

Recommended Literature

Microelectrode Instruments

- ❑ Ogden DC (1994) Microelectrode Techniques. The Plymouth Workshop Handbook, Second Edition, The Company of Biologists Limited, Cambridge
- ❑ Polder, H.R., M. Weskamp, K. Linz & R. Meyer (2004) Voltage-Clamp and Patch-Clamp Techniques, Chapter 3.4, 272-323 in: Dhein, Stefan; Mohr, Friedrich Wilhelm; Delmar, Mario (Eds.) *Practical Methods in Cardiovascular Research*, Springer, Berlin, Heidelberg and New York 2004.
- ❑ **Windhorst, U. and H. Johansson (eds.) Modern Techniques in Neuroscience Research, Springer, Berlin, Heidelberg, New York**

BRIDGE AMPLIFIERS

- ❑ Behrend, O., Branoner, F., Zhivkov, Z., & Ziehm, U. (2006). Neural responses to water surface waves in the midbrain of the aquatic predator *Xenopus laevis laevis*. *Eur.J Neurosci.* **23**, 729-744.
- ❑ Blomeley, C. & Bracci, E. (2008). Substance P depolarizes striatal projection neurons and facilitates their glutamatergic inputs. *Journal of Physiology* **586**, 2143-2155.
- ❑ Blomeley, C. P., Kehoe, L. A., & Bracci, E. (2009). Substance P Mediates Excitatory Interactions between Striatal Projection Neurons. *Journal of Neuroscience* **29**, 4953-4963.
- ❑ Burrell, B. D. & Sahley, C. L. (2004). Multiple forms of long-term potentiation and long-term depression converge on a single interneuron in the leech CNS. *J Neurosci.* **24**, 4011-4019.
- ❑ Burrell, B. D. & Sahley, C. L. (2005). Serotonin Mediates Learning-Induced Potentiation Of Excitability. *Journal of Neurophysiology* **94**, 4002-4010.
- ❑ Drion, G., Bonjean, M., Waroux, O., Scuvee-Moreau, J., Liegeois, J. F., Sejnowski, T. J., Sepulchre, R., & Seutin, V. (2010). M-type channels selectively control bursting in rat dopaminergic neurons. *Eur.J Neurosci.* **31**, 827-835.
- ❑ Gollisch, T., Schutze, H., Benda, J., & Herz, A. V. (2002). Energy integration describes sound-intensity coding in an insect auditory system. *J Neurosci.* **22**, 10434-10448.
- ❑ Grey, K. B. & Burrell, B. D. (2010). Co-induction of LTP and LTD and its regulation by protein kinases and phosphatases. *J Neurophysiol.* **103**, 2737-2746.
- ❑ Hutzler, M., Lambacher, A., Eversmann, B., Jenkner, M., Thewes, R., & Fromherz, P. (2006). High-resolution multi-transistor array recording of electrical field potentials in cultured brain slices. *J Neurophysiol.*
- ❑ Kettenmann, H. & Grantyn, R. (eds.) (1992) *Practical Electrophysiological Methods*, Wiley-Liss, New York
- ❑ Kim, J. B., Sebastiano, V., Wu, G., Arauzo-Bravo, M. J., Sasse, P., Gentile, L., Ko, K., Ruau, D., Ehrlich, M., van den, B. D., Meyer, J., Hubner, K., Bernemann, C., Ortmeier, C., Zenke, M., Fleischmann, B. K., Zaehres, H., & Scholer, H. R. (2009). Oct4-induced pluripotency in adult neural stem cells. *Cell.* **136**, 411-419.

