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| <b>Module Name</b><br>Functional Genomics        |   |                               |   |   |   |                            |
| <b>Type of Module</b><br>○ Advanced Module       |   |                               |   | <b>Module Code</b><br>Functional Genomics     |   |                            |
| <b>Identification Number</b><br>MN-B-SM<br>(A 4) | <b>Workload</b><br>360 h  | <b>Credit Points</b><br>12 CP | <b>Term</b><br>2 <sup>nd</sup> term of studying | <b>Offered Every</b><br>Summer term           | <b>Start</b><br>summer term only                          | <b>Duration</b><br>7 weeks |
| <b>1</b>   | <b>Course Types</b><br>a) Lectures<br>b) Practical/Lab<br>c) Seminar  |                               | <b>Contact Time</b><br>22 h<br>150 h<br>8 h     | <b>Private Study</b><br>50 h<br>100 h<br>30 h | <b>Planned Group Size*</b><br>max. 12<br>max. 2<br>max. 2 |                            |
| <b>2</b>   | <b>Module Objectives and Skills to be Acquired</b><br>Students who successfully completed this module <ul style="list-style-type: none"> <li>• genome regulation in physiology and disease.</li> <li>• 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.</li> <li>• 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.</li> <li>• are able to transfer skills acquired in this module to other fields of biology.</li> </ul> |                               |   |   |   |                            |
| <b>3</b>   | <b>Module Content</b> <ul style="list-style-type: none"> <li>• Regulation of nuclear and chromatin architecture</li> <li>• Epigenetic regulation of gene expression</li> <li>• Principles of transcriptional regulation</li> <li>• Identification and characterisation of genetic variants</li> <li>• Next-generation sequencing methods for genomic analyses</li> <li>• Genome editing</li> <li>• Genetic screening</li> <li>• Genetic reprogramming</li> <li>• Chromatin immunoprecipitation</li> <li>• Cloning methods</li> <li>• Cell biology, immunological staining methods, microscopy</li> <li>• DNA repair</li> </ul>  |                               |   |   |   |                            |
| <b>4</b>   | <b>Teaching Methods</b><br>Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form  |                               |   |   |   |                            |

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| 5  | <p><b>Prerequisites (for the Module)</b></p> <p>Enrollment in the Master's degree course "Biological Sciences" or in the Master's degree course "Biochemistry".</p> <p><b>Additional academic requirements</b></p> <p>Previous attendance of the lecture module "Principles of Molecular Genetics, Development and Aging (A/D/G)".</p>   |
| 6  | <p><b>Type of Examination</b></p> <p>The final examination consists of two parts: written examination on topics of lectures, seminars and the practical/lab part (1 hour; 50 % of the total module mark), oral presentation (20-30 min; 50 % of the total module mark)</p>   |
| 7  | <p><b>Credits Awarded</b></p> <p>Regular and active participation<br/>Each examination part at least "sufficient" (see appendix of the examination regulations for details)</p>  |
| 8  | <p><b>Compatibility with other Curricula*</b></p> <p>Biological subject module in the Master's degree course "Biochemistry"</p>  |
| 9  | <p><b>Proportion of Final Grade</b></p> <p>In the Master's degree course "Biological Sciences": 12 % of the overall grade (see also appendix of the examination regulations)</p>   |
| 10 | <p><b>Module Coordinator</b></p> <p>Dr. Joris Deelen, +49 (0)221 379 70 480, e-mail: Joris.Deelen@age.mpg.de</p>   |
| 11 | <p><b>Further Information</b></p> <p><b>Subject module</b> of the Master's degree course "Biological Sciences",<br/><b>Specialization:</b> (A) Mechanisms of Aging and Aging Associated Diseases</p> <p><b>Participating faculty:</b> Dr. J. Deelen, Dr. S. Panier, Dr. H. Bazzi, Dr. L. Kurian, Dr. S. Steculorum, Dr. L. Pernas, Dr. I. Huppertz, Dr. P. Antczak, Dr. J. Reznick, Dr. S. Poepsel</p> <p><b>Literature:</b> Information about textbooks and other reading material will be given on the ILIAS representation of the course (<a href="https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html">https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html</a>)</p> <p><b>General time schedule:</b> 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</p> <p><b>Note:</b> 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><b>Introduction to the module:</b> May 15, 2023 at 9:00 a.m., MPI Age, Joseph-Stelzmann-Str. 9 b, 50931 Köln, seminar room 1 (ground floor) or online (in this case, 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><b>Written examination:</b> July 14, 2023, second/supplementary examination August 25, 2023; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p> |

\* 10 students from the Master's degree course "Biological Sciences" and 2 students from the Master's degree course "Biochemistry".