

<i>Title of module</i>	Advanced Practical in the Focal Point Program: “Molecular Medicine” VZ: 185881 "Protein targeting to mitochondria in infectious diseases"		
<i>Credit points</i>	7.5 (of 15)	<i>Available in semester(s)</i>	2
<i>Hours per week</i>	9	<i>Compact course</i>	<input type="checkbox"/>
<i>Lecturer(s)</i>	J. Rassow		
<i>Teaching methods</i>	A five-week all-day practical lab course with a compulsory seminar presentation. Please note: A second Advanced Practical will have to be performed in the same semester to earn the full complement of 15 credits		
<i>Evaluation of learning progress</i>	Active participation, feedback during independently performed experiments, project discussions with the supervisor		
<i>Mode of examination</i>	Assessment of experimental skills during the practical (50%), a written project report (40%), and a seminar presentation of experimental results (10%).		
<i>Learning objectives</i>	An increasing number of bacterial and viral proteins is known to target mitochondria in the cells of infected tissues. It is the aim of the practical course to show how the molecular interactions of these proteins with mitochondria can be investigated <i>in vitro</i> and in intact cells.		
<i>Soft skills</i>	Daily discussion of the results obtained in the investigations and discussion of the strategy of the next experiments. All work is done in collaboration with experienced coworkers.		

Contents of module

- Isolation of mitochondria from yeast, or, optional, from rat liver.
- Synthesis of radio-labeled model proteins in reticulocyte lysate (in small volumes of up to 0.2 ml).
- Construction of plasmids encoding new model proteins (including site-directed mutagenesis).
- Import of radio-labeled proteins into isolated mitochondria, SDS-PAGE, detection and quantification of the imported proteins using a phosphorimager.
- Subfractionation of mitochondria for detection of proteins in distinct mitochondrial compartments.
- Analysis of protein complexes by native acrylamide gelelectrophoresis (BN-PAGE).
- Expression of GFP-labeled fusion proteins in yeast and assessment of the intracellular location by fluorescence microscopy.