mar520 - Main Module Proteomics

<table>
<thead>
<tr>
<th>Module label</th>
<th>Main Module Proteomics</th>
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<tr>
<td>Module code</td>
<td>mar520</td>
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<tr>
<td>Credit points</td>
<td>12.0 KP</td>
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<tr>
<td>Workload</td>
<td>360 h</td>
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<tr>
<td>Used in course of study</td>
<td>Master's Programme Microbiology &gt; Mastermodule</td>
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<td>Contact person</td>
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Module responsibility
- Ralf Andreas Rabus
- Lars Wöhlbrand
- 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
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Modulart
je nach Studiengang Pflicht oder Wahlpflicht

Lern-/Lehrform / Type of program

Vorkenntnisse / Previous knowledge

Examination
Final exam of module
Time of examination
An announced at the beginning of the course.

Type of 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
Practical

Frequency
28 h
128 h

Workload attendance
140 h

Total time of attendance for the module
140 h