

Modulbezeichnung: <b>Flexi: System biology of human diseases – focusing on metabolism and immune cells</b>				Modulnummer:	
Institution: Studiendekanat Biologie				Modulabkürzung: <b>Flexi-Modul</b>	
Workload:	300 h	Präsenzzeit:	100 h	Semester:	0
Leistungspunkte:	10	Selbststudium:	200 h	Anzahl Semester:	1
Pflichtform:	Wahl			SWS:	8
Lehrveranstaltungen/Oberthemen: System biology of human diseases (lecture) System biology of human diseases (practical course) System biology of human diseases (seminar) System biology of human diseases (exercise) - Computational Practice					
Belegungslogik (wenn alternative Auswahl, etc.): ---					
Lehrende: Dr. Wei He, Prof. Dr. Karsten Hiller					
Qualifikationsziele: After completing the module, students should be able to: - understand system biology, and explain its application in human diseases. - understand the major -omics employed for disease-based system biology, and analyze datasets from these -omics. - understand the role of immune cells in obesity/type-2 diabetes and cancers. - understand the interplay between cellular metabolism and function in immune cells. - discuss immune cell-based cutting-edge therapeutic application in obesity/type-2 diabetes and cancers. - propose own perspective on immune cell-based therapeutic application, with help of system biology.					
Inhalte:  Seminar: The seminar provides overview of system biology and the multi-omics technologies employed by system biology. Human diseases will be introduced with the application of system biology. Cancers and obesity-associated complications such as insulin resistance and type-2 diabetes, will be the representative human diseases to be discussed by the seminar. The roles of immune cells and their cellular metabolism will be key entries to understand the development, progression and therapeutic strategies of these diseases.  Finally, the students will propose their own immune cell-based therapeutic strategies to these diseases with help of system biology, in the form of a written mini research proposal and an oral presentation to all seminar participants. The strategy should focus on specific cellular targets based on the -omics datasets provided by the lecturers, or another -omics datasets from a published literature.  Practical course: Students will analyze given -omics datasets from published research papers on cancers and obesity/type-2 diabetes. Students will perform wet-lab experiments using in vitro models mimicking cancers and obesity/type-2 diabetes, followed with analysis of representative disease-associated markers.					
Lernformen: Lecture, seminar, practical course					
Prüfungsmodalitäten / Voraussetzungen zur Vergabe von Leistungspunkten: Study performance: - experimental work - successful participation in the seminar  Testing performance: - Student research project (1): written research proposal (4-5 pages) for this therapeutic strategy, should include background, your own strategy, a schematic figure of this strategy, your work plan, references (1) and oral presentation based on this research proposal (30 min presentation + 20 min open discussion).  The final grade corresponds to the grade achieved.					
Turnus (Beginn): each summer semester					
Modulverantwortliche(r): Dr. Wei He, Prof. Dr. Karsten Hiller					
Sprache: Englisch					
Medienformen: ---					

Literatur:

- will be announced in the seminar

Erklärender Kommentar:

Requirements for choosing this module

Obligatory: none

Recommended: none

This module is particularly suitable for students who wish to pursue scientific studies after master program.

Kategorien (Modulgruppen):

Biochemie / Bioinformatik (BB) - Schwerpunkt

Voraussetzungen für dieses Modul:

Teilnahmevoraussetzungen siehe Besondere Prüfungsordnung Biologie (BL-STD2-66)

Studiengänge:

Biologie (2019) (Master), Biotechnologie (2019) (Master), Biochemie (2019) (Master)

Kommentar für Zuordnung:

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