

10 Literatur

Abdel-Ghany M, Cheng HC, Elble RC, Lin H, DiBiasio J, Pauli BU (2003) The interacting binding domains of the beta(4) integrin und calcium-activated chloride channels (CLCAs) in metastasis. *J Biol Chem* 278:49406-49416

Abdel-Ghany M, Cheng HC, Elble RC, Pauli BU (2002) Focal adhesion kinase activated by beta(4) integrin ligation to mCLCA1 mediates early metastatic growth. *J Biol Chem* 277:34391-34400

Abdel-Ghany M, Cheng HC, Elble RC, Pauli BU (2001) The breast cancer beta 4 integrin und endothelial human CLCA2 mediate lung metastasis. *J Biol Chem* 276:25438-25446

Agnel M, Vermat T, Culouscou JM (1999) Identification of three novel members of the calcium-dependent chloride channel (CaCC) family predominantly expressed in the digestive tract und trachea. *FEBS Lett* 455:295-301

Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P (2004a) Membrantransport kleiner Moleküle und ionen und elektrische Eigenschaften von Membranen. In: Jaenicke L (Hrsg.): *Molekularbiologie der Zelle*. WILEY-VCH Verlag GmbH & Co., 728

Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P (2004b) Zellkompartimente und Proteinsortierung. In: Jaenicke L (Hrsg.): *Molekularbiologie der Zelle*. WILEY-VCH Verlag GmbH & Co., 764

Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P (2004) Intrazellulärer Vesikeltransport. In: Jaenicke L (Hrsg.): *Molekularbiologie der Zelle*. WILEY-VCH Verlag GmbH & Co., 827-889

Alfalah M, Krahn MP, Wetzel G, von Horsten S, Wolke C, Hooper N, Kalinski T, Krueger S, Naim HY, Lendeckel U (2006) A mutation in aminopeptidase N (CD13) isolated from a patient suffering from leukemia leads to an arrest in the endoplasmic reticulum. *J Biol Chem* 281:11894-11900

Anton F, Leverkoehne I, Mundhenk L, Thoreson WB, Gruber AD (2005) Overexpression of eCLCA1 in small airways of horses with recurrent airway obstruction. *J Histochem Cytochem* 53:1011-1021

Beckley JR, Pauli BU, Elble RC (2004) Re-expression of detachment-inducible chloride channel mCLCA5 suppresses growth of metastatic breast cancer cells. *J Biol Chem* 279:41634-41641

Bendtsen JD, Nielsen H, von Heijne G, Brunak S (2004) Improved prediction of signal peptides: SignalP 3.0. *J Mol Biol* 340:783-795

Berschneider HM, Knowles MR, Azizkhan RG, Boucher RC, Tobey NA, Orlando RC, Powell DW (1988) Altered intestinal chloride transport in cystic fibrosis. *Faseb J* 2:2625-2629

Bertrand CA, Danahay H, Poll CT, Laboisse C, Hopfer U, Bridges RJ (2004) Niflumic acid inhibits ATP-stimulated exocytosis in a mucin-secreting epithelial cell line. *Am J Physiol Cell Physiol* 286:C247-255

Bice DE, Seagrave J, Green FH (2000) Animal models of asthma: potential usefulness for studying health effects of inhaled particles. *Inhal Toxicol* 12:829-862

Bronsveld I, Mekus F, Bijman J, Ballmann M, Greipel J, Hundrieser J, Halley DJ, Laabs U, Busche R, De Jonge HR, Tummler B, Veeze HJ (2000) Residual chloride secretion in intestinal tissue of deltaF508 homozygous twins und siblings with cystic fibrosis. The European CF Twin und Sibling Study Consortium. *Gastroenterology* 119:32-40

Brouillard F, Bensalem N, Hinzpeter A, Tondelier D, Trudel S, Gruber AD, Ollero M, Edelman A (2005) Blue native-SDS PAGE analysis reveals reduced expression of the mClCA3 protein in cystic fibrosis knock-out mice. *Mol Cell Proteomics* 4:1762-1775

Chinery R, Cox HM (1995) Modulation of epidermal growth factor effects on epithelial ion transport by intestinal trefoil factor. *Br J Pharmacol* 115:77-80

Chung C, Fang I, Nguyen V, Luk C, Kent G, Rozmahel R (2001) Investigation of mCLCA3 as a modifier of CF disease in mice. *Pediatr Pulm (Suppl)* 22:A125

Clarke LL, Grubb BR, Yankaskas JR, Cotton CU, McKenzie A, Boucher RC (1994) Relationship of a non-cystic fibrosis transmembrane conductance regulator-mediated chloride conductance to organ-level disease in Cftr(-/-) mice. *Proc Natl Acad Sci U S A* 91:479-483

Connon CJ, Yamasaki K, Kawasaki S, Quantock AJ, Koizumi N, Kinoshita S (2004) Calcium-activated chloride channel-2 in human epithelia. *J Histochem Cytochem* 52:415-418

Cserzo M, Wallin E, Simon I, von Heijne G, Elofsson A (1997) Prediction of transmembrane alpha-helices