

## 7. Literatur

- Aarnisalo, A.A., Aalto-Setälä, K., Holthofer, H., Ylikoski, J., 2000. Puromycin-induced lipid peroxidation in the cochlea of ApoE knockout mice. *Acta Otolaryngol Suppl*, 543, 102-104.
- Abe, S., Katagiri, T., Saito-Hisaminato, A., Usami, S., Inoue, Y., Tsunoda, T., Nakamura, Y., 2003. Identification of CRYM as a candidate responsible for nonsyndromic deafness, through cDNA microarray analysis of human cochlear and vestibular tissues. *Am. J. Hum. Genet.*, 72, 73-82.
- Abraham, M.R., Jahangir, A., Alekseev, A.E., Terzic, A., 1999. Channelopathies of inwardly rectifying potassium channels. *FASEB J.*, 13, 1901-1910.
- Adamczyk, A., Solecka, J., Strosznajder, J.B., 2005. Expression of alpha-synuclein in different brain parts of adult and aged rats. *J. Physiol Pharmacol.*, 56, 29-37.
- Adler, H.J., Belyantseva, I.A., Merritt, R.C., Jr., Frolenkov, G.I., Dougherty, G.W., Kachar, B., 2003. Expression of prestin, a membrane motor protein, in the mammalian auditory and vestibular periphery. *Hear. Res.*, 184, 27-40.
- Agrup, C., Bagger-Sjoberg, D., Fryckstedt, J., 1997. Protein kinase and protein phosphatase presence in the stria vascularis. *Pflugers Arch.*, 433, 603-608.
- Ahmed, T., Frey, J.U., 2005. Phosphodiesterase 4B (PDE4B) and cAMP-level regulation within different tissue fractions of rat hippocampal slices during long-term potentiation in vitro. *Brain Res.*, 1041, 212-222.
- Allaoua, H., Chicheportiche, R., 1989. Anaesthetic properties of phencyclidine (PCP) and analogues may be related to their interaction with Na<sup>+</sup> channels. *Eur. J. Pharmacol.*, 163, 327-335.
- Alonso, D., Radomski, M.W., 2003. The nitric oxide-endothelin-1 connection. *Heart Fail. Rev.*, 8, 107-115.
- Altschuler, R.A., Cho, Y., Ylikoski, J., Pirvola, U., Magal, E., Miller, J.M., 1999. Rescue and regrowth of sensory nerves following deafferentation by neurotrophic factors. *Ann. N. Y. Acad. Sci.*, 884, 305-311.
- Angley, C., Kumar, M., Dinsio, K.J., Hall, A.K., Siegel, R.E., 2003. Signaling by bone morphogenetic proteins and Smad1 modulates the postnatal differentiation of cerebellar cells. *J. Neurosci.*, 23, 260-268.
- Apicella, S., Chen, S., Bing, R., Penniston, J.T., Llinas, R., Hillman, D.E., 1997. Plasmalemmal ATPase calcium pump localizes to inner and outer hair bundles. *Neuroscience*, 79, 1145-1151.
- Arany, Z., Huang, L.E., Eckner, R., Bhattacharya, S., Jiang, C., Goldberg, M.A., Bunn, H.F., Livingston, D.M., 1996. An essential role for p300/CBP in the cellular response to hypoxia. *Proc. Natl. Acad. Sci. U. S. A.*, 93, 12969-12973.
- Arnhold, S., Klinz, F.J., Bloch, W., Hess, A., Andressen, C., Addicks, K., 1999. Selective expression of the NOS II isoform during mouse vestibulocochlear receptorogenesis. *Eur. J. Neurosci.*, 11, 2187-2193.
- Arun, D., Gutmann, D.H., 2004. Recent advances in neurofibromatosis type 1. *Curr. Opin. Neurol.*, 17, 101-105.

- Aschner, M., Cherian, M.G., Klaassen, C.D., Palmiter, R.D., Erickson, J.C., Bush, A.I., 1997. Metallothioneins in brain--the role in physiology and pathology. *Toxicol. Appl. Pharmacol.*, 142, 229-242.
- Ashmore, J.F., 1987. A fast motile response in guinea-pig outer hair cells: the cellular basis of the cochlear amplifier. *J. Physiol*, 388, 323-347.
- Ashton, K.J., Nilsson, U., Willems, L., Holmgren, K., Headrick, J.P., 2003. Effects of aging and ischemia on adenosine receptor transcription in mouse myocardium. *Biochem. Biophys. Res. Commun.*, 312, 367-372.
- Attias, J., Weisz, G., Almog, S., Shahar, A., Wiener, M., Joachims, Z., Netzer, A., Ising, H., Rebentisch, E., Guenther, T., 1994. Oral magnesium intake reduces permanent hearing loss induced by noise exposure. *Am. J. Otolaryngol.*, 15, 26-32.
- Babnigg, G., Zagranichnaya, T., Wu, X., Villereal, M.L., 2003. Differential tyrosine phosphorylation of plasma membrane Ca<sup>2+</sup>-ATPase and regulation of calcium pump activity by carbachol and bradykinin. *J. Biol. Chem.*, 278, 14872-14882.
- Bacher, M., Schrader, J., Thompson, N., Kuschela, K., Gemsa, D., Waeber, G., Schlegel, J., 2003. Up-regulation of macrophage migration inhibitory factor gene and protein expression in glial tumor cells during hypoxic and hypoglycemic stress indicates a critical role for angiogenesis in glioblastoma multiforme. *Am. J. Pathol.*, 162, 11-17.
- Barile, M., Pisitkun, T., Yu, M.J., Chou, C.L., Verbalis, M.J., Shen, R.F., Knepper, M.A., 2005. Large scale protein identification in intracellular aquaporin-2 vesicles from renal inner medullary collecting duct. *Mol. Cell Proteomics.*, 4, 1095-1106.
- Basile, A.S., Brichta, A.M., Harris, B.D., Morse, D., Coling, D., Skolnick, P., 1999. Dizocilpine attenuates streptomycin-induced vestibulotoxicity in rats. *Neurosci. Lett.*, 265, 71-74.
- Basile, A.S., Huang, J.M., Xie, C., Webster, D., Berlin, C., Skolnick, P., 1996. N-methyl-D-aspartate antagonists limit aminoglycoside antibiotic-induced hearing loss. *Nat. Med.*, 2, 1338-1343.
- Beck, C., 1984. Pathology of labyrinthine hearing loss. *Arch. Otorhinolaryngol. Suppl*, 1, 1-57.
- Beck, R.D., Jr., Wasserfall, C., Ha, G.K., Cushman, J.D., Huang, Z., Atkinson, M.A., Petitto, J.M., 2005. Changes in hippocampal IL-15, related cytokines, and neurogenesis in IL-2 deficient mice. *Brain Res.*, 1041, 223-230.
- Beglopoulos, V., Montag-Sallaz, M., Rohlmann, A., Piechotta, K., Ahmad, M., Montag, D., Missler, M., 2005. Neurexophilin 3 is highly localized in cortical and cerebellar regions and is functionally important for sensorimotor gating and motor coordination. *Mol. Cell Biol.*, 25, 7278-7288.
- Beilharz, E.J., Williams, C.E., Dragunow, M., Sirimanne, E.S., Gluckman, P.D., 1995. Mechanisms of delayed cell death following hypoxic-ischemic injury in the immature rat: evidence for apoptosis during selective neuronal loss. *Brain Res. Mol. Brain Res.*, 29, 1-14.
- Belyantseva, I.A., Adler, H.J., Curi, R., Frolenkov, G.I., Kachar, B., 2000. Expression and localization of prestin and the sugar transporter GLUT-5 during development of electromotility in cochlear outer hair cells. *J. Neurosci.*, 20, RC116-
- Beneyto, M., Sala, J.C., Sala, M.L., Merchan, J.A., Prieto, J.J., 1997. Structure of glycogen particles in organ of Corti's outer hair cells in three rodent species. *J. Hirnforsch.*, 38, 341-351.

- Benamins, J.A., Nedelkoska, L., George, E.B., 2003. Protection of mature oligodendrocytes by inhibitors of caspases and calpains. *Neurochem. Res.*, 28, 143-152.
- Berndt, C., Gross, J., Henke, W., 1998. Quantification of PCR products using DNA hybridization assays in microplates. In: Siebert, P.D., Larrick, J.W. (eds) *Gene Cloning & Analysis by RT-PCR*. Bio Techniques Books, Eaton Publishing, Section II
- Biebl, M., Winner, B., Winkler, J., 2005. Caspase inhibition decreases cell death in regions of adult neurogenesis. *Neuroreport*, 16, 1147-1150.
- Bienkowski, P., Scinska, A., Kostowski, W., Koros, E., Kukwa, A., 2000. Ototoxic mechanism of aminoglycoside antibiotics--role of glutaminergic NMDA receptors. *Pol. Merkuriusz. Lek.*, 9, 713-715.
- Black, P.H., Garbutt, L.D., 2002. Stress, inflammation and cardiovascular disease. *J. Psychosom. Res.*, 52, 1-23.
- Blagosklonny, M.V., Giannakakou, P., Romanova, L.Y., Ryan, K.M., Vousden, K.H., Fojo, T., 2001. Inhibition of HIF-1- and wild-type p53-stimulated transcription by codon Arg175 p53 mutants with selective loss of functions. *Carcinogenesis*, 22, 861-867.
- Bohme, G., 1987. Hearing disorders in peripheral arterial vascular diseases. A contribution on hearing loss in the aged. *Laryngol. Rhinol. Otol. (Stuttg)*, 66, 638-642.
- Bonfoco, E., Krainc, D., Ankarcona, M., Nicotera, P., Lipton, S.A., 1995. Apoptosis and necrosis: two distinct events induced, respectively, by mild and intense insults with N-methyl-D-aspartate or nitric oxide/superoxide in cortical cell cultures. *Proc. Natl. Acad. Sci. U. S. A.*, 92, 7162-7166.
- Borella, A., Sumangali, R., Ko, J., Whitaker-Azmitia, P.M., 2003. Characterization of social behaviors and oxytocinergic neurons in the S-100 beta overexpressing mouse model of Down Syndrome. *Behav. Brain Res.*, 141, 229-236.
- Boyer, C., Art, J.J., Dechesne, C.J., Lehouelleur, J., Vautrin, J., Sans, A., 2001. Contribution of the plasmalemma to Ca<sup>2+</sup> homeostasis in hair cells. *J. Neurosci.*, 21, 2640-2650.
- Brannan, C.A., Roberts, M.R., 2004. Resident microglia from adult mice are refractory to nitric oxide-inducing stimuli due to impaired NOS2 gene expression. *Glia*, 48, 120-131.
- Breder, J., Sabelhaus, C.F., Opitz, T., Reymann, K.G., Schroder, U.H., 2000. Inhibition of different pathways influencing Na(+) homeostasis protects organotypic hippocampal slice cultures from hypoxic/hypoglycemic injury. *Neuropharmacology*, 39, 1779-1787.
- Brini, M., Coletto, L., Pierobon, N., Kraev, N., Guerini, D., Carafoli, E., 2003. A comparative functional analysis of plasma membrane Ca<sup>2+</sup> pump isoforms in intact cells. *J. Biol. Chem.*, 278, 24500-24508.
- Brown, P.O., Botstein, D., 1999. Exploring the new world of the genome with DNA microarrays. *Nat. Genet.*, 21, 33-37.
- Bruick, R.K., 2000. Expression of the gene encoding the proapoptotic Nip3 protein is induced by hypoxia. *Proc. Natl. Acad. Sci. U. S. A.*, 97, 9082-9087.
- Buchman, C.A., Luxford, W.M., Hirsch, B.E., Fucci, M.J., Kelly, R.H., 1999. Beta-2 transferrin assay in the identification of perilymph. *Am. J Otol*, 20, 174-178.

- Butt, A.J., Martin, J.L., Dickson, K.A., McDougall, F., Firth, S.M., Baxter, R.C., 2004. Insulin-like growth factor binding protein-3 expression is associated with growth stimulation of T47D human breast cancer cells: the role of altered epidermal growth factor signaling. *J. Clin. Endocrinol. Metab*, 89, 1950-1956.
- Camirand, A., Zakikhani, M., Young, F., Pollak, M., 2005. Inhibition of insulin-like growth factor-1 receptor signaling enhances growth-inhibitory and proapoptotic effects of gefitinib (Iressa) in human breast cancer cells. *Breast Cancer Res.*, 7, R570-R579.
- Campbell, S.G., Hoyle, N.P., Ashe, M.P., 2005. Dynamic cycling of eIF2 through a large eIF2B-containing cytoplasmic body: implications for translation control. *J. Cell Biol.*, 170, 925-934.
- Cannon, S.C., 2004. Paying the price at the pump: dystonia from mutations in a Na<sup>+</sup>/K<sup>+</sup> -ATPase. *Neuron*, 43, 153-154.
- Carafoli, E., 1997. Plasma membrane calcium pump: structure, function and relationships. *Basic Res. Cardiol.*, 92 Suppl 1, 59-61.
- Caramona, M.M., 1983. Localization of monoamine oxidase of type A and B in blood vessels with different innervation patterns. *Naunyn Schmiedebergs Arch. Pharmacol.*, 324, 185-189.
- Carnicero, E., Zelarayan, L.C., Ruttiger, L., Knipper, M., Alvarez, Y., Alonso, M.T., Schimmang, T., 2004. Differential roles of fibroblast growth factor-2 during development and maintenance of auditory sensory epithelia. *J. Neurosci. Res.*, 77, 787-797.
- Cartier, L., Hartley, O., Dubois-Dauphin, M., Krause, K.H., 2005. Chemokine receptors in the central nervous system: role in brain inflammation and neurodegenerative diseases. *Brain Res. Brain Res. Rev.*, 48, 16-42.
- Caye-Thomasen, P., Wagner, N., Lidegaard, F.B., Asal, K., Thomsen, J., 2005. Erythropoietin and erythropoietin receptor expression in the guinea pig inner ear. *Hear. Res.*, 203, 21-27.
- Cevette, M.J., Drew, D., Webb, T.M., Marion, M.S., 2000. Cisplatin ototoxicity, increased DPOAE amplitudes, and magnesium deficiency. Distortion product otoacoustic emissions. *J. Am. Acad. Audiol.*, 11, 323-329.
- Cevette, M.J., Franz, K.B., Brey, R.H., Robinette, M.S., 1989. Influence of dietary magnesium on the amplitude of wave V of the auditory brainstem response. *Otolaryngol Head Neck Surg.*, 101, 537-541.
- Chan, S.L., Mattson, M.P., 1999. Caspase and calpain substrates: roles in synaptic plasticity and cell death. *J. Neurosci. Res.*, 58, 167-190.
- Charriaut-Marlangue, C., Margaill, I., Represa, A., Popovici, T., Plotkine, M., Ben Ari, Y., 1996. Apoptosis and necrosis after reversible focal ischemia: an in situ DNA fragmentation analysis. *J. Cereb. Blood Flow Metab*, 16, 186-194.
- Chauhan, A., Chauhan, V., Brown, W.T., Cohen, I., 2004. Oxidative stress in autism: increased lipid peroxidation and reduced serum levels of ceruloplasmin and transferrin--the antioxidant proteins. *Life Sci.*, 75, 2539-2549.
- Chen, G.D., McWilliams, M.L., Fechter, L.D., 1999. Intermittent noise-induced hearing loss and the influence of carbon monoxide. *Hear. Res.*, 138, 181-191.

