

6 LITERATURVERZEICHNIS

Akaike N, Tokutomi N, Ikemoto Y. Augmentation of GABA-induced current in frog sensory neurons by pentobarbital. *Am J. Physiol.* 1990;258:C452-C460.

Allan LA, Morrice N, Brady S, Magee G, Pathak S, Clarke PR. Inhibition of caspase-9 through phosphorylation at Thr 125 by ERK MAPK. *Nat Cell Biol.* 2003 Jul;5(7):647-54.

Almli CR, Levy TJ, Han BH, Shah AR, Gidday JM, Holtzman DM. BDNF protects against spatial memory deficits following neonatal hypoxia-ischemia. *Exp Neurol.* 2000 Nov;166(1):99-114.

Asimiadou S, Bittigau P, Felderhoff-Mueser U, Manthey D, Siffringer M, Pesditschek S, Dzietko M, Kaindl AM, Pytel M, Studniarczyk D, Mozrzymas JW, Ikonomidou C. Protection with estradiol in developmental models of apoptotic neurodegeneration. *Ann Neurol.* 2005 Aug;58(2):266-76.

Barnabe-Heider F, Miller FD. Endogenously produced neurotrophins regulate survival and differentiation of cortical progenitors via distinct signaling pathways. *J Neurosci.* 2003 Jun 15;23(12):5149-60.

Baulac S, Huberfeld G, Gourfinkel-An I, Mitropoulou G, Beranger A, Prud'homme JF, Baulac M, Brice A, Bruzzone R, LeGuern E. First genetic evidence of GABA(A) receptor dysfunction in epilepsy: a mutation in the gamma2-subunit gene. *Nat Genet.* 2001 May;28(1):46-8.

Berkemeier LR, Winslow JW, Kaplan DR, Nikolics K, Goeddel DV, Rosenthal A. Neurotrophin-5: a novel neurotrophic factor that activates trk and trkB. *Neuron.* 1991 Nov;7(5):857-66.

Bittigau P, Pohl D, Siffringer M, Shimizu H, Ikeda M, Ishimaru M, Stadthaus D, Fuhr S, Dikranian K, Olney JW, Ikonomidou C. Modeling pediatric head trauma: mechanisms of degeneration and potential strategies for neuroprotection. *Restor Neurol Neurosci.* 1998;13(1-

2):11-23.

Bittigau P, Siffringer M, Felderhoff-Mueser U, Ikonomidou C. Apoptotic neurodegeneration in the context of traumatic injury to the developing brain. *Exp Toxicol Pathol.* 2004 Oct;56(1-2):83-9.

Bittigau P, Siffringer M, Genz K, Reith E, Pospischil D, Govindarajalu S, Dzietko M, Pesditschek S, Mai I, Dikranian K, Olney JW, Ikonomidou C. Antiepileptic drugs and apoptotic neurodegeneration in the developing brain. *Proc Natl Acad Sci U S A.* 2002 Nov 12;99(23):15089-94.

Bonhoeffer T. Neurotrophins and activity-dependent development of the neocortex. *Curr Opin Neurobiol.* 1996 Feb;6(1):119-26.

Bonni A, et al. Cell survival promoted by the Ras- MAPK signaling pathway by transcription-dependent and independent mechanisms. *Science* 1999;286, 1358-1362.

Bormann J. Electrophysiology of GABA-A and GABA-B-receptor subtypes. *Trends Neurosci* 11, 112-116.

Bourgeois BFD. Antiepileptic drugs in pediatric practice. *Epilepsia* 1995;36, Suppl 2, 34-44.

Bova R, Micheli MR, Qualadrucci P, Zucconi GG. BDNF and trkB mRNAs oscillate in rat brain during the light-dark cycle. *Brain Res Mol Brain Res.* 1998 Jun 15;57(2):321-4.

Brodie M.J., Dichter M.A. Drug therapie: Antiepileptic drugs. *N Engl J Med* 1996;334:168-175.

Burek, M.J. et Oppenheim, R.W. Programmed cell death in the developing nervous system. *Brai. Pathology* 6 (1996) 427-44.

Calandre EP, Dominguez-Granados R, Gomez-Rubio M, Molina-Font JA. Cognitive effects of long-term treatment with phenobarbital and valproic acid in school children. *Acta Neurol Scand.* 1990 Jun;81(6):504-6.

