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 counceling
- 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)

### Modulart
Wahlpflicht / Elective

### Vorkenntnisse / Previous knowledge
organismic biology, evolutionary biology, neurobiology, genetics, molecular biology, experience with lab work

### Examination
- **Final exam of module**: same winter term, report (50%) and presentation (50%)

### Course type and Workload

<table>
<thead>
<tr>
<th>Course type</th>
<th>Comment</th>
<th>SWS</th>
<th>Frequency</th>
<th>Workload attendance</th>
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<td>Lecture</td>
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**Total time of attendance for the module**: 56 h