bio845 - Introduction to Development and Evolution

Module label: Introduction to Development and Evolution
Module code: bio845
Credit points: 6.0 KP
Workload: 180 h
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 Biology
- Transgenic Mice
- Medical Implications of Developmental Biology

Reader's advisory:
Literature:

Links:
Language of instruction: English
Duration (semesters): 1 Semester
Module capacity: 20
selection criteria: sequence of registration

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

Modul level
MM (Mastermodul / Master module)

Modulart
Wahlpflicht / Elective

Lern-/Lehrform / Type of program

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

Examination

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<th>Time of examination</th>
<th>Type of examination</th>
<th>Workload attendance</th>
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<tr>
<td>Final exam of module</td>
<td>same winter term</td>
<td>oral exam of 30 minutes</td>
<td>56 h</td>
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Course type

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<th>Comment</th>
<th>SWS</th>
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<td>28 h</td>
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<tr>
<td>Seminar</td>
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Total time of attendance for the module
56 h