- Carswell EA, Old LJ, Kassel RL, Green S, Fiore N, Williamson B. An endotoxin-induced serum factor that causes necrosis of tumors. *Proc Natl Acad Sci U S A.* 1975 Sep;72(9):3666-70.
- Cha BH, Silveira DC, Liu X, et al. Effect of topiramate following recurrent and prolonged seizures during early development. *Epilepsy Res.* Oct 2002, 51(3) p217-32.
- Chao MV, Bothwell M. Neurotrophins: to cleave or not to cleave. *Neuron.* 2002 Jan 3;33(1):9-12.
- Charlier C, Singh NA, Ryan SG, Lewis TB, Reus BE, Leach RJ, Leppert M. A pore mutation in a novel KQT-like potassium channel gene in an idiopathic epilepsy family. *Nat Genet.* 1998 Jan;18(1):53-5.
- Cheng Y, Gidday JM, Yan Q, Shah AR, Holtzman DM. Marked age-dependent neuroprotection by brain-derived neurotrophic factor against neonatal hypoxic-ischemic brain injury. *Ann Neurol.* 1997 Apr;41(4):521-9.
- Cirelli C, Tononi G. Differential expression of plasticity-related genes in waking and sleep and their regulation by the noradrenergic system. *J Neurosci.* 2000 Dec 15;20(24):9187-94.
- Climent E, Pascual M, Renau-Piqueras J, Guerri C. Ethanol exposure enhances cell death in the developing cerebral cortex: role of brain-derived neurotrophic factor and its signaling pathways. *J Neurosci Res.* 2002 Apr 15;68(2):213-25.
- Cobb MH. MAP kinase pathways. *Prog Biophys Mol Biol.* 1999;71(3-4):479-500.
- Coupey SM. Barbiturates. *Pediatrics in Review* 1997;18(8) : 260-265.
- Cowan L.D. The epidemiologie of the epilepsies in children. *Ment Retard Dev Disabil Res Rev* 2002;8(3): 171-81.

de la Rosa EJ, de Pablo F. Cell death in early neural development: beyond the neurotrophic theory. *Trends Neurosci.* 2000 Oct;23(10):454-8.

Dessens AB, Cohen-Kettenis PT, Mellenbergh GJ, Koppe JG, van de Poll NE, Boer K (2000) Association of prenatal phenobarbital and phenytoin exposure with small head size at birth and with learning problems. *Acta paediatr* 89:533-41.

Dobbing J., Sands J. Comparative aspects of the brain growth spurt *Early Hum Dev* 1997; 3: 79-83.

Dobbing, J. et al.: The later growth of the brain and its vulnerability. *Scientific Foundations of Pediatrics* 1974;565-577.

Domizio S, Verrotti A, Ramenghi LA, Sabatino G, Morgese G. Anti-epileptic therapy and behaviour disturbances in children. *Childs Nerv Syst.* 1993 Aug;9(5):272-4.

Dran DL, Meador KJ. Epilepsy, anticonvulsant drugs and cognition. *Bailieres Clin Neurol* 1996;5:877-885.

Duvall E, Wyllie AH, Morris RG. Macrophage recognition of cells undergoing programmed cell death (apoptosis). *Immunology*. 1985 Oct;56(2):351-8.

Dzietko M, Felderhoff-Mueser U, Siffringer M, Krutz B, Bittigau P, Thor F, Heumann R, Buhrer C, Ikonomidou C, Hansen HH. Erythropoietin protects the developing brain against N-methyl-D-aspartate receptor antagonist neurotoxicity. *Neurobiol Dis.* 2004 Mar;15(2):177-87.

Encinas M, Iglesias M, Llecha N, Comella JX. Extracellular-regulated kinases and phosphatidylinositol 3-kinase are involved in brain-derived neurotrophic factor-mediated survival and neuritogenesis of the neuroblastoma cell line SH-SY5Y. *J Neurochem.* 1999 Oct;73(4):1409-21.

Escayg A, MacDonald BT, Meisler MH, Baulac S, Huberfeld G, An-Gourfinkel I, Brice A, LeGuern E, Moulard B, Chaigne D, Buresi C, Malafosse A. Mutations of SCN1A, encoding a

neuronal sodium channel, in two families with GEFS+2. *Nat Genet.* 2000 Apr;24(4):343-5.