- Chen, Y.H., Dale, T.J., Romanos, M.A., Whitaker, W.R., Xie, X.M., Clare, J.J., 2000. Cloning, distribution and functional analysis of the type III sodium channel from human brain. *Eur. J. Neurosci.*, 12, 4281-4289.
- Chen, Z.Y., Corey, D.P., 2002a. An inner ear gene expression database. *J. Assoc Res Otolaryngol*, 3, 140-148.
- Chen, Z.Y., Corey, D.P., 2002b. Understanding inner ear development with gene expression profiling. *J. Neurobiol.*, 53, 276-285.
- Cheng, A.G., Huang, T., Stracher, A., Kim, A., Liu, W., Malgrange, B., Lefebvre, P.P., Schulman, A., Van De Water, T.R., 1999. Calpain inhibitors protect auditory sensory cells from hypoxia and neurotrophin-withdrawal induced apoptosis. *Brain Res.*, 850, 234-243.
- Chesik, D., Glazenburg, K., Wilczak, N., Geeraedts, F., De Keyser, J., 2004. Insulin-like growth factor binding protein-1-6 expression in activated microglia. *Neuroreport*, 15, 1033-1037.
- Chestkov, A.V., Baka, I.D., Kost, M.V., Georgiev, G.P., Buchman, V.L., 1996. The d4 gene family in the human genome. *Genomics*, 36, 174-177.
- Cho, Y., Gong, T.W., Kanicki, A., Altschuler, R.A., Lomax, M.I., 2004. Noise overstimulation induces immediate early genes in the rat cochlea. *Brain Res Mol. Brain Res*, 130, 134-148.
- Cho, Y., Gong, T.W., Stover, T., Lomax, M.I., Altschuler, R.A., 2002. Gene expression profiles of the rat cochlea, cochlear nucleus, and inferior colliculus. *J. Assoc Res Otolaryngol*, 3, 54-67.
- Choi, D.W., 1988. Calcium-mediated neurotoxicity: relationship to specific channel types and role in ischemic damage. *Trends Neurosci.*, 11, 465-469.
- Choi, D.W., Rothman, S.M., 1990. The role of glutamate neurotoxicity in hypoxic-ischemic neuronal death. *Annu. Rev. Neurosci.*, 13, 171-182.
- Christie, M.J., Connor, M., Vaughan, C.W., Ingram, S.L., Bagley, E.E., 2000. Cellular actions of opioids and other analgesics: implications for synergism in pain relief. *Clin. Exp. Pharmacol. Physiol*, 27, 520-523.
- Cioffi, J.A., Erbe, C.B., Raphael, R., Kwitek, A.E., Tiwari, U.K., Jacob, H.J., Popper, P., Wackym, P.A., 2003. Expression of G-protein alpha subunit genes in the vestibular periphery of *Rattus norvegicus* and their chromosomal mapping. *Acta Otolaryngol*, 123, 1027-1034.
- Clarris, H.J., McKeown, S., Key, B., 2002. Expression of neurexin ligands, the neuroligins and the neurexophilins, in the developing and adult rodent olfactory bulb. *Int. J. Dev. Biol.*, 46, 649-652.
- Cohen, D.R., Curran, T., 1988. fra-1: a serum-inducible, cellular immediate-early gene that encodes a fos-related antigen. *Mol. Cell Biol.*, 8, 2063-2069.
- Conlon, J.M., Larhammar, D., 2005. The evolution of neuroendocrine peptides. *Gen. Comp Endocrinol.*, 142, 53-59.
- Coppens, A.G., Kiss, R., Heizmann, C.W., Schafer, B.W., Poncelet, L., 2001. Immunolocalization of the calcium binding S100A1, S100A5 and S100A6 proteins in the dog cochlea during postnatal development. *Brain Res. Dev. Brain Res.*, 126, 191-199.

- Coucke, P.J., Van Hauwe, P., Kelley, P.M., Kunst, H., Schatteman, I., Van Velzen, D., Meyers, J., Ensink, R.J., Verstreken, M., Declau, F., Marres, H., Kastury, K., Bhasin, S., McGuirt, W.T., Smith, R.J., Cremers, C.W., Van de, H.P., Willems, P.J., Smith, S.D., Van Camp, G., 1999. Mutations in the KCNQ4 gene are responsible for autosomal dominant deafness in four DFNA2 families. *Hum. Mol. Genet.*, 8, 1321-1328.
- Cowell, R.M., Xu, H., Galasso, J.M., Silverstein, F.S., 2002. Hypoxic-ischemic injury induces macrophage inflammatory protein-1alpha expression in immature rat brain. *Stroke*, 33, 795-801.
- Crawford, A.C., Evans, M.G., Fettiplace, R., 1991. The actions of calcium on the mechano-electrical transducer current of turtle hair cells. *J. Physiol*, 434, 369-398.
- Da Lee, R., Rhee, G.S., An, S.M., Kim, S.S., Kwack, S.J., Seok, J.H., Chae, S.Y., Park, C.H., Yoon, H.J., Cho, D.H., Kim, H.S., Park, K.L., 2004. Differential gene profiles in developing embryo and fetus after in utero exposure to ethanol. *J. Toxicol. Environ. Health A*, 67, 2073-2084.
- Dallos, P., 1996. Overview: Cochlear neurobiology. In Dallos, P., Popper, A.N., Fay, R.R. (eds) *The cochlea. Springer Handbook of auditory research*, Springer, New York, pp. 1-43.
- Dallos, P., Fakler, B., 2002. Prestin, a new type of motor protein. *Nat. Rev. Mol. Cell Biol.*, 3, 104-111.
- Dallos, P., He, D.Z., Lin, X., Sziklai, I., Mehta, S., Evans, B.N., 1997. Acetylcholine, outer hair cell electromotility, and the cochlear amplifier. *J. Neurosci.*, 17, 2212-2226.
- Dasgupta, B., Dugan, L.L., Gutmann, D.H., 2003. The neurofibromatosis 1 gene product neurofibromin regulates pituitary adenylate cyclase-activating polypeptide-mediated signaling in astrocytes. *J Neurosci.*, 23, 8949-8954.
- Davies, A.C., 1995. *Hearing in adults*. Whurr, London.
- Dechesne, C.J., Kauff, C., Stettler, O., Tavitian, B., 1997. Rab3A immunolocalization in the mammalian vestibular end-organs during development and comparison with synaptophysin expression. *Brain Res. Dev. Brain Res.*, 99, 103-111.
- Dechesne, C.J., Pujol, R., 1986. Neuron-specific enolase immunoreactivity in the developing mouse cochlea. *Hear. Res.*, 21, 87-90.
- Delivoria-Papadopoulos, M., Mishra, O.P., 2004. Nuclear mechanisms of hypoxic cerebral injury in the newborn. *Clin. Perinatol.*, 31, 91-105.
- Derst, C., Karschin, C., Wischmeyer, E., Hirsch, J.R., Preisig-Muller, R., Rajan, S., Engel, H., Grzeschik, K., Daut, J., Karschin, A., 2001. Genetic and functional linkage of Kir5.1 and Kir2.1 channel subunits. *FEBS Lett.*, 491, 305-311.
- Despres, G., Leger, G.P., Dahl, D., Romand, R., 1994. Distribution of cytoskeletal proteins (neurofilaments, peripherin and MAP-tau) in the cochlea of the human fetus. *Acta Otolaryngol.*, 114, 377-381.
- Di Loreto, S., Maccarone, R., Corvetti, L., Sebastiani, P., Piancatelli, D., Adorno, D., 2003. Differential modulation of interleukin-6 expression by interleukin-1beta in neuronal and glial cultures. *Eur. Cytokine Netw.*, 14, 97-102.
- Dineley, K.E., Votyakova, T.V., Reynolds, I.J., 2003. Zinc inhibition of cellular energy production: implications for mitochondria and neurodegeneration. *J. Neurochem.*, 85, 563-570.

- Ding, H., Wu, X., Bostrom, H., Kim, I., Wong, N., Tsoi, B., O'Rourke, M., Koh, G.Y., Soriano, P., Betsholtz, C., Hart, T.C., Marazita, M.L., Field, L.L., Tam, P.P., Nagy, A., 2004. A specific requirement for PDGF-C in palate formation and PDGFR-alpha signaling. *Nat. Genet.*, 36, 1111-1116.
- Doetzlhofer, A., White, P.M., Johnson, J.E., Segil, N., Groves, A.K., 2004. In vitro growth and differentiation of mammalian sensory hair cell progenitors: a requirement for EGF and periotic mesenchyme. *Dev. Biol.*, 272, 432-447.
- Dolev, E., Tamir, A., Leventon, G., 1983. "Is magnesium depletion the reason for ototoxicity caused by aminoglycosides?". *Med. Hypotheses*, 10, 353-358.
- Drago, J., Gerfen, C.R., Lachowicz, J.E., Steiner, H., Hollon, T.R., Love, P.E., Ooi, G.T., Grinberg, A., Lee, E.J., Huang, S.P., ., 1994. Altered striatal function in a mutant mouse lacking D1A dopamine receptors. *Proc. Natl. Acad. Sci. U. S A*, 91, 12564-12568.
- Dryja, T.P., McGee, T.L., Berson, E.L., Fishman, G.A., Sandberg, M.A., Alexander, K.R., Derlacki, D.J., Rajagopalan, A.S., 2005. Night blindness and abnormal cone electroretinogram ON responses in patients with mutations in the GRM6 gene encoding mGluR6. *Proc. Natl. Acad. Sci. U. S. A*, 102, 4884-4889.
- Duan, M., Agerman, K., Ernfors, P., Canlon, B., 2000. Complementary roles of neurotrophin 3 and a N-methyl-D-aspartate antagonist in the protection of noise and aminoglycoside-induced ototoxicity. *Proc. Natl. Acad. Sci. U. S. A*, 97, 7597-7602.
- Dulon, D., Zajic, G., Schacht, J., 1990. Increasing intracellular free calcium induces circumferential contractions in isolated cochlear outer hair cells. *J. Neurosci.*, 10, 1388-1397.
- Dulon, D., Zajic, G., Schacht, J., 1991. Differential motile response of isolated inner and outer hair cells to stimulation by potassium and calcium ions. *Hear. Res.*, 52, 225-231.
- Dumont, R.A., Lins, U., Filoteo, A.G., Penniston, J.T., Kachar, B., Gillespie, P.G., 2001. Plasma membrane Ca<sup>2+</sup>-ATPase isoform 2a is the PMCA of hair bundles. *J. Neurosci.*, 21, 5066-5078.
- Ebadi, M., Iversen, P.L., Hao, R., Cerutis, D.R., Rojas, P., Happe, H.K., Murrin, L.C., Pfeiffer, R.F., 1995. Expression and regulation of brain metallothionein. *Neurochem. Int.*, 27, 1-22.
- Ebert, B.L., Bunn, H.F., 1998. Regulation of transcription by hypoxia requires a multiprotein complex that includes hypoxia-inducible factor 1, an adjacent transcription factor, and p300/CREB binding protein. *Mol. Cell Biol.*, 18, 4089-4096.
- Eckardt, K.U., Rosenberger, C., Jurgensen, J.S., Wiesener, M.S., 2003. Role of hypoxia in the pathogenesis of renal disease. *Blood Purif.*, 21, 253-257.
- Ehrenberger, K., Felix, D., 1991. Glutamate receptors in afferent cochlear neurotransmission in guinea pigs. *Hear. Res.*, 52, 73-80.
- Ehrenberger, K., Felix, D., 1995. Receptor pharmacological models for inner ear therapies with emphasis on glutamate receptors: a survey. *Acta Otolaryngol.*, 115, 236-240.
- Ellison, G., 1994. Competitive and non-competitive NMDA antagonists induce similar limbic degeneration. *Neuroreport*, 5, 2688-2692.
- Ellison, G., 1995. The N-methyl-D-aspartate antagonists phencyclidine, ketamine and dizocilpine as both behavioral and anatomical models of the dementias. *Brain Res. Brain Res. Rev.*, 20, 250-267.

- Emamaullee, J., Liston, P., Korneluk, R.G., Shapiro, A.M., Elliott, J.F., 2005. XIAP overexpression in islet beta-cells enhances engraftment and minimizes hypoxia-reperfusion injury. *Am. J. Transplant.*, 5, 1297-1305.
- Embark, H.M., Bohmer, C., Vallon, V., Luft, F., Lang, F., 2003. Regulation of KCNE1-dependent K(+) current by the serum and glucocorticoid-inducible kinase (SGK) isoforms. *Pflugers Arch.*, 445, 601-606.
- Erlandsson, A., Enarsson, M., Forsberg-Nilsson, K., 2001. Immature neurons from CNS stem cells proliferate in response to platelet-derived growth factor. *J Neurosci.*, 21, 3483-3491.
- Espanol, M.T., Xu, Y., Litt, L., Chang, L.H., James, T.L., Weinstein, P.R., Chan, P.H., 1994. Modulation of edema by dizocilpine, kynurenate, and NBQX in respiring brain slices after exposure to glutamate. *Acta Neurochir. Suppl (Wien. )*, 60, 58-61.
- Faden, A.I., Demediuk, P., Panter, S.S., Vink, R., 1989. The role of excitatory amino acids and NMDA receptors in traumatic brain injury. *Science*, 244, 798-800.
- Félétou, M., Vanhoutte, P.M., 2006. Endothelium-derived hyperpolarizing factor: where are we now? *Arterioscler. Thromb. Vasc. Biol.*, 26, 1215-1225.
- Ferrary, E., Sterkers, O., Saumon, G., Tran Ba, H.P., Amiel, C., 1987. Facilitated transfer of glucose from blood into perilymph in the rat cochlea. *Am. J. Physiol.*, 253, F59-F65.
- Fessenden, J.D., Schacht, J., 1998. The nitric oxide/cyclic GMP pathway: a potential major regulator of cochlear physiology. *Hear. Res.*, 118, 168-176.
- Fischer, W.H., Schubert, D., 1996. Characterization of a novel platelet-derived growth factor-associated protein. *J Neurochem.*, 66, 2213-2216.
- Flamant, F., Samarut, J., 2003. Thyroid hormone receptors: lessons from knockout and knock-in mutant mice. *Trends Endocrinol. Metab.*, 14, 85-90.
- Ford, M.S., Maggirwar, S.B., Rybak, L.P., Whitworth, C., Ramkumar, V., 1997. Expression and function of adenosine receptors in the chinchilla cochlea. *Hear. Res.*, 105, 130-140.
- Förstermann, U., Boissel, J.P., Kleinert, H., 1998. Expressional control of the 'constitutive' isoforms of nitric oxide synthase (NOS I and NOS III). *FASEB J.*, 12, 773-790.
- Frank, G., Hemmert, W., Gummer, A.W., 1999. Limiting dynamics of high-frequency electromechanical transduction of outer hair cells. *Proc. Natl. Acad. Sci. U. S. A.*, 96, 4420-4425.
- Frayne, J., Ingram, C., Love, S., Hall, L., 1999. Localisation of phosphatidylethanolamine-binding protein in the brain and other tissues of the rat. *Cell Tissue Res.*, 298, 415-423.
- Fuchs, P.A., Glowatzki, E., Moser, T., 2003. The afferent synapse of cochlear hair cells. *Curr. Opin. Neurobiol.*, 13, 452-458.
- Fujita, T., Ikuta, J., Hamada, J., Okajima, T., Tatematsu, K., Tanizawa, K., Kuroda, S., 2004. Identification of a tissue-non-specific homologue of axonal fasciculation and elongation protein zeta-1. *Biochem. Biophys. Res. Commun.*, 313, 738-744.
- Furness, D.N., Lawton, D.M., 2003. Comparative distribution of glutamate transporters and receptors in relation to afferent innervation density in the mammalian cochlea. *J. Neurosci.*, 23, 11296-11304.



