

# **REFERÈNCIES**

---

## 7 Referències

- AL-ASWAD, L. A., GONG, H., LEE, D., O'DONNELL, M. E., BRANDT, J. D., RYAN, W. J., SCHROEDER, A. & ERICKSON, K. A. (1999). Effects of Na-K-2Cl cotransport regulators on outflow facility in calf and human eyes in vitro. *Invest Ophthalmol Vis Sci* **40**, 1695-1701.
- ALBERTS, B., BRAY, D., LEWIS, J., RAFF, M., ROBERTS, K. & WATSON, J. (1994). Internal organization of the cell. In *Molecular biology of the cell*. Garland Publishing, Inc, New York, NY.
- ALLARD, B., COUBLE, M. L., MAGLOIRE, H. & BLEICHER, F. (2000). Characterization and gene expression of high conductance calcium-activated potassium channels displaying mechanosensitivity in human odontoblasts. *J Biol Chem* **275**, 25556-25561.
- ARNOULD, T., MICHELS, C., ALEXANDRE, I. & REMACLE, J. (1992). Effect of hypoxia upon intracellular calcium concentration of human endothelial cells. *J Cell Physiol* **152**, 215-221.
- BEECH, D. J. (1997). Actions of neurotransmitters and other messengers on Ca<sup>2+</sup> channels and K<sup>+</sup> channels in smooth muscle cells. *Pharmacol Ther* **73**, 91-119.
- BELMONTE, C., GARCIA-HIRSCHFELD, J. & GALLAR, J. (1997). Neurobiology of ocular pain. *Prog Retin Eye Res* **16**, 117.
- BERMAN, E. R. (1991). Aqueous, iris-ciliary body, and trabeculum. In *Biochemistry of the eye*. ed. BLAKEMORE, C., pp. 151-200. Plenum press, New York.
- BORRAS, T. (2003). Gene expression in the trabecular meshwork and the influence of intraocular pressure. *Prog Retin Eye Res* **22**, 435-463.
- BRADLEY, J. M., KELLEY, M. J., ZHU, X., ANDERSOHN, A. M., ALEXANDER, J. P. & ACOTT, T. S. (2001). Effects of mechanical stretching on trabecular matrix metalloproteinases. *Invest Ophthalmol Vis Sci* **42**, 1505-1513.
- BROWN, R. C., MARK, K. S., EGLETON, R. D. & DAVIS, T. P. (2004). Protection against hypoxia-induced blood-brain barrier disruption: changes in intracellular calcium. *Am J Physiol Cell Physiol* **286**, C1045-1052.
- CHRISTENSEN, O. & HOFFMANN, E. K. (1992). Cell swelling activates K<sup>+</sup> and Cl<sup>-</sup> channels as well as nonselective, stretch-activated cation channels in Ehrlich ascites tumor cells. *J Membr Biol* **129**, 13-36.
- COLE, D. (1984). Ocular fluids. In *The Eye*. ed. H, D. Academic Press, Inc, Orlando, Florida.
- COLEMAN, A. (1999). Glaucoma. *The Lancet* **354**, 1803-1810.
- COMES, N., VITTITOW, J. L., GASULL, X., GUAL, A. & BORRAS, T. (2004). Molecular signature of the voltage-gated chloride channels in the human trabecular meshwork. *Invest. Ophthalmol. Vis. Sci.* **45**, 4419-.

- CONWAY, R. M., SCHLOTZER-SCHREHARDT, U., KUCHLE, M. & NAUMANN, G. O. (2004). Pseudoexfoliation syndrome: pathological manifestations of relevance to intraocular surgery. *Clin Experiment Ophthalmol* **32**, 199-210.
- CORONEO, M. T., KORBMACHER, C., FLUGEL, C., STIEMER, B., LUTJEN-DRECOLL, E. & WIEDERHOLT, M. (1991). Electrical and morphological evidence for heterogeneous populations of cultured bovine trabecular meshwork cells. *Exp Eye Res* **52**, 375-388.
- CRAWFORD, L. E., MILLIKEN, E. E., IRANI, K., ZWEIER, J. L., BECKER, L. C., JOHNSON, T. M., EIASSA, N. T., CRYSTAL, R. G., FINKEL, T. & GOLDSCHMIDT-CLERMONT, P. J. (1996). Superoxide-mediated actin response in post-hypoxic endothelial cells. *J Biol Chem* **271**, 26863-26867.
- CREAN, E. V., SHERWOOD, M. E., CASEY, R., MILLER, M. W. & RICHARDSON, T. M. (1986). Establishment of calf trabecular meshwork cell cultures. *Exp Eye Res* **43**, 503-517.
- CROSSON, C. E., YATES, P. W., BHAT, A. N., MUKHIN, Y. V. & HUSAIN, S. (2004). Evidence for multiple P2Y receptors in trabecular meshwork cells. *J Pharmacol Exp Ther* **309**, 484-489.
- DAVIDSON, R. M. (1993). Membrane stretch activates a high-conductance K<sup>+</sup> channel in G292 osteoblastic-like cells. *J Membr Biol* **131**, 81-92.
- DAVSON, H. (1990). The aqueous humor and the intraocular pressure. In *Physiology of the eye*. ed. H. D. The Macmillan press Ltd, London.
- DE KATER, A. W., SPURR-MICHAUD, S. J. & GIPSON, I. K. (1990). Localization of smooth muscle myosin-containing cells in the aqueous outflow pathway. *Invest Ophthalmol Vis Sci* **31**, 347-353.
- DICHIARA, T. J. & REINHART, P. H. (1997). Redox modulation of hsl0 Ca(2+)-activated K<sup>+</sup> channels. *The Journal of Neuroscience* **17**, 4942-4955.
- DOPICO, A. M., KIRBER, M. T., SINGER, J. J. & WALSH, J. V., JR. (1994). Membrane stretch directly activates large conductance Ca(2+)-activated K<sup>+</sup> channels in mesenteric artery smooth muscle cells. *Am J Hypertens* **7**, 82-89.
- DUAN, D., WINTER, C., COWLEY, S., HUME, J. R. & HOROWITZ, B. (1997). Molecular identification of a volume-regulated chloride channel. *Nature* **390**, 417-421.
- ERICKSON-LAMY, K., KORBMACHER, C., SCHUMAN, J. S. & NATHANSON, J. A. (1991). Effect of endothelin on outflow facility and accommodation in the monkey eye in vivo. *Invest Ophthalmol Vis Sci* **32**, 492-495.
- ERICKSON-LAMY, K., ROHEN, J. W. & GRANT, W. M. (1988). Outflow facility studies in the perfused bovine aqueous outflow pathways. *Current Eye Research* **7**, 799-807.
- FAN, Y., WU, D. Z., GONG, Y. Q., ZHOU, J. Y. & HU, Z. B. (2003). Effects of calycoxin on the impairment of barrier function induced by hypoxia in human umbilical vein endothelial cells. *Eur J Pharmacol* **481**, 33-40.

