
Introduction to the commercial, scientific image visualization and analysis software Imaris.

Presentation of Fiji software:
Introduction to the free, scientific image visualization, processing and analysis software Fiji.

DO's and DON'Ts in image processing:
What is image processing and what is manipulation? Which guidelines do I have to follow when creating a figure panel for a publication? What is a "representative" image?

The workshops:

General training will be with Endy on the Leica confocal and Hege on the Zeiss confocal. We will go through the most common operating modes of the confocal microscopes, learn how to acquire a correct image and how to acquire Z-stacks, and if time allows it go through more specialized operation modes.

We will have two **confocal hands on** sessions where people are divided into groups of 3 people. On the second session you will be at the microscope mostly on your own and practice what you have recently learnt. In the second session you can also bring your own samples.

Software sessions on Photoshop, Imaris and Fiji will be held at a PC-station with 4 PCs. We will give out some tasks for you to solve to learn simple image processing, and tip you on some useful freeware to download at "home".

Spinning disk sessions will be a demonstration on the spinning disk confocal system together with Michaël. This microscope is dedicated to live cell imaging and you will have a taste on how it works compared to a conventional confocal microscope.

You will all receive a 2h free time during the third day, this in order to fit everyone into the schedule.

We invite participants to bring their own samples to the course. The second confocal hands on session is dedicated to imaging of own samples.