mar520 - Main Module Proteomics

Module label: Main Module Proteomics
Module code: mar520
Credit points: 12.0 KP
Workload: 360 h
Used in course of study: Master's Programme Microbiology > Mastermodule
Contact person: Module responsibility
  - Ralf Andreas Rabus
  - Lars Wöhlbrand
Module counseling
  - N. N.
Entry requirements: Lecture: Physiology and diversity of prokaryotes
  Lecture: Molecular Microbiology
Skills to be acquired in this module: The students are getting directly involved in actual scientific projects in the area of physiological and/or meta-proteomics (under guidance). They
  - get acquainted with state-of-the-art proteomic concepts and technologies,
  - know how to write concise scientific protocols,
  - know how to present/discuss their results in public.

Module contents: Functional proteomics: Daily lectures introduce the students to theory and concepts of modern proteomics: (i) separation of cellular compartments and protein extraction, (ii) gel-based and -free protein separation, (iii) gel-staining, protein detection and quantification by image analysis, (iv) integrative mass spectrometry-based protein identification, (v) meta-proteomics, and (vi) focused genomic analysis. Each student will prepare a seminar presentation on selected publications relevant for the actual scientific project. The following sequence of experiments will be conducted: - extraction and quantification of total protein from prepared cell samples (incl. separation of compartments), - protein separation by SDS-PAGE and staining with Coomassie, silver and/or fluorescent dyes, - digital image acquisition and analysis, - manual and/or automated band excision, - protein identification by nanoLC-ESI-MS/MS, - nanoLC-MALDI-coupling and protein identification by MALDI-TOF-MS/MS, - Physiological interpretation of predicted protein functions and relevant genomic context.

Reader’s advisory: Lottspeich - Bioanalytik
Links
Language of instruction: English
Duration (semesters): 1 Semester
Module frequency: yearly
Module capacity: unlimited
Reference text: 12 CP | SE; PR | 2. FS | Rabus
Modulelevel: ---
Modulart: je nach Studiengang Pflicht oder Wahlpflicht

Lern-/Lehrform / Type of program
Vorkenntnisse / Previous knowledge

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<tr>
<th>Examination</th>
<th>Time of examination</th>
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<td>Final exam of module</td>
<td>Announced at the beginning of the course.</td>
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Examination: One assessments of examination: Portfolio: Written protocol and contribution to the seminar (seminar presentation) Seminar presentation (25%), written protocol (75 %). Active participation (Active and documented participation in practical courses (labs, exercises, seminars, field trips) and courses. These include e.g. the delivery of exercises, writing a lab report or seminar presentations according to the advice or the course.

Course type
Seminar: 2.00
Practical: 8.00
Total time of attendance for the module: 140 h

Frequency
Workload attendance
28 h
112 h
140 h