

Model Systems of Aging and Age-related Diseases						
Identification number	Workload	Credit points	Term of studying	Frequency of occurrence	Duration	
MN-B-SM (G 2)	360 h	12 CP	1 st or 2 nd term of studying	Winter term, 1 st half	7 weeks	
1	Type of lessons		Contact times	Self-study times	Intended group size*	
	a) Lectures		28 h	42 h	max. 14	
	b) Practical/Lab		145 h	112 h	max. 3	
	c) Seminar		9 h	24 h	max. 2	
2	Aims of the module and acquired skills					
	Students who successfully completed this module ...					
	<ul style="list-style-type: none"> • have acquired detailed knowledge on important genetic concepts in modern aging research including key genetic model systems such as <i>C. elegans</i>, <i>Drosophila</i>, and <i>mice</i>. • have acquired experimental skills in state-of-the art methodologies in 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					
	<ul style="list-style-type: none"> • Genetic programs/mechanisms of aging • Interplay between proteostasis, mitochondria, inflammation and aging • Genetic control of tissue regeneration and tumor growth • Basic cell biology mechanisms of cancer as an aging associated disease • Cellular mechanisms of nutrient sensing in aging • State of the art <i>C. elegans</i> and <i>Drosophila</i> techniques • Eukaryotic cell culture • DNA analysis by polymerase chain reaction (PCR), quantification of gene expression • Gel electrophoresis (agarose and PAGE) and western blot • Staining methods, immunohistochemistry, microscopy 					
4	Teaching/Learning methods					
	<ul style="list-style-type: none"> • 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" or in the Master´s degree course "Biochemistry"					
6	Type of module examinations					
	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	<p>Requisites for the allocation of creditsalso</p> <p>Regular and active participation; Each examination part at least "sufficient" (see appendix of the examination regulations for details)</p>
8	<p>Compatibility with other Curricula</p> <p>Biological subject module in the Master's degree course "Biochemistry"</p>
9	<p>Significance of the module mark for the overall grade</p> <p>In the Master's degree course "Biological Sciences": 15 % of the overall grade (see also appendix of the examination regulations)</p>
10	<p>Module coordinator</p> <p>Prof. Dr. Thorsten Hoppe, phone 478-84218, e-mail: thorsten.hoppe@uni-koeln.de</p>
11	<p>Additional information</p> <p>Subject module of the Master's degree course "Biological Sciences", Focus of research: (G) Genetics and Cell Biology</p> <p>Participating faculty: Prof. Dr. A. Antebi, Dr. C. Demetriades, Prof. Dr. T. Hoppe, Dr. S. Iden, Prof. Dr. M. Krüger, Prof. Dr. C. Niessen, Prof. Dr. M. Uhlírova, Prof. Dr. S. Trifunovic, Dr. D. Vilchez</p> <p>Literature:</p> <ul style="list-style-type: none"> • 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". <p>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</p> <p>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.</p> <p>Introduction to the module: October 07, 2019 at 9 a.m., CECAD research center, Joseph-Stelzmann Str. 26, seminar room, first floor</p> <p>Written examination: November 22, 2019, second/supplementary examination February 14, 2020; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>

* 13 students from the Master's degree course "Biological Sciences" and 1 student from the Master's degree course "Biochemistry".