Farwell JR, Lee YJ, Hirtz DG, Sulzbacher SI, Ellenberg JH, Nelson, KB. Phenobarbital for febrile seizures- effects on intelligence and on seizure recurrence *N Engl J Med* 1990;322: 364-9.

Felderhoff-Mueser U, Siffringer M, Pesditschek S, Kuckuck H, Moysich A, Bittigau P, Ikonomidou C. Pathways leading to apoptotic neurodegeneration following trauma to the developing rat brain. *Neurobiol Dis.* 2002 Nov;11(2):231-45.

Felderhoff-Mueser U, Taylor DL, Greenwood K, Kozma M, Stibenz D, Joashi UC, Edwards AD, Mehmet H. Fas/CD95/APO-1 can function as a death receptor for neuronal cells in vitro and in vivo and is upregulated following cerebral hypoxic-ischemic injury to the developing rat brain. *Brain Pathol.* 2000 Jan;10(1):17-29.

Finkbeiner S. CREB couples neurotrophin signals to survival messages. *Neuron.* 2000 Jan;25(1):11-4.

Fraser DD, Duffy S, Angelides KJ, Perez-Velazquez JL, Kettenmann H, MacVicar BA. GABA_A/benzodiazepine receptors in acutely isolated hippocampal astrocytes. *J Neurosci.* 1995 Apr;15(4):2720-32.

French JA. Vigabatrin. *Epilepsia* 1990;40 Suppl 5: S11-6.

Friedlander RM. Apoptosis and caspases in neurodegenerative diseases. *N Engl J Med.* 2003 Apr 3;348(14):1365-75.

Glier C, Dzietko M, Bittigau P, Jarosz B, Korobowicz E, Ikonomidou C (2004) Therapeutic doses of topiramate are not toxic to the developing rat brain. *Exp Neurol.* 2004 Jun;187(2):403-9.

Hamrick SE, Ferriero DM. The injury response in the term newborn brain: can we neuroprotect? *Curr Opin Neurol.* 2003 Apr;16(2):147-54.

Han BH, Holtzman DM. BDNF protects the neonatal brain from hypoxic-ischemic injury in vivo via the ERK pathway. *J Neurosci*. 2000 Aug 1;20(15):5775-81.

Hansen HH, Briem T, Dzietko M, Siffringer M, Voss A, Rzeski W, Zdzisinska B, Thor F, Heumann R, Stepulak A, Bittigau P, Ikonomidou C. Mechanisms leading to disseminated apoptosis following NMDA receptor blockade in the developing rat brain.

Neurobiol Dis. 2004 Jul;16(2):440-53.

Harris RA, Proctor WR, McQuilkin SJ, Klein RL, Mascia MP, Whatley V, Whiting PJ, Dunwiddie TV. Ethanol increases GABA_A responses in cells stably transfected with receptor subunits. *Alcohol Clin Exp Res*. 1995 Feb;19(1):226-32.

Hauser WA. The prevalence and incidence of convulsive disorders in children. *Epilepsia* 1994;35 Suppl 2:S1-6.

Hauser WA, Rich SS, Annegers JF, Anderson VE. Seizure recurrence after a 1st unprovoked seizure: an extended follow-up. *Neurology* 1990;40: 1163-70.

Hengartner M. The biochemistry of apoptosis *Nature* 2000;407: 770-776

Heumann R, Goemans C, Bartsch D, Lingenhohl K, Waldmeier PC, Hengerer B, Allegrini PR, Schellander K, Wagner EF, Arendt T, Kamdem RH, Obst-Pernberg K, Narz F, Wahle P, Berns H. Transgenic activation of Ras in neurons promotes hypertrophy and protects from lesion-induced degeneration. *J Cell Biol*. 2000 Dec 25;151(7):1537-48.

Hohn A, Leibrock J, Bailey K, Barde YA. Identification and characterization of a novel member of the nerve growth factor/brain-derived neurotrophic factor family. *Nature* 1990 Mar 22;344(6264):339-41.

Holmes GL, Gairsa JL, Chevassus-Au-Louis N, Ben-Ari Y. Consequences of neonatal seizures in the rat: morphological and behavioral effects. *Ann Neurol*. 1998 Dec;44(6):845-57.