- ❑ **Lalley, P.M., A.K. Moschovakis and U. Windhorst (1999) Electrical Activity of Individual Neurons in Situ: Extra- and Intracellular Recording, in: U. Windhorst and H. Johansson (eds.) Modern Techniques in Neuroscience Research, Springer, Berlin, New York**
- ❑ Maier, N., Nimmrich, V., & Draguhn, A. (2003). Cellular and network mechanisms underlying spontaneous sharp wave-ripple complexes in mouse hippocampal slices. *J Physiol* **550**, 873-887.
- ❑ Mayer-Waarden, K. (1975) Einführung in die biologische und medizinische Meßtechnik. Schattauer-Verlag, Stuttgart.
- ❑ Möck, M., Butovas, S., & Schwarz, C. (2006). Functional unity of the ponto-cerebellum: evidence that intrapontine communication is mediated by a reciprocal loop with the cerebellar nuclei. *J Neurophysiol.* **95**, 3414-3425.
- ❑ Neher, E. (1974) Elektrische Meßtechnik in der Physiologie. Springer-Verlag, Berlin.
- ❑ Nimmrich, V., Maier, N., Schmitz, D., & Draguhn, A. (2005). Induced sharp wave-ripple complexes in the absence of synaptic inhibition in mouse hippocampal slices. *Journal of Physiology* **563**, 663-670.
- ❑ Ogden DC (1994) Microelectrode Techniques. The Plymouth Workshop Handbook, Second Edition, The Company of Biologists Limited, Cambridge
- ❑ Prinz, A. A. and P. Fromherz (2000). Electrical synapses by guided growth of cultured neurons from the snail *Lymnaea stagnalis*, *Biol. Cybern.* **82**, L1-L5
- ❑ Prinz, A. A. & Fromherz, P. (2003). Effect of neuritic cables on conductance estimates for remote electrical synapses. *J Neurophysiol.* **89**, 2215-2224.
- ❑ Purves, R.D. (1981) Microelectrode Methods for Intracellular Recording and Ionophoresis. London: Academic Press
- ❑ Rokem, A., Watzl, S., Gollisch, T., Stemmler, M., Herz, A. V., & Samengo, I. (2006). Spike-timing precision underlies the coding efficiency of auditory receptor neurons. *J Neurophysiol.* **95**, 2541-2552.
- ❑ Rotte, C., Krach, C., Balfanz, S., Baumann, A., Walz, B., & Blenau, W. (2009). Molecular characterization and localization of the first tyramine receptor of the American cockroach (*Periplaneta americana*). *Neuroscience.* **162**, 1120-1133.
- ❑ Schaeffe, R., Gollisch, T., & Herz, A. V. M. (2005). Spike-Train Variability of Auditory Neurons in vivo: Dynamic Responses Follow Predictions from Constant Stimuli. *Journal of Neurophysiology* **93**, 3270-3281.
- ❑ Schnell, B., Joesch, M., Forstner, F., Raghu, S. V., Otsuna, H., Ito, K., Borst, A., & Reiff, D. F. (2010). Processing of horizontal optic flow in three visual interneurons of the *Drosophila* brain. *J Neurophysiol.* **103**, 1646-1657.
- ❑ Schoen, I. & Fromherz, P. (2007). The Mechanism of Extracellular Stimulation of Nerve Cells on an Electrolyte-Oxide-Semiconductor Capacitor. *Biophys.J.*, **92**, 1096-1111.
- ❑ Vogel, A., Hennig, R. M., & Ronacher, B. (2005). Increase of neuronal response variability at higher processing levels as revealed by simultaneous recordings. *Journal of Neurophysiology*, **93**, 3548-3559.
- ❑ Volgushev, M., Malyshev, A., Balaban, P., Chistiakova, M., Volgushev, S., & Wolf, F. (2008). Onset dynamics of action potentials in rat neocortical neurons and identified snail neurons: quantification of the difference. *PLoS.ONE.* **3**, e1962.
- ❑ Zeck G. and P. Fromherz (2001) Noninvasive neuroelectronic interfacing with synaptically connected snail neurons immobilized on a semiconductor chip, *PNAS*, Vol. 98, no. 18:10457–10462

Intra- and extracellular drug application and tracer injection

- ❑ Lalley, P.M., A.K. Moschovakis and U. Windhorst (1999) Electrical Activity of Individual Neurons in Situ: Extra- and Intracellular Recording, in: U. Windhorst and H. Johansson (eds.) *Modern Techniques in Neuroscience Research*, Springer, Berlin, New York
- ❑ Lalley, P.M. (1999) Microiontophoresis and Pressure Ejection, in: U. Windhorst, and H. Johansson (eds) *Modern Techniques in Neuroscience Research*, Springer, Berlin, New York
- ❑ Röhrig, G., Klaus, G., and Sutor, B. (1996) Intracellular acidification reduced gap junction coupling between immature rat neocortical pyramidal neurons, *J. Physiol.*490.1 pp. 31-49

Visualization and infrared video microscopy

- ❑ Dodt, H.U and W. Zieglgänsberger (1994) Infrared videomicroscopy: a new look at neuronal structure and function, *Trends in Neurosciences*, Vol. 19 No. 11 453-458

