

Title of the module	Intracellular targeting of proteins		
Term/semester	Summer term / 2		
VAK-Number	Will be assigned centrally		
Credit points	6 ECTS		
Compulsory / elective course	Elective course		
Teaching methods	Method	SWS	CP
	Lecture	0.5 (7 h)	0.5
	Seminar	1.5 (21 h)	1.9
	Lab course	4 (56 h)	3.6
Self studies	Protocols 20 h Preparation of the talk 30 h Learning for the exam 46 h		
Module representative	Prof. Dr. R. Stick		
Instructor	Prof. Dr. R. Stick / Dr. Annette Peter		
Examiner	Prof. Dr. R. Stick		
Objectives	<ul style="list-style-type: none"> • Deepened knowledge about cell biological aspects of amphibian oogenesis and early development • Basic knowledge about intermediate filament proteins • Knowledge about protein lipidation • Development of experimental strategies • Performance of microinjection techniques • Acquiring experimental skills in basal lab techniques: protein separation and detection • Basic skills in immuno-histochemistry and fluorescence microscopy • Basic skills in data interpretation and evaluation 		
Content of teaching	<p><i>Theoretical part:</i></p> <ul style="list-style-type: none"> • Introduction in the oogenesis and early development of amphibians with special emphasis on the biological adaptations of amphibian oocytes. • Amphibian oocytes as protein expression system. • Cell fractionation techniques including differential centrifugation, floating gradient centrifugation. Oocyte handling, nuclear isolation, sub-fractionation of oocyte nuclei, in vitro egg maturation. • Introduction into intermediate filament biology with special emphasis on nuclear lamins, posttranslational modification and processing, principles of subcellular targeting. <p><i>Practical part:</i></p> <ul style="list-style-type: none"> • Oocyte isolation and handling, oocyte microinjection, cellfractionation and nuclear fractionation, protein sample preparation for SDS-PAGE, SDS-PAGE, western-blotting. • Cryofixation, cryosectioning and immunostaining, fluorescence microscopy, image processing. 		
Educational objectives	<ul style="list-style-type: none"> • Ability to understand the advantages and shortcomings of the 'biological system oocyte' • Ability to plan and perform scientific experiments • Ability to interpretate and evaluate scientific data produced in the practical • Ability to present and discuss scientific data obtained in the practical 		
Evaluation of the learning progress	Protocol, oral presentation of the results, discussion round during the practical		
Assessment	Seminar talk (30%); protocol (30%); final exam (40%)		
Frequency	Each summer semester		
Usage in other degree programmes	The module is also provided to diploma students (Biology)		
Requirements	Successful participation in module A		