- FERNANDEZ-FERNANDEZ, J. M., NOBLES, M., CURRID, A., VAZQUEZ, E. & VALVERDE, M. A. (2002). Maxi K<sup>+</sup> channel mediates regulatory volume decrease response in a human bronchial epithelial cell line. *Am J Physiol Cell Physiol* **283**, C1705-1714.
- FLEISCHHAUER, J. C., MITCHELL, C. H., STAMER, W. D., KARL, M. O., PETERSON-YANTORNO, K. & CIVAN, M. M. (2003). Common actions of adenosine receptor agonists in modulating human trabecular meshwork cell transport. *J Membr Biol* **193**, 121-136.
- FLÜGEL, C., TAMM, E. & LUTJEN-DRECOLL, E. (1991). Different cell populations in bovine trabecular meshwork: an ultrastructural and immunocytochemical study. *Exp Eye Res* **52**, 681-690.
- GABELT, B. & KAUFMAN, P. L. (2002). Aqueous humor hydrodynamics. In *Adler's Physiology of the eye*.
- GABELT, B. T., GOTTANKA, J., LUTJEN-DRECOLL, E. & KAUFMAN, P. L. (2003). Aqueous humor dynamics and trabecular meshwork and anterior ciliary muscle morphologic changes with age in rhesus monkeys. *Invest Ophthalmol Vis Sci* **44**, 2118-2125.
- GABELT, B. T., WIEDERHOLT M, CLARK, A. F. & KAUFMAN, P. L. (1997). Anterior segment physiology after bumetanide inhibition of Na-K-Cl cotransport. *Invest Ophthalmol Vis Sci* **38**, 1700-1707.
- GANFORNINA, M. D. & LÓPEZ-BARNEO, J. (1991). Single K<sup>+</sup> channels in membrane patches of arterial chemoreceptor cells are modulated by O<sub>2</sub> tension. *Proc Natl Acad Sci U S A* **88**, 2927-2930.
- GASULL, X., BATALLER, R., GINES, P., SANCHO-BRU, P., NICOLAS, J. M., GORBIG, M. N., FERRER, E., BADIA, E., GUAL, A., ARROYO, V. & RODES, J. (2001). Human myofibroblastic hepatic stellate cells express Ca(2+)-activated K(+) channels that modulate the effects of endothelin-1 and nitric oxide. *J Hepatol* **35**, 739-748.
- GEBREMEDHIN, D., BONNET, P., GREENE, A. S., ENGLAND, S. K., RUSCH, N. J., LOMBARD, J. H. & HARDER, D. R. (1994). Hypoxia increases the activity of Ca(2+)-sensitive K<sup>+</sup> channels in cat cerebral arterial muscle cell membranes. *Pflugers Arch* **428**, 621-630.
- GELBAND, C. H. & HUME, J. R. (1995). [Ca2+]i inhibition of K<sup>+</sup> channels in canine renal artery. Novel mechanism for agonist-induced membrane depolarization. *Circ Res* **77**, 121-130.
- GILABERT, R., GASULL, X., PALES, J., BELMONTE, C., BERGAMINI, M. V. & GUAL, A. (1997). Facility changes mediated by cAMP in the bovine anterior segment in vitro. *Vision Res* **37**, 9-15.
- GONZALEZ, P., EPSTEIN, D. L. & BORRAS, T. (2000). Genes upregulated in the human trabecular meshwork in response to elevated intraocular pressure. *Invest Ophthalmol Vis Sci* **41**, 352-361.
- GREHN, F. (2001). World health problem of glaucoma. *J Glaucoma* **10**, S2-4.