- Furuta, H., Luo, L., Hepler, K., Ryan, A.F., 1998. Evidence for differential regulation of calcium by outer versus inner hair cells: plasma membrane Ca-ATPase gene expression. *Hear. Res.*, 123, 10-26.
- Galland, L., 1991. Magnesium, stress and neuropsychiatric disorders. *Magnes. Trace Elem.*, 10, 287-301.
- Gao, H., Sun, Y., Wu, Y., Luan, B., Wang, Y., Qu, B., Pei, G., 2004. Identification of beta-arrestin2 as a G protein-coupled receptor-stimulated regulator of NF-kappaB pathways. *Mol. Cell*, 14, 303-317.
- Gao, J., Gross, J., Andreeva, N., Glatzel, E., Grutzmann, H., Heldt, J., Husemann, B., Jamielson, L., Andersson, K., 1999. Hypoxia induces differential changes of dopamine metabolism in mature and immature mesencephalic and diencephalic cell cultures. *J. Neural Transm.*, 106, 111-122.
- Garnier, Y., Middelani, J., Jensen, A., Berger, R., 2002. Neuroprotective effects of magnesium on metabolic disturbances in fetal hippocampal slices after oxygen-glucose deprivation: mediation by nitric oxide system. *J. Soc. Gynecol. Investig.*, 9, 86-92.
- Gavrieli, Y., Sherman, Y., Ben Sasson, S.A., 1992. Identification of programmed cell death in situ via specific labeling of nuclear DNA fragmentation. *J. Cell Biol.*, 119, 493-501.
- Geisler, C.D., 2006. From sound to synapse. II Hair cell functions. New York Oxford, Oxford University Press, pp 91-164.
- Geleoc, G.S., Casalotti, S.O., Forge, A., Ashmore, J.F., 1999. A sugar transporter as a candidate for the outer hair cell motor. *Nat. Neurosci.*, 2, 713-719.
- Giffard, R.G., Xu, L., Zhao, H., Carrico, W., Ouyang, Y., Qiao, Y., Sapolsky, R., Steinberg, G., Hu, B., Yenari, M.A., 2004. Chaperones, protein aggregation, and brain protection from hypoxic/ischemic injury. *J. Exp. Biol.*, 207, 3213-3220.
- Gomez-Maldonado, J., Avila, C., Torre, F., Canas, R., Canovas, F.M., Campbell, M.M., 2004. Functional interactions between a glutamine synthetase promoter and MYB proteins. *Plant J*, 39, 513-526.
- Gorlach, A., Camenisch, G., Kvietikova, I., Vogt, L., Wenger, R.H., Gassmann, M., 2000. Efficient translation of mouse hypoxia-inducible factor-1alpha under normoxic and hypoxic conditions. *Biochim. Biophys. Acta*, 1493, 125-134.
- Graeber, M.B., Raivich, G., Kreutzberg, G.W., 1989. Increase of transferrin receptors and iron uptake in regenerating motor neurons. *J. Neurosci. Res.*, 23, 342-345.
- Grant, P., Pant, H.C., 2000. Neurofilament protein synthesis and phosphorylation. *J. Neurocytol.*, 29, 843-872.
- Gravel, M., Gao, E., Hervouet-Zeiber, C., Parsons, V., Braun, P.E., 2000. Transcriptional regulation of 2',3'-cyclic nucleotide 3'-phosphodiesterase gene expression by cyclic AMP in C6 cells. *J Neurochem.*, 75, 1940-1950.
- Gregory, M.A., Xiao, Q., Cornwall, G.A., Lutterbach, B., Hann, S.R., 2000. B-Myc is preferentially expressed in hormonally-controlled tissues and inhibits cellular proliferation. *Oncogene*, 19, 4886-4895.
- Grimm, C., Hermann, D.M., Bogdanova, A., Hotop, S., Kilic, U., Wenzel, A., Kilic, E., Gassmann, M., 2005. Neuroprotection by hypoxic preconditioning: HIF-1 and erythropoietin protect from retinal degeneration. *Semin. Cell Dev. Biol.*, 16, 531-538.

- Gross, J., 2005. Molekulare Grundlagen von Hypoxie und Asphyxie. In: Ganten, D., Ruckpaul, K. (eds) Molekulare Grundlagen von Hypoxie und Asphyxie. Springer, Berlin, Heidelberg, pp. 573-605.
- Gross, J., Machulik, A., Amarjargal, N., Fuchs, J., Mazurek, B., 2005. Expression of prestin mRNA in the organotypic culture of rat cochlea. *Hear. Res.*, 204, 183-190.
- Gross, J., Rheinlander, C., Fuchs, J., Mazurek, B., Machulik, A., Andreeva, N., Kietzmann, T., 2003. Expression of hypoxia-inducible factor-1 in the cochlea of newborn rats. *Hear. Res.*, 183, 73-83.
- Gross, M., Finckh-Kramer, U., Spormann-Lagodzinski, M., 2000. Congenital hearing disorders in children. 1: Acquired hearing disorders. *HNO*, 48, 879-886.
- Gross, M., Lange, K., Spormann-Lagodzinski, M., 2001. Congenital hearing loss in children. 2: Genetic hearing loss. *HNO*, 49, 602-617.
- Gu, Y.Z., Moran, S.M., Hogenesch, J.B., Wartman, L., Bradfield, C.A., 1998. Molecular characterization and chromosomal localization of a third alpha-class hypoxia inducible factor subunit, HIF3alpha. *Gene Expr.*, 7, 205-213.
- Guitton, M.J., Wang, J., Puel, J.L., 2004. New pharmacological strategies to restore hearing and treat tinnitus. *Acta Otolaryngol.*, 124, 411-415.
- Guntinas-Lichius, O., 2002. Growth factors in otorhinolaryngology. *Laryngorhinootologie*, 81 Suppl 1, S39-S60.
- Guo, B., Zhai, D., Cabezas, E., Welsh, K., Nouraini, S., Satterthwait, A.C., Reed, J.C., 2003. Humanin peptide suppresses apoptosis by interfering with Bax activation. *Nature*, 423, 456-461.
- Guo, Y., Zhang, C., Du, X., Nair, U., Yoo, T.J., 2005. Morphological and functional alterations of the cochlea in apolipoprotein E gene deficient mice. *Hear. Res.*, 208, 54-67.
- Guth, P.S., Norris, C.H., 1996. The hair cell acetylcholine receptors: a synthesis. *Hear. Res.*, 98, 1-8.
- Hagiwara, T., Tanaka, K., Takai, S., Maeno-Hikichi, Y., Mukainaka, Y., Wada, K., 1996. Genomic organization, promoter analysis, and chromosomal localization of the gene for the mouse glial high-affinity glutamate transporter Slc1a3. *Genomics*, 33, 508-515.
- Hall, A., 1998. Rho GTPases and the actin cytoskeleton. *Science*, 279, 509-514.
- Halliwel, R.F., Peters, J.A., Lambert, J.J., 1989. The mechanism of action and pharmacological specificity of the anticonvulsant NMDA antagonist MK-801: a voltage clamp study on neuronal cells in culture. *Br. J. Pharmacol.*, 96, 480-494.
- Hansen, T., Unger, R.E., Gaumann, A., Hundorf, I., Maurer, J., Kirkpatrick, C.J., Kriegsmann, J., 2001. Expression of matrix-degrading cysteine proteinase cathepsin K in cholesteatoma. *Mod. Pathol.*, 14, 1226-1231.
- Harauz, G., Ishiyama, N., Hill, C.M., Bates, I.R., Libich, D.S., Fares, C., 2004. Myelin basic protein-diverse conformational states of an intrinsically unstructured protein and its roles in myelin assembly and multiple sclerosis. *Micron.*, 35, 503-542.
- Harris, J.P., Heydt, J., Keithley, E.M., Chen, M.C., 1997. Immunopathology of the inner ear: an update. *Ann. N. Y. Acad. Sci.*, 830, 166-178.

- Haupt, H., Scheibe, F., Mazurek, B., 2003. Therapeutic efficacy of magnesium in acoustic trauma in the guinea pig. *ORL J. Otorhinolaryngol. Relat Spec.*, 65, 134-139.
- He, D.Z., Cheatham, M.A., Pearce, M., Vetter, D.E., 2004. Mouse outer hair cells lacking the alpha9 ACh receptor are motile. *Brain Res. Dev. Brain Res.*, 148, 19-25.
- He, D.Z., Evans, B.N., Dallos, P., 1994. First appearance and development of electromotility in neonatal gerbil outer hair cells. *Hear. Res.*, 78, 77-90.
- Hebert, S.C., 2003. Bartter syndrome. *Curr. Opin. Nephrol. Hypertens.*, 12, 527-532.
- Hediger, M.A., Romero, M.F., Peng, J.B., Rolfs, A., Takanaga, H., Bruford, E.A., 2004. The ABCs of solute carriers: physiological, pathological and therapeutic implications of human membrane transport proteins. *Introduction. Pflugers Arch.*, 447, 465-468.
- Heinrich, U.R., Maurer, J., Mann, W., 2004. Evidence for a possible NOS back-up system in the organ of Corti of the guinea pig. *Eur. Arch. Otorhinolaryngol.*, 261, 121-128.
- Herdegen, T., Leah, J.D., 1998. Inducible and constitutive transcription factors in the mammalian nervous system: control of gene expression by Jun, Fos and Krox, and CREB/ATF proteins. *Brain Res. Brain Res. Rev.*, 28, 370-490.
- Hess, A., Bloch, W., Huverstuhl, J., Su, J., Stennert, E., Addicks, K., Michel, O., 1999. Expression of inducible nitric oxide synthase (iNOS/NOS II) in the cochlea of guinea pigs after intratympanic endotoxin-treatment. *Brain Res*, 830, 113-122.
- Hesse, G., 2000. Ohrgeräusche. In: Lehnhardt, E., Laszig R. (Hrsg) *Praxis der Audiometrie*. Thieme, Stuttgart.
- Hibino, H., Higashi-Shingai, K., Fujita, A., Iwai, K., Ishii, M., Kurachi, Y., 2004. Expression of an inwardly rectifying K<sup>+</sup> channel, Kir5.1, in specific types of fibrocytes in the cochlear lateral wall suggests its functional importance in the establishment of endocochlear potential. *Eur. J Neurosci.*, 19, 76-84.
- Hildebrand, M.S., de Silva, M.G., Klockars, T., Rose, E., Price, M., Smith, R.J., McGuirt, W.T., Christopoulos, H., Petit, C., Dahl, H.H., 2004. Characterisation of DRASIC in the mouse inner ear. *Hear. Res.*, 190, 149-160.
- Hirai, T., Chida, K., 2003. Protein kinase Czeta (PKCzeta): activation mechanisms and cellular functions. *J. Biochem. (Tokyo)*, 133, 1-7.
- Holt, J.R., Corey, D.P., 2000. Two mechanisms for transducer adaptation in vertebrate hair cells. *Proc. Natl. Acad. Sci. U. S. A.*, 97, 11730-11735.
- Honda, A., Miyoshi, K., Baba, K., Taniguchi, M., Koyama, Y., Kuroda, S., Katayama, T., Tohyama, M., 2004. Expression of fasciculation and elongation protein zeta-1 (FEZ1) in the developing rat brain. *Brain Res. Mol. Brain Res.*, 122, 89-92.
- Hong, W., 2005. SNAREs and traffic. *Biochim. Biophys. Acta*, 1744, 493-517.
- Hossain, W.A., Antic, S.D., Yang, Y., Rasband, M.N., Morest, D.K., 2005. Where is the spike generator of the cochlear nerve? Voltage-gated sodium channels in the mouse cochlea. *J. Neurosci.*, 25, 6857-6868.

- Housley, G.D., Ashmore, J.F., 1992. Ionic currents of outer hair cells isolated from the guinea-pig cochlea. *J. Physiol*, 448, 73-98.
- Housley, G.D., Kanjhan, R., Raybould, N.P., Greenwood, D., Salih, S.G., Jarlebark, L., Burton, L.D., Setz, V.C., Cannell, M.B., Soeller, C., Christie, D.L., Usami, S., Matsubara, A., Yoshie, H., Ryan, A.F., Thorne, P.R., 1999. Expression of the P2X(2) receptor subunit of the ATP-gated ion channel in the cochlea: implications for sound transduction and auditory neurotransmission. *J. Neurosci.*, 19, 8377-8388.
- Hsu, W.J., Anniko, M., Kubo, T., Huang, T.S., 1997. Image analysis of neurofilament immunoreactivity in human spiral ganglion. *ORL J. Otorhinolaryngol. Relat Spec.*, 59, 258-262.
- Hu, B.H., Guo, W., Wang, P.Y., Henderson, D., Jiang, S.C., 2000. Intense noise-induced apoptosis in hair cells of guinea pig cochleae. *Acta Otolaryngol.*, 120, 19-24.
- Hu, B.H., Henderson, D., Nicotera, T.M., 2002. Involvement of apoptosis in progression of cochlear lesion following exposure to intense noise. *Hear. Res.*, 166, 62-71.
- Huang, L.E., Arany, Z., Livingston, D.M., Bunn, H.F., 1996. Activation of hypoxia-inducible transcription factor depends primarily upon redox-sensitive stabilization of its alpha subunit. *J. Biol. Chem.*, 271, 32253-32259.
- Hyde, G.E., Rubel, E.W., 1995. Mitochondrial role in hair cell survival after injury. *Otolaryngol. Head Neck Surg.*, 113, 530-540.
- Ichimiya, I., Yoshida, K., Suzuki, M., Mogi, G., 2003. Expression of adhesion molecules by cultured spiral ligament fibrocytes stimulated with proinflammatory cytokines. *Ann. Otol Rhinol. Laryngol*, 112, 722-728.
- Iguchi, H., Anniko, M., 1998. Interleukin 8 can affect inner ear function. *ORL J. Otorhinolaryngol. Relat Spec.*, 60, 181-189.
- Iijima, N., Suzuki, N., Oguchi, T., Hashimoto, S., Takumi, Y., Sugahara, K., Okuda, T., Yamashita, H., Usami, S., 2004. The effect of hypergravity on the inner ear: CREB and syntaxin are up-regulated. *Neuroreport*, 15, 965-969.
- Ikeda, K., Onimaru, H., Yamada, J., Inoue, K., Ueno, S., Onaka, T., Toyoda, H., Arata, A., Ishikawa, T.O., Taketo, M.M., Fukuda, A., Kawakami, K., 2004. Malfunction of respiratory-related neuronal activity in Na<sup>+</sup>, K<sup>+</sup>-ATPase alpha2 subunit-deficient mice is attributable to abnormal Cl<sup>-</sup> homeostasis in brainstem neurons. *J. Neurosci.*, 24, 10693-10701.
- Ikemoto, K., Kitahama, K., Seif, I., Maeda, T., De Maeyer, E., Valatx, J.L., 1997. Monoamine oxidase B (MAOB)-containing structures in MAOA-deficient transgenic mice. *Brain Res.*, 771, 121-132.
- Ishii, N., Wanaka, A., Ohno, K., Matsumoto, K., Eguchi, Y., Mori, T., Tsujimoto, Y., Tohyama, M., 1996. Localization of bcl-2, bax, and bcl-x mRNAs in the developing inner ear of the mouse. *Brain Res.*, 726, 123-128.
- Ito, M., Spicer, S.S., Schulte, B.A., 1993. Immunohistochemical localization of brain type glucose transporter in mammalian inner ears: comparison of developmental and adult stages. *Hear. Res.*, 71, 230-238.
- Itou, M., Ogawa, K., Inoue, Y., Sato, M., Kanzaki, J., 2001. Effects of neuropeptide Y on cochlear blood flow in guinea pigs. *Acta Otolaryngol.*, 121, 573-578.

