Functional Genomics						
Identification number	Workload	Credit points	Term of studying		Frequency of occurence	Duration
MN-B-SM (G 6)	360 h	12 CP	1st or 2nd term of studying		Winter term, 2nd half	7 weeks
1	Type of lessons		Contact times	Self-study times		Intended group size*
	a) Lectures		22 h	50 h		max. 16
	b) Practical/Lab		150 h	100 h		max. 2
	c) Seminar		8 h	30 h		max. 2

2 Aims of the module and acquired skills

Students who successfully completed this module …

- have acquired detailed knowledge in the concepts of functional genomics and the role of genome regulation in physiology and disease.
- have acquired experimental skills in state-of-the art methods in genomics, cell biology and molecular biology and 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 biology.

3 Contents of the module

- Evolution of genomes and traits
- Regulation of nuclear and chromatin architecture
- Epigenetic regulation of gene expression
- Principles of transcriptional regulation
- Identification of longevity genes
- Model organisms for functional genomics and ageing research
- Next generation sequencing methods for genomic analyses
- Genetic screening
- Genetic reprogramming
- Chromatin immunoprecipitation
- Cloning methods
- Cell biology, immunological staining methods, microscopy

4 Teaching/Learning methods

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

Functional Genomics (MN-B-SM [G 6]) continued

5	Requirements for participation Enrollment in the Master´s degree course “Biological Sciences” or in the Master´s degree course “Biochemistry”
6	Type of module examinations The final examination consists of two parts: Two hours written examination about topics of the lectures and the practical/lab part (70 % of the total module mark) and oral presentation (30 % of the total module mark)
7	Requisites for the allocation of credits Regular and active participation; Passed seminar paper; Each examination part at least “sufficient” (see appendix of the examination regulations for details)
8	Compatibility with other Curricula Biological 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 Dr. Martin Graef, phone 379 70470, e-mail: martin.graef@age.mpg.de
11	Additional information Subject module of the Master´s degree course “Biological Sciences”, Focus of research: (G) Genetics and Cell Biology Participating faculty: Dr. H. Bazzi, Dr. M. Denzel, Dr. M. Graef, Dr. L. Kurian, Dr. L. Pernas, Dr. S. Steculorum, Dr. P. Tessarz, Dr. T. Wunderlich 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 (Mon.-Fri.): Introduction to Functional Genomics (lectures), safety lecture and lab projects; Week 2-6 (Mon.-Fri.): Lectures, seminars and lab projects; 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. Introduction to the module: December 02, 2019 at 9:00 a.m., MPI Age, Joseph-Stelzmann-Str. 9 b, 50931 Köln, seminar room 1 (ground floor) Written examination: January 31, 2020, second/supplementary examination March 20, 2020; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.

* 14 students from the Master´s degree course “Biological Sciences” and 2 students from the Master´s degree course “Biochemistry”.