## REFERENCES

---

- GRIBKOFF, V. K., STARRETT, J. E., JR. & DWORETZKY, S. I. (2001). Maxi-K potassium channels: form, function, and modulation of a class of endogenous regulators of intracellular calcium. *Neuroscientist* **7**, 166-177.
- GRIERSON, I., ROBINS, E., UNGER, W., MILLAR, L. & AHMED, A. (1985). The cells of the bovine outflow system in tissue culture. *Exp Eye Res* **40**, 35-46.
- GUAL, A., LLLOBET, A., GASULL, X. & NICOLAS, J. M. (1999). Ion channel activation by bradykinin in trabecular meshwork cells. *Invest Ophthalmol Vis Sci* **40**, S193.
- GUAL, A., LLLOBET, A., GILABERT, R., BORRAS, M., PALES, J., BERGAMINI, M. V. & BELMONTE, C. (1997). Effects of time of storage, albumin, and osmolality changes on outflow facility (C) of bovine anterior segment in vitro. *Invest Ophthalmol Vis Sci* **38**, 2165-2171.
- HAMILL, O., MARTY, A., NEHER, E., SAKMANN, B. & SIGWORTH, F. (1981). Improved patch-clamp techniques for high-resolution current recording from cells and cell-free membrane patches. *Pflugers Arch* **391**.
- HAMILL, O. P. & MARTINAC, B. (2001). Molecular basis of mechanotransduction in living cells. *Physiol Rev* **81**, 685-740.
- HANAFY, K. A., KRUMENACKER, J. S. & MURAD, F. (2001). NO, nitrotyrosine, and cyclic GMP in signal transduction. *Med Sci Monit* **7**, 801-819.
- HARTNESS, M. E., BRAZIER, S. P., PEERS, C., BATESON, A. N., ASHFORD, M. L. & KEMP, P. J. (2003). Post-transcriptional control of human maxiK potassium channel activity and acute oxygen sensitivity by chronic hypoxia. *J Biol Chem* **278**, 51422-51432.
- HELBIG, H., HINZ, J. P., KELLNER, U. & FOERSTER, M. H. (1993). Oxygen in the anterior chamber of the human eye. *Ger J Ophthalmol* **2**, 161-164.
- HELBIG, H., SCHLOTZER-SCHREHARDT, U., NOSKE, W., KELLNER, U., FOERSTER, M. H. & NAUMANN, G. O. (1994). Anterior-chamber hypoxia and iris vasculopathy in pseudoexfoliation syndrome. *German Journal of Ophthalmology* **3**, 148-153.
- HERNANDEZ, M. R., WEINSTEIN, B. I., SCHWARTZ, J., RITCH, R., GORDON, G. G. & SOUTHREN, A. L. (1987). Human trabecular meshwork cells in culture: morphology and extracellular matrix components. *Invest Ophthalmol Vis Sci* **28**, 1655-1660.
- HILLE, B. (2001). *Ion channels of excitable membranes*. Sinauer Associates, Inc, Sunderland, MA.
- HOYER, J., DISTLER, A., HAASE, W. & GOGELEIN, H. (1994). Ca<sup>2+</sup> influx through stretch-activated cation channels activates maxi K<sup>+</sup> channels in porcine endocardial endothelium. *Proc Natl Acad Sci U S A* **91**, 2367-2371.
- HU, Q. & ZIEGELSTEIN, R. C. (2000). Hypoxia/reoxygenation stimulates intracellular calcium oscillations in human aortic endothelial cells. *Circulation* **102**, 2541-2547.
- HUANG, H., RAO, Y., SUN, P. & GONG, L. W. (2002). Involvement of actin cytoskeleton in modulation of Ca(2+)-activated K(+) channels from rat hippocampal CA1 pyramidal neurons. *Neurosci Lett* **332**, 141-145.