- Ivan, M., Kondo, K., Yang, H., Kim, W., Valiando, J., Ohh, M., Salic, A., Asara, J.M., Lane, W.S., Kaelin, W.G., Jr., 2001. HIF $\alpha$  targeted for VHL-mediated destruction by proline hydroxylation: implications for O<sub>2</sub> sensing. *Science*, 292, 464-468.
- Iyer, N.V., Leung, S.W., Semenza, G.L., 1998. The human hypoxia-inducible factor 1 $\alpha$  gene: HIF1A structure and evolutionary conservation. *Genomics*, 52, 159-165.
- Janssen, R., 1992. Glutamate neurotoxicity in the developing rat cochlea is antagonized by kynurenic acid and MK-801. *Brain Res.*, 590, 201-206.
- Jelkmann, W., Wagner, K., 2004. Beneficial and ominous aspects of the pleiotropic action of erythropoietin. *Ann. Hematol.*, 83, 673-686.
- Jentsch, T.J., Schroeder, B.C., Kubisch, C., Friedrich, T., Stein, V., 2000. Pathophysiology of KCNQ channels: neonatal epilepsy and progressive deafness. *Epilepsia*, 41, 1068-1069.
- Jeong, H.J., Hong, S.H., Park, R.K., Shin, T., An, N.H., Kim, H.M., 2005. Hypoxia-induced IL-6 production is associated with activation of MAP kinase, HIF-1, and NF- $\kappa$ B on HEI-OC1 cells. *Hear. Res.*, 207, 59-67.
- Jevtovic-Todorovic, V., Wozniak, D.F., Powell, S., Olney, J.W., 2001. Propofol and sodium thiopental protect against MK-801-induced neuronal necrosis in the posterior cingulate/retrosplenial cortex. *Brain Res.*, 913, 185-189.
- Jiang, B.H., Semenza, G.L., Bauer, C., Marti, H.H., 1996. Hypoxia-inducible factor 1 levels vary exponentially over a physiologically relevant range of O<sub>2</sub> tension. *Am. J Physiol*, 271, C1172-C1180.
- Jiang, B.H., Zheng, J.Z., Leung, S.W., Roe, R., Semenza, G.L., 1997. Transactivation and inhibitory domains of hypoxia-inducible factor 1 $\alpha$ . Modulation of transcriptional activity by oxygen tension. *J Biol. Chem.*, 272, 19253-19260.
- Jin, Z.H., Kikuchi, T., Tanaka, K., Kobayashi, T., 2003. Expression of glutamate transporter GLAST in the developing mouse cochlea. *Tohoku J. Exp. Med.*, 200, 137-144.
- Jinnouchi, K., 2001. Mechanism of endothelin 1 production in the cochlea of rats. *ORL J Otorhinolaryngol Relat Spec.*, 63, 6-11.
- Jones, D.T., Reed, R.R., 1987. Molecular cloning of five GTP-binding protein cDNA species from rat olfactory neuroepithelium. *J. Biol. Chem.*, 262, 14241-14249.
- Jongkamonwiwat, N., Phansuwan-Pujito, P., Sarapoke, P., Chetsawang, B., Casalotti, S.O., Forge, A., Dodson, H., Govitrapong, P., 2003. The presence of opioid receptors in rat inner ear. *Hear. Res.*, 181, 85-93.
- Judice, T.N., Nelson, N.C., Beisel, C.L., Delimont, D.C., Fritsch, B., Beisel, K.W., 2002. Cochlear whole mount in situ hybridization: identification of longitudinal and radial gradients. *Brain Res. Brain Res. Protoc.*, 9, 65-76.
- Kachar, B., Brownell, W.E., Altschuler, R., Fex, J., 1986. Electrokinetic shape changes of cochlear outer hair cells. *Nature*, 322, 365-368.
- Kachar, B., Parakkal, M., Kurc, M., Zhao, Y., Gillespie, P.G., 2000. High-resolution structure of hair-cell tip links. *Proc. Natl. Acad. Sci. U. S. A.*, 97, 13336-13341.

- Kanai, Y., Hediger, M.A., 2003. The glutamate and neutral amino acid transporter family: physiological and pharmacological implications. *Eur. J. Pharmacol.*, 479, 237-247.
- Kanai, Y., Hediger, M.A., 2004. The glutamate/neutral amino acid transporter family SLC1: molecular, physiological and pharmacological aspects. *Pflugers Arch*, 447, 469-479.
- Kane, M.D., Jatkoa, T.A., Stumpf, C.R., Lu, J., Thomas, J.D., Madore, S.J., 2000. Assessment of the sensitivity and specificity of oligonucleotide (50mer) microarrays. *Nucleic Acids Res*, 28, 4552-4557.
- Karadaghy, A.A., Lasak, J.M., Chomchai, J.S., Khan, K.M., Drescher, M.J., Drescher, D.G., 1997. Quantitative analysis of dopamine receptor messages in the mouse cochlea. *Brain Res. Mol. Brain Res.*, 44, 151-156.
- Kariya, S., Okano, M., Aoji, K., Kosaka, M., Chikumoto, E., Hattori, H., Yuen, K., Nishioka, S., Nishioka, K., Nishizaki, K., 2003. Role of macrophage migration inhibitory factor in otitis media with effusion in adults. *Clin. Diagn. Lab Immunol.*, 10, 417-422.
- Kasper, D., Planells-Cases, R., Fuhrmann, J.C., Scheel, O., Zeitz, O., Ruether, K., Schmitt, A., Poet, M., Steinfeld, R., Schweizer, M., Kornak, U., Jentsch, T.J., 2005. Loss of the chloride channel CIC-7 leads to lysosomal storage disease and neurodegeneration. *EMBO J.*, 24, 1079-1091.
- Kawagoe, H., Soma, O., Goji, J., Nishimura, N., Narita, M., Inazawa, J., Nakamura, H., Sano, K., 1995. Molecular cloning and chromosomal assignment of the human brain-type phosphodiesterase I/nucleotide pyrophosphatase gene (PDNP2). *Genomics*, 30, 380-384.
- Kawakami, Z., Kitabayashi, I., Matsuoka, T., Gachelin, G., Yokoyama, K., 1992. Conserved structural motifs among mammalian junB genes. *Nucleic Acids Res.*, 20, 914
- Kawamoto, K., Yagi, M., Stover, T., Kanzaki, S., Raphael, Y., 2003. Hearing and hair cells are protected by adenoviral gene therapy with TGF-beta1 and GDNF. *Mol. Ther.*, 7, 484-492.
- Kawasaki, E., Hattori, N., Miyamoto, E., Yamashita, T., Inagaki, C., 1999. Single-cell RT-PCR demonstrates expression of voltage-dependent chloride channels (CIC-1, CIC-2 and CIC-3) in outer hair cells of rat cochlea. *Brain Res.*, 838, 166-170.
- Kee, Y., Scheller, R.H., 1996. Localization of synaptotagmin-binding domains on syntaxin. *J. Neurosci.*, 16, 1975-1981.
- Kelleher, J.A., Gregory, G.A., Chan, P.H., 1994. Effect of fructose-1,6-bisphosphate on glutamate uptake and glutamine synthetase activity in hypoxic astrocyte cultures. *Neurochem. Res.*, 19, 209-215.
- Kennedy, H.J., Evans, M.G., Crawford, A.C., Fettiplace, R., 2003. Fast adaptation of mechano-electrical transducer channels in mammalian cochlear hair cells. *Nat. Neurosci.*, 6, 832-836.
- Kew, J.N., Smith, D.W., Sofroniew, M.V., 1996. Nerve growth factor withdrawal induces the apoptotic death of developing septal cholinergic neurons in vitro: protection by cyclic AMP analogue and high potassium. *Neuroscience*, 70, 329-339.
- Khan, K.M., Drescher, M.J., Hatfield, J.S., Khan, A.M., Drescher, D.G., 2002. Muscarinic receptor subtypes are differentially distributed in the rat cochlea. *Neuroscience*, 111, 291-302.
- Kiel, J.W., 2000. Endothelin modulation of choroidal blood flow in the rabbit. *Exp. Eye Res.*, 71, 543-550.

- Kiesewetter, H., Jung, F., Kotitschke, G., Nuttgens, H.P., Witt, R., Winkelhog, C., Ladwig, K.H., Waterloh, E., Roebruck, P., Schneider, R., ., 1988. Prevalence, risk factors and rheological profile of arterial vascular disease; first results of the Aachen study. *Folia Haematol. Int. Mag. Klin. Morphol. Blutforsch.*, 115, 587-593.
- Kietzmann, T., Cornesse, Y., Brechtel, K., Modaresi, S., Jungermann, K., 2001. Perivenous expression of the mRNA of the three hypoxia-inducible factor alpha-subunits, HIF1alpha, HIF2alpha and HIF3alpha, in rat liver. *Biochem. J.*, 354, 531-537.
- Kikyo, N., Williamson, C.M., John, R.M., Barton, S.C., Beechey, C.V., Ball, S.T., Cattanaach, B.M., Surani, M.A., Peters, J., 1997. Genetic and functional analysis of neuronatin in mice with maternal or paternal duplication of distal Chr 2. *Dev. Biol.*, 190, 66-77.
- King, M.E., 2005. Can tau filaments be both physiologically beneficial and toxic? *Biochim. Biophys. Acta*, 1739, 260-267.
- Knipper, M., Bandtlow, C., Gestwa, L., Kopschall, I., Rohbock, K., Wiechers, B., Zenner, H.P., Zimmermann, U., 1998. Thyroid hormone affects Schwann cell and oligodendrocyte gene expression at the glial transition zone of the VIIIth nerve prior to cochlea function. *Development*, 125, 3709-3718.
- Knipper, M., Gestwa, L., Ten Cate, W.J., Lautermann, J., Brugger, H., Maier, H., Zimmermann, U., Rohbock, K., Kopschall, I., Wiechers, B., Zenner, H.P., 1999. Distinct thyroid hormone-dependent expression of TrKB and p75NGFR in nonneuronal cells during the critical TH-dependent period of the cochlea. *J Neurobiol.*, 38, 338-356.
- Knipper, M., Zinn, C., Maier, H., Praetorius, M., Rohbock, K., Kopschall, I., Zimmermann, U., 2000. Thyroid hormone deficiency before the onset of hearing causes irreversible damage to peripheral and central auditory systems. *J. Neurophysiol.*, 83, 3101-3112.
- Konig, O., Winter, E., Fuchs, J., Haupt, H., Mazurek, B., Weber, N., Gross, J., 2003. Protective effect of magnesium and MK 801 on hypoxia-induced hair cell loss in new-born rat cochlea. *Magnes. Res*, 16, 98-105.
- Konishi, T., Butler, R.A., Fernandez, C., 1961. Effect of anoxia on cochlear potentials. *J. Acoust. Soc. Am.*, 33, 349-356.
- Kress, S., Stein, A., Maurer, P., Weber, B., Reichert, J., Buchmann, A., Huppert, P., Schwarz, M., 1998. Expression of hypoxia-inducible genes in tumor cells. *J. Cancer Res. Clin. Oncol.*, 124, 315-320.
- Krishna, P., Bauer, C., 2004. Hearing loss as the initial presentation of Creutzfeldt-Jakob disease. *Ear Nose Throat J.*, 83, 535, 538, 540-
- Kros, C.J., Crawford, A.C., 1990. Potassium currents in inner hair cells isolated from the guinea-pig cochlea. *J. Physiol*, 421, 263-291.
- Kros, C.J., Marcotti, W., van Netten, S.M., Self, T.J., Libby, R.T., Brown, S.D., Richardson, G.P., Steel, K.P., 2002. Reduced climbing and increased slipping adaptation in cochlear hair cells of mice with Myo7a mutations. *Nat. Neurosci.*, 5, 41-47.
- Kubisch, C., Schroeder, B.C., Friedrich, T., Lutjohann, B., El Amraoui, A., Marlin, S., Petit, C., Jentsch, T.J., 1999. KCNQ4, a novel potassium channel expressed in sensory outer hair cells, is mutated in dominant deafness. *Cell*, 96, 437-446.

- Kubulus, D., Roesken, F., Amon, M., Rucker, M., Bauer, M., Bauer, I., Menger, M.D., 2004. Mechanism of the delay phenomenon: tissue protection is mediated by heme oxygenase-1. *Am. J. Physiol Heart Circ. Physiol*, 287, H2332-H2340.
- Kuokkanen, J., Aarnisalo, A.A., Ylikoski, J., 2000. Efficiency of hyperbaric oxygen therapy in experimental acute acoustic trauma from firearms. *Acta Otolaryngol. Suppl*, 543, 132-134.
- Kuramoto, T., Maihara, T., Masu, M., Nakanishi, S., Serikawa, T., 1994. Gene mapping of NMDA receptors and metabotropic glutamate receptors in the rat (*Rattus norvegicus*). *Genomics*, 19, 358-361.
- Labbe, D., Teranishi, M.A., Hess, A., Bloch, W., Michel, O., 2005. Activation of caspase-3 is associated with oxidative stress in the hydroptic guinea pig cochlea. *Hear. Res.*, 202, 21-27.
- Ladrech, S., Guitton, M., Saido, T., Lenoir, M., 2004. Calpain activity in the amikacin-damaged rat cochlea. *J. Comp Neurol.*, 477, 149-160.
- Ladrech, S., Lenoir, M., Ruel, J., Puel, J.L., 2003. Microtubule-associated protein 2 (MAP2) expression during synaptic plasticity in the guinea pig cochlea. *Hear. Res.*, 186, 85-90.
- Lamm, K., Arnold, W., 1996. Noise-induced cochlear hypoxia is intensity dependent, correlates with hearing loss and precedes reduction of cochlear blood flow. *Audiol. Neurootol.*, 1, 148-160.
- Lamp, K., Humeny, A., Nikolic, Z., Imai, K., Adamski, J., Schiebel, K., Becker, C.M., 2001. The murine GABA(B) receptor 1: cDNA cloning, tissue distribution, structure of the *Gabbr1* gene, and mapping to chromosome 17. *Cytogenet. Cell Genet.*, 92, 116-121.
- Laurens, M., Defamie, V., Scozzari, G., Schmid-Alliana, A., Gugenheim, J., Crenesse, D., 2005. Hypoxia-reoxygenation-induced chemokine transcription is not prevented by preconditioning or intermittent hypoxia, in mice hepatocytes. *Transpl. Int.*, 18, 444-452.
- Lee, J.H., Cribbs, L.L., Perez-Reyes, E., 1999. Cloning of a novel four repeat protein related to voltage-gated sodium and calcium channels. *FEBS Lett.*, 445, 231-236.
- Lee, Y.W., Ozeki, M., Juhn, S.K., Lin, J., 2004. Expression of platelet-derived growth factor in the developing cochlea of rats. *Acta Otolaryngol.*, 124, 558-562.
- Lefebvre, P.P., Malgrange, B., Lallemand, F., Staecker, H., Moonen, G., Van De Water, T.R., 2002. Mechanisms of cell death in the injured auditory system: otoprotective strategies. *Audiol. Neurootol.*, 7, 165-170.
- Lefebvre, P.P., Van De Water, T.R., Staecker, H., Weber, T., Galinovic-Schwartz, V., Moonen, G., Ruben, R.J., 1992. Nerve growth factor stimulates neurite regeneration but not survival of adult auditory neurons in vitro. *Acta Otolaryngol.*, 112, 288-293.
- Lehnhardt, E., 1994. Sudden deafness--a form of acute hearing loss. *Fortschr. Med.*, 112, 367-371.
- Lehninger, A.L., Nelson, D.L., Cox, M.M., 1994. *Prinzipien der Biochemie*. Tschesche, H. (Hrsg) Spektrum Lehrbuch. Studienausgabe. Spektrum Akademischer Verlag,
- Lenarz, T., 1992. Epidemiologie. In: Feldmann, H. (Hrsg) *Tinnitus*. Thieme, Stuttgart, S. 71-75.
- Levi, A., Ferri, G.L., Watson, E., Possenti, R., Salton, S.R., 2004. Processing, distribution, and function of VGF, a neuronal and endocrine peptide precursor. *Cell Mol. Neurobiol.*, 24, 517-533.



