

Modern Techniques of Developmental Biology					
Identification number	Workload	Credit points	Term of studying	Frequency of occurrence	Duration
MN-B-SM (DG 1)	360 h	12 CP	1 st or 2 nd term of studying	each term, 2 nd half	7 weeks
1	Type of lessons		Contact times	Self-study times	Intended group size*
	a) Lectures		12 h	24 h	max. 13
	b) Practical/Lab		162 h	129 h	max. 3
	c) Seminar		9 h	24 h	max. 6
2	Aims of the module and acquired skills Students who successfully completed this module ... <ul style="list-style-type: none"> • have acquired theoretical and experimental skills concerning important techniques in developmental biology (see contents of the module). • 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 analysis of developmental processes • Clonal analysis • Advanced techniques of fluorescence microscopy • Cell transplantations • Cell ablations • Transgenic techniques • RNAi and morpholino knock-down of developmental genes • Life-imaging of morphogenetic processes • Cell migration and intracellular transport of mRNAs and proteins • Basic techniques of molecular cloning (DNA preparation, transformation, ligation, RNA synthesis) • Basic protein techniques (PAGE, Western blotting) 				
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" Additionally recommended: Participation in an advanced genetics, cell biology or developmental biology course within a bachelor's program is highly desirable. The knowledge of basic molecular and cell biology on the level of introductory biology or cell biology textbooks (Campbell, Purves, Alberts) is a prerequisite. Basic lab experience (pipetting, preparation of solutions) is presumed.				

6	<p>Type of module examinations</p> <p>The final examination consists of three parts: Two hours written examination about topics of the lectures and the practical/lab part (50 % of the total module mark), oral presentation (25 % of the total module mark) and seminar paper (25 % of the total module mark)</p>
7	<p>Requisites for the allocation of credits</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. Siegfried Roth, phone 470-2491, e-mail: siegfried.roth@uni-koeln.de</p>
11	<p>Additional information</p> <p>Subject module of the Master's degree course "Biological Sciences", Focus of research: (D) Developmental Biology; (G) Genetics and Cell Biology</p> <p>Participating faculty: PD Dr. B. Altenhein, Prof. Dr. O. Bossinger, Prof. Dr. M. Hammerschmidt, Prof. Dr. M. Hülskamp, PD Dr. M. Kroiher, Dr. H.-M. Pogoda, Prof. Dr. S. Roth, Prof. Dr. B. Schermer, Prof. Dr. M. Uhlirva, Prof. Dr. W. Werr, Prof. Dr. A. Wodarz</p> <p>Literature:</p> <ul style="list-style-type: none"> • Gilbert, S.F. (2006) Developmental Biology. 8th edition, Sinauer Associates • Wolpert, L., Jessel, T., Lawrence, P. <i>et al.</i> (2006) Principles of Development. 3rd edition, Oxford University Press • Review articles on particular topics will be provided during the course. <p>General time schedule: Week 1-5 (Mon.-Fri.): Lectures and practical/lab and preparation for the seminar talk (held in the weeks 4-6); Week 6 (Mon.-Fri): Writing seminar paper; 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: May 19, 2020 at 9:00 a.m., Cologne Biocenter, room 3.002 (third floor)</p> <p>Written examination: July 17, 2020, second/supplementary examination August 28, 2020; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>

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