

Module Name Lecture Principles of Molecular Genetics, Development and Aging						
Type of Module ○ Basic Module				Module Code Genetics and Aging Lecture		
Identification Number MN-B-GA 1	Workload 180 h	Credit Points 6 CP	Term 1 st term of studying	Offered Every Winter term	Start Winter term only	Duration 1 term
1	Course Types Lecture		Contact Time 49 h	Private Study 131 h	Planned Group Size* Approx. 70-100 students	
2	Module Objectives and Skills to be Acquired Students who successfully completed this module <ul style="list-style-type: none"> • have acquired an understanding of principles and mechanisms of molecular and cellular biology and key concepts in modern genetics and aging research. • have acquired in-depth knowledge of molecular, cellular and systemic mechanisms that orchestrate development and organismal homeostasis and how their malfunctions contribute to aging and aging-associated diseases. • can solve problems and develop strategies to answer questions related to molecular genetics and mechanisms underlying organismal development and aging. 					
3	Module Content <ul style="list-style-type: none"> • Eukaryotic, bacterial and viral genome structure and organization • DNA stability, damage and repair, DNA replication and recombination • Organization and function of the cytoskeleton • Cell cycle and its regulation • Regulation of gene expression and epigenetics • Translation, proteostasis and ER stress, including protein folding and posttranslational modification of proteins • Signal transduction, inter- and intra-cellular communication • Mitochondria biology and function • Cell death and senescence • Stem cell biology, regeneration • Infection biology, defense mechanisms and immunity • Human genetics, polymorphisms and mutations • Animal models in biomedical research • Principles of morphogenesis and differentiation 					
4	Teaching Methods <ul style="list-style-type: none"> • Lecture 					

5	<p>Prerequisites (for the Module) Enrollment in the Master´s degree course "Biological Sciences"</p> <p>Additional academic requirements The knowledge of cell, molecular and developmental biology as well as genetics on the level of general biology text books (<i>e.g.</i> Alberts, Lodish or Watson) is required.</p>
6	<p>Type of Examination Two hours written examination about topics of the lectures (100 % of the total module mark)</p>
7	<p>Credits Awarded Written examination at least "sufficient"</p>
8	<p>Compatibility with other Curricula None</p>
9	<p>Proportion of Final Grade 7.5 %</p>
10	<p>Module Coordinator Prof. Dr. Mirka Uhlirova, phone 478 84334, e-mail: mirka.uhlirova@uni-koeln.de</p>
11	<p>Further Information</p> <p>Participating faculty: Professors of the Institute for Genetics and Cologne Excellence Cluster on Cellular Stress Responses in Aging-Associated Diseases (CECAD), Institute for Zoology and Institute for Biochemistry</p> <p>Literature:</p> <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) <p>General time schedule: Weeks 1-14: Mon. from 11:00 to 12:30 a.m. and Thu. from 9:00 to 10:30 a.m.; Week 15 (Mon.-Fri.): Preparation for the written examination</p> <p>Introduction to the module: October 11, 2021 at 11:00 a.m., online (further information/link will be sent to your Smail-Account); for preparation to the module before this introduction see ILIAS link under literature.</p> <p>Written examination: February 11, 2022, second/supplementary examination March 11, 2022; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>

* Depending on how many students from other subject areas (and if indicated also from other master´s degree courses, see 5) choose this module.