E 03 - GGNB Extended Methods Course 2010

ENI Electrophysiology Training (ENI-ELECTRAIN)

Date: **10 – 21 May 2010**

Participants: **8**

Two groups A/B of 4 participants each. The groups switch topics after one week. Participation for both weeks is mandatory. Topics 1+2 are offered in both weeks, topic 3 is offered in week 2 only. Topics will be assigned to participants during the course.

TOPIC 1: *In vitro* Electrophysiology of Expressed Ion Channels
in *Xenopus laevis* oocytes (STÜHMER + NN)
(4 participants)

TOPIC 2: *In vivo* Electrophysiology of Identified Neurons
in *Hirudo medicinalis* (HÖRNER + NN)
(4 participants)

TOPIC 3: Measurement of synaptic parameters in mouse hippocampal
organotypic slices (SCHLÜTER + NN)
(4 participants)

Week 1/2 (Group A: 10-14 May 2010, Group B: 17-21 May 2010), ENI Lecture Hall, ENI Teaching Labs, Grisebachstr. 5.

Topic: Expression and electrophysiological characterization of different ion-channels in the *Xenopus* oocyte expression system

Techniques: cDNA expression techniques in *Xenopus* oocytes, Two-electrode voltage clamp configuration and measurements, Quantitative evaluation and statistical analysis of different ion channels/conductances

Lectures: Monday through Thursday from 9-11h, ENI Lecture Hall (open to all GGNB students)
Practical Training: Monday through Thursday from 13-18h, ENI Teaching Labs
Presentation of results: Friday 9-12h, ENI Lecture Hall, Friday afternoon: Cleaning-up

Week 1/2 (Group B: 10. – 14.05.2010, Group A: 17. - 21.05.2010) ENI Lecture Hall, ENI Teaching Labs, Grisebachstr. 5.

Topic: In-vivo electrophysiology of identified neurons in *Hirudo medicinalis*

Techniques: Single and double intracellular recording techniques, single cell fluorescent labeling and 3d-imaging, Characterization of spontaneous and stimulus-evoked electrical activity patterns in identified neurons, Analysis of synaptic connectivity and network properties, Pharmacological characterization of different electrical conductances

Week 2 (Group A or B: 17. - 21.05.2010) ENI Lecture Hall, ENI Teaching Labs, Grisebachstr. 5.

Topic: Measurement of synaptic parameters in mouse hippocampal organotypic slices

Techniques: Miniature EPSC recording of CA1 pyramidal cells, evoked AMPA receptor and NMDA receptor mediated synaptic transmission of Schaffer collateral CA1 pyramidal cell synapses, lentiviral-mediated molecular manipulation of CA1 pyramidal cells

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