- Lewis, R.S., Hudspeth, A.J., 1983. Voltage- and ion-dependent conductances in solitary vertebrate hair cells. *Nature*, 304, 538-541.
- Li, H., Wang, J., 1999. Study on c-myc mRNA and its product expression during hair cell regeneration in the chick basilar papilla. *Lin. Chuang. Er. Bi Yan. Hou Ke. Za Zhi.*, 13, 173-175.
- Li, X., Sun, J., Yu, N., Sun, Y., Tan, Z., Jiang, S., Li, N., Zhou, C., 2001. Glutamate induced modulation of free Ca<sup>2+</sup> in isolated inner hair cells of the guinea pig cochlea. *Hear. Res.*, 161, 29-34.
- Li, X., Sun, J., Yu, N., Sun, Y., Tan, Z., Jiang, S., Li, N., Zhou, C., 2002. D-AP5 blocks the increase of intracellular free Ca<sup>2+</sup> induced by glutamate in isolated cochlear IHCs. *Chin Med. J. (Engl. )*, 115, 89-93.
- Li, Y., Xiang, J., Duan, C., 2005. Insulin-like growth factor-binding protein-3 plays an important role in regulating pharyngeal skeleton and inner ear formation and differentiation. *J. Biol. Chem.*, 280, 3613-3620.
- Liberatori, S., Canas, B., Tani, C., Bini, L., Buonocore, G., Godovac-Zimmermann, J., Mishra, O.P., Delivoria-Papadopoulos, M., Bracci, R., Pallini, V., 2004. Proteomic approach to the identification of voltage-dependent anion channel protein isoforms in guinea pig brain synaptosomes. *Proteomics.*, 4, 1335-1340.
- Lin, J., Ozeki, M., Javel, E., Zhao, Z., Pan, W., Schlentz, E., Levine, S., 2003. Identification of gene expression profiles in rat ears with cDNA microarrays. *Hear. Res.*, 175, 2-13.
- Lin, X., Chen, S., Chen, P., 2000. Activation of metabotropic GABAB receptors inhibited glutamate responses in spiral ganglion neurons of mice. *Neuroreport*, 11, 957-961.
- Lindeman, J.H., Hanemaaijer, R., Mulder, A., Dijkstra, P.D., Szuhai, K., Bromme, D., Verheijen, J.H., Hogendoorn, P.C., 2004. Cathepsin K is the principal protease in giant cell tumor of bone. *Am. J Pathol.*, 165, 593-600.
- Lipton, P., 1999. Ischemic cell death in brain neurons. *Physiol Rev.*, 79, 1431-1568.
- Lipworth, B.J., 2005. Phosphodiesterase-4 inhibitors for asthma and chronic obstructive pulmonary disease. *Lancet*, 365, 167-175.
- Liu, J., Narasimhan, P., Yu, F., Chan, P.H., 2005. Neuroprotection by hypoxic preconditioning involves oxidative stress-mediated expression of hypoxia-inducible factor and erythropoietin. *Stroke*, 36, 1264-1269.
- Liu, X., Mohamed, J.A., Ruan, R., 2004. Analysis of differential gene expression in the cochlea and kidney of mouse by cDNA microarrays. *Hear. Res.*, 197, 35-43.
- Liu, X.Z., Ouyang, X.M., Xia, X.J., Zheng, J., Pandya, A., Li, F., Du, L.L., Welch, K.O., Petit, C., Smith, R.J., Webb, B.T., Yan, D., Arnos, K.S., Corey, D., Dallos, P., Nance, W.E., Chen, Z.Y., 2003. Prestin, a cochlear motor protein, is defective in non-syndromic hearing loss. *Hum. Mol. Genet.*, 12, 1155-1162.
- Lomax, M.I., Huang, L., Cho, Y., Gong, T.L., Altschuler, R.A., 2000. Differential display and gene arrays to examine auditory plasticity. *Hear. Res.*, 147, 293-302.
- Lopez-Gonzalez, M.A., Lucas, M., Delgado, F., Diaz, P., 1998. The production of free oxygen radicals and nitric oxide in the rat cochlea. *Neurochem. Int.*, 33, 55-59.

- Lowenheim, H., Kil, J., Gultig, K., Zenner, H.P., 1999. Determination of hair cell degeneration and hair cell death in neomycin treated cultures of the neonatal rat cochlea. *Hear. Res.*, 128, 16-26.
- Lu, S., Gu, X., Hoestje, S., Epner, D.E., 2002. Identification of an additional hypoxia responsive element in the glyceraldehyde-3-phosphate dehydrogenase gene promoter. *Biochim. Biophys. Acta*, 1574, 152-156.
- Ludwig, J., Oliver, D., Frank, G., Klocker, N., Gummer, A.W., Fakler, B., 2001. Reciprocal electromechanical properties of rat prestin: the motor molecule from rat outer hair cells. *Proc. Natl. Acad. Sci. U. S. A.*, 98, 4178-4183.
- Lyon, M.J., Payman, R.N., 2000. Comparison of the vascular innervation of the rat cochlea and vestibular system. *Hear. Res.*, 141, 189-198.
- Malgrange, B., Rigo, J.M., Coucke, P., Thiry, M., Hans, G., Nguyen, L., Van De Water, T.R., Moonen, G., Lefebvre, P.P., 2002. Identification of factors that maintain mammalian outer hair cells in adult organ of Corti explants. *Hear. Res.*, 170, 48-58.
- Malgrange, B., Rogister, B., Lefebvre, P.P., Mazy-Servais, C., Welcher, A.A., Bonnet, C., Hsu, R.Y., Rigo, J.M., Van De Water, T.R., Moonen, G., 1998. Expression of growth factors and their receptors in the postnatal rat cochlea. *Neurochem. Res.*, 23, 1133-1138.
- Marret, S., Gressens, P., Gadisseux, J.F., Evrard, P., 1995. Prevention by magnesium of excitotoxic neuronal death in the developing brain: an animal model for clinical intervention studies. *Dev. Med. Child Neurol.*, 37, 473-484.
- Matsubara, A., Laake, J.H., Davanger, S., Usami, S., Ottersen, O.P., 1996. Organization of AMPA receptor subunits at a glutamate synapse: a quantitative immunogold analysis of hair cell synapses in the rat organ of Corti. *J. Neurosci.*, 16, 4457-4467.
- Matsunobu, T., Ogita, K., Schacht, J., 2004. Modulation of activator protein 1/DNA binding activity by acoustic overstimulation in the guinea-pig cochlea. *Neuroscience*, 123, 1037-1043.
- Matsushima, Y., Shinkai, Y., Kobayashi, Y., Sakamoto, M., Kunieda, T., Tachibana, M., 2002. A mouse model of Waardenburg syndrome type 4 with a new spontaneous mutation of the endothelin-B receptor gene. *Mamm. Genome*, 13, 30-35.
- Maubaret, C., Delettre, C., Sola, S., Hamel, C.P., 2002. Identification of preferentially expressed mRNAs in retina and cochlea. *DNA Cell Biol.*, 21, 781-791.
- Maulik, S.K., Kumari, R., Maulik, M., Manchanda, S.C., Gupta, S.K., 2001. Captopril and its time of administration in myocardial ischaemic-reperfusion injury. *Pharmacol. Res.*, 44, 123-128.
- Mayer, M.L., Westbrook, G.L., Guthrie, P.B., 1984. Voltage-dependent block by Mg<sup>2+</sup> of NMDA responses in spinal cord neurones. *Nature*, 309, 261-263.
- Maytin, E.V., Habener, J.F., 1998. Transcription factors C/EBP alpha, C/EBP beta, and CHOP (Gadd153) expressed during the differentiation program of keratinocytes in vitro and in vivo. *J. Invest Dermatol.*, 110, 238-246.
- Mazure, N.M., Brahimi-Horn, M.C., Berta, M.A., Benizri, E., Bilton, R.L., Dayan, F., Ginouves, A., Berra, E., Pouyssegur, J., 2004. HIF-1: master and commander of the hypoxic world. A pharmacological approach to its regulation by siRNAs. *Biochem. Pharmacol.*, 68, 971-980.

- Mazurek, B., Haupt, H., Gross, J., 2006. Pharmacotherapy in acute tinnitus. The special role of hypoxia and ischemia in the pathogenesis of tinnitus. *HNO*, 54, 9-15.
- McKinnon, S.J., Lehman, D.M., Tahzib, N.G., Ransom, N.L., Reitsamer, H.A., Liston, P., LaCasse, E., Li, Q., Korneluk, R.G., Hauswirth, W.W., 2002. Baculoviral IAP repeat-containing-4 protects optic nerve axons in a rat glaucoma model. *Mol. Ther.*, 5, 780-787.
- McLennan, N.F., Brennan, P.M., McNeill, A., Davies, I., Fotheringham, A., Rennison, K.A., Ritchie, D., Brannan, F., Head, M.W., Ironside, J.W., Williams, A., Bell, J.E., 2004. Prion protein accumulation and neuroprotection in hypoxic brain damage. *Am. J. Pathol.*, 165, 227-235.
- Meldrum, B., Evans, M., Griffiths, T., Simon, R., 1985. Ischaemic brain damage: the role of excitatory activity and of calcium entry. *Br. J. Anaesth.*, 57, 44-46.
- Melman, Y.F., Um, S.Y., Krumerman, A., Kagan, A., McDonald, T.V., 2004. KCNE1 binds to the KCNQ1 pore to regulate potassium channel activity. *Neuron*, 42, 927-937.
- Meyer, J., Furness, D.N., Zenner, H.P., Hackney, C.M., Gummer, A.W., 1998. Evidence for opening of hair-cell transducer channels after tip-link loss. *J. Neurosci.*, 18, 6748-6756.
- Meyer, J., Gummer, A.W., 2000. Physiological effects of destruction of the tip links of cochlear hair cells. Significance for noise-induced hearing loss. *HNO*, 48, 383-389.
- Meyer, T.E., Habener, J.F., 1992. Cyclic AMP response element binding protein CREB and modulator protein CREM are products of distinct genes. *Nucleic Acids Res.*, 20, 6106-
- Middlemas, D.S., Lindberg, R.A., Hunter, T., 1991. trkB, a neural receptor protein-tyrosine kinase: evidence for a full-length and two truncated receptors. *Mol. Cell Biol.*, 11, 143-153.
- Minet, E., Ernest, I., Michel, G., Roland, I., Remacle, J., Raes, M., Michiels, C., 1999. HIF1A gene transcription is dependent on a core promoter sequence encompassing activating and inhibiting sequences located upstream from the transcription initiation site and cis elements located within the 5'UTR. *Biochem. Biophys. Res. Commun.*, 261, 534-540.
- Missiaen, L., Robberecht, W., Van Den, B.L., Callewaert, G., Parys, J.B., Wuytack, F., Raeymaekers, L., Nilius, B., Eggermont, J., De Smedt, H., 2000. Abnormal intracellular  $Ca^{2+}$  homeostasis and disease. *Cell Calcium*, 28, 1-21.
- Missler, M., Sudhof, T.C., 1998. Neurexins: three genes and 1001 products. *Trends Genet.*, 14, 20-26.
- Miyake, A., Itoh, N., 1996. Rat fibroblast growth factor receptor-4 mRNA in the brain is preferentially expressed in cholinergic neurons in the medial habenular nucleus. *Neurosci. Lett.*, 203, 101-104.
- Moos, T., Morgan, E.H., 2002. A morphological study of the developmentally regulated transport of iron into the brain. *Dev. Neurosci.*, 24, 99-105.
- Moritz, W., Meier, F., Stroka, D.M., Giuliani, M., Kugelmeier, P., Nett, P.C., Lehmann, R., Candinas, D., Gassmann, M., Weber, M., 2002. Apoptosis in hypoxic human pancreatic islets correlates with HIF-1 $\alpha$  expression. *FASEB J.*, 16, 745-747.
- Morris, K.A., Snir, E., Pompeia, C., Koroleva, I.V., Kachar, B., Hayashizaki, Y., Carninci, P., Soares, M.B., Beisel, K.W., 2005. Differential expression of genes within the cochlea as defined by a custom mouse inner ear microarray. *J. Assoc. Res. Otolaryngol.*, 6, 75-89.

- Moseley, A.E., Lieske, S.P., Wetzell, R.K., James, P.F., He, S., Shelly, D.A., Paul, R.J., Boivin, G.P., Witte, D.P., Ramirez, J.M., Sweadner, K.J., Lingrel, J.B., 2003. The Na,K-ATPase alpha 2 isoform is expressed in neurons, and its absence disrupts neuronal activity in newborn mice. *J. Biol. Chem.*, 278, 5317-5324.
- Moulder, K.L., Cormier, R.J., Shute, A.A., Zorumski, C.F., Mennerick, S., 2003. Homeostatic effects of depolarization on Ca<sup>2+</sup> influx, synaptic signaling, and survival. *J. Neurosci.*, 23, 1825-1831.
- Mowbray, C., Hammerschmidt, M., Whitfield, T.T., 2001. Expression of BMP signalling pathway members in the developing zebrafish inner ear and lateral line. *Mech. Dev.*, 108, 179-184.
- Mrak, R.E., Griffin, W.S., 2004. Trisomy 21 and the brain. *J. Neuropathol. Exp. Neurol.*, 63, 679-685.
- Mrsulja, B.B., Mrsulja, B.J., Cvejic, V., Djuricic, B.M., Rogac, L., 1978. Alterations of putative neurotransmitters and enzymes during ischemia in gerbil cerebral cortex. *J. Neural Transm. Suppl.*, 23-30.
- Muessel, M.J., Klein, R.M., Wilson, A.M., Berman, N.E., 2002. Ablation of the chemokine monocyte chemoattractant protein-1 delays retrograde neuronal degeneration, attenuates microglial activation, and alters expression of cell death molecules. *Brain Res. Mol. Brain Res.*, 103, 12-27.
- Muir, K.W., 1998. New experimental and clinical data on the efficacy of pharmacological magnesium infusions in cerebral infarcts. *Magnes. Res.*, 11, 43-56.
- Muir, K.W., 2001. Magnesium for neuroprotection in ischaemic stroke: rationale for use and evidence of effectiveness. *CNS. Drugs*, 15, 921-930.
- Muir, K.W., Watt, A., Baxter, G., Grosset, D.G., Lees, K.R., 2000. Randomized trial of graded compression stockings for prevention of deep-vein thrombosis after acute stroke. *QJM.*, 93, 359-364.
- Munoz, D.J., Kendrick, I.S., Rassam, M., Thorne, P.R., 2001. Vesicular storage of adenosine triphosphate in the guinea-pig cochlear lateral wall and concentrations of ATP in the endolymph during sound exposure and hypoxia. *Acta Otolaryngol.*, 121, 10-15.
- Nagy, I., Bodmer, M., Brors, D., Bodmer, D., 2004. Early gene expression in the organ of Corti exposed to gentamicin. *Hear. Res.*, 195, 1-8.
- Nakas-Icindic, E., Zaciragic, A., Hadzovic, A., Avdagic, N., 2004. Endothelin in health and disease. *Bosn. J. Basic Med. Sci.*, 4, 31-34.
- Nakashima, T., Naganawa, S., Sone, M., Tominaga, M., Hayashi, H., Yamamoto, H., Liu, X., Nuttall, A.L., 2003. Disorders of cochlear blood flow. *Brain Res. Brain Res. Rev.*, 43, 17-28.
- Nakazawa, K., Spicer, S.S., Schulte, B.A., 1995. Postnatal expression of the facilitated glucose transporter, GLUT 5, in gerbil outer hair cells. *Hear. Res.*, 82, 93-99.
- Narkio-Makela, M., Teppo, A.M., Meri, S., 2000. Complement C3 cleavage and cytokines interleukin-1beta and tumor necrosis factor-alpha in otitis media with effusion. *Laryngoscope*, 110, 1745-1749.
- Naumann, H.H., Helms, J., Herberhold, C., Kastenbauer, E., 1994. *Oto-Rhinolaryngologie in Klinik und Praxis. Band 1 Ohr.* Thieme, Stuttgart.
- Nelson, E.G., Hinojosa, R., 2006. Presbycusis: a human temporal bone study of individuals with downward sloping audiometric patterns of hearing loss and review of the literature. *Laryngoscope*, 116, 1-12.

