

Neurogenetics: From Genes to Behavior					
Identification number	Workload	Credit points	Term of studying	Frequency of occurrence	Duration
MN-B-SM (NG 1)	360 h	12 CP	1 <sup>st</sup> or 2 <sup>nd</sup> term of studying	Summer term, 1 <sup>st</sup> half	7 weeks
<b>1</b>	<b>Type of lessons</b>		<b>Contact times</b>	<b>Self-study times</b>	<b>Intended group size*</b>
	a) Lectures		15 h	30 h	max. 6
	b) Practical/Lab		120 h	161 h	max. 1
	c) Seminar		10 h	24 h	max. 1
<b>2</b>	<b>Aims of the module and acquired skills</b> Students who successfully completed this module ... <ul style="list-style-type: none"> <li>• have acquired detailed knowledge of genetic methods used in pioneer model systems. In addition they have acquired knowledge of principles and methods used to dissect mechanisms underlying neuronal development and behavior.</li> <li>• are able to use transgenic approaches to functionally analyze gene products and their impact on neuronal function 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>Contents of the module</b> <ul style="list-style-type: none"> <li>• Classical genetics</li> <li>• Generation of <i>Drosophila melanogaster</i> mutants</li> <li>• Localization of transgenic products and reporter genes</li> <li>• Immunohistochemical approaches to analyse neuronal morphology</li> <li>• Basics of neuronal development</li> <li>• Comparative characterization of neuroanatomical data</li> <li>• Behavioral paradigms and their analysis</li> </ul>				
<b>4</b>	<b>Teaching/Learning methods</b> <ul style="list-style-type: none"> <li>• Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form</li> </ul>				
<b>5</b>	<b>Requirements for participation</b> Enrollment in the Master´s degree course "Biological Sciences" or in the Master´s degree course "Klinische und Experimentelle Neurowissenschaften" <b>Additionally recommended:</b> Successful participation in an advanced Genetics, Developmental Biology or Neurobiology modules during the Bachelor´s degree course (e.g. MN-B-WP II [Gen 1], MN-B-WP I [Dev 1] or MN-B-WP I [Neuro 1] for Cologne students) or similar skills (after consultation). In cases of doubt, please contact the module coordinator (see 10) before choosing this subject module.				

6	<p><b>Type of module examinations</b></p> <p>The final examination consists of three parts: 30 min oral examination about topics of the lectures, the practical/lab part and the seminars (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><b>Requisites for the allocation of credits</b></p> <p>Regular and active participation; 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>Elective module in the Master's degree course "Klinische und Experimentelle Neurowissenschaften"</p>
9	<p><b>Significance of the module mark for the overall grade</b></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><b>Module coordinator</b></p> <p>Prof. Dr. Henrike Scholz, phone 470-3121, e-mail: henrike.scholz@uni-koeln.de</p>
11	<p><b>Additional information</b></p> <p><b>Subject module</b> of the Master's degree course "Biological Sciences", <b>Focus of research:</b> (N) Neurobiology; (G) Genetics and Cell Biology</p> <p><b>Participating faculty:</b> Prof. Dr. H. Scholz</p> <p><b>Literature:</b></p> <ul style="list-style-type: none"> <li>• Gilbert, S.F. (2010) Developmental Biology. 9<sup>th</sup> edition, Palgrave Macmillan. Chapter 10</li> <li>• Wolpert, L. (2006) Principles of Development. 3<sup>rd</sup> edition, Oxford University Press. Chapter 10</li> <li>• Byrne, J.H., Roberts, J.L. (2009) From Molecules to Networks. 2<sup>nd</sup> edition, Academic Press. Chapters 1, 2, 8, 9, 10, 11</li> <li>• For those students, who speak German: Janning, W., Knust, W. (2004) Genetik. Thieme Verlag. Kapitel 1-11, 18.2.2, for those students who speak English only Greenspan, R.J. (2004) Fly Pushing: The Theory and Practice of <i>Drosophila</i> Genetics. Cold Spring Harbor Laboratory, might be an alternative</li> <li>• Original papers will be handed out during the module</li> </ul> <p><b>General time schedule:</b> Week 1-6 (Mon.-Fri.): Lectures, practical/lab (starting at 9.30 a.m.) and preparation for the seminar talk (held at the end of week 6) as well as writing seminar paper; Week 7 (Mon.-Fri): Preparation for the written examination</p> <p><b>Note:</b> The module contains hand-on laboratory work conducted by small groups of students as well as 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> April 01, 2019 at 10:00 a.m., Cologne Biocenter, room 0.013 (ground floor)</p> <p><b>Oral examination:</b> May 17, 2019, second/supplementary examination July 26, 2019; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>

\* 5 students from the Master's degree course "Biological Sciences" and 1 students from the Master's degree course "Klinische und Experimentelle Neurowissenschaften".