Holmes LB, Harvey EA, Coull BA, Huntington KB, Khoshbin S, Hayes AM, Ryan LM. The teratogenicity of anticonvulsant drugs. *N Engl J Med* 2001;344:1132-1138.

Huang E.J. et Reichardt, L. Neurotrophins: roles in neuronal development and function *Annu. Rev. Neuroscience* 2001;24, 677-736.

Ikonomidou C, Bittigau P, Ishimaru MJ, et al. Ethanol-induced apoptotic neurodegeneration and fetal alcohol syndrome. *Science*, Feb 11 2000, 287(5455):1056-60.

Ikonomidou C, Bosch F, Miksa M, et al. Blockade of NMDA receptors and apoptotic neurodegeneration in the developing brain. *Science*, Jan 1 1999, 283(5398):70-4.

Ishimaru et al. Distinguishing excitotoxic from apoptotic neurodegeneration in the developing brain. *J Comp Neurol* 1999;408:461-76.

Kaila K. Ionic basis of GABA_A receptor channel function in the nervous system. *Prog Neurobiol*. 1994 Mar;42(4):489-537.

Kerr JF, Wyllie AH, Currie AR. Apoptosis: a basic biological phenomenon with wide-ranging implications in tissue kinetics. *Br J Cancer*. 1972 Aug;26(4):239-57.

Klein R, Nanduri V, Jing S, Lamballe F, Tapley P, Bryant S, Cordon-Cardo C, Jones KR, Reichardt LF, Barbacid M. The trkB tyrosine kinase is a receptor for brain-derived neurotrophic factor and Neurotrophin-3. *Cell* 1991;66: 395-403.

Klein R, Parada LF, Coulier F, Barbacid M. trkB, a novel tyrosine protein kinase receptor expressed during mouse neural development. *EMBO J*. 1989 Dec 1;8(12):3701-9.

Klocker N, Kermer P, Weishaupt JH, Labes M, Ankerhold R, Bahr M. Brain-derived neurotrophic factor-mediated neuroprotection of adult rat retinal ganglion cells in vivo does not exclusively depend on phosphatidyl-inositol-3'-kinase/protein kinase B signaling. *J Neurosci*. 2000 Sep 15;20(18):6962-7.

- Krammer PH. CD95(APO-1/Fas)-mediated apoptosis: live and let die. *Adv Immunol.* 1999;71:163-210.
- Lamballe F, Klein R, Barbacid M. Trkc, a member of the trk family of tyrosine protein kinases, is a receptor for Neurotrophin-3. *Cell* 1991;66: 967-979.
- Lambert JJ, Peters JA, Cottrell GA. Actions of synthetic and endogenous steroids on the GABA-A-receptor. *Trends Pharmacol. Sci.* 1987;8:224-227.
- Leibrock J, Lottspeich F, Hohn A, Hofer M, Hengerer B, Masiakowski P, Thoenen H, Barde YA. Molecular cloning and expression of brain-derived neurotrophic factor. *Nature.* 1989 Sep 14;341(6238):149-52.
- Levi-Montalcini R. The nerve growth factor 35 years later. *Science.* 1987 Sep 4;237(4819):1154-62.
- Liou JC, Fu WM. Regulation of quantal secretion from developing motoneurons by postsynaptic activity-dependent release of NT-3. *J Neurosci.* 1997 Apr 1;17(7):2459-68.
- Lindvall O, Kokaia Z, Bengzon J, Elmer E, Kokaia M. Neurotrophins and brain insults. *Trends Neurosci.* 1994 Nov;17(11):490-6.
- Lobner D, Ali C. Mechanisms of bFGF and NT-4 potentiation of necrotic neuronal death. *Brain Res.* 2002 Nov 1;954(1):42-50.
- Löscher W. Valproate: a reappraisal of its pharmacodynamic properties and mechanisms of action. *Progr Neurobiol* 1999;58: 31-59.
- Lovinger DM, White G, Weight FF. Ethanol inhibits NMDA-activated ion current in hippocampal neurons. *Science.* 1989 Mar 31;243(4899):1721-4.
- Macdonald RL, Olsen RW. GABAA receptor channels. *Annu Rev Neurosci.* 1994;17:569-602.