- Nicolas, M., Dememes, D., Martin, A., Kupersmidt, S., Barhanin, J., 2001. KCNQ1/KCNE1 potassium channels in mammalian vestibular dark cells. *Hear. Res.*, 153, 132-145.
- Nicotera, T.M., Hu, B.H., Henderson, D., 2003. The caspase pathway in noise-induced apoptosis of the chinchilla cochlea. *J. Assoc. Res. Otolaryngol.*, 4, 466-477.
- Nieber, K., 1999. Hypoxia and neuronal function under in vitro conditions. *Pharmacol. Ther.*, 82, 71-86.
- Ninkina, N.N., Mertsalov, I.B., Kulikova, D.A., Alimova-Kost, M.V., Simonova, O.B., Korochkin, L.I., Kiselev, S.L., Buchman, V.L., 2001. Cerd4, third member of the d4 gene family: expression and organization of genomic locus. *Mamm. Genome*, 12, 862-866.
- Nishimura, T., Sakudo, A., Nakamura, I., Lee, D.C., Taniuchi, Y., Saeki, K., Matsumoto, Y., Ogawa, M., Sakaguchi, S., Itoharu, S., Onodera, T., 2004. Cellular prion protein regulates intracellular hydrogen peroxide level and prevents copper-induced apoptosis. *Biochem. Biophys. Res. Commun.*, 323, 218-222.
- Nordang, L., Cestreicher, E., Arnold, W., Anniko, M., 2000. Glutamate is the afferent neurotransmitter in the human cochlea. *Acta Otolaryngol.*, 120, 359-362.
- Nowak, L., Bregestovski, P., Ascher, P., Herbet, A., Prochiantz, A., 1984. Magnesium gates glutamate-activated channels in mouse central neurones. *Nature*, 307, 462-465.
- Oestreicher, E., Wolfgang, A., Felix, D., 2002. Neurotransmission of the cochlear inner hair cell synapse--implications for inner ear therapy. *Adv. Otorhinolaryngol.*, 59, 131-139.
- Ohuchi, H., Yasue, A., Ono, K., Sasaoka, S., Tomonari, S., Takagi, A., Itakura, M., Moriyama, K., Noji, S., Nohno, T., 2005. Identification of cis-element regulating expression of the mouse *Fgf10* gene during inner ear development. *Dev. Dyn.*, 233, 177-187.
- Okada, M., Hatakeyama, T., Itoh, H., Tokuta, N., Tokumitsu, H., Kobayashi, R., 2004. S100A1 is a novel molecular chaperone and a member of the Hsp70/Hsp90 multichaperone complex. *J. Biol. Chem.*, 279, 4221-4233.
- Okano, Y., Iwai, H., 1975. Effect of the high potassium medium on cultured cochlear epithelial cells. *Arch. Otorhinolaryngol.*, 209, 121-125.
- Oliver, D., Fakler, B., 1999. Expression density and functional characteristics of the outer hair cell motor protein are regulated during postnatal development in rat. *J. Physiol.*, 519 Pt 3, 791-800.
- Oliver, D., He, D.Z., Klocker, N., Ludwig, J., Schulte, U., Waldegger, S., Ruppertsberg, J.P., Dallos, P., Fakler, B., 2001. Intracellular anions as the voltage sensor of prestin, the outer hair cell motor protein. *Science*, 292, 2340-2343.
- Olney, J.W., Labruyere, J., Price, M.T., 1989. Pathological changes induced in cerebrocortical neurons by phencyclidine and related drugs. *Science*, 244, 1360-1362.
- Orrenius, S., Zhivotovsky, B., Nicotera, P., 2003. Regulation of cell death: the calcium-apoptosis link. *Nat. Rev. Mol. Cell Biol.*, 4, 552-565.
- Oshima, T., Ikeda, K., Furukawa, M., Takasaka, T., 1997. Expression of voltage-dependent chloride channels in the rat cochlea. *Hear. Res.*, 103, 63-68.

- Ottersen, O.P., Takumi, Y., Matsubara, A., Landsend, A.S., Laake, J.H., Usami, S., 1998. Molecular organization of a type of peripheral glutamate synapse: the afferent synapses of hair cells in the inner ear. *Prog. Neurobiol.*, 54, 127-148.
- Paschen, W., 2003. Shutdown of translation: lethal or protective? Unfolded protein response versus apoptosis. *J. Cereb. Blood Flow Metab.*, 23, 773-779.
- Pawankar, R., Tomiyama, S., Jinnouchi, K., Ikezono, T., Nonaka, M., Yagi, T., 1998. Intercellular adhesion molecule-1 expression in the inner ear of rats following secondary immune reaction in the endolymphatic sac. *Acta Otolaryngol. Suppl.*, 539, 5-14.
- Pennefather, J.N., Lecci, A., Candenas, M.L., Patak, E., Pinto, F.M., Maggi, C.A., 2004. Tachykinins and tachykinin receptors: a growing family. *Life Sci.*, 74, 1445-1463.
- Pestka, S., Krause, C.D., Walter, M.R., 2004. Interferons, interferon-like cytokines, and their receptors. *Immunol. Rev.*, 202, 8-32.
- Peters, T.A., Kuijpers, W., Curfs, J.H., 2001. Occurrence of NaK-ATPase isoforms during rat inner ear development and functional implications. *Eur. Arch Otorhinolaryngol.*, 258, 67-73.
- Petito, C.K., Chung, M.C., Verkhovsky, L.M., Cooper, A.J., 1992. Brain glutamine synthetase increases following cerebral ischemia in the rat. *Brain Res.*, 569, 275-280.
- Petito, C.K., Chung, M.H., Morgello, S., Felix, J.C., Lesser, M.L., 1989. Postischemic increases in astrocyte glutamine synthetase and intermediate filament proteins. In: Ginsberg, M.D., Dietrich, W.D. (eds) *Cerebrovascular diseases*. Raven Press, New York, pp. 159-164.
- Phansuwan-Pujito, P., Saleema, L., Mukda, S., Tongjaroenbuangam, W., Jutapakdeegul, N., Casalotti, S.O., Forge, A., Dodson, H., Govitrapong, P., 2003. The opioid receptors in inner ear of different stages of postnatal rats. *Hear. Res.*, 184, 1-10.
- Phippard, D., Lu, L., Lee, D., Saunders, J.C., Crenshaw, E.B., III, 1999. Targeted mutagenesis of the POU-domain gene *Brn4/Pou3f4* causes developmental defects in the inner ear. *J Neurosci.*, 19, 5980-5989.
- Pickles, J.O., 2004. Mutation in mitochondrial DNA as a cause of presbycusis. *Audiol. Neurootol.*, 9, 23-33.
- Piiper, A., Zeuzem, S., 2004. Receptor tyrosine kinases are signaling intermediates of G protein-coupled receptors. *Curr. Pharm. Des.*, 10, 3539-3545.
- Pilgramm, M., Rychlik, R., Lebisch, H., Siedentop, H., Goebel, G., Kirchhoff, D., 1999. Tinnitus in the Federal Republic of Germany: A representative epidemiological study. In: Hazell, J. (ed) *Proceedings of the Sixth International Tinnitus Seminar*. Cambridge, UK, pp 64-67.
- Pirvola, U., Ylikoski, J., Trokovic, R., Hebert, J.M., McConnell, S.K., Partanen, J., 2002. FGFR1 is required for the development of the auditory sensory epithelium. *Neuron*, 35, 671-680.
- Pitts, B.J., 1979. Stoichiometry of sodium-calcium exchange in cardiac sarcolemmal vesicles. Coupling to the sodium pump. *J. Biol. Chem.*, 254, 6232-6235.
- Poissant, S.F., Megerian, C.A., Hume, D., 2003. Cochlear implantation in a patient with neurofibromatosis type 1 and profound hearing loss: evidence to support a cochlear site of lesion. *Otol Neurotol.*, 24, 751-756.

- Popa, R., Anniko, M., Arnold, W., Oestreicher, E., 2000. Alpha and beta subunits of acetylcholine receptors in the human inner ear. *Acta Otolaryngol.*, 120, 484-489.
- Previati, M., Lanzoni, I., Corbacella, E., Magosso, S., Giuffre, S., Francioso, F., Arcelli, D., Volinia, S., Barbieri, A., Hatzopoulos, S., Capitani, S., Martini, A., 2004. RNA expression induced by cisplatin in an organ of Corti-derived immortalized cell line. *Hear. Res.*, 196, 8-18.
- Preyer, S., Renz, S., Hemmert, W., Zenner, H.P., Gummer, A.W., 1996. Receptor potential of outer hair cells isolated from base to apex of the adult guinea-pig cochlea: Implications for cochlear tuning mechanisms. *Auditory Neuroscience*, 2, 145-157.
- Proks, P., Girard, C., Haider, S., Gloyn, A.L., Hattersley, A.T., Sansom, M.S., Ashcroft, F.M., 2005. A gating mutation at the internal mouth of the Kir6.2 pore is associated with DEND syndrome. *EMBO Rep.*, 6, 470-475.
- Puel, J.L., Pujol, R., Tribillac, F., Ladrech, S., Eybalin, M., 1994. Excitatory amino acid antagonists protect cochlear auditory neurons from excitotoxicity. *J. Comp Neurol.*, 341, 241-256.
- Puel, J.L., Ruel, J., Gervais, d.C., Pujol, R., 1998. Excitotoxicity and repair of cochlear synapses after noise-trauma induced hearing loss. *Neuroreport*, 9, 2109-2114.
- Puel, J.L., Ruel, J., Guitton, M., Pujol, R., 2002a. The inner hair cell afferent/efferent synapses revisited: a basis for new therapeutic strategies. *Adv. Otorhinolaryngol.*, 59, 124-130.
- Puel, J.L., Ruel, J., Guitton, M., Wang, J., Pujol, R., 2002b. The inner hair cell synaptic complex: physiology, pharmacology and new therapeutic strategies. *Audiol. Neurootol.*, 7, 49-54.
- Pujol, R., Puel, J.L., Gervais, d.C., Eybalin, M., 1993. Pathophysiology of the glutamatergic synapses in the cochlea. *Acta Otolaryngol.*, 113, 330-334.
- Pujol, R., Rebillard, G., Puel, J.L., Lenoir, M., Eybalin, M., Recasens, M., 1990. Glutamate neurotoxicity in the cochlea: a possible consequence of ischaemic or anoxic conditions occurring in ageing. *Acta Otolaryngol. Suppl.*, 476, 32-36.
- Puschner, B., Schacht, J., 1997a. Calmodulin-dependent protein kinases mediate calcium-induced slow motility of mammalian outer hair cells. *Hear. Res.*, 110, 251-258.
- Puschner, B., Schacht, J., 1997b. Energy metabolism in cochlear outer hair cells in vitro. *Hear. Res.*, 114, 102-106.
- Quarles, R.H., 2002. Myelin sheaths: glycoproteins involved in their formation, maintenance and degeneration. *Cell Mol. Life Sci.*, 59, 1851-1871.
- Quilty, M.C., Gai, W.P., Pountney, D.L., West, A.K., Vickers, J.C., 2003. Localization of alpha-, beta-, and gamma-synuclein during neuronal development and alterations associated with the neuronal response to axonal trauma. *Exp. Neurol.*, 182, 195-207.
- Rajakumar, A., Conrad, K.P., 2000. Expression, ontogeny, and regulation of hypoxia-inducible transcription factors in the human placenta. *Biol. Reprod.*, 63, 559-569.
- Ramkumar, V., Whitworth, C.A., Pingle, S.C., Hughes, L.F., Rybak, L.P., 2004. Noise induces A1 adenosine receptor expression in the chinchilla cochlea. *Hear. Res.*, 188, 47-56.

- Raphael, Y., Altschuler, R.A., 2003. Structure and innervation of the cochlea. *Brain Res. Bull.*, 60, 397-422.
- Ratan, R.R., 2004. cAMP response element binding protein family transcription factors: the Holy Grail of neurological therapeutics? *Ann. Neurol.*, 56, 607-608.
- Rauch, S.D., 2000. Transferrin microheterogeneity in human perilymph. *Laryngoscope*, 110, 545-552.
- Ravishankar, S., Ashraf, Q.M., Fritz, K., Mishra, O.P., Delivoria-Papadopoulos, M., 2001. Expression of Bax and Bcl-2 proteins during hypoxia in cerebral cortical neuronal nuclei of newborn piglets: effect of administration of magnesium sulfate. *Brain Res*, 901, 23-29.
- Read, A.P., Newton, V.E., 1997. Waardenburg syndrome. *J. Med. Genet.*, 34, 656-665.
- Resendes, B.L., Williamson, R.E., Morton, C.C., 2001. At the speed of sound: gene discovery in the auditory system. *Am. J Hum. Genet.*, 69, 923-935.
- Reuss, B., Bohlen und, H.O., 2003. Fibroblast growth factors and their receptors in the central nervous system. *Cell Tissue Res.*, 313, 139-157.
- Ricort, J.M., Binoux, M., 2002. Insulin-like growth factor-binding protein-3 activates a phosphotyrosine phosphatase. Effects on the insulin-like growth factor signaling pathway. *J. Biol. Chem.*, 277, 19448-19454.
- Rieder, A., 2003. Sozialmedizinische Aspekte des Alterns von Männern und Frauen. In: Rosenmeyer, L., Böhmer, F. (eds) *Hoffnung Alter. Forschung, Theorie, Praxis*. WUV Universitätsverlag, Wien, pp. 79-93.
- Rio, C., Dikkes, P., Liberman, M.C., Corfas, G., 2002. Glial fibrillary acidic protein expression and promoter activity in the inner ear of developing and adult mice. *J Comp Neurol.*, 442, 156-162.
- Rivolta, M.N., Halsall, A., Johnson, C.M., Tones, M.A., Holley, M.C., 2002. Transcript profiling of functionally related groups of genes during conditional differentiation of a mammalian cochlear hair cell line. *Genome Res*, 12, 1091-1099.
- Rosenberger, J., Petrovics, G., Buzas, B., 2001. Oxidative stress induces proorphanin FQ and proenkephalin gene expression in astrocytes through p38- and ERK-MAP kinases and NF-kappaB. *J. Neurochem.*, 79, 35-44.
- Roth, K.A., D'Sa, C., 2001. Apoptosis and brain development. *Ment. Retard. Dev. Disabil. Res Rev.*, 7, 261-266.
- Rothman, S.M., Olney, J.W., 1986. Glutamate and the pathophysiology of hypoxic--ischemic brain damage. *Ann. Neurol.*, 19, 105-111.
- Rusch, A., Ng, L., Goodyear, R., Oliver, D., Lisoukov, I., Vennstrom, B., Richardson, G., Kelley, M.W., Forrest, D., 2001. Retardation of cochlear maturation and impaired hair cell function caused by deletion of all known thyroid hormone receptors. *J Neurosci.*, 21, 9792-9800.
- Russo, E., Smith, C.W., Friedman, E.M., Smith, E.O., Kaplan, S.L., 2004. Cell adhesion molecules and cytokines in middle ear effusions in children with or without recent acute otitis media. *Otolaryngol. Head Neck Surg.*, 130, 242-248.
- Ryan, A., Dallos, P., 1975. Effect of absence of cochlear outer hair cells on behavioural auditory threshold. *Nature*, 253, 44-46.



