

Graduate Program in Molecular Cell Biology:

Special Lecture/Course in: Live cell imaging and superresolution microscopy

Lecturer: Stephan Geley, Martin Offterdinger

Number: 041520

Type: VU Semester hours: 1.5 ECTS

Character: Practical course combined with a thorough theoretical introduction

Time/Date: to be announced.

Location: Seminar room 2-392, Light microscopy room 2-390 , and Core facility Biooptics

Limited number of places YES, number of places 6 (?) , registration necessary YES

For registration use the i-med inside system for questions please contact the lecturers

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Aim:

- Provide the theoretical basis of fluorescence live cell imaging, resolution, sensitivity
- Detection systems, limitations
- Fluorescent proteins
- FRET, FRAP, etc.
- Widefield and confocal microscopy
- Superresolution microscopy (gSTED, etc)

Description/contents:

- Imaging will be performed using available cell lines and/or transiently transfected cells expressing fluorescent proteins
- Widefield low light microscopy: time lapse imaging, deconvolution
- Laser scanning and spinning disk confocal microscopy, FRAP, FRET
- Superresolution microscopy: living cells: STED
- [Fixed samples: STORM]
- [number and brightness analysis]

Suggested reading:

see microscopy primer (online), Chapters Confocal Imaging, TIRF, Spinning Disk, STED