

Mitochondrial Proteins: Biogenesis, Networks and Functional Decline								
Identification number		Workload	Credit points	Term of studying	Frequency of occurrence	Duration		
MN-B-SM (G 5)		360 h	12 CP	1 st or 2 nd term of studying	Summer term, 2 nd half	7 weeks		
1	Type of lessons a) Lectures b) Practical/Lab c) Seminar		Contact times	Self-study times	Intended group size*			
			24 h	48 h	max. 8			
			154 h	102 h	max. 2			
			8 h	24 h	max. 2			
2	Aims of the module and acquired skills <p>Students who successfully completed this module ...</p> <ul style="list-style-type: none"> have acquired detailed knowledge on biogenesis of different cellular organelles especially mitochondria. have acquired detailed knowledge on general protein synthesis, folding, homeostasis and degradation with an emphasis on mitochondrial proteins. can independently develop strategies for characterization of proteins, and responsible folding, translocation, and surveillance machineries. are able to analyze enzymes/pathways on different levels, such as primary sequence, domain structure, oligomerization, three-dimensional structure, evolutionary conservation, genetic interactions with other pathways. can independently carry out small scientific projects related to the topic of the module. have learned how to present research results in oral and written form and to critically discuss scientific publications related to the topic of the module on a professional level. are able to transfer skills acquired in this module to other fields of biochemistry. 							
3	Contents of the module <ul style="list-style-type: none"> Mammalian cell culture, Isolation of mitochondria Purification of recombinant proteins and their biophysical, biochemical and structural analysis Techniques to analyse mitochondrial protein synthesis, import, and folding 							
4	Teaching/Learning methods <p>Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form</p>							
5	Requirements for participation <p>Enrollment in the Master's degree course "Biological Sciences" or in the Master's degree course "Biochemistry"</p>							
6	Type of module examinations <p>The final examination consists of three parts: Two hours written examination about topics of the lectures and the practical/lab part (50 % of the total module mark), oral presentation in the framework of a seminar (25 % of the total module mark) and seminar paper (= poster presentation; 25 % of the total module mark)</p>							

7	Requisites for the allocation of credits Regular and active participation; Each examination part at least "sufficient" (see appendix of the examination regulations for details)
8	Compatibility with other Curricula Biochemical subject module in the Master's degree course "Biochemistry"
9	Significance of the module mark for the overall grade In the Master's degree course "Biological Sciences": 15 % of the overall grade (see also appendix of the examination regulations)
10	Module coordinator Prof. Dr. Jan Riemer, phone 470-7306, e-mail: jan.riemer@uni-koeln.de
11	Additional information Subject module of the Master's degree course "Biological Sciences", Specialization: (G) Molecular and Developmental Genetics Participating faculty: Prof. Dr. J. Riemer Literature: <ul style="list-style-type: none"> • Information about textbooks and other reading material will be given on the ILIAS representation of the course (https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html) Note: The module contains hand-on laboratory work conducted by small groups of students and is taught in research laboratories. The module does not contain computer-based practicals/research as a main component. General time schedule: Week 1 (Mon.-Fri.): Lectures, preparations for practical work and practical work; Week 2-5 (Mon.-Fri.): Lectures, Seminars and practical/lab; Week 6 (Mon.-Fri.): Preparing chalk talk and posters, and chalk talk and poster presentation about the content of the practical; Week 7 (Mon.-Fri.): Preparation for the written examination Introduction to the module: June 07, 2021 at 8:30 a.m. (this date is also the start of the module = week 1), Center for Molecular Biosciences (COMB), room 0.01 (ground floor) or online (in this case, further information/link will be sent to your Smail-Account); for preparation to the module before this introduction see ILIAS link under literature. Written examination: July 23, 2021, second/supplementary examination August 27, 2021; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.

* 4 students from the Master's degree course "Biological Sciences" and 4 students from the Master's degree course "Biochemistry".

Corona note! Depending on the Corona situation during the summer term, practical work may be skipped either totally or in part. In this case, some or all practical parts will be replaced by adequate alternatives so that (i) the workload and (ii) the principle content of the modules remained unchanged.