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 Neuroscience > Background Modules

Contact person:
- Module responsibility: Ulrike Sienknecht
- Authorized examiners: Ulrike Sienknecht, Maike Claußen
- Module counseling: Maike Claußen

Entry requirements:
Upon successful completion of this course, students
- 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 Biology
- Transgenic Mice
- Medical Implications of Developmental Biology

Reader's advisory:
Literature:

Links:
Language of instruction: English
Duration (semesters): 1 Semester
Module frequency: 
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

Vorkenntnisse / Previous knowledge
organismic biology, developmental biology, evolutionary biology, neurobiology, genetics, molecular biology

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