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

Module responsibility:
- Karl-Wilhelm Koch

Authorized examiners:
- Alle hier genannten

Module counseling:
- 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 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 (Thediek)
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
Lern-/Lehrform / Type of program: Time of examination:
Vorkenntnisse / Previous knowledge:

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

**Course type**  
Projektorientiertes Modul

<table>
<thead>
<tr>
<th>SWS</th>
<th>10.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>WiSe</td>
</tr>
<tr>
<td>Workload attendance</td>
<td>140 h</td>
</tr>
</tbody>
</table>