- JACKSON, W. (2000). Ion channels and vascular tone. *Hypertension* **35**, 173-178.
- JENTSCH, T. J., FRIEDRICH, T., SCHRIEVER, A. & YAMADA, H. (1999). The CLC chloride channel family. *Pflugers Arch* **437**, 783-795.
- JIANG, C. & HADDAD, G. G. (1994). A direct mechanism for sensing low oxygen levels by central neurons. *Proc Natl Acad Sci U S A* **91**, 7198.
- JIANG, R. G. & EYZAGUIRRE, C. (2004). Effects of hypoxia and putative transmitters on  $[Ca^{2+}]_i$  of rat glomus cells. *Brain Res* **995**, 285-296.
- KACZAROWSKI, G., KNAUS, H.-G., LEONARD, R., McMANUS, O. & GARCIA, M. (1996). High-conductance calcium activated-potassium channels; structure, pharmacology and function. *Journal of Bioenergetics and Biomembranes* **28**, 255-267.
- KAGEYAMA, M., FUJITA, M. & SHIRASAWA, E. (1996). Endothelin-1 mediated  $Ca^{2+}$  influx does not occur through L-type voltage-dependent  $Ca^{2+}$  channels in cultured bovine trabecular meshwork cells. *J Ocul Pharmacol Ther* **12**, 433-440.
- KAMOUCHI, M., TROUET, D., DE GREEF, C., DROOGMANS, G., EGGERMONT, J. & NILIUS, B. (1997). Functional effects of expression of hsl0  $Ca^{2+}$  activated  $K^+$  channels in cultured macrovascular endothelial cells. *Cell Calcium* **22**, 497-506.
- KATSUMI, A., ORR, A., TZIMA, E. & SCHWARTZ, M. (2004). Integrins in mechanotransduction. *The Journal of Biological Chemistry* **279**, 12001-12004.
- KAUFMAN, P., WIEDMAN, T. & ROBINSON, J. (1984). Cholinergics. In *Pharmacology of the eye: handbook of experimental pharmacology*. ed. ML, S. Springer-Verlag, Berlin.
- KAYYALI, U. S., PENNELL, C. M., TRUJILLO, C., VILLA, O., GAESTEL, M. & HASSOUN, P. M. (2002). Cytoskeletal changes in hypoxic pulmonary endothelial cells are dependent on MAPK-activated protein kinase MK2. *J Biol Chem* **277**, 42596-42602.
- KHAW, P. T., SHAH, P. & ELKINGTON, A. R. (2004). Glaucoma--1: diagnosis. *Bmj* **328**, 97-99.
- KIMURA, C., OIKE, M. & ITO, Y. (2000). Hypoxia-induced alterations in  $Ca(2+)$  mobilization in brain microvascular endothelial cells. *Am J Physiol Heart Circ Physiol* **279**, H2310-2318.
- KIRBER, M. T., ORDWAY, R. W., CLAPP, L. H., WALSH, J. V., JR. & SINGER, J. J. (1992). Both membrane stretch and fatty acids directly activate large conductance  $Ca(2+)$ -activated  $K^+$  channels in vascular smooth muscle cells. *FEBS Lett* **297**, 24-28.
- KOHMOTO, H., MATSUMOTO, S. & SERIZAWA, T. (1994). Effects of endothelin-1 on  $[Ca^{2+}]_i$  and pH<sub>i</sub> in trabecular meshwork cells. *Curr Eye Res* **13**, 197-202.
- KRAUSS, A. H., WIEDERHOLT, M., STURM, A. & WOODWARD, D. F. (1997). Prostaglandin effects on the contractility of bovine trabecular meshwork and ciliary muscle. *Experimental Eye Research* **64**, 447-453.

## REFERENCES

---

- LEE, S., PARK, M., SO, I. & EARM, Y. (1994). NADH and NAS modulate Ca(2+)-activated K<sup>+</sup> channels in small pulmonary arterial smooth muscle cells. *Pflugers Arch* **427**, 378-380.
- LEPPLE-WIENHUES, A., RAUCH, R., CLARK, A. F., GRASSMANN, A., BERWECK, S. & WIEDERHOLT, M. (1994). Electrophysiological properties of cultured human trabecular meshwork cells. *Experimental Eye Research* **59**, 305-311.
- LEPPLE-WIENHUES, A., STAHL, F. & WIEDERHOLT, M. (1991a). Differential smooth muscle-like contractile properties of trabecular meshwork and ciliary muscle. *Exp Eye Res* **53**, 33-38.
- LEPPLE-WIENHUES, A., STAHL, F., WILLNER, U., SCHAFER, R. & WIEDERHOLT, M. (1991b). Endothelin-evoked contractions in bovine ciliary muscle and trabecular meshwork: interaction with calcium, nifedipine and nickel. *Current Eye Research* **10**, 983-989.
- LEPPLE-WIENHUES, A., STAHL, F., WUNDERLING, D. & WIEDERHOLT, M. (1992). Effects of endothelin and calcium channel blockers on membrane voltage and intracellular calcium in cultured bovine trabecular meshwork cells. *German Journal of Ophthalmology* **1**, 159-163.
- LEWIS, A., PEERS, C., ASHFORD, M. L. & KEMP, P. J. (2002). Hypoxia inhibits human recombinant large conductance, Ca(2+)-activated K<sup>(+)</sup> (maxi-K) channels by a mechanism which is membrane delimited and Ca(2+) sensitive. *J Physiol* **540**, 771-780.
- LIU, H., MOCZYDLOWSKI, E. & HADDAD, G. G. (1999). O<sub>2</sub> deprivation inhibits Ca(2+)-activated K<sup>(+)</sup> channels via cytosolic factors in mice neocortical neurons. *J Clin Invest* **104**, 577-588.
- LLOBET, A., GASULL, X. & GUAL, A. (2003). Understanding trabecular meshwork physiology: a key to the control of intraocular pressure? *News Physiol Sci* **18**, 205-209.
- LLOBET, A., GASULL, X., PALES, J., MARTI, E. & GUAL, A. (2001). Identification of Kir2.1 channel activity in cultured trabecular meshwork cells. *Invest Ophthalmol Vis Sci* **42**, 2371-2379.
- LLOBET, A., GUAL, A., PALES, J., BARRAQUER, R., TOBIAS, E. & NICOLAS, J. M. (1999). Bradykinin decreases outflow facility in perfused anterior segments and induces shape changes in passaged BTM cells in vitro. *Invest Ophthalmol Vis Sci* **40**, 113-125.
- LOPEZ-BARNEO, J., PARDAL, R. & ORTEGA-SAENZ, P. (2001). Cellular mechanism of oxygen sensing. *Annu Rev Physiol* **63**, 259-287.
- LÜTJEN-DRECOLL, E. (1999). Functional morphology of the trabecular meshwork in primate eyes. *Prog Retin Eye Res* **18**, 91-119.
- LÜTJEN-DRECOLL, E., GABELT, B. T., TIAN, B. & KAUFMAN, P. L. (2001). Outflow of aqueous humor. *J Glaucoma* **10**, S42-44.

