neu470 - Molecular Sensory Neuroscience

Module label: Molecular Sensory Neuroscience
Module code: neu470
Credit points: 15.0 KP
Workload: 450 h
Used in course of study: Master's Programme Neuroscience > Research Modules

Contact person:
- Karl-Wilhelm Koch
- Hans Gerd Nothwang
- Kathrin Thedieck
- John Neidhardt
- Anna-Maria Hartmann

Entry requirements:
Skills to be acquired in this module:
- + Neurosci. knowlg. Expt. methods
- Independent research
- Scient. literature
- + Social skills
- + Interdiscipl. knowlg. Maths/Stats/Progr. Data present./disc.
- + Scientific English
- + Ethics

For students putting emphasis on cell biological, molecular biological, genetic, biochemical and/or neurobiological fields. The module can serve the purpose of preparing for a Master’s thesis.

Upon successful completion of this course, students have the following achievements:
- have an advanced knowledge in molecular cell biology
- have acquired methodological and experimental skills in molecular cell biology
- have an advanced knowledge of how to perform research projects
- have advanced skills in presenting and discussing scientific data they have obtained, analysed and put in a wider framework of a current scientific topic.

Module contents:
Theory and practice of topics related to issues in molecular sensory neuroscience:
- independent treatment of an individual project
- acquiring an advanced theoretical knowledge in selected fields of the molecular biology of the cell (points of emphasis: genetics, biochemistry, cell biology; topics depending on working groups).

There are several options for the lab projects, in the broad categories of:
1. Protein function in neurosensory signaling (Koch)
   Heterologous expression in cell cultures of a protein involved in visual transduction or magnetoreception
2. Neurosensory genetics (Nothwang)
3. Metabolic signalling networks (Thedieck)
4. Human genetics: mutation identification, pathogenic processes and therapy development (Neidhardt)

Reader’s advisory:
Specific literature of the topics indicated above; original papers related to the current research question; will be different for every student and every year.
Textbooks of Cell Biology, Biochemistry, Genetics:
Alberts et al. Molecular Biology of the Cell (5th Edition or later); Stryer Biochemistry (7th Edition or later); Lehninger Biochemistry (4th Edition or later). These textbooks are updated almost every 3 or 4 years.

Links:
Languages of instruction: German, English
Duration (semesters): 1 Semester
Module frequency: halbjährlich
Module capacity: unlimited
Reference text:
Time is flexible and subject to individual arrangement. An accepted internship report and participation in a joint poster presentation of concurrent research modules are required to pass the module.

Modullevel: MM (Mastermodul)
Modulart: Wahlpflicht

Examination:
- Time of examination: as agreed; usually within 2 months of the conclusion of lab work
- Type of examination: oral exam of 30 min. in Cell Biology, Genetics or Biochemistry, depending on the chosen option
- Participation in seminar,
<table>
<thead>
<tr>
<th>Examination</th>
<th>Time of examination</th>
<th>Type of examination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Signed project report</td>
</tr>
</tbody>
</table>

**Course type**  
Projektorientiertes Modul

**SWS**  
10.00

**Frequency**  
WiSe

**Workload attendance**  
140 h