Blockkurs “Developmental Biology and Neuroscience”

**Duration:** 6 weeks; 15 credit points  
**When:** second half of spring term; 3rd year

**Goal:** The aim of the Developmental Biology and Neuroscience Course is to learn about current topics in these fields, and to gain first-hand experience in state-of-the-art experimental methods. The course consists of introductory lectures covering different research topics, practical experimental sessions and data analysis. In addition, students will be advised how to write a research report and how to critically assess scientific literature.

**The main topics:**

**Developmental biology**  
- Stem cells  
- Cell differentiation  
- Organ and cell development  
- Cell signalling

**Neuroscience**  
- Connectivity in the brain and spinal cord  
- Dynamics and plasticity of synapses in the brain  
- Sensory and motor processing  
- Imaging structure and function in the nervous system  
- Biology of the Neuromuscular system

**Laboratory experience:**  
- Immunostaining, tissue dissection, cell cultures  
- Fluorescence activated cell sorting (FACS)  
- Fluorescence microscopy  
- Genetic analysis  
- Live imaging *in vivo*  
- Analysis of brain connectivity using online databases  
- PCR, genotyping, enzyme assays  
- Quantitative data and image analysis  
- Gene expression analysis: quantitative PCR, bioinformatics approaches  
- Behaviour

**Additional skills:**  
- Data analysis and writing a research project  
- Reading, interpreting, and critically assessing scientific literature  
- Scientific writing and presentation  
- Experience and discussions of contemporary and emerging research fields

The course lasts six weeks (compulsory attendance), followed by two weeks for exam preparation. The final grade is determined by final examination only.

**Language:** English  
**Responsible person:** Prof. Fiona Doetsch (fiona.doetsch@unibas.ch)  
**Co-organizers:** Prof. Markus Affolter, Prof. Silvia Arber, Prof. Flavio Donato, Prof. Susan Mango, Prof. Markus Rüegg, Prof. Peter Scheiffele

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