

## Cycle B: Neuroscience

### Coordinator:

Neuroscience Network Basel: S. Grumbacher, C. Alioth

For details see <http://www.neuronetwork.unibas.ch/>

The lecture series provides basic knowledge in neurosciences. All the graduate students who aim to obtain a Ph.D. in neurobiology are asked to attend these lectures. In each semester one particular topic from developmental to clinical aspects of neuroscience is covered. Lectures include a general introduction into the topic as well as a discussion of the latest publications and results in the field. Lectures are organized by experts from the University of Basel, the University Hospital, the Friedrich Miescher Institute and from industry.

### **B1: Developmental Neuroscience – 14467**

(2 hrs/week; 2 CP; Fall 2019)

**S. Arber, F. Rijli**

Neurogenesis / mechanisms of neuronal circuit assembly / patterning / axon guidance / synaptogenesis / refinement of synaptic connections / development of visual, olfactory, peripheral, motor and somatosensory system / neurotrophins / stem cells.

### **B2: Signaling in the Nervous System – 13693**

(2 hrs/week; 2 CP; Spring 2020)

**A. Lüthi, T. Rinaldi Barkat**

Neuronal cell biology / excitability and ion channels / neurotransmitter release / postsynaptic organization / ionotropic and metabotropic neurotransmitter receptors / synaptic transmission / dendritic integration / synaptic plasticity / receptor trafficking / methods in electrophysiology and synaptic imaging / drug induced synaptic plasticity / genetic analysis of synaptic plasticity.

### **B3: Genes and Behavior – 13145**

(2 hrs/week; 2 CP, Fall 2020)

**J. Kapfhammer, G. Keller**

Sensory circuits and encoding of sensory information / Motor control / Vision / Cortical processing and function / Developmental and adult learning / Emotion, fear, decision making, consciousness / From genes to behavior and from behavior to genes.

**B4: Neurological Diseases – 12416**

(2 hrs/week; 2 CP; Spring 2019)

J.-L. Boulay, St. Frank, J. Kapfhammer, M.E. Liechti, Ph. A. Lyrer, L. Mariani,  
T. Rinaldi Barkat, St. Rüegg, **N. Schaeren-Wiemers**, V. Taylor

Depression / Prion Disease, Epilepsy / Mitochondria and Neurodegeneration / Hearing Impairment / Drug Addiction / Brain Tumors / Multiple Sclerosis / Childhood Ischemia / Cord Injury / Huntington's Disease / Stem Cells.

**B5: Neurex – 53294** (Spring 2019)

(1 CP/workshop, every semester)

**F. Doetsch**, P. Piguet (Coordinator NEUREX), and lecturers of the trinational Neuroscience Network (Basel, Freiburg, Strasbourg)

The workshops consist of regular tri-national events, and include both theoretical and practical teaching in all aspects of Neuroscience. Workshops are organized in the context of the Neuro Campus Project of the Neurex Network, and involve teachers-scientists, as well as students from the three Universities of Basel, Freiburg (Germany) and Strasbourg (France).

The Neurex workshops are open to students, junior and senior scientists of the Universities of Basel, Freiburg (D) and Strasbourg (F). Most of the workshops take place in one of the three above-cited cities. The topics addressed are diverse and cover all aspects of neuroscience, from fundamental to clinical research, from the molecular level to systems neuroscience and behavioral studies. A list of ongoing and past events is available on [www.neurex.org](http://www.neurex.org) in the section "Events to come". If you create a Neurex account, you will automatically receive updates on newly added workshops and events.

1 CP is granted for each workshop that lasts 2 days, or for two one-day workshops in the same semester. Please make to register for all workshops on [www.neurex.org](http://www.neurex.org).

Please note: industrial visits offered do not count into the credit point system.

**B6: Circuit Dissection of Behaviors – 54033** (Spring 2019)

(1 CP/4x2h, every semester)

J. Gründemann, **K. Tan**, T. Rinaldi Barkat

This class is an opportunity for PhD students of the Neuroscience specialty to present the progress of their PhD work. This consist of preparing a presentation which allows the audience to provide inputs on the ongoing work. The topic covers the investigation of neuronal circuits involved in behaviors including locomotion, audition precessing and fear states.