EXTRACELLULAR AMPLIFIERS AND FILTERS

- ❑ Barmashenko, G., Eysel, U. T., & Mittmann, T. (2003). Changes in intracellular calcium transients and LTP in the surround of visual cortex lesions in rats. *Brain Res.* **990**, 120-128.
- ❑ Behrend, O., Branoner, F., Zhivkov, Z., & Ziehm, U. (2006). Neural responses to water surface waves in the midbrain of the aquatic predator *Xenopus laevis laevis*. *Eur.J Neurosci.* **23**, 729-744.
- ❑ Boettger, T., Rust, M. B., Maier, H., Seidenbecher, T., Schweizer, M., Keating, D. J., Faulhaber, J., Ehmke, H., Pfeffer, C., Scheel, O., Lemcke, B., Horst, J., Leuwer, R., Pape, H. C., Volkl, H., Hubner, C. A., & Jentsch, T. J. (2003). Loss of K-Cl co-transporter KCC3 causes deafness, neurodegeneration and reduced seizure threshold. *EMBO J* **22**, 5422-5434.
- ❑ Both, M., Bahner, F., Bohlen Und, H. O., & Draguhn, A. (2008). Propagation of specific network patterns through the mouse hippocampus. *Hippocampus*.
- ❑ Budde, T., Caputi, L., Kanyshkova, T., Staak, R., Abrahamczik, C., Munsch, T., & Pape, H. C. (2005). Impaired regulation of thalamic pacemaker channels through an imbalance of subunit expression in absence epilepsy. *J Neurosci.* **25**, 9871-9882.
- ❑ Carr, R. W., Sittl, R., Fleckenstein, J., & Grafe, P. (2010). GABA increases electrical excitability in a subset of human unmyelinated peripheral axons. *PLoS. ONE.* **20;5**, e8780.
- ❑ Grzegorzewska, M., Mackowiak, M., Wedzony, K., & Hess, G. (2010). 5-HT(1A) receptors mediate detrimental effects of cocaine on long-term potentiation and expression of polysialylated neural cell adhesion molecule protein in rat dentate gyrus. *Neuroscience.* **166**, 122-131.
- ❑ Hartwich, K., Pollak, T., & Klausberger, T. (2009). Distinct Firing Patterns of Identified Basket and Dendrite-Targeting Interneurons in the Prefrontal Cortex during Hippocampal Theta and Local Spindle Oscillations. *Journal of Neuroscience* **29**, 9563-9574.
- ❑ Huemmeke, M., Eysel, U. T., & Mittmann, T. (2002). Metabotropic glutamate receptors mediate expression of LTP in slices of rat visual cortex. *Eur.J Neurosci.* **15**, 1641-1645.
- ❑ Huemmeke, M., Eysel, U. T., & Mittmann, T. (2004). Lesion-induced enhancement of LTP in rat visual cortex is mediated by NMDA receptors containing the NR2B subunit. *J Physiol* **559** , 875-882.
- ❑ Kowski, A. B., Veh, R. W., & Weiss, T. (2009). Dopaminergic activation excites rat lateral habenular neurons in vivo. *Neuroscience.* **161**, 1154-1165.

