

Nodule Name Metabolic Reprogramming in Health and Diseases (Trifunovic)					
Identification Number	Workload	Credit Point	Term	Offered Every	Duration
MN-BC-BSM04	360 Hours	12 CP	1 st or 2 nd term	Winter, 2 nd half	7 weeks
1	Course Types a) Lecture b) Practical/Lab c) Seminar	Contact Times 20 h 150 h 12 h	Self-Study Times 80 h 50 h 48 h	Group Size max. 10 max 1 max 10	
2	Module Objectives and Skills to be Acquired Students who successfully completed this module ... <ul style="list-style-type: none"> • have acquired detailed knowledge on important metabolic concepts in a variety of health and diseases states. • have acquired experimental skills in state-of-the art methodologies in cell biology, biochemistry and molecular biology and can independently carry out small scientific projects related to the topic of the module. • have the ability to process, quantify and evaluate their experimental results. • 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	Module Content In this course we will gain insight into the fundamental principles of metabolic concepts in different health and diseases states and especially emphasize how these processes can be studied using biochemical and molecular biological techniques. The specific areas that will be covered are: <ul style="list-style-type: none"> • Compartmentalization of mitochondrial metabolism in the brain • Metabolic plasticity of T cell immunity • Reprogramming of mitochondrial metabolism in macrophages to drive the wound healing response • Immuno-metabolic pathways involved in human diseases • Mitochondria and cancer • Metabolic control of cancer • Metabolic (re)programming of the heart: during development and disease • Inflammatory cell death in metabolic diseases linked to obesity • Mitochondrial metabolism in the defense against microbes • Metabolic Homeostasis during stress conditions • Mitochondrial control of metabolism 				
4	Teaching Methods Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form				
5	Prerequisites (for the Module) Enrolment in the Master´s degree course "Biochemistry and Molecular Medicine"				
6	Type of Examination				

	The final examination consists of three parts: Two hours written examination about topics of the lectures (50% of the total module mark), oral presentation (25% of the total module mark) and seminar paper (25% of the total module mark)
7	Credits Awarded Regular and active participation; Each examination part at least "sufficient" (see appendix of the examination regulations for details)
8	Compatibility with other Curricula -
9	Proportion of Final Grade 10%
10	Module Coordinator Prof. Dr. Aleksandra Trifunovic, phone 478-84291, e-mail: aleksandra.trifunovic@uk-koeln.de Dr. Alexandra Kukat, phone 478-84296, e-mail: akukat@uni-koeln.de
11	Further Information Subject module of the Master's degree course "Biological Sciences", Focus of research: (M) Molecular Biology: Molecular mechanisms of metabolic reprogramming. Participating faculty: Prof. Dr. M. Bergami,/Dr. E. Motori, Dr. M. Corrado, Prof. Dr. S. Eming/Dr. S. Willenborg, Prof. Dr. M. Fabri, Prof. Dr. C. Frezza, Prof. Dr. H. Kashkar/Dr. L. Schiffmann, Dr. L. Kurian, Dr. M. Peltzer, Dr. L. Pernas, Dr. G. Storelli, Prof. Dr. A. Trifunovic Literature: A list of literature that should be used for preparation to the module can be obtained from http://www.genetik.uni-koeln.de/Teaching.html under "Advanced undergraduate courses". General time schedule: Week 1-6 (Mon.-Fri.): Lectures, practical/lab, writing seminar paper and preparation for the oral presentation (held at the end of week 6); Week 7 (Mon.-Fri): Preparation for the written examination Note: The module contains hand-on laboratory work conducted individually and is taught in research laboratories. The module does not contain computer-based practicals/research as a main component.

* 10 students from the Master's degree course "Biochemistry and Molecular Medicine".