- LÜTJEN-DRECOLL, E. & ROHEN, J. W. (1994). The normal anterior segment. Anatomy of aqueous humor formation and drainage. In *Glaucoma*, vol. 7. ed. KAUFMAN, P. L. & MITTAG, T. W. Mosby-Wolfe, London.
- MACDONALD, A. G. (1997). Effect of high hydrostatic pressure on the BK channel in bovine chromaffin cells. *Biophys J* **73**, 1866-1873.
- MALHOTRA, R. & GREGORY-EVANS, K. (2000). Management of ocular ischaemic syndrome. *Br J Ophthalmol* **84**, 1428-1431.
- MALLOUK, N. & ALLARD, B. (2000). Stretch-induced activation of Ca(2+)-activated K(+) channels in mouse skeletal muscle fibers. *Am J Physiol Cell Physiol* **278**, C473-479.
- MATSUO, T. (2000). Basal nitric oxide production is enhanced by hydraulic pressure in cultured human trabecular cells. *Br J Ophthalmol* **84**, 631-635.
- MATSUO, T. & MATSUO, N. (1996). Intracellular calcium response to hydraulic pressure in human trabecular cells. *British Journal of Ophthalmology* **80**, 561-566.
- MCLAREN, J., DINSLAGE, S., DILLON, J., ROBERTS, J. & BRUBAKER, R. (1998). Measuring oxygen tension in the anterior chamber of rabbits. *Invest Ophthalmol Vis Sci* **39**, 1899-1909.
- MCMANUS, O. B. (1991). Calcium-activated potassium channels: regulation by calcium. *J Bioenerg Biomembr* **23**, 537-560.
- MICHELS, C. (2004). Physiological and pathological responses to hypoxia. *Am J Pathol* **164**, 1875-1882.
- MIENVILLE, J., BARKER, J. L. & LANGE, G. D. (1996). Mechanosensitive properties of BK channels from embryonic rat neuroepithelium. *J Membr Biol* **153**, 211-216.
- MILLER, C. (2000). An overview of the potassium channel family. *Genome Biol* **1**, REVIEWS0004.
- MINTENIG, G. M., SÁNCHEZ-VIVES, M. V., MARTIN, C., GUAL, A. & BELMONTE, C. (1995). Sensory receptors in the anterior uvea of the cat's eye. An in vitro study. *Invest. Ophthalmol. vis. sci.* **36**, 1615-1624.
- MITCHELL, C. H., FLEISCHHAUER, J. C., STAMER, W. D., PETERSON-YANTORNO, K. & CIVAN, M. M. (2002). Human trabecular meshwork cell volume regulation. *Am J Physiol Cell Physiol* **283**, C315-326.
- MORRIS, C. E. & HORN, R. (1991). Failure to elicit neuronal macroscopic mechanosensitive currents anticipated by single-channel studies. *Science* **251**, 1246-1249.
- NARUSE, K. & SOKABE, M. (1993). Involvement of stretch-activated ion channels in Ca<sup>2+</sup> mobilization to mechanical stretch in endothelial cells. *Am J Physiol* **264**, C1037-1044.
- NELSON, M. T. & QUAYLE, J. M. (1995). Physiological roles and properties of potassium channels in arterial smooth muscle. *Am J Physiol* **268**, C799-822.