- ❑ Lalley, P. M., A. K. Moschovakis & Windhorst, U. (1999). **Electrical Activity of Individual Neurons In Situ: Extra- and Intracellular Recording**, in: Windhorst, U. & Johansson, H. (eds.) **Modern Techniques in Neuroscience Research**, Springer, Berlin, New York.
- ❑ Lambert, F. M., Beck, J. C., Baker, R., & Straka, H. (2008). Semicircular canal size determines the developmental onset of angular vestibuloocular reflexes in larval *Xenopus*. *Journal of Neuroscience* **28**, 8086-8095.
- ❑ Mellen, N. M. (2008). A vibrating microtome attachment for cutting brain slice preparations at reproducible compound angles relative to the midline. *J.Neurosci.Methods*. **168**, 113-118.
- ❑ Meuth, S. G., Aller, M. I., Munsch, T., Schuhmacher, T., Seidenbecher, T., Meuth, P., Kleinschnitz, C., Pape, H. C., Wiendl, H., Wisden, W., & Budde, T. (2006). The contribution of TASK-1-containing channels to the function of dorsal lateral geniculate thalamocortical relay neurons. *Molecular Pharmacology*.
- ❑ Mochida, H., Fortin, G., Champagnat, J., & Glover, J. C. (2009). Differential Involvement of Projection Neurons During Emergence of Spontaneous Activity in the Developing Avian Hindbrain. *Journal of Neurophysiology* **101**, 591-602.
- ❑ Müller, Ch.M. (1992) Extra- and Intracellular Recording in the Slice, in: Kettenmann, H. & Grantyn, R. (eds.) **Practical Electrophysiological Methods**, Wiley-Liss, New York.
- ❑ Okada, R., Rybak, J., Manz, G., & Menzel, R. (2007). Learning-related plasticity in PE1 and other mushroom body-extrinsic neurons in the honeybee brain. *J Neurosci*. **27**, 11736-11747.
- ❑ Palani, D., Baginskias, A., & Raastad, M. (2010). Bursts and hyperexcitability in non-myelinated axons of the rat hippocampus. *Neuroscience*. **167**, 1004-1013.
- ❑ Pecka, M., Zahn, T. P., Saunier-Rebori, B., Siveke, I., Felmy, F., Wiegrebe, L., Klug, A., Pollak, G. D., & Grothe, B. (2007). Inhibiting the inhibition: a neuronal network for sound localization in reverberant environments. *J Neurosci*. **27**, 1782-1790.
- ❑ Rabbitt, R. D., Boyle, R., & Highstein, S. M. (2010). Mechanical amplification by hair cells in the semicircular canals. *Proc.Natl.Acad.Sci.U.S.A.*
- ❑ Rogers, K. L., Picaud, S., Roncali, E., Boisgard, R., Colasante, C., Stinnakre, J., Tavitian, B., & Brulet, P. (2007). Non-invasive in vivo imaging of calcium signaling in mice. *PLoS.ONE*. **2**, e974.
- ❑ Scheiner, R., Kuritz-Kaiser, A., Menzel, R., & Erber, J. (2005). Sensory responsiveness and the effects of equal subjective rewards on tactile learning and memory of honeybees. *Learn.Mem.* **12**, 626-635.
- ❑ Schneider, N. L. & Stengl, M. (2005). Pigment-dispersing factor and GABA synchronize cells of the isolated circadian clock of the cockroach *Leucophaea maderae*. *J Neurosci*. **25**, 5138-5147.
- ❑ Schneider, N. L. & Stengl, M. (2006). Gap junctions between accessory medulla neurons appear to synchronize circadian clock cells of the cockroach *Leucophaea maderae*. *J Neurophysiol*. **95**, 1996-2002.
- ❑ Schulz, D., Huston, J. P., Jezek, K., Haas, H. L., Roth-Harer, A., Selbach, O., & Luhmann, H. J. (2002). Water maze performance, exploratory activity, inhibitory avoidance and hippocampal plasticity in aged superior and inferior learners. *Eur.J.Neurosci*. **16**, 2175-2185.
- ❑ Seidenbecher, T. & Pape, H. C. (2001). Contribution of intralaminar thalamic nuclei to spike-and wave-discharges during spontaneous seizures in a genetic rat model of absence epilepsy. *Eur. J. Neurosci*, **13**, 1537-1546.
- ❑ Sheroziya, M. G., Bohlen Und, H. O., Unsicker, K., & Egorov, A. V. (2009). Spontaneous bursting activity in the developing entorhinal cortex. *J Neurosci*. **29**, 12131-12144.
- ❑ Staak, R. & Pape, H. C. (2001). Contribution of GABA_A and GABA_B Receptors to Thalamic Neuronal Activity during Spontaneous Absence Seizures in Rats. *J. Neurosci*. **21**, 1378–1384.

- ❑ Taqatqeh, F., Mergia, E., Neitz, A., Eysel, U. T., Koesling, D., & Mittmann, T. (2009). More than a Retrograde Messenger: Nitric Oxide Needs Two cGMP Pathways to Induce Hippocampal Long-Term Potentiation. *Journal of Neuroscience* **29**, 9344-9350.
- ❑ Trimbuch, T., Beed, P., Vogt, J., Schuchmann, S., Maier, N., Kintscher, M., Breustedt, J., Schuelke, M., Streu, N., Kieselmann, O., Brunk, I., Laube, G., Strauss, U., Battefeld, A., Wende, H., Birchmeier, C., Wiese, S., Sendtner, M., Kawabe, H., Kishimoto-Suga, M., Brose, N., Baumgart, J., Geist, B., Aoki, J., Savaskan, N. E., Brauer, A. U., Chun, J., Ninnemann, O., Schmitz, D., & Nitsch, R. (2009). Synaptic PRG-1 modulates excitatory transmission via lipid phosphate-mediated signaling. *Cell*. **138**, 1222-1235.
- ❑ Weiss, E. K., Krupka, N., Bahner, F., Both, M., & Draguhn, A. (2008). Fast effects of glucocorticoids on memory-related network oscillations in the mouse hippocampus. *J.Neuroendocrinol.* **20**, 549-557.
- ❑ Werdin, F., Grussinger, H., Jaminet, P., Kraus, A., Manoli, T., Danker, T., Guenther, E., Haerle, M., Schaller, H. E., & Sinis, N. (2009). An improved electrophysiological method to study peripheral nerve regeneration in rats. *J Neurosci.Methods.* **182**, 71-77.