neu280 - Research Techniques in Neuroscience

Module label: Research Techniques in Neuroscience
Module code: neu280
Credit points: 6.0 KP
Workload: 180 h

(2 SWS Lecture: 35 h contact / 45 h background reading / 10 h exam preparation 2 SWS Practical: 50 h contact / 30 h protocol preparation / 10 h exam preparation)

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

Contact person:
- Anna-Maria Hartmann

Module responsibility:
- Anna-Maria Hartmann
- Hans Gerd Nothwang
- Christiane Margarete Thiel
- John Neidhardt
- Martin Greschner
- Carsten Bantel
- Alexandra Philipsen

Entry requirements:

1. have basic knowledge of different techniques (see content of the module) used in neurosciences
2. have basic knowledge of realizing clinical studies, generating questionnaires and their biostatistical data analyses
3. have acquired practical skills in whole brain imaging (fMRI) and molecular techniques
4. have acquired practical skills in performing clinical studies

Skills to be acquired in this module:

- Neurosci. knowlg.
- Expt. Methods
- Scient. Literature
- Social skills
- Interdiscipl. knowlg.
- Maths/Stats/Progr.
- Data present./disc.
- Scientific English
- Ethics

Module contents:

Lecture topics:
1. Whole brain imaging (CT, MRI, fMRI, PET, EEG, MEG)
2. Animal Behaviour
3. Microscopy and Visualizing nervous system structure
4. Electrophysiology
5. Identifying Gene of Interest and Gene delivery strategies
6. Molecular Cloning, generation of transgenic organism, manipulating endogenous genes
7. Cell culture techniques
8. Biochemical assays and intracellular signalling
9. Clinical studies
10. questionnaire and biostatistics
11. judicial basics of scientific work

Laboratory course:
1. molecular methods (site directed mutagenesis, PCR, midi preparation, sequencing, bioinformatics)
2. fMRI
3. clinical studies

Reader's advisory:
Guide to Research Techniques in Neuroscience, 2nd Edition
Author(s): Carter & Shieh
Print Book ISBN: 9780128005118
eBook ISBN: 9780128005972

Links:
- Language of instruction: English
- Duration (semesters): 1 Semester
- Module frequency: summer term / annually
- Module capacity: 20
  - Registration procedure / selection criteria: StudIP

Module level:
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Modulart | je nach Studiengang Pflicht oder Wahlpflicht
Lern-/Lehrform / Type of program
Vorkenntnisse / Previous knowledge

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<th>Examination</th>
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<td>Final exam of module</td>
<td>end of semester</td>
<td>written exam</td>
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<td>Practical (Practical)</td>
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Total time of attendance for the module | 56 h