Module description

Modul No. 10-12- 0101Credit points 15 CPWorkload 450 hSelf-study 206 hDuration 1 SemesterOffered Every 2nd SemesterLanguage EnglishResponsible persons Prof. Dr. Cristina Cardoso, Prof. I Ulrike NuberResponsible persons Prof. Dr. Cristina Cardoso, Prof. I Ulrike Nuber1Module courses(CP)Teachin H g form PW W1Module course(CP)Teachin H g form PW W10-12-0101- stem Cell Biology and se3Lecture 2 Seminar10-12-0101- prStem Cell Biology and Epigenetics - Lecture10Practical Lab Course2Teaching syllabus:10Practical Lab CoursePractical Lab Course2Teaching syllabus:Lecture is based on research publications on stem c biology and epigenetics. In particular the following topics are presented and discussed: replication of the (epi)genome; gene expression, reprogramming and lineage conversion, epigenetics and chromatin.2Seminar: In these topics, project ideas are planned for practical experiments are presented and discussed at the end of the experiments are presented and discussed at the end of the module the form of a poster or oral presentation.Practical Lab Colowing weeks. The projects are located within the field of ste cell biology and epigenetics and focus, e.g., on the following methods:	Module name Stem Cell Biology and Epigenetics									
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	Assay)						
	• Cell culture and differentiation						
	• Iransient and stable transfection of mammalian cells and						
	• Immunofluorescence and live cell microscopy protein dynamics						
	(FRAP)						
3	To gain a basic understanding of epigenetic mechanisms.						
	To understand the relevance of maintaining as well as changing the epigenetic landscape and transcription factor hierarchies for the stability of cell types, for the reprogramming of somatic cells into induced pluripotent stem cells (iPSCs) and for direct cell lineage conversion/transdifferentiation.						
	To present research publications and to critically evaluate published research data in the field of stem cell biology and epigenetics.						
	To be able to design cell and molecular biological experiments and to analyze, interpret and present experimental results.						
4	Requirements:						
	Advanced knowledge in cell biology, molecular biology, molecular genetics, biochemistry						
5	Exam:						
	Oral/Written exam (graded)						
	Accomplishment 1: "continuous assessment" of lab notebook and lab work (graded)						
	Accomplishment 2: Roadmap and Poster presentations (graded).						
6	Prerequisites for credit points						
	Passed exam and accomplishments 1 + 2						
7	Grading						
	Standard BWS, Written exam (1/3), Accomplishment 1 (1/3) Accomplishment 2 (1/3)						
8	This Module can be part of						
	Technical Biology (M.Sc.)						
	Biomolecular Engineering (M.Sc.)						
9	Literature:						
	<u>General cell biology text books, e.g.:</u>						
	 Alberts, Molecular Biology of the Cell 						
	• Lodish, Molecular Cell Biology						
	 Pollard and Earnshaw, Cell Biology 						
	<u>Epigenetics text books, e.g.:</u>						
	• Allis et al; Epigenetics						
	• Misteli and Spector; The Nucleus						
	Cook ; Principles of Nuclear Structure and Function						
	Internet material:						
	 Databases (http://www.ncbi.nlm.nin.gov/sites/entrez; www.ensembl.org) 						
	• Light Microscopy						
	neep.//www.mreroscopy.isu.edu/primer/index.neme						

10	Comments
	All relevant information and schedules can be found in Moodle / TUCaN