

Title of the module	Electron transport			
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	1 (14 h)	1.3	
	Seminar	1 (14 h)	1.1	
	Practical course	4 (56 h)	3.6	
Self study	protocols	20 h		
	preparation of the talk	30 h		
	learning for the exam	46 h		
Module representative	Prof. U. Nehls			
Instructor	Prof. U. Nehls			
Examiner	Prof. U. Nehls			
Objectives	Introduction in the electron transport chains of mitochondria, plastids and the plasma membrane of photosynthetic bacteria. Comparison of animal, plant, fungal and bacterial capabilities.			
Content of teaching	<ul style="list-style-type: none"> Components of mitochondrial respiratory chains of plants, fungi and animals. Coupling of electron transport and proton motive force generation in mitochondria. Light quality and photosynthesis. Transformation of light energy into a proton gradient. Composition of the photosynthetic apparatus in plastids and photosynthetic bacteria. Function of the ATPase complex. NADH:quinone oxidoreductases in plasma membranes, mitochondria and plastids. <p><i>Methods used in the practical course:</i></p> <ul style="list-style-type: none"> Differential centrifugation and organelle separation. Light spectroscopy. Oxygen electrode measurements in combination with artificial electron donors/acceptors and inhibitors to dissect electron transport. 			
Educational objectives	<ul style="list-style-type: none"> Ability to understand advanced contents of electron transport and compartmentation in eukaryotes. Ability to conduct comparative analysis of mitochondria from plants, fungi and animals. Ability to understand and analyse evolutionary similarities of electron transport mechanisms at the plasma membrane and in different organelles. Ability to develop strategies for biochemical dissection of complex questions. 			
Evaluation of learning progress	Seminars and protocols			
Assessment	Seminar presentation (30%); protocol (40%); oral exam (30%)			
Frequency	Every summer term (block event before summer term will start)			
Usage in other degree programmes	The module is suitable for diploma students (focus on biochemistry and molecular cell biology) and M.Sc. students of Marine Biology.			
Requirements	Basic biochemistry in theory and practice			