## REFERENCES

---

- NILJUS, B., DROOGMANS, G. & WONDERGEM, R. (2003). Transient receptor potential channels in endothelium: solving the calcium entry puzzle? *Endothelium* **10**, 1-11.
- NILSSON, S., SPERBER, G. & BILL, A. (1986). Effects of vasoactive intestinal polypeptide (VIP) on intraocular pressure, facility of outflow and formation of aqueous humor in the monkey. *Exp Eye Res* **43**, 849-857.
- NILSSON, S. F., MAEPEA, O., SAMUELSSON, M. & BILL, A. (1990). Effects of timolol on terbutaline- and VIP-stimulated aqueous humor flow in the cynomolgus monkey. *Curr Eye Res* **9**, 863-872.
- NILSSON, S. F. E. & BILL, A. (1994). The normal anterior segment. Physiology and neurophysiology of aqueous humor inflow and outflow. In *Glaucoma*, vol. 7. ed. KAUFMAN, P. L. & MITTAG, T. W. Mosby-Wolfe, London.
- O'DONNELL, M. E., BRANDT, J. D. & CURRY, F. R. (1995). Na-K-Cl cotransport regulates intracellular volume and monolayer permeability of trabecular meshwork cells. *Am J Physiol* **268**, C1067-1074.
- OKADA, Y., MAENO, E., SHIMIZU, T., DEZAKI, K., WANG, J. & MORISHIMA, S. (2001). Receptor-mediated control of regulatory volume decrease (RVD) and apoptotic volume decrease (AVD). *J Physiol* **532**, 3-16.
- OLSCHEWSKI, A., HONG, Z., LINDEN, B. C., PORTER, V. A., WEIR, E. K. & CORNFIELD, D. N. (2002a). Contribution of the K(Ca) channel to membrane potential and O<sub>2</sub> sensitivity is decreased in an ovine PPHN model. *Am J Physiol Lung Cell Mol Physiol* **283**, L1103-1109.
- OLSCHEWSKI, A., HONG, Z., NELSON, D. P. & WEIR, E. K. (2002b). Graded response of K<sup>+</sup> current, membrane potential, and [Ca<sup>2+</sup>]<sub>i</sub> to hypoxia in pulmonary arterial smooth muscle. *Am J Physiol Lung Cell Mol Physiol* **283**, L1143-1150.
- ORIO, P., ROJAS, P., FERREIRA, G. & LATORRE, R. (2002). New disguises for an old channel: MaxiK channel beta-subunits. *News Physiol Sci* **17**, 156-161.
- PARTRIDGE, C. A. (1995). Hypoxia and reoxygenation stimulate biphasic changes in endothelial monolayer permeability. *Am J Physiol* **269**, L52-58.
- PEERS, C. (1990). Hypoxic suppression of K<sup>+</sup> currents in type I carotid body cells: selective effect on the Ca<sup>2+</sup>-activated K<sup>+</sup> current. *Neurosci Lett* **119**, 253-256.
- PEERS, C. (1997). Oxygen-sensitive ion channels. *Trends Pharmacol Sci* **18**, 405-408.
- PEERS, C. & KEMP, P. J. (2004). Ion channel regulation by chronic hypoxia in models of acute oxygen sensing. *Cell Calcium* **36**, 341-348.
- PEREZ-GARCIA, M. T., LOPEZ-LOPEZ, J. R. & GONZALEZ, C. (1999). Kv1.2 subunit coexpression in HEK293 cells confers O<sub>2</sub> sensitivity to Kv4.2 but not to shaker channels. *Journal of General Physiology* **113**, 897-907.

- PINTOR, J., PELAEZ, T. & PERAL, A. (2004). Adenosine tetraphosphate, Ap4, a physiological regulator of intraocular pressure in normotensive rabbit eyes. *J Pharmacol Exp Ther* **308**, 468-473.
- PINTOR, J., PERAL, A., PELAEZ, T., MARTIN, S. & HOYLE, C. H. (2003). Presence of diadenosine polyphosphates in the aqueous humor: their effect on intraocular pressure. *J Pharmacol Exp Ther* **304**, 342-348.
- PUTNEY, L. K., BRANDT, J. D. & O'DONNELL, M. E. (1999). Na-K-Cl cotransport in normal and glaucomatous human trabecular meshwork cells. *Invest Ophthalmol Vis Sci* **40**, 425-434.
- REIMANN, F. & ASHCROFT, F. M. (1999). Inwardly rectifying potassium channels. *Curr Opin Cell Biol* **11**, 503-508.
- REZAEI, T., CHILD, A., HITCHINGS, R., BRICE, G., MILLER, L., COCA-PRADOS, M., HEON, E., KRUPIN, T., RITCH, R., KREUTZER, D., CRICK, R. P. & SARFARAZI, M. (2002). Adult-onset primary open-angle glaucoma caused by mutations in optineurin. *Science* **295**, 1077-1079.
- RICH, A., FARRUGIA, G. & RAE, J. L. (1999). Effects of melatonin on ionic currents in cultured ocular tissues. *Am J Physiol* **276**, C923-929.
- RIESCO-FAGUNDO, A. M., PEREZ-GARCIA, M. T., GONZALEZ, C. & LOPEZ-LOPEZ, J. R. (2001). O(2) modulates large-conductance Ca(2+)-dependent K(+) channels of rat chemoreceptor cells by a membrane-restricted and CO-sensitive mechanism. *Circ Res* **89**, 430-436.
- SACKIN, H. (1995). Mechanosensitive channels. *Annu Rev Physiol* **57**, 333-353.
- SARDINI, A., AMEY, J. S., WEYLANDT, K. H., NOBLES, M., VALVERDE, M. A. & HIGGINS, C. F. (2003). Cell volume regulation and swelling-activated chloride channels. *Biochimica et Biophysica Acta* **1618**, 153-162.
- SCHUBERT, R. & NELSON, M. T. (2001). Protein kinases: tuners of the BKCa channel in smooth muscle. *Trends Pharmacol Sci* **22**, 505-512.
- SHADE, D. L., CLARK, A. F. & PANG, I. H. (1996). Effects of muscarinic agents on cultured human trabecular meshwork cells. *Exp Eye Res* **62**, 201-210.
- SHARIF, N. A. & XU, S. X. (1996). Pharmacological characterization of bradykinin receptors coupled to phosphoinositide turnover in SV40-immortalized human trabecular meshwork cells. *Exp Eye Res* **63**, 631-637.
- SINGER, J. J. & WALSH, J. V., JR. (1987). Characterization of calcium-activated potassium channels in single smooth muscle cells using the patch-clamp technique. *Pflugers Arch* **408**, 98-111.
- SMITH, I. F., BOYLE, J. P., VAUGHAN, P. F., PEARSON, H. A. & PEERS, C. (2001). Effects of chronic hypoxia on Ca(2+) stores and capacitative Ca(2+) entry in human neuroblastoma (SH-SY5Y) cells. *J Neurochem* **79**, 877-884.
- SOTO, D., COMES, N., FERRER, E., MORALES, M., ESCALADA, A., PALES, J., SOLSONA, C., GUAL, A. & GASULL, X. (2004). Modulation of aqueous humor outflow by ionic

