Title of module	Modular Advanced Practical and Seminar in the Focal Point Programme "Molecular Medicine", VZ: 185780, 183781 **" Interactions of bacterial and viral proteins with mitochondria "**

Credit points	4	***Available in semester(s)***	1
Hours per week	5.25	***Compact course***	☒

Lecturer(s)	J. Rassow and teaching assistants
Teaching methods	Two-week advanced laboratory course with an intergrated seminar, one of four lab courses to be completed in the first term
Evaluation of learning progress	Active participation in the laboratory tasks and seminar, feedback during the experiment
Mode of examination	Assessment of active and successful participation in the practical (50%) and a written project report (50%)
Learning objectives	The virulence of pathogenic bacteria and viruses depends on proteins that mediate adhesion to target cells, toxicity or defence against the immune system. An increasing number of these 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 virulence factors with mitochondria can be investigated. The major experimental system used is a cell-free system for import of ^{35}S-radiolabeled proteins into isolated mitochondria.
Soft skills	An important aspect of the work in the laboratory is the daily discussion of the results obtained in the investigations and the strategy of the next experiments. All work is done in collaboration with experienced

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). Optional: Construction of plasmids encoding new model proteins. Import of radio-labeled proteins into isolated mitochondria, SDS-PAGE, BN-PAGE, assessment of the import efficiency using a phosphorimager. Subfractionation of mitochondria for detection of proteins in distinct mitochondrial compartments.