- Saffer, L.D., Gu, R., Corwin, J.T., 1996. An RT-PCR analysis of mRNA for growth factor receptors in damaged and control sensory epithelia of rat utricles. *Hear. Res.*, 94, 14-23.
- Safieddine, S., Ly, C.D., Wang, Y.X., Wang, C.Y., Kachar, B., Petralia, R.S., Wenthold, R.J., 2002. Ocsyn, a novel syntaxin-interacting protein enriched in the subapical region of inner hair cells. *Mol. Cell Neurosci.*, 20, 343-353.
- Safieddine, S., Wenthold, R.J., 1999. SNARE complex at the ribbon synapses of cochlear hair cells: analysis of synaptic vesicle- and synaptic membrane-associated proteins. *Eur. J. Neurosci.*, 11, 803-812.
- Sahley, T.L., Nodar, R.H., Musiek, F.E., 1999. Endogenous dynorphins: possible role in peripheral tinnitus. *Int. Tinnitus. J.*, 5, 76-91.
- Sakai, M., Okuda, A., Hatayama, I., Sato, K., Nishi, S., Muramatsu, M., 1989. Structure and expression of the rat c-jun messenger RNA: tissue distribution and increase during chemical hepatocarcinogenesis. *Cancer Res.*, 49, 5633-5637.
- Salceda, S., Caro, J., 1997. Hypoxia-inducible factor 1alpha (HIF-1alpha) protein is rapidly degraded by the ubiquitin-proteasome system under normoxic conditions. Its stabilization by hypoxia depends on redox-induced changes. *J. Biol. Chem.*, 272, 22642-22647.
- Saliba, E., Henrot, A., 2001. Inflammatory mediators and neonatal brain damage. *Biol. Neonate*, 79, 224-227.
- Salton, S.R., Ferri, G.L., Hahm, S., Snyder, S.E., Wilson, A.J., Possenti, R., Levi, A., 2000. VGF: a novel role for this neuronal and neuroendocrine polypeptide in the regulation of energy balance. *Front Neuroendocrinol.*, 21, 199-219.
- Sameshima, H., Ikenoue, T., 2001. Long-term magnesium sulfate treatment as protection against hypoxic-ischemic brain injury in seven-day-old rats. *Am. J. Obstet. Gynecol.*, 184, 185-190.
- Saner, K.J., Suzuki, T., Sasano, H., Pizzey, J., Ho, C., Strauss, J.F., III, Carr, B.R., Rainey, W.E., 2005. Steroid sulfotransferase 2A1 gene transcription is regulated by steroidogenic factor 1 and GATA-6 in the human adrenal. *Mol. Endocrinol.*, 19, 184-197.
- Satoh, H., Firestein, G.S., Billings, P.B., Harris, J.P., Keithley, E.M., 2002. Tumor necrosis factor-alpha, an initiator, and etanercept, an inhibitor of cochlear inflammation. *Laryngoscope*, 112, 1627-1634.
- Satoh, H., Firestein, G.S., Billings, P.B., Harris, J.P., Keithley, E.M., 2003. Proinflammatory cytokine expression in the endolymphatic sac during inner ear inflammation. *J. Assoc. Res. Otolaryngol.*, 4, 139-147.
- Scheibe, F., Haupt, H., Ising, H., 2000. Preventive effect of magnesium supplement on noise-induced hearing loss in the guinea pig. *Eur. Arch. Otorhinolaryngol.*, 257, 10-16.
- Scheibe, F., Haupt, H., Ludwig, C., 1992. Intensity-dependent changes in oxygenation of cochlear perilymph during acoustic exposure. *Hear. Res.*, 63, 19-25.
- Scheibe, F., Haupt, H., Ludwig, C., 1993. Intensity-related changes in cochlear blood flow in the guinea pig during and following acoustic exposure. *Eur. Arch. Otorhinolaryngol.*, 250, 281-285.
- Scherer, E.Q., Wangemann, P., 2002. ETA receptors in the gerbil spiral modiolar artery. *Adv. Otorhinolaryngol.*, 59, 58-65.

- Scherer, E.Q., Wonneberger, K., Wangemann, P., 2001. Differential desensitization of Ca<sup>2+</sup> mobilization and vasoconstriction by ET(A) receptors in the gerbil spiral modiolar artery. *J. Membr. Biol.*, 182, 183-191.
- Schluter, O.M., Schmitz, F., Jahn, R., Rosenmund, C., Sudhof, T.C., 2004. A complete genetic analysis of neuronal Rab3 function. *J. Neurosci.*, 24, 6629-6637.
- Schmitt, H.J., Barth, G.R., Thierauf, P., 1994. Neuronal protection by intraschemic brain perfusion: an electron microscopy study in the rat. *J. Neurosurg. Anesthesiol.*, 6, 265-274.
- Schnaar, R.L., 2004. Glycolipid-mediated cell-cell recognition in inflammation and nerve regeneration. *Arch. Biochem. Biophys.*, 426, 163-172.
- Schneider, J.E., Bamforth, S.D., Farthing, C.R., Clarke, K., Neubauer, S., Bhattacharya, S., 2003. High-resolution imaging of normal anatomy, and neural and adrenal malformations in mouse embryos using magnetic resonance microscopy. *J. Anat.*, 202, 239-247.
- Schousboe, A., 1999. Pharmacologic and therapeutic aspects of the developmentally regulated expression of GABA(A) and GABA(B) receptors: cerebellar granule cells as a model system. *Neurochem. Int.*, 34, 373-377.
- Schuknecht, H.F., 1955. Presbycusis. *Laryngoscope*, 65, 402-419.
- Schuknecht, H.F., 1964. Further observations on the pathology of presbycusis. *Arch. Otolaryngol*, 80, 369-382.
- Schulte, B.A., 1993. Immunohistochemical localization of intracellular Ca-ATPase in outer hair cells, neurons and fibrocytes in the adult and developing inner ear. *Hear. Res.*, 65, 262-273.
- Schutyser, E., Struyf, S., Van Damme, J., 2003. The CC chemokine CCL20 and its receptor CCR6. *Cytokine Growth Factor Rev.*, 14, 409-426.
- Schwarz, T.L., 2004. Synaptotagmin promotes both vesicle fusion and recycling. *Proc. Natl. Acad. Sci. U. S. A.*, 101, 16401-16402.
- Semenza, G.L., 1999. Regulation of mammalian O<sub>2</sub> homeostasis by hypoxia-inducible factor 1. *Annu. Rev. Cell Dev. Biol.*, 15, 551-578.
- Semenza, G.L., 2000. HIF-1: mediator of physiological and pathophysiological responses to hypoxia. *J Appl. Physiol*, 88, 1474-1480.
- Semenza, G.L., 2001a. HIF-1 and mechanisms of hypoxia sensing. *Curr. Opin. Cell Biol.*, 13, 167-171.
- Semenza, G.L., 2001b. Hypoxia-inducible factor 1: control of oxygen homeostasis in health and disease. *Pediatr. Res.*, 49, 614-617.
- Severance, E.G., Zhang, H., Cruz, Y., Pakhlevanians, S., Hadley, S.H., Amin, J., Wecker, L., Reed, C., Cuevas, J., 2004. The alpha7 nicotinic acetylcholine receptor subunit exists in two isoforms that contribute to functional ligand-gated ion channels. *Mol. Pharmacol.*, 66, 420-429.
- Sha, S.H., Taylor, R., Forge, A., Schacht, J., 2001. Differential vulnerability of basal and apical hair cells is based on intrinsic susceptibility to free radicals. *Hear. Res.*, 155, 1-8.

- Shen, J., Harada, N., Nakazawa, H., Yamashita, T., 2005. Involvement of the nitric oxide-cyclic GMP pathway and neuronal nitric oxide synthase in ATP-induced Ca<sup>2+</sup> signalling in cochlear inner hair cells. *Eur. J. Neurosci.*, 21, 2912-2922.
- Shen, W., Willis, D., Zhang, Y., Molloy, G.R., 2003. Expression of creatine kinase isoenzyme genes during postnatal development of rat brain cerebrum: evidence for posttranscriptional regulation. *Dev. Neurosci.*, 25, 421-435.
- Sher, P.K., 1990. The effects of acidosis on chronically hypoxic neurons in culture. *Exp. Neurol.*, 107, 256-262.
- Shi, X., Nuttall, A.L., 2003. Upregulated iNOS and oxidative damage to the cochlear stria vascularis due to noise stress. *Brain Res.*, 967, 1-10.
- Shimizu, T., Abe, R., Nishihira, J., Shibaki, A., Watanabe, H., Nakayama, T., Taniguchi, M., Ishibashi, T., Shimizu, H., 2003. Impaired contact hypersensitivity in macrophage migration inhibitory factor-deficient mice. *Eur. J. Immunol.*, 33, 1478-1487.
- Shiraga, T., Hata, T., Yamazoe, Y., Ohno, Y., Iwasaki, K., 1999. N-sulphoconjugation of amines by human cytosolic hydroxysteroid sulphotransferase. *Xenobiotica*, 29, 341-347.
- Shirane, M., Harrison, R.V., 1987. The effects of hypoxia on sensory cells of the cochlea in chinchilla. *Scanning Microsc.*, 1, 1175-1183.
- Sidhu, A., Wersinger, C., Vernier, P., 2004. alpha-Synuclein regulation of the dopaminergic transporter: a possible role in the pathogenesis of Parkinson's disease. *FEBS Lett.*, 565, 1-5.
- Silver, I.A., Deas, J., Erecinska, M., 1997. Ion homeostasis in brain cells: differences in intracellular ion responses to energy limitation between cultured neurons and glial cells. *Neuroscience*, 78, 589-601.
- Simeone, T.A., Sanchez, R.M., Rho, J.M., 2004. Molecular biology and ontogeny of glutamate receptors in the mammalian central nervous system. *J. Child Neurol.*, 19, 343-360.
- Skrzycki, M., Czeczot, H., 2004. Extracellular superoxide dismutase (EC-SOD)--structure, properties and functions. *Postepy Hig. Med. Dosw. (Online.)*, 58, 301-311.
- Snyder-Keller, A., Chandra, R., Lin, Y., Mitchell, E.S., 2002. Basal EGR-1 (zif268, NGFI-A, Krox-24) expression in developing striatal patches: role of dopamine and glutamate. *Brain Res.*, 958, 297-304.
- Sobkowicz, H.M., August, B.K., Slapnick, S.M., 2002. Influence of neurotrophins on the synaptogenesis of inner hair cells in the deaf Bronx waltzer (bv) mouse organ of Corti in culture. *Int. J. Dev. Neurosci.*, 20, 537-554.
- Sobkowicz, H.M., Loftus, J.M., Slapnick, S.M., 1993. Tissue culture of the organ of Corti. *Acta Otolaryngol. Suppl.*, 502, 3-36.
- Son, M., Cloyd, C.D., Rothstein, J.D., Rajendran, B., Elliott, J.L., 2003. Aggregate formation in Cu,Zn superoxide dismutase-related proteins. *J Biol. Chem.*, 278, 14331-14336.
- Spicer, S.S., Schulte, B.A., 1998. Evidence for a medial K<sup>+</sup> recycling pathway from inner hair cells. *Hear. Res.*, 118, 1-12.

- Staecker, H., Van De Water, T.R., 1998. Factors controlling hair-cell regeneration/repair in the inner ear. *Curr. Opin. Neurobiol.*, 8, 480-487.
- Staecker, H., Zheng, Q.Y., Van De Water, T.R., 2001. Oxidative stress in aging in the C57B16/J mouse cochlea. *Acta Otolaryngol.*, 121, 666-672.
- Stankovic, K.M., Corfas, G., 2003. Real-time quantitative RT-PCR for low-abundance transcripts in the inner ear: analysis of neurotrophic factor expression. *Hear. Res.*, 185, 97-108.
- Starr, A., Michalewski, H.J., Zeng, F.G., Fujikawa-Brooks, S., Linthicum, F., Kim, C.S., Winnier, D., Keats, B., 2003. Pathology and physiology of auditory neuropathy with a novel mutation in the MPZ gene (Tyr145->Ser). *Brain*, 126, 1604-1619.
- Stefano, G.B., Fricchione, G., Goumon, Y., Esch, T., 2005. Pain, immunity, opiate and opioid compounds and health. *Med. Sci. Monit.*, 11, MS47-MS53.
- Stover, T., 2003. Gene expression, gene regulation and gene transfer in the inner ear. *Laryngo-Rhino-Otologie*, 82, 40-41.
- Stover, T., Wissel, K., Averbek, T., Lenarz, T., Altschuler, R.A., 2004. Characterisation of the gene expression profiles in the inner ear and the colliculus inferior of normal and deafened rats by gene-array-technology. *Laryngorhinootologie*, 83, 597-605.
- Stracher, A., 1999. Calpain inhibitors as therapeutic agents in nerve and muscle degeneration. *Ann. N. Y. Acad. Sci.*, 884, 52-59.
- Stroka, D.M., Burkhardt, T., Desbaillets, I., Wenger, R.H., Neil, D.A., Bauer, C., Gassmann, M., Candinas, D., 2001. HIF-1 is expressed in normoxic tissue and displays an organ-specific regulation under systemic hypoxia. *FASEB J.*, 15, 2445-2453.
- Suarez, I., Bodega, G., Fernandez, B., 2002. Glutamine synthetase in brain: effect of ammonia. *Neurochem. Int.*, 41, 123-142.
- Surguchov, A., Palazzo, R.E., Surgucheva, I., 2001. Gamma synuclein: subcellular localization in neuronal and non-neuronal cells and effect on signal transduction. *Cell Motil. Cytoskeleton*, 49, 218-228.
- Svaren, J., Ehrig, T., Abdulkadir, S.A., Ehrenguber, M.U., Watson, M.A., Milbrandt, J., 2000. EGR1 target genes in prostate carcinoma cells identified by microarray analysis. *J. Biol. Chem.*, 275, 38524-38531.
- Swinnen, J.V., Joseph, D.R., Conti, M., 1989. Molecular cloning of rat homologues of the *Drosophila melanogaster dunce* cAMP phosphodiesterase: evidence for a family of genes. *Proc. Natl. Acad. Sci. U. S. A.*, 86, 5325-5329.
- Syrris, P., Carter, N.D., Patton, M.A., 1999. Novel nonsense mutation of the endothelin-B receptor gene in a family with Waardenburg-Hirschsprung disease. *Am. J. Med. Genet.*, 87, 69-71.
- Sziklai, I., Toth, T., Zimmermann, U., 2003. The effects of auditory research on clinical practice. *HNO*, 51, 456-461.
- Tabuchi, K., Ito, Z., Wada, T., Takahashi, K., Hara, A., Kusakari, J., 1999. Effect of A1 adenosine receptor agonist upon cochlear dysfunction induced by transient ischemia. *Hear. Res.*, 136, 86-90.

- Takahashi, M., Nishihira, J., Shimpo, M., Mizue, Y., Ueno, S., Mano, H., Kobayashi, E., Ikeda, U., Shimada, K., 2001. Macrophage migration inhibitory factor as a redox-sensitive cytokine in cardiac myocytes. *Cardiovasc. Res.*, 52, 438-445.
- Takumi, Y., Matsubara, A., Danbolt, N.C., Laake, J.H., Storm-Mathisen, J., Usami, S., Shinkawa, H., Ottersen, O.P., 1997. Discrete cellular and subcellular localization of glutamine synthetase and the glutamate transporter GLAST in the rat vestibular end organ. *Neuroscience*, 79, 1137-1144.
- Takumi, Y., Matsubara, A., Tsuchida, S., Ottersen, O.P., Shinkawa, H., Usami, S., 2001. Various glutathione S-transferase isoforms in the rat cochlea. *Neuroreport*, 12, 1513-1516.
- Tarzami, S.T., Cheng, R., Miao, W., Kitsis, R.N., Berman, J.W., 2002. Chemokine expression in myocardial ischemia: MIP-2 dependent MCP-1 expression protects cardiomyocytes from cell death. *J. Mol. Cell Cardiol.*, 34, 209-221.
- Tate, D.J., Miceli, M.V., Newsome, D.A., 2002. Expression of metallothionein isoforms in human chorioretinal complex. *Curr. Eye Res.*, 24, 12-25.
- Tatsumi, T., Shiraiishi, J., Keira, N., Akashi, K., Mano, A., Yamanaka, S., Matoba, S., Fushiki, S., Fliss, H., Nakagawa, M., 2003. Intracellular ATP is required for mitochondrial apoptotic pathways in isolated hypoxic rat cardiac myocytes. *Cardiovasc. Res.*, 59, 428-440.
- Tekin, M., Amos, K.S., Pandya, A., 2001. Advances in hereditary deafness. *Lancet*, 358, 1082-1090.
- Terui, K., Haga, S., Enosawa, S., Ohnuma, N., Ozaki, M., 2004. Hypoxia/re-oxygenation-induced, redox-dependent activation of STAT1 (signal transducer and activator of transcription 1) confers resistance to apoptotic cell death via hsp70 induction. *Biochem. J.*, 380, 203-209.
- Thalmann, I., Matschinsky, F.M., Thalmann, R., 1970. Quantitative study of selected enzymes involved in energy metabolism of the cochlear duct. *Ann. Otol Rhinol. Laryngol*, 79, 12-29.
- Thalmann, R., Miyoshi, T., Thalmann, I., 1972. The influence of ischemia upon the energy reserves of inner ear tissues. *Laryngoscope*, 82, 2249-2272.
- Thiriet, N., Deng, X., Solinas, M., Ladenheim, B., Curtis, W., Goldberg, S.R., Palmiter, R.D., Cadet, J.L., 2005. Neuropeptide Y protects against methamphetamine-induced neuronal apoptosis in the mouse striatum. *J. Neurosci.*, 25, 5273-5279.
- Thomas, S., Thiery, E., Aflalo, R., Vayssettes, C., Verney, C., Berthuy, I., Creau, N., 2003. PCP4 is highly expressed in ectoderm and particularly in neuroectoderm derivatives during mouse embryogenesis. *Gene Expr. Patterns.*, 3, 93-97.
- Tian, H., Hammer, R.E., Matsumoto, A.M., Russell, D.W., McKnight, S.L., 1998. The hypoxia-responsive transcription factor EPAS1 is essential for catecholamine homeostasis and protection against heart failure during embryonic development. *Genes Dev.*, 12, 3320-3324.
- Tisi, D.K., Liu, X.J., Wykes, L.J., Skinner, C.D., Koski, K.G., 2005. Insulin-like growth factor II and binding proteins 1 and 3 from second trimester human amniotic fluid are associated with infant birth weight. *J. Nutr.*, 135, 1667-1672.
- To, K.K., Koshiji, M., Hammer, S., Huang, L.E., 2005. Genetic instability: the dark side of the hypoxic response. *Cell Cycle*, 4, 881-882.

- Toesca, A., 1996. Central and peripheral myelin in the rat cochlear and vestibular nerves. *Neurosci. Lett.*, 221, 21-24.
- Tong, H.H., Long, J.P., Shannon, P.A., DeMaria, T.F., 2003. Expression of cytokine and chemokine genes by human middle ear epithelial cells induced by influenza A virus and *Streptococcus pneumoniae* opacity variants. *Infect. Immun.*, 71, 4289-4296.
- Toutenhoofd, S.L., Strehler, E.E., 2002. Regulation of calmodulin mRNAs in differentiating human IMR-32 neuroblastoma cells. *Biochim. Biophys. Acta*, 1600, 95-104.
- Van De Water, T.R., Lallemand, F., Eshraghi, A.A., Ahsan, S., He, J., Guzman, J., Polak, M., Malgrange, B., Lefebvre, P.P., Staecker, H., Balkany, T.J., 2004. Caspases, the enemy within, and their role in oxidative stress-induced apoptosis of inner ear sensory cells. *Otol. Neurotol.*, 25, 627-632.
- van Rensburg, S.J., van Zyl, J., Hon, D., Daniels, W., Hendricks, J., Potocnik, F., Erasmus, R., 2004. Biochemical model for inflammation of the brain: the effect of iron and transferrin on monocytes and lipid peroxidation. *Metab Brain Dis.*, 19, 97-112.
- van Tilborg, G.A., Mulder, W.J., Deckers, N., Storm, G., Reutelingsperger, C.P., Strijkers, G.J., Nicolay, K., 2006. Annexin A5-functionalized bimodal lipid-based contrast agents for the detection of apoptosis. *Bioconjug. Chem.*, 17, 741-749.
- Varela-Nieto, I., Morales-Garcia, J.A., Vigil, P., Diaz-Casares, A., Gorospe, I., Sanchez-Galiano, S., Canon, S., Camarero, G., Contreras, J., Cediell, R., Leon, Y., 2004. Trophic effects of insulin-like growth factor-I (IGF-I) in the inner ear. *Hear. Res.*, 196, 19-25.
- Verma, A., Kambhampati, S., Parmar, S., Platanius, L.C., 2003. Jak family of kinases in cancer. *Cancer Metastasis Rev.*, 22, 423-434.
- Villa, P., Bigini, P., Mennini, T., Agnello, D., Laragione, T., Cagnotto, A., Viviani, B., Marinovich, M., Cerami, A., Coleman, T.R., Brines, M., Ghezzi, P., 2003. Erythropoietin selectively attenuates cytokine production and inflammation in cerebral ischemia by targeting neuronal apoptosis. *J. Exp. Med.*, 198, 971-975.
- Wada, T., Penninger, J.M., 2004. Mitogen-activated protein kinases in apoptosis regulation. *Oncogene*, 23, 2838-2849.
- Waka, N., Knipper, M., Engel, J., 2003. Localization of the calcium channel subunits Cav1.2 (alpha1C) and Cav2.3 (alpha1E) in the mouse organ of Corti. *Histol. Histopathol.*, 18, 1115-1123.
- Walsh, E.J., 1992. Functional development of the cochlea and the cochlear nerve. In: Romand, R., Varela-Nieto, I. (eds) *Development of the auditory and vestibular system*. 2. Elsevier, Amsterdam, New York, pp. 161-219.
- Walshe, P., Walsh, M., McConn, W.R., 2003. Hair cell regeneration in the inner ear: a review. *Clin. Otolaryngol. Allied Sci.*, 28, 5-13.
- Wanaverbecq, N., Marsh, S.J., Al Qatari, M., Brown, D.A., 2003. The plasma membrane calcium-ATPase as a major mechanism for intracellular calcium regulation in neurones from the rat superior cervical ganglion. *J. Physiol*, 550 (Pt1), 83-101.
- Wang, C., Nguyen, H.N., Maguire, J.L., Perry, D.C., 2002. Role of intracellular calcium stores in cell death from oxygen-glucose deprivation in a neuronal cell line. *J. Cereb. Blood Flow Metab*, 22, 206-214.

- Wang, D., Zhang, H., Zhao, S., Wei, M., Zhang, H., 1997. Prophylactic effects of magnesium sulfate and ligustrazin on the hypoxic-ischemic brain damage in neonatal rats. *Zhongguo Yi. Xue. Ke. Xue. Yuan Xue. Bao.*, 19, 301-304.
- Wang, G.L., Semenza, G.L., 1993. Desferrioxamine induces erythropoietin gene expression and hypoxia-inducible factor 1 DNA-binding activity: implications for models of hypoxia signal transduction. *Blood*, 82, 3610-3615.
- Wang, J., Van De Water, T.R., Bonny, C., de Ribaupierre, F., Puel, J.L., Zine, A., 2003. A peptide inhibitor of c-Jun N-terminal kinase protects against both aminoglycoside and acoustic trauma-induced auditory hair cell death and hearing loss. *J Neurosci.*, 23, 8596-8607.
- Wang, Z., Li, H., Chi, F., Li, H., Shen, Y., 2001. Transient Bax-protein immunoreactivity prior to apoptosis of spiral ganglion neurons in the postnatal rat. *Acta Otolaryngol.*, 121, 777-780.
- Wangemann, P., 2002. K<sup>+</sup> cycling and the endocochlear potential. *Hear. Res.*, 165, 1-9.
- Watanabe, K., Inai, S., Jinnouchi, K., Baba, S., Yagi, T., 2003a. Expression of caspase-activated deoxyribonuclease (CAD) and caspase 3 (CPP32) in the cochlea of cisplatin (CDDP)-treated guinea pigs. *Auris Nasus Larynx*, 30, 219-225.
- Watanabe, K., Oshima, T., Kobayashi, T., Ikeda, K., 2003b. The expression and localization of heme oxygenase in the adult guinea pig cochlea. *Brain Res.*, 966, 162-166.
- Waters, C., Pyne, S., Pyne, N.J., 2004. The role of G-protein coupled receptors and associated proteins in receptor tyrosine kinase signal transduction. *Semin. Cell Dev. Biol.*, 15, 309-323.
- Watson, N., Linder, M.E., Druey, K.M., Kehrl, J.H., Blumer, K.J., 1996. RGS family members: GTPase-activating proteins for heterotrimeric G-protein alpha-subunits. *Nature*, 383, 172-175.
- Weber, T., Zimmermann, U., Winter, H., Mack, A., Kopschall, I., Rohbock, K., Zenner, H.P., Knipper, M., 2002. Thyroid hormone is a critical determinant for the regulation of the cochlear motor protein prestin. *Proc. Natl. Acad. Sci. U. S. A.*, 99, 2901-2906.
- Webster, K.A., Discher, D.J., Bishopric, N.H., 1993. Induction and nuclear accumulation of fos and jun proto-oncogenes in hypoxic cardiac myocytes. *J. Biol. Chem.*, 268, 16852-16858.
- Wei, H., Ahn, S., Barnes, W.G., Lefkowitz, R.J., 2004. Stable interaction between beta-arrestin 2 and angiotensin type 1A receptor is required for beta-arrestin 2-mediated activation of extracellular signal-regulated kinases 1 and 2. *J. Biol. Chem.*, 279, 48255-48261.
- Wenger, R.H., Gassmann, M., 1997. Oxygen(es) and the hypoxia-inducible factor-1. *Biol. Chem.*, 378, 609-616.
- Wenger, R.H., Kvietikova, I., Rolfs, A., Gassmann, M., Marti, H.H., 1997. Hypoxia-inducible factor-1 alpha is regulated at the post-mRNA level. *Kidney Int.*, 51, 560-563.
- Whitehouse, C., Chambers, J., Howe, K., Cobourne, M., Sharpe, P., Solomon, E., 2002. NBR1 interacts with fasciculation and elongation protein zeta-1 (FEZ1) and calcium and integrin binding protein (CIB) and shows developmentally restricted expression in the neural tube. *Eur. J Biochem.*, 269, 538-545.
- Whitlon, D.S., Sobkowicz, H.M., 1988. Neuron-specific enolase during the development of the organ of Corti. *Int. J. Dev. Neurosci.*, 6, 77-87.

- Whitlon, D.S., Wright, L.S., Nelson, S.A., Szakaly, R., Siegel, F.L., 1999. Maturation of cochlear glutathione-S-transferases correlates with the end of the sensitive period for ototoxicity. *Hear. Res.*, 137, 43-50.
- Wieloch, T., 1985. Hypoglycemia-induced neuronal damage prevented by an N-methyl-D-aspartate antagonist. *Science*, 230, 681-683.
- Wiesener, M.S., Maxwell, P.H., 2003. HIF and oxygen sensing; as important to life as the air we breathe? *Ann. Med.*, 35, 183-190.
- Wiesinger, H., Hamprecht, B., Dringen, R., 1997. Metabolic pathways for glucose in astrocytes. *Glia*, 21, 22-34.
- Wijnholds, J., Chowdhury, K., Wehr, R., Gruss, P., 1995. Segment-specific expression of the neuronatin gene during early hindbrain development. *Dev. Biol.*, 171, 73-84.
- Winter, E., 2004. Einfluss von Hypoxie und Ischämie auf Corti-Organ neugeborener Ratten. Dissertation, Charité - Universitätsmedizin Berlin. Dissertation, Charité - Universitätsmedizin Berlin.
- Wong, E.V., David, S., Jacob, M.H., Jay, D.G., 2003. Inactivation of myelin-associated glycoprotein enhances optic nerve regeneration. *J Neurosci.*, 23, 3112-3117.
- Wood, J.D., Muchinsky, S.J., Filoteo, A.G., Penniston, J.T., Tempel, B.L., 2004. Low endolymph calcium concentrations in deafwaddler2J mice suggest that PMCA2 contributes to endolymph calcium maintenance. *J. Assoc. Res. Otolaryngol.*, 5, 99-110.
- Wright, T.J., Hatch, E.P., Karabagli, H., Karabagli, P., Schoenwolf, G.C., Mansour, S.L., 2003. Expression of mouse fibroblast growth factor and fibroblast growth factor receptor genes during early inner ear development. *Dev. Dyn.*, 228, 267-272.
- Xiao, A.Y., Homma, M., Wang, X.Q., Wang, X., Yu, S.P., 2001. Role of K(+) efflux in apoptosis induced by AMPA and kainate in mouse cortical neurons. *Neuroscience*, 108, 61-67.
- Yamanaka, T., Him, A., Cameron, S.A., Dutia, M.B., 2000. Rapid compensatory changes in GABA receptor efficacy in rat vestibular neurones after unilateral labyrinthectomy. *J Physiol*, 523 Pt 2, 413-424.
- Yamane, H., Nakai, Y., Takayama, M., Konishi, K., Iguchi, H., Nakagawa, T., Shibata, S., Kato, A., Sunami, K., Kawakatsu, C., 1995. The emergence of free radicals after acoustic trauma and strial blood flow. *Acta Otolaryngol Suppl*, 519, 87-92.
- Yamashita, K., Discher, D.J., Hu, J., Bishopric, N.H., Webster, K.A., 2001. Molecular regulation of the endothelin-1 gene by hypoxia. Contributions of hypoxia-inducible factor-1, activator protein-1, GATA-2, AND p300/CBP. *J. Biol. Chem.*, 276, 12645-12653.
- Yang, Y., Ma, J., Chen, Y., Wu, M., 2004. Nucleocytoplasmic shuttling of receptor-interacting protein 3 (RIP3): identification of novel nuclear export and import signals in RIP3. *J Biol. Chem.*, 279, 38820-38829.
- Yeom, K., Gray, J., Nair, T.S., Arts, H.A., Telian, S.A., Disher, M.J., El Kashlan, H., Sataloff, R.T., Fisher, S.G., Carey, T.E., 2003. Antibodies to HSP-70 in normal donors and autoimmune hearing loss patients. *Laryngoscope*, 113, 1770-1776.



- Yoshihara, T., Satoh, M., Yamamura, Y., Itoh, H., Ishii, T., 1999. Ultrastructural localization of glucose transporter 1 (GLUT1) in guinea pig stria vascularis and vestibular dark cell areas: an immunogold study. *Acta Otolaryngol.*, 119, 336-340.
- Yu-Lee, L.Y., Hrachovy, J.A., Stevens, A.M., Schwarz, L.A., 1990. Interferon-regulatory factor 1 is an immediate-early gene under transcriptional regulation by prolactin in Nb2 T cells. *Mol. Cell Biol.*, 10, 3087-3094.
- Zenner, H.P., 1986. Motile responses in outer hair cells. *Hear. Res.*, 22, 83-90.
- Zenner, H.P., 1998. Systematics for mechanisms of tinnitus development. *HNO*, 46, 699-704.
- Zenner, H.P., Arnold, W., Gitter, A.H., 1988. Outer hair cells as fast and slow cochlear amplifiers with a bidirectional transduction cycle. *Acta Otolaryngol.*, 105, 457-462.
- Zenner, H.P., Reuter, G., Zimmermann, U., Gitter, A.H., Fermin, C., LePage, E.L., 1994. Transitory endolymph leakage induced hearing loss and tinnitus: depolarization, biphasic shortening and loss of electromotility of outer hair cells. *Eur. Arch. Otorhinolaryngol.*, 251, 143-153.
- Zenner, H.P., Struwe, V., Schuschke, G., Spreng, M., Stange, G., Plath, P., Babisch, W., Rebentisch, E., Plinkert, P., Bachmann, K.D., Ising, H., Lehnert, G., 1999. Hearing loss caused by leisure noise. *HNO*, 47, 236-248.
- Zenner, H.P., Zimmermann, U., Schmitt, U., 1985. Reversible contraction of isolated mammalian cochlear hair cells. *Hear. Res.*, 18, 127-133.
- Zhang, C., Huang, W., Song, H., 2000. Expression of vascular cell adhesion molecule-1, alpha4-integrin and L-selectin during inner ear immunity reaction. *Acta Otolaryngol.*, 120, 607-614.
- Zheng, J., Shen, W., He, D.Z., Long, K.B., Madison, L.D., Dallos, P., 2000. Prestin is the motor protein of cochlear outer hair cells. *Nature*, 405, 149-155.
- Zheng, J.L., Helbig, C., Gao, W.Q., 1997. Induction of cell proliferation by fibroblast and insulin-like growth factors in pure rat inner ear epithelial cell cultures. *J. Neurosci.*, 17, 216-226.
- Zheng, W.H., Kar, S., Quirion, R., 2002. Insulin-like growth factor-1-induced phosphorylation of transcription factor FKHRL1 is mediated by phosphatidylinositol 3-kinase/Akt kinase and role of this pathway in insulin-like growth factor-1-induced survival of cultured hippocampal neurons. *Mol. Pharmacol.*, 62, 225-233.
- Zimmer, D.B., Sadosky, P.W., Weber, D.J., 2003. Molecular mechanisms of S100-target protein interactions. *Microscopy Research and Technique*, 60, 552-559.
- Zimmermann, U., Fermin, C., 1996. Shape deformation of the organ of Corti associated with length changes of outer hair cell. *Acta Otolaryngol.*, 116, 395-400.
- Zine, A., Van De Water, T.R., 2004. The MAPK/JNK signalling pathway offers potential therapeutic targets for the prevention of acquired deafness. *Curr. Drug Targets. CNS. Neurol. Disord.*, 3, 325-332.