

Predictive Medicine: Identification and Modelling						
Kennnummer	Workload	Credits/LP	Studiensemester	Häufigkeit des Angebots	Dauer	
	180 Std.	6	1	Jedes Semester	1 Semester	
1	Lehrveranstaltungen		Sprache	Kontaktzeit	Selbststudium	Geplante Gruppengröße
	a) Diagnostics of Microorganisms		a) English	a) 22,5 Std.	a) 67,5 Std.	a) 15
	b) Model Systems		b) English	b) 22,5 Std.	b) 67,5 Std.	b) 15
2	Lernergebnisse/Kompetenzen					
	After successful participation in the module the students ...					
	Verständnis (2)					
	... get knowledge of different model systems, their advantages, disadvantages and limits in research, medicine and testing. ... explain the advantages and disadvantages of a variety of state-of-the-art techniques used in the diagnostics of microorganisms.					
	Anwendung (3)					
	... plan experiments or tests with appropriate model organisms answering specific questions. ... choose appropriate diagnostic methods for a given research question in microbiology.					
	Evaluation / Bewertung (6)					
	... evaluate the strength and weaknesses of published studies with respect to the methods used.					
3	Inhalte					
	a) overview on the variety of state-of-the-art-methods to isolate, quantify and identify microorganisms and their physiological properties from medically important samples, e.g., aerobic and anaerobic cultivation techniques, PCR, qPCR, molecular fingerprinting techniques, FACS, FISH, MALDI-TOF, FT-IR spectroscopy, NGS, SIP, Metatechnologies etc.					
	b) overview on different types of frequently used models systems, e.g. mice, zebrafish, drosophila, stem cells, yeast, as well as new developed methods (bioengineering) and rare used models; GMO model systems, aspects of animal testing (including legal aspects), planning an experiment with laboratory animals, preclinical animal testing with all legal aspects, discussion on limits by law, ethics and comparability to humans.					

4	Lehrformen a) Seminar b) Seminar
5	Teilnahmevoraussetzungen B.Sc.-level based-knowledge in (human) biology, molecular biology, biochemistry and (clinical) microbiology
6	Prüfungsformen a) Prüfungsleistung 1sbR (Referat) (3 LP) b) Prüfungsleistung 1sbPN (Präsentation) (3 LP)
7	Verwendung des Moduls Precision Medicine Diagnostics M.Sc. (PMD)
8	Modulbeauftragte/r und hauptamtlich Lehrende Prof. Dr. Markus Egert (Modulverantwortliche/r)
9	Literatur a) textbooks on Microbiology; scientific papers (review, original articles) dealing with the respective methods b) scientific papers (review, original articles) dealing with model organisms; textbooks on cell culture, bioengineering, animal models; legal texts (TierSchG, TierSchVerV, ESchG)