## REFERENCES

---

- mechanisms involved in trabecular meshwork cell volume regulation. *Invest Ophthalmol Vis Sci* **45**, In press.
- SRINIVAS, S. P., MAERTENS, C., GOON, L. H., GOON, L., SATPATHY, M., YUE, B. Y., DROOGMANS, G. & NILIUS, B. (2004). Cell volume response to hyposmotic shock and elevated cAMP in bovine trabecular meshwork cells. *Exp Eye Res* **78**, 15-26.
- STAMER, W. D., PEPPEL, K., O'DONNELL, M. E., ROBERTS, B. C., WU, F. & EPSTEIN, D. L. (2001). Expression of aquaporin-1 in human trabecular meshwork cells: role in resting cell volume. *Invest Ophthalmol Vis Sci* **42**, 1803-1811.
- STAMER, W. D., ROBERTS, B. C. & EPSTEIN, D. L. (1999). Hydraulic pressure stimulates adenosine 3',5'-cyclic monophosphate accumulation in endothelial cells from Schlemm's canal. *Investigative Ophthalmology & Visual Science* **40**, 1983-1988.
- STAMER, W. D., SEFTOR, R. E., WILLIAMS, S. K., SAMAHA, H. A. & SNYDER, R. W. (1995). Isolation and culture of human trabecular meshwork cells by extracellular matrix digestion. *Curr Eye Res* **14**, 611-617.
- STEFANSSON, E., WOLBARSHT, M. & LANDERS, M. R. (1983). The corneal contact lens and aqueous humor hypoxia in cats. *Invest Ophthalmol Vis Sci* **24**, 1052-1054.
- STEINHAUSEN, K., STUMPFF, F., STRAUSS, O., THIEME, H. & WIEDERHOLT, M. (2000). Influence of muscarinic agonists and tyrosine kinase inhibitors on L-type Ca(2+)Channels in human and bovine trabecular meshwork cells. *Exp Eye Res* **70**, 285-293.
- STOILOV, I., AKAR SU, A. & SARFARAZI, M. (1997). Identification of three different truncating mutations in cytochrome P4501B1 (CYP1B1) as the principal cause of primary congenital glaucoma (Buphtalmos) in families linked to the GLC3A locus on chromosome 2p21. *Hum. Mol. Genet.* **6**, 641-647.
- STONE, E. M., FINGERT, J. H., ALWARD, W. L., NGUYEN, T. D., POLANSKY, J. R., SUNDEN, S. L., NISHIMURA, D., CLARK, A. F., NYSTUEN, A., NICHOLS, B. E., MACKEY, D. A., RITCH, R., KALENAK, J. W., CRAVEN, E. R. & SHEFFIELD, V. C. (1997). Identification of a gene that causes primary open angle glaucoma. *Science* **275**, 668-670.
- STUMPFF, F., STRAUSS, O., BOXBERGER, M. & WIEDERHOLT, M. (1997). Characterization of maxi-K-channels in bovine trabecular meshwork and their activation by cyclic guanosine monophosphate. *Invest Ophthalmol Vis Sci* **38**, 1883-1892.
- TAMM, E. R., RUSSELL, P., EPSTEIN, D. L., JOHNSON, D. H. & PIATIGORSKY, J. (1999). Modulation of myocilin/TIGR expression in human trabecular meshwork. *Invest Ophthalmol Vis Sci* **40**, 2577-2582.
- TAMM, E. R., SIEGNER, A., BAUR, A. & LUTJEN-DRECOLL, E. (1996). Transforming growth factor-beta 1 induces alpha-smooth muscle- actin expression in cultured human and monkey trabecular meshwork. *Experimental Eye Research* **62**, 389-397.
- TANIHARA, H., OHUCHI, T., YOSHIMURA, N., NEGISHI, M. & ITO, S. (1991). Heterogeneous response in calcium signaling by adrenergic and cholinergic stimulation in cultured bovine trabecular cells. *Exp Eye Res* **52**, 393-396.

