bio846 - Lab Exercises in Development and Evolution

Module label: Lab Exercises in Development and Evolution
Module code: bio846
Credit points: 6.0 KP
Workload: 180 h

Used in course of study:
- Master's Programme Biology > Background Modules
- Master's Programme Neuroscience > Background Modules

Contact person:
Module responsibility:
- Ulrike Sienknecht

Authorized examiners:
- Ulrike Sienknecht
- Hans Gerd Nothwang

Module counseling:
- Hans Gerd Nothwang

Entry requirements:

Skills to be acquired in this module:
Upon successful completion of this course, students have skills in methods of developmental biology:
- are capable of performing live embryo husbandry
- are able to carry out in-ovo stainings
- are familiar with the use of embryonic stage discrimination standards for model organisms
- document the observed embryonic stages by drawings with anatomical labelling
- are familiar with embryo handling, tissue preparation (including cryosectioning), dissection of inner ears, and the use of different histological staining methods
- microscopy, data analysis, and photographic data documentation
- know the standards of proper documentation of research data and the universal format of a lab note-book
- know how to carry out formal laboratory reports (and the anatomy of a scientific paper)

and in addition, have basic knowledge in the field of auditory system development:
- have basic knowledge of the organisation of the auditory system across vertebrate groups
- have basic knowledge of the development of the middle and inner ear, as well as selected auditory brain centres
- are able to summarize current hypotheses about the evolution of the auditory system in vertebrates

skills:
++ deepened biological expertise
++ deepened knowledge of biological working methods
++ data analysis skills
++ critical and analytical thinking
+ independent searching and knowledge of scientific literature
++ ability to perform independent biological research
++ data presentation and discussion in German and English (written and spoken)
++ teamwork
+ ethics and professional behaviour
++ project and time management

Module contents:
Lab exercises in comparative developmental biology on chicken and mouse embryos.

Practical introduction to methods, such as in-ovo live observation; developmental stage discrimination and description, tissue preparation for histology, sectioning, staining, and microscopy, including data analyses.

Lectures in the field of auditory system development, such as:
- Development of the Inner Ear
- Development of the Middle Ear
- Evolution of the Central and Peripheral Auditory System
- Development and Layout of the Central Auditory System

Reader's advisory:

Links
Language of instruction: English  
Duration (semesters): 1 Semester  
Module frequency: 6 (selection criteria: sequence of registration)  
Reference text: Associated with bio845 (previously neu110) (Introduction to Development and Evolution)  
Modullevel: MM (Mastermodul / Master module)  
Modulart: Wahlpflicht / Elective  
Vorkenntnisse / Previous knowledge: organismic biology, evolutionary biology, neurobiology, genetics, molecular biology, experience with lab work  
Examination: Final exam of module  
  Time of examination: same winter term  
  Type of examination: report (50%) and presentation (50%)  
Course type:  
<table>
<thead>
<tr>
<th>Course type</th>
<th>Comment</th>
<th>SWS</th>
<th>Frequency</th>
<th>Workload attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>0.50</td>
<td>WiSe</td>
<td>7 h</td>
<td></td>
</tr>
<tr>
<td>Seminar</td>
<td>0.50</td>
<td>WiSe</td>
<td>7 h</td>
<td></td>
</tr>
<tr>
<td>Exercises</td>
<td>3.00</td>
<td>WiSe</td>
<td>42 h</td>
<td></td>
</tr>
<tr>
<td><strong>Total time of attendance for the module</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>56 h</strong></td>
</tr>
</tbody>
</table>