Microbial Genetics					
Identification number	Workload	Credit points	Term of studying	Frequency of occurence	Duration
MN-B-SM (G 4)	360 h	12 CP	1st or 2nd term of studying	Summer term, 2nd half	7 weeks

1	Type of lessons	Contact times	Self-study times	Intended group size
	a) Lectures/Tutorial	10 h	50 h	max. 12
	b) Practical/Lab	180 h	80 h	max. 2-3
	c) Seminar	10 h	30 h	max. 1-2

2 Aims of the module and acquired skills

Students who successfully completed this module …

- have acquired detailed knowledge of microbial genetics and the cellular repertoire of Yeast (*Saccharomyces cerevisiae*) and *Escherichia coli* to regulate gene and protein function as well as to respond to stress and environmental signals operating at different levels in the cell from gene expression to protein function and signaling.
- are able to address a scientific question related to the topic of the module by independently planning and conducting an experimental project, including choice of accurate methods, appropriate data compilation, accurate documentation of experiments as well as analysis and interpretation.
- 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 biology.

3 Contents of the module

- Planning and conduction of an individual project (in teams of 2 to 3 students)
- Methods of gene targeting and site-directed mutagenesis
- Analysis of transcriptional and post-transcriptional regulation
- Analysis of protein-protein interaction and protein photo-crosslinking
- Characterization of post-translational regulation of protein function and selective protein degradation
- Standard molecular genetic techniques (cloning, protein expression, sequencing, etc.)
- Selection and characterization of mutants

4 Teaching/Learning methods

- Lectures;Practical/Lab (Project work);Seminar; Guidance to independent research; Training on presentation techniques in oral and written form

5 Requirements for participation

Enrollment in the Master´s degree course “Biological Sciences”

Knowledge and understanding of the content of the theory module “Principles of Molecular Genetics, Development and Aging (A/D/G)” is absolutely required for participation in the course. In cases of doubt please contact the module coordinator (see 10).

6	Type of module examinations The final examination consists of three parts: Two hours written examination about topics of the lectures/tutorials (50 % of the total module mark), oral presentation (25 % of the total module mark), and seminar paper (25 % of the total module mark).
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 None
9	Significance of the module mark for the overall grade 15 % of the overall grade (see also appendix of the examination regulations)
10	Module coordinator Prof. Dr. Karin Schnetz, phone 470-3815, e-mail: schnetz@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. Dohmen, Prof. Dr. K. Schnetz Literature: • 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) General time schedule: Week 1-6 (Mon.-Fri. 07.06. to 16.07.21): Lectures/tutorials and practical/lab (daily from approximately 9 a.m. to 5 p.m. including lunch break, times may vary depending on practical/lab work), preparation for the seminar talk (held at the end of week 5) and writing reports about the project studies (to be submitted by the end of week 6); Week 7 (Mon.-Fri.): Preparation for the written examination Note: The module contains hand-on laboratory work conducted by small groups of students and is taught in course rooms. Introduction to the module: June 02, 2021 at 11 a.m., Center for Molecular Biosciences (COMB), seminar room 0.46 (ground floor) or online (in this case, further information/link will be posted in ILIAS and 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.

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.