

Title of module	XII Master Project
Module coordinator	Prof. Dr. Beate Brand-Saberi

Credit points	30	Semester(s) in which the module is taught	4
Contact hours	40	Workload	900 hours

Lecturer(s)	All PIs from the associated labs
Type of teaching	Practical work and instructions accompanying lab bench work Presenting progress reports in the seminar (1 hour per week) Discussion of drafts for the master thesis
Relation to curriculum	Compulsory; elective
Prerequisites	The successful completion of all previous modules (except of the module XII Master Project itself) is required as prerequisite.
Aims	In the module "Master Project", the students will be enabled to plan, perform lab experiments choosing from a range of particular methods to solve a particular question and to interpret their results in context with the relevant literature. They will be enabled to act under regular supervision independently. They will master the task to take over scientific responsibility.
Learning outcome	Knowledge: Students have gained knowledge on research topics of the host lab and in depth-knowledge of project-related literature. Skills: Students are able to generate, document and interpret original research data. Competencies: Students are capable of critically evaluating their own research data by discussions with supervisors and lab-fellows in the context of current and historical literature; they will be able to keep up with relevant publications in the field. They are capable of adapting their time schedule. Students are self-dependent, self-organized and interact in a laboratory environment in a responsible way;
Contents of module	The topic of research project: http://www.ruhr-uni-bochum.de/istem/Mastertopics.html
Study and examination requirements; Forms of examination	Regular progress reports and discussions with the supervisor in the context of the master project and in the seminar with lecturers and fellow students are required; The assessment will be done on the basis of a written master thesis in English language.
Literature	Yusuf F. and Brand-Saberi B. (2012). Myogenesis and muscle regeneration. <i>Histochemistry and Cell Biology</i> , 138(2):187-199 Lafenetre P, Leske O, Wahle P, Heumann R. (2011). The beneficial effects of physical activity on impaired adult neurogenesis and cognitive performance. <i>Front. Neurosci.</i> doi: 10.3389/fnins.2011.00051. Manns, M., Leske, O., Gottfried, S., Bichler, Z., Lafenetre, P., Wahle, P., and Heumann, R. (2011). Role of neuronal ras activity in adult hippocampal neurogenesis and cognition. <i>Front Neurosci</i> 5, 18. Full text pdf Squire, Berg, Bloom, du Lac, Ghosh, Spitzer. <i>Fundamental Neuroscience</i> , 3rd Ed. AP (2008)

Confocal Microscopy Methods and Protocols. Stephen W. Paddock (ed.) "Methods in Molecular Biology", v. 123, Humana Press.

Electron Microscopy Methods and Protocols M A Nasser Hajibagheri, (ed.), 1999, "Methods in Molecular Biology", v. 117, Humana Press

Microscopy and Histology for Molecular Biologists: A Users Guide (2002). J. Kiernan and I. Mason (eds.) Portland Press limited.

Theiss C, Meller K (2012). Fluorescence Proteins and Time-Lapse Imaging of the Cytoskeleton. Protocols in Neuroscience, Interdisciplinary Methods for Investigation of the Cytoskeleton. Ed.: R. Dermietzel. Springer Press.

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Hennen E, Faissner A (2012) LewisX: a neural stem cell specific glycan? Int J Biochem Cell Biol 44:830-833.

Kim, et. al., (2009) Direct reprogramming of human neural stem cells by OCT4 Nature 461: 649-653.

Kögler et al. (2004) A New Human Somatic Stem Cell from Placental Cord Blood with Intrinsic Pluripotent Differentiation Potential JEM 200 no. 2 123-135

"Vertebrate Myogenesis: Stem Cells and Precursors" Beate Brand-Saberi (ed.) Springer-Verlag 2014, Problems and Results in Cell Differentiation

Denecke B, Horsch LD, Radtke S, Fischer JC, Horn PA, Giebel B. Human endothelial colony-forming cells expanded with an improved protocol are a useful endothelial cell source for scaffold-based tissue engineering. J Tissue Eng Regen Med. 2013 epub

Klump H, Teichweyde N, Hinrichs C, Horn PA. Development of patient-specific hematopoietic stem and progenitor cell grafts from pluripotent stem cells, in vitro. Current Molecular Medicine. 2013