bio845 - Introduction to Development and Evolution

Module label
Introduction to Development and Evolution

Module code
bio845

Credit points
6.0 KP

Workload
180 h

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

Contact person
Module responsibility
- Ulrike Sienknecht

Authorized examiners
- Ulrike Sienknecht
- Maike Claußen

Module counseling
- Maike Claußen

Entry requirements

Skills to be acquired in this module
- know the fundamental problems organisms share in development
- know the common basic steps of ontogenesis after comparing the life cycles of different species (both vertebrates and invertebrates)
- know the fundamentals of the genetic control of cell-fate specification, morphogenesis, and organogenesis
- know the principles of gene regulatory networks in development and are able to explain examples
- are able to explain and discuss mechanisms of development across taxonomic groups and questions about the evolution of developmental mechanisms
- have in-depth knowledge of the development of animal nervous systems, including cellular and network properties

skills:

++ deepened biological expertise
+ deepened knowledge of biological working methods
++ interdisciplinary thinking
++ critical and analytical thinking
+ independent searching and knowledge of scientific literature
+ ability to perform independent biological research
+ teamwork

Module contents
Lectures on the fundamentals and concepts of developmental biology, including evolutionary aspects. Parallel seminars matching the topics of the lectures and emphasizing discussion.

Lecture topics:
- Introduction to Developmental Biology
- Cell-Cell Communication
- Differential Gene Expression (I and II)
- Early Development of Vertebrates, Gastrulation
- Neurulation
- Brain Development
- Axonal Growth, Target Selection, Synaptogenesis and Refinement
- Neural Crest
- Mesoderm Development
- Limb Development
- Developmental Mechanisms of Evolutionary Change
- Model Organisms in Developmental Bioplogy
- Transgenic Mice
- Medical Implications of Developmental Biology

Reader’s advisory
Literature:

Links

Language of instruction
English

Duration (semesters)
1 Semester

Module frequency
1 / 2
**Module capacity**
20 (selection criteria: sequence of registration)

**Reference text**
associated with bio846 (previously neu120) (Lab Exercises in Development and Evolution)

**Modullevel**
MM (Mastermodul / Master module)

**Modulart**
Wahlpflicht / Elective

**Lern-/Lehrform / Type of program**
organismic biology, developmental biology, evolutionary biology, neurobiology, genetics, molecular biology

**Vorkenntnisse / Previous knowledge**

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<th>Examination</th>
<th>Time of examination</th>
<th>Type of examination</th>
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<tr>
<td>Final exam of module</td>
<td>same winter term</td>
<td>oral exam of 30 minutes</td>
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<td>2.00</td>
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**Total time of attendance for the module**
56 h