

Module Name Neurobiology in <i>Drosophila</i>						
Type of Module ○ Advanced Module				Module Code Neurobiology in <i>Drosophila</i>		
Identification Number	Workload	Credit Points	Term	Offered Every	Start	Duration
MN-B-SM (N 2)	360 h	12 CP	2 nd term of studying	Summer term	summer term only	7 weeks
1	Course Types		Contact Time	Private Study	Planned Group Size	
	a) Lectures		24 h	50 h	max. 9	
	b) Practical/Lab		150 h	99 h	max. 9	
	c) Seminar		7 h	30 h	max. 9	
2	Module Objectives and Skills to be Acquired Students who successfully completed this module <ul style="list-style-type: none"> • will have gained a general understanding of neural cells and their function • achieved basic understanding of the relationship between anatomy and function in the <i>Drosophila</i> brain • gained insights into neuron-glia interaction and how this controls behaviour • learned state-of-the-art techniques in neurobiology • learned how to address neurobiological questions experimentally and plan experiments • gained insights in data evaluation, statistical methods and data management • 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	Module Content The master course module for <i>Drosophila</i> neurobiology provides a versatile view on research conducted using the fruit fly <i>Drosophila</i> . Since decades <i>Drosophila</i> represents a valuable model organism to address questions spanning from cellular mechanisms of neurons to neuronal network functions and behavior controlling circuits. It is also widely used for the investigation of mechanisms underlying the development of human neurological diseases. In this course the students will learn the essential techniques to address fundamental neurobiological questions, like molecular biology, immunohistochemistry, laser-scanning microscopy, animal behavior and statistical analysis, as well as electron microscopy connectome database-driven analysis of neuronal circuits and computational 3D neuron image analysis. Students will also be trained in scientific reading and writing skills and making pertinent questions. During the course, outstanding <i>Drosophila</i> researchers from all over the world will visit in person or online and present their research.					

	<ul style="list-style-type: none"> • From genes to behavior: concepts of neurogenesis, neural function, and circuit formation • Molecular neurobiology • Staining methods, immunohistochemistry, state-of-the-art microscopy techniques and bio-informatic image processing methods • Basic and advanced methods in cell and molecular biology and protein biochemistry • Behavioural assays of larval and/or adult locomotion in flies • Basic and advanced <i>Drosophila</i> genetics • Scientific writing (grant proposal, paper) and presentation (oral, seminar, poster)
4	Teaching Methods Lectures; Practical/Lab (Project work); Seminars; Guidance to independent research; Training on presentation techniques in oral and written form; training on paper/grant writing
5	Prerequisites (for the Module) Enrollment in the Master's degree course "Biological Sciences" Additional academic requirements Previous attendance of the lecture module "Neurobiology: Genes, Circuits, and Behavior (N)".
6	Type of Examination The final examination consists of two parts: oral presentation (20-30 min; 50 % of the total module mark), written report (50 % of the total module mark)
7	Credits Awarded Regular and active participation Each examination part at least "sufficient" (see appendix of the examination regulations for details)
8	Compatibility with other Curricula None
9	Proportion of Final Grade 15 % of the overall grade (see also appendix of the examination regulations)
10	Module Coordinator Dr. Thomas Riemensperger, phone 470-76283, e-mail: triemens@uni-koeln.de
11	Further Information Subject module of the Master's degree course "Biological Sciences", Specialization: (N) Neurobiology: Genes, Circuits, and Behavior Participating faculty: PD Dr. B. Altenhein, Dr. E. Erhardt, Dr. , Prof. Dr. K. Ito, Dr. T. Riemensperger, Prof. Dr. H. Scholz Literature: 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)

General time schedule: Week 1 (Mon.-Fri., 9 a.m. - 5 p.m.): Seminars, lectures, introduction to paper/grant writing, practice; Week 2-6 (Mon.-Fri., 9 a.m. - 5 p.m.): practical/lab; Week 7 (Mon.-Fri.): Preparation for the oral examination and final presentation

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: April 08, 2024 at 10 a.m., Cologne Biocenter, room 2.009 (second 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.

Oral or written examination: May 20, 2022, second/supplementary examination August 05, 2022; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.