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|---|---|--|---|-------------|------------------------|---|-------|
| [C3.2] | Advanced methods in Membrane Biochemistry | Compulsory elective module in the core area C3 | 5 CP (total) = 150 h | | | | 4 SWS |
| | | | Contact hours 4 SWS / 60 h | | Independent study 90 h | | |
| Content | | | | | | | |
| <p>The practical course consists of 2 different experimental parts, which are carried out all day in groups of usually two students.</p> <ol style="list-style-type: none"> Electrophysiology: The students investigate and analyze the electrical properties of cells and of proteins expressed in the membrane (light-inducible cation channel channelrhodopsin-2). Two-Electrode Voltage Clamp (TEVC) experiments are performed on <i>Xenopus laevis</i> oocytes and you will get to know the Patch-Clamp technique via a simulation software. Reconstitution of a membrane protein: Using a typical membrane protein, all protein biochemical work steps that are necessary to prepare samples for further functional or structural biological studies are to be carried out. This involves cell disruption, membrane isolation, solubilization, purification, and incorporation of the membrane protein into liposomes. The obtained results are summarized and discussed in form of a scientific publication. | | | | | | | |
| Learning outcomes and skills | | | | | | | |
| <p>After completing the module, students can:</p> <ul style="list-style-type: none"> plan and perform basic biochemical experiments with membrane proteins discuss and interpret biochemical data write a manuscript conduct and interpret basic electrophysiological experiments accurately record and evaluate relevant data correctly present and interpret the results obtained | | | | | | | |
| Admissions requirements/Conditions for participation in the module/courses | | | | | | | |
| Practical course 2. Reconstitution of a membrane protein: Module Advanced methods in biochemistry – C2.1 | | | | | | | |
| Recommended prior knowledge | | | | | | | |
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| Organizational details | | | | | | | |
| <p>The part 'Reconstitution of a membrane protein' takes place in the summer semester. The part 'Electrophysiology' takes place during the lecture-free period after the winter semester as a block practical course. Maximum number of participants: 40</p> | | | | | | | |
| Module allocation (degree programme/faculty) | | | Master Biochemistry / FB14 | | | | |
| Module transferrable to other degree programmes | | | | | | | |
| Module offered | | | Winter semester (1.) /summer semester (2.) | | | | |
| Duration | | | 1 semester | | | | |
| Module coordinator | | | Dr Liewald | | | | |
| Course requirements for credits | | | | | | | |
| Participation record | | | regular attendance | | | | |
| Coursework | | | Fulfillment and protocols of the practical course experiments | | | | |
| Forms of teaching / learning | | | | | | | |
| Language teaching and instruction | | | English | | | | |
| Module assessment | | | Form / duration / content, if applicable | | | | |
| Final module assessment | | | Protocols (ungraded, see §35) | | | | |
| Cumulative module assessment consisting of | | | | | | | |
| Composition of the module grade for cumulative module assessment | | | | | | | |
| | | Mode of teaching / study | Semester hours per week | Semester CP | | | |
| | | | | 1 | 2 | 3 | 4 |
| | Advanced methods Membrane Biochemistry | | P | | | | |
| | 1. Electrophysiology | | | 2 | | | |
| | 2. Reconstitution of a membrane protein | | | | 3 | | |
| | TOTAL | | | 4 | 5 | | |