

Agenda Advanced Imaging Techniques in Microscopy

DAY 1

Theory:

Lecture1: Introduction to microscopy

Lecture 2: Sample preparation

Software demonstration: Overview about the ZEN software

Practical part:

Basic introduction in the work with microscopes (fixed samples and live cells)

DAY 2

Theory:

Lecture1: Introduction to fluorescence microscopy

Lecture 2: Fluorescent dyes and special microscopy

Software demonstration: Setting up acquisition parameters (remote from the computer room)

Practical part:

Image quality measurements with beads

Recording images and spectral information from fixed fluorescent cells

Analysis of the first images in the computer room.

DAY 3

Theory:

Lecture1: Introduction to GFP and relatives

Lecture 2: Fluorescence live cell labelling and analysis methods and F-methods

Software demonstration: time-lapse recording in 2D and 3D

Practical part:

Live cell microscopy GFP Tracking in 2D, 3D and 4D over time, FRAP, FLIP, FRET and unmixing,

Day 4

Theory:

Lecture1: All kind of software questions and demo, analysis of time series, batch analysis of images, 3D and 4D software Imaris (Bitplane) (Ni 75 min).

Practical part:

Live cell microscopy GFP Tracking in 2D, 3D and 4D over time, FRAP, FLIP, FRET and unmixing,

DAY 5

Theory:

Lecture1: Making movies with ZEN, Macromedia, VideoMach3D and 4D software Imaris (Bitplane), Huygens Deconvolution (SVI).

Lecture2: Data analysis, preparation of the PP presentations, making animations, collages.

Practical part:

Preparing of the data for the presentation with PowerPoint.

Wrap-up discussion