- TAO, W., PRASANNA, G., DIMITRIJEVICH, S. & YORIO, T. (1998). Endothelin receptor A is expressed and mediates the  $[Ca^{2+}]_i$  mobilization of cells in human ciliary smooth muscle, ciliary nonpigmented epithelium, and trabecular meshwork. *Curr Eye Res* **17**, 31-38.
- TEN TUSSCHER, M. P. M., BECKERS, H. J. M., VRENSEN, G. F. J. M. & KLOOSTER, J. (1994). Peripheral neural circuits regulating IOP? A review of its anatomical backbone. *Doc. Ophthalmol.* **87**, 291-313.
- TIAN, B., GEIGER, B., EPSTEIN, D. L. & KAUFMAN, P. L. (2000). Cytoskeletal involvement in the regulation of aqueous humor outflow. *Invest Ophthalmol Vis Sci* **41**, 619-623.
- TRIPATHI BJ, T. R. (1984). Anatomy, orbit and adnexa of the human eye. In *The Eye*. 3rd ed. ed. PRESS, A. Davson H, Orlando, Florida.
- TUMMINIA, S. J., MITTON, K. P., ARORA, J., ZELENKA, P., EPSTEIN, D. L. & RUSSELL, P. (1998). Mechanical stretch alters the actin cytoskeletal network and signal transduction in human trabecular meshwork cells. *Invest Ophthalmol Vis Sci* **39**, 1361-1371.
- VALVERDE, M. A., ROJAS, P., AMIGO, J., COSMELLI, D., ORIO, P., BAHAMONDE, M. I., MANN, G. E., VERGARA, C. & LATORRE, R. (1999). Acute activation of Maxi-K channels (hSlo) by estradiol binding to the beta subunit. *Science* **285**, 1929-1931.
- VANOYE, C. G. & REUSS, L. (1999). Stretch-activated single K<sup>+</sup> channels account for whole-cell currents elicited by swelling. *Proc Natl Acad Sci U S A* **96**, 6511-6516.
- VERGARA, C., LATORRE, R., MARRION, N. V. & ADELMAN, J. P. (1998). Calcium-activated potassium channels. *Curr Opin Neurobiol* **8**, 321-329.
- WATANABE, S. I., TANIZAKI, M. & KANEKO, A. (1997). Two types of stretch-activated channels coexist in the rabbit corneal epithelial cell. *Exp Eye Res* **64**, 1027-1035.
- WAX, M. B., TEZEL, G., KOBAYASHI, S. & HERNANDEZ, M. R. (2000). Responses of different cell lines from ocular tissues to elevated hydrostatic pressure. *Br J Ophthalmol* **84**, 423-428.
- WEIGER, T. M., HERMANN, A. & LEVITAN, I. B. (2002). Modulation of calcium-activated potassium channels. *J Comp Physiol A Neuroethol Sens Neural Behav Physiol* **188**, 79-87.
- WEINREB, R. N. & KHAW, P. T. (2004). Primary open-angle glaucoma. *Lancet* **363**, 1711-1720.
- WEIR, E. K. & ARCHER, S. (1995). The mechanism of acute hypoxic pulmonary vasoconstriction: the tale of two channels. *FASEB J* **9**, 183-189.
- WIEDERHOLT, M. (1998a). Direct involvement of trabecular meshwork in the regulation of aqueous humor outflow. *Curr Opin Ophthalmol* **9**, 46-49.
- WIEDERHOLT, M., BIELKA, S., SCHWEIG, F., LÜTJEN-DRECOLL, E. & LEPPLE-WIENHUES, A. (1995). Regulation of outflow rate and resistance in the perfused anterior segment of the bovine eye. *Exp Eye Res* **61**, 223-234.

## **REFERENCES**

---

- WIEDERHOLT, M., STUMPFF, F. (1998b). The trabecular meshwork and aqueous humor reabsorption. In *The eye's aqueous humor. From secretion to glaucoma.*, vol. 45. ed. CIVAN, M. M., pp. 163-201. Academic Press, New York.
- WIEDERHOLT, M., STURM, A. & LEPPLE-WIENHUES, A. (1994). Relaxation of trabecular meshwork and ciliary muscle by release of nitric oxide. *Investigative Ophthalmology & Visual Science* **35**, 2515-2520.
- WIEDERHOLT, M., THIEME, H. & STUMPFF, F. (2000). The regulation of trabecular meshwork and ciliary muscle contractility. *Prog Retin Eye Res* **19**, 271-295.
- WOLDEMUSSIE, E., RUIS, G. & FELDMANN, B. (1990). Muscarinic receptor subtype involved in signalling mechanisms in cultured human trabecular meshwork cells. *Invest Ophthalmol Vis Sci* **31**, 388.
- WOODWARD, D. F. & GIL, D. W. (2004). The inflow and outflow of anti-glaucoma drugs. *Trends Pharmacol Sci* **25**, 238-241.
- WYATT, C. N. & PEERS, C. (1995). Ca<sup>2+</sup>-activated K<sup>+</sup> channels in isolated type I cells of the neonatal rat carotid body. *Journal of Physiology* **483**, 559-565.
- YAZEJIAN, B., SUN, X. P. & GRINNELL, A. D. (2000). Tracking presynaptic Ca2+ dynamics during neurotransmitter release with Ca2+-activated K<sup>+</sup> channels. *Nat Neurosci* **3**, 566-571.
- YORIO, T., KRISHNAMOORTHY, R. & PRASANNA, G. (2002). Endothelin: is it a contributor to glaucoma pathophysiology? *J Glaucoma* **11**, 259-270.
- ZHANG, D., VETRIVEL, L. & VERKMAN, A. S. (2002). Aquaporin deletion in mice reduces intraocular pressure and aqueous fluid production. *J Gen Physiol* **119**, 561-569.