- Maroto R, Perez-Polo JR. BCL-2-related protein expression in apoptosis: oxidative stress versus serum deprivation in PC12 cells. *J Neurochem.* 1997 Aug;69(2):514-23.
- Martin-Zanca D, Oskam R, Mitra G, Copeland T, Barbacid M. Molecular and biochemical characterization of the human trk proto-oncogene. *Mol Cell Biol.* 1989 Jan;9(1):24-33.
- Masana Y, Wanaka A, Kato H, Asai T, Tohyama M. Localization of trkB mRNA in postnatal brain development. *J Neurosci Res.* 1993 Aug 1;35(5):468-79.
- McCabe BK, Silveira DC, Cilio MR, Cha BH, Liu X, Sogawa Y, Holmes GL. Reduced neurogenesis after neonatal seizures. *J Neurosci.* 2001 Mar 15;21(6):2094-103.
- Meakin SO, Shooter EM. The nerve growth factor family of receptors. *Trends Neurosci.* 1992;15: 323-330.
- Mehta AK, Tiku MK. An update on GABA-A-Receptors. *Brain Res Rev* 1999;29: 196-217.
- Meldrum B. Action of established and novel anticonvulsant drugs on the basic mechanisms of epilepsy. *Epilepsy Res Suppl.* 1996;11:67-77.
- Mesner PW, Epting CL, Hegarty JL, Green SH. A timetable of events during programmed cell death induced by trophic factor withdrawal from neuronal PC12 cells. *J Neurosci.* 1995 Nov;15(11):7357-66.
- Olney JW, Labruyere J, Wang G, et al. NMDA antagonist neurotoxicity: mechanism and prevention. *Science*, Dec 6 1991, 254(5037) 1515-8.
- Padosch SA, Vogel P, Bottiger BW. Neuronal apoptosis following cerebral ischemia. Basis, physiopathology and treatment strategies *Anaesthesist*. 2001 Dec;50(12):905-20.
- Perucca E. An introduction to antiepileptic drugs. *Epilepsia.* 2005;46 Suppl 4:31-7.
- Peter ME, Krammer PH. The CD95(APO-1/Fas) DISC and beyond. *Cell Death Differ.* 2003

Jan;10(1):26-35.

Pohl D, Bittigau P, Ishimaru MJ, Stadthaus D, Hubner C, Olney JW, Turski L, Ikonomidou C. N-Methyl-D-aspartate antagonists and apoptotic cell death triggered by head trauma in developing rat brain. Proc Natl Acad Sci U S A. 1999 Mar 2;96(5):2508-13.

Pulera MR, Adams LM, Liu H, Santos DG, Nishimura RN, Yang F, Cole GM, Wasterlain CG. Apoptosis in a neonatal rat model of cerebral hypoxia-ischemia. Stroke. 1998 Dec;29(12):2622-30.

Raff MC. Social controls on cell survival and cell death. Nature. 1992 Apr 2;356(6368):397-400.

Reinisch JM, Sanders SA, Mortensen, EL, Rubin DB. In utero exposure to phenobarbital and intelligence deficits in adult men. JAMA 1995;274: 1518-1525.

Rennie JM, Boylan GB. Neonatal seizures and their treatment. Curr Opin Neurol. 2003 Apr;16(2):177-81.

Rudolph U, Mohler H. Analysis of GABAA receptor function and dissection of the pharmacology of benzodiazepines and general anesthetics through mouse genetics. Annu Rev Pharmacol Toxicol. 2004;44:475-98.

Schofield PR, Darlison MG, Fujita N, Burt DR, Stephenson FA, Rodriguez H, Rhee LM, Ramachandran J, Reale V, Glencorse TA, et al. Sequence and functional expression of the GABA A receptor shows a ligand-gated receptor super-family. Nature. 1987 Jul 16-22;328(6127):221-7.

Scolnik D, Nulman I, Rovet J, Gladstone D, Czuchta D, Gardner HA, Gladstone R, Ashby P, Weksberg R, Einarson T, et al. Neurodevelopment of children exposed in utero to phenytoin and carbamazepine monotherapy. JAMA. 1994 Mar 9;271(10):767-70.

Shinnar S, Berg AT. Withdrawal of antiepileptic drugs. Curr Opin Neurol 1995;8: 103-106.

