neu170 - Molecular Genetics and Cell Biology

Module label: Molecular Genetics and Cell Biology
Module code: neu170
Credit points: 15.0 KP
Workload: 450 h
Used in course of study: Master's Programme Neuroscience > Background Modules
Contact person: John Neidhardt

Module responsibility

- John Neidhardt

Authorized examiners

- Alle hier genannten

Module counseling

- Karl-Wilhelm Koch
- Kathrin Thedieck

Entry requirements

+ Neurosci. knowlg. + Expt. methods Independent research + Scient. literature + Social skills
++ Interdiscipl. knowlg. Maths/Stats/Progr. Data present./disc. + Scientific English Ethics

Students interested in molecular genetics, cell biology, molecular biology, and neurobiology will achieve the knowledge after completion of the course:

- Genetic basis of diseases, inheritance patterns of diseases and gene therapeutic approaches
- Cell nucleus and genomic DNA, Nucleic acid structure and function
- Signaling and Cancer
- Gene expression
- RNA Processing
- Translation
- structures of proteins and protein functions
- Membranes and membran proteins
- Energie metabolism in the cell
- sequencing techniques and knowledge of several other selected lab techniques
- Basic knowledge of how to perform research projects.

Module contents

Subjects of the lecture and seminar:

- Storing and processing of genetic information
- mutation analysis
- genetic high throughput techniques
- structure and function of proteins/membranes, cytoskeleton, meta-bolic signaling, molecular basis of neurodegenerative diseases.

Exercises: Learning current methods of human genetics, cellular and molecular neurobiology; introduction to cell cultivation techniques.

- DNA extraction and agarose gel analysis
- Sanger sequencing and sequence analysis
- PCR-based techniques
- bioinformatic analysis of high throughput data
- cell culture
- gene therapy of dominant diseases

Reader's advisory

Several selected scientific papers for the seminar (selection may vary)

Textbooks of Molecular Cell Biology; Alberts, Molecular biology of the cell

Links

Language of instruction: English
Duration (semesters): 1 Semester
Module frequency: jährlich
Module capacity: unlimited
Reference text: Course in the first half of the semester
Modullevel: MM (Mastermodul)
### Modulart

Wahlpflicht

### Lern-/Lehrform / Type of program

### Vorkenntnisse / Previous knowledge

#### Examination

**Final exam of module**

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<thead>
<tr>
<th>Time of examination</th>
<th>Type of examination</th>
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<tr>
<td></td>
<td>70% written exam, 30% presentation(s)</td>
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<tr>
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<td>Presentation(s) within the frame of the seminar.</td>
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<td>Regular active participation is required for the module to be passed.</td>
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#### Course type

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<thead>
<tr>
<th>Course type</th>
<th>Comment</th>
<th>SWS</th>
<th>Frequency</th>
<th>Workload attendance</th>
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<tbody>
<tr>
<td>Lecture</td>
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<td>28 h</td>
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<td>Exercises</td>
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<td>6.00</td>
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<tr>
<td>Seminar</td>
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**Total time of attendance for the module**: 140 h