



Epicure Hands on Course on Experimental Epileptology Program Monday – Saturday Feb 9-14, 2009

Institute of Neurophysiology
Tucholskystr. 2, 10117 Berlin

Problem Lectures 8.30 – 9.30 a.m.

Room: Emil du Bois-Reymond conference room, 2nd floor

Monday	Heinemann, Uwe “Extracellular recordings from acute slices and slice cultures, seizure models”
Tuesday	Kilb, Werner “GABAergic inhibition”
Wednesday	Gloveli, Tengis “Electrophysiological properties of morphologically identified cells <i>in vitro</i> ”
Thursday	Polder, Reiner “Modern methods of cellular electrophysiology advances in microelectrode and patch clamp electronics”
Friday	Zoltan Gerevich “Multiphoton and spinning disc confocal imaging of fast intradendritic and mitochondrial calcium signals”

Demonstration or exercise Monday-Friday 9.30 – 10.30 a.m.

Albus, Klaus (Organotypic slice cultures)

Dugladze, Tamar (NeuroLucida drawing)

Holtkamp, Martin (Stimulations-induced status epilepticus)

Zoltan, Gerevich (Spinning disc confocal microscopy)

Lab work (2 students with one instructor or tutor per set-up) Start: 11:00 a.m.

Albus, Klaus 1) Selective drug resistance of 4-aminopyridine induced seizure like events (SLEs) in immature rat temporal cortex: possible contributions of the K⁺-Cl⁻-cotransporter isoform 1 (NKCC1) and of carbonic anhydrase (Abdul Wahab).

- 2) Are tonic clonic seizure like events (SLEs) induced by alkalosis in rat organotypic hippocampal slice cultures (OHSCs) resistant to standard antiepileptic drugs? (Klaus Albus)
- Albrecht, Doris 3) Input-specificity of LTP and LTD in the lateral amygdale.
Method: extracellular study
- Behr, Joachim 4) 5-HT_{1A} receptor-modulated synaptic transmission in the dentate gyrus of control and epileptic rats. Methods: patch-clamp recordings
5) Modulation of synaptic plasticity in the subiculum of MK-801-treated rats, an animal model of psychosis. Methods: single-cell recordings.
- Gerevich, Zoltan 6) Modulation of KA- or ACh-induced gamma frequency oscillations in hippocampal slices by extracellular ATP: local field potentials, intracellular recording, FFT analysis of data, interpretation of power spectra.
- Gebhardt, Christine 7) MEK1 mice: a genetic approach to epilepsy. Method: patch-clamp technique.
- Gloveli, Tengis 8) Properties of KA-induced network oscillatory activity in control and chronic epileptic mice: field potential/intracellular studies (Nino Maziashvili).
9) Intrinsic and firing properties of visually identified neurons in slice preparation: patch-clamp recordings (Shalva Gurgenidze).
- Heinemann, Uwe 10) Effects of nicotine on evoked potentials in area CA3 during blockade of the glutamatergic transmission by DL-APV co-applied with CNQX. Methods: extracellular recordings (CA3 and CA1) with simultaneous intracellular recordings of CA3 pyramidal cells, bath application of APV and CNQX, electrical stimulation of stratum oriens and/or stratum radiatum in area CA3, application of 10, 50 and 100 μ M nicotine during repeated extracellular single pulse or paired pulse stimulation (Christoph Behrens)
11) Effects of the neuromodulator acetylcholine (ACh) on stimulus-induced gamma network oscillations in area dentata and their propagation into the CA1 region in CA3 and subiculum dissected slices. Methods: extracellular recordings in the DG and in the stratum pyramidale of the CA1 region in CA3/subiculum dissected slices with simultaneous intracellular recordings of CA1 pyramidal cells, high frequency stimulation (HFS @ 100 Hz, 40 pulses) of the stratum moleculare in the DG, bath application of ACh (5 or 10 μ M) co-applied with physostigmine (2 μ M) (Christoph Behrens)
12) Onset site of 4-AP induced seizure (Anna Wójtowicz and Jochen Decker)
- Kann, Oliver 13) Manipulating mitochondrial energy metabolism in slice cultures. Methods: CCD camera-based imaging; NAD(P)H, FAD and Rh-123 fluorescence; organotypic hippocampal slice cultures; data evaluation (Christine Huchzermeyer)

14) Investigating gamma oscillations in slice cultures. Methods: extracellular recordings of local field potentials; cholinergically evoked gamma oscillations, organotypic hippocampal slice cultures; data evaluation (Anton Rösler)

Gabriel S., Sandow N. 15) Effects of drug transport-inhibitors on seizure-like events

Saturday Feb. 14

Project reports (15 min presentations)

Room: Emil du Bois-Reymond conference room, 2nd floor

10.00 – 10.15

10.15 – 10.30

10.30 – 10.45

10.45 – 11.00

11.15 – 11.30

11.30 – 12.00 *Coffee break*

12.00 – 12.15

12.15 – 12.30

12.30 – 12.45

12.45 – 13.00

13.00 – 13.15

13.15 – 14.15 *Lunch break*

14.15 – 14.30

14.30 – 14.45

14.45 – 15.00

15.00 – 15.15

15.15 – 15.30

The course is sponsored by

**Deutsche Gesellschaft für Epilepsy
and**