Sieghart W, Sperk G. Subunit composition, distribution and function of GABA(A) receptor subtypes. *Curr Top Med Chem.* 2002 Aug;2(8):795-816.

Singh M, Setalo G Jr, Guan X, Warren M, Toran-Allerand CD. Estrogen-induced activation of mitogen-activated protein kinase in cerebral cortical explants: convergence of estrogen and neurotrophin signaling pathways. *J Neurosci.* 1999 Feb 15;19(4):1179-88.

Sudha S, Lakshmana MK, Pradhan N. Phenobarbital in the anticonvulsant dose range does not impair learning and memory or alter brain AChE activity or monoamine levels. *Pharmacol Biochem Behav.* Jul 1996, 54(3) 633-8.

Singh NA, Charlier C, Stauffer D, DuPont BR, Leach RJ, Melis R, Ronen GM, Bjerre I, Quattlebaum T, Murphy JV, McHarg ML, Gagnon D, Rosales TO, Peiffer A, Anderson VE, Leppert M. A novel potassium channel gene, KCNQ2, is mutated in an inherited epilepsy of newborns. *Nat Genet.* 1998 Jan;18(1):25-9.

Sulzbacher S, Farwell JR, Temkin N, Lu AS, Hirtz,DG. Late cognitive effects of early treatment with phenobarbital. *Clin Pediatr* 1999;38(7): 387-394.

Thornberry NA, Lazebnik Y. Caspases: enemies within. *Science.* 1998 Aug 28;281(5381):1312-6.

Trotter A, Pohlandt F. The replacement of oestradiol and progesterone in very premature infants. *Ann Med.* 2000 Dec;32(9):608-14.

Troy CM, Friedman JE, Friedman WJ. Mechanisms of p75-mediated death of hippocampal neurons. Role of caspases. *J Biol Chem.* 2002 Sep 13;277(37):34295-30.

Tsukahara T, Yonekawa Y, Tanaka K, Ohara O, Wantanabe S, Kimura T, Nishijima T, Taniguchi T. The role of brain-derived neurotrophic factor in transient forebrain ischemia in the rat brain. *Neurosurgery.* 1994 Feb;34(2):323-31

Vannucci SJ, Hagberg H. Hypoxia-ischemia in the immature brain. *J Exp Biol.* 2004 Aug;207(Pt 18):3149-54.

Venters HD, Dantzer R, Kelley KWA new concept in neurodegeneration: TNFalpha is a silencer of survival signals. *Trends Neurosci.* Apr 2000, 23(4) 175-80.

Wallace RH, Marini C, Petrou S, Harkin LA, Bowser DN, Panchal RG, Williams DA, Sutherland GR, Mulley JC, Scheffer IE, Berkovic SF. Mutant GABA(A) receptor gamma2-subunit in childhood absence epilepsy and febrile seizures. *Nat Genet.* 2001 May;28(1):49-52.

Wallace RH, Wang DW, Singh R, Scheffer IE, George AL Jr, Phillips HA, Saar K, Reis A, Johnson EW, Sutherland GR, Berkovic SF, Mulley JC. Febrile seizures and generalized epilepsy associated with a mutation in the Na⁺-channel beta1 subunit gene SCN1B. *Nat Genet.* 1998 Aug;19(4):366-70.

Wlaz P, Rolinski Z, Kleinrok Z, Czuczwar SJ. Anticonvulsant activity of carbamazepine and diphenylhydantoin against maximal electroshock in mice chronically treated with aminophylline. *J Neural Transm Gen Sect.* 1992;89(1-2):41-8.

Yager JY, Armstrong EA, Miyashita H, Wirrell EC. Prolonged neonatal seizures exacerbate hypoxic-ischemic brain damage: correlation with cerebral energy metabolism and excitatory amino acid release. *Dev Neurosci.* 2002;24(5):367-81.

Young D, Lawlor PA, Leone P, Dragunow M, During MJ. Environmental enrichment inhibits spontaneous apoptosis, prevents seizures and is neuroprotective. *Nat Med.* 1999 Apr;5(4):448-53.

Yuan J, Yankner BA. Apoptosis in the nervous system. *Nature* 2000 Oct;407:802-809.

Zahn CA, Morrell MJ, Collins SD, Labiner DM, Yerby MS. Management issues for women with epilepsy: A review of the literature. *Neurology* 1998;51: 949-95