

Molecular Cell Biology

Content and Qualification Goals of MSi Module 10 (winter term)

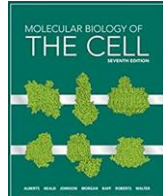
The course aims to provide a broad knowledge on different aspects of research in cell biology including basic science and translational research.

Module 10a: Molecular Cell Biology I (WS)

➤ Lecture: Molecular Cell Biology (8 students):

Contents: Cytoskeleton, Molecular motors, Intracellular transport, Autophagy, Gene regulation, Splicing, Cilia biology, Photoreceptor cell biology, Neuronal degenerations; Usher syndrome, Protein networks - affinity proteomics, Animal & cell models, iPSCs, Retinal organoids, Gene therapy.

All life is cellular!



10-12 lectures including 2-3 int. expert guest speakers. Language: English

Goal: You can answer questions about basic & advanced knowledge of cell biology.

➤ Hands on course: Molecular Cell Biology I

Block course; 2 weeks, full day, working in 2-4-teams, language: Deutsch/English

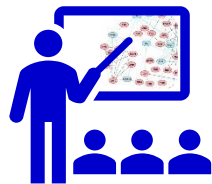
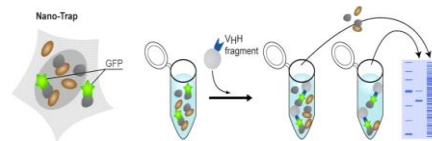
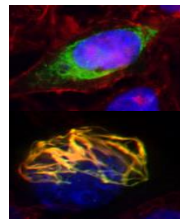
- Recombinant expression of GFP-tagged proteins in mammalian cells – plasmid expression & purification - transfection - immunocytochemistry
- Subcellular localization of proteins in cryosections via immunofluorescence
- Validation of molecular interactions of proteins via GFP-Trap immunoprecipitations protein-protein interactions

Goal: You can perform experiments in cell biology under supervision.

➤ Seminar: Current Topics in Cell Biology, language: English

Presentation of a scientific original publication incl. background information.

Goal: You will be able to present the content of a current scientific publication on cell biology research in English.



Module 10b: Molecular Cell Biology II (8 students):

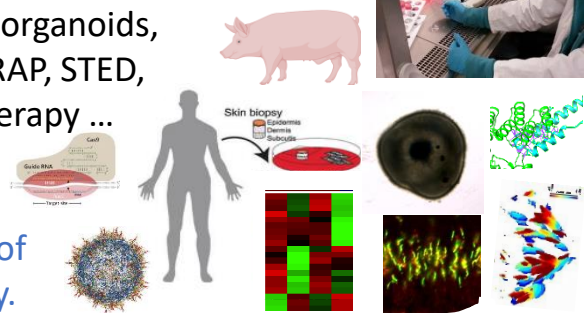
Lab course; 4-5 weeks, full day, working in 2-teams, Biocenter 2, 2nd floor

Lab/bench work, participation at a current research project of the lab:

(Techniques & methods: patient derived cells, iPSC, 3D organoids, RNAseq, omics technologies, life cell imaging, FRET, FRAP, STED, protein biochemistry, phase separation, TEM, gene therapy ... more info see www.ag-wolfrum.bio.uni-mainz.de)

Language: Deutsch/English

Goal: You will be capable of working on investigations of current questions in the field of molecular cell biology.



Module 10c: Molecular Cell Biology (12 students):

➤ Lecture: Molecular Cell Biology (content/goals see 10a)

➤ Seminar: Current Topics in Cell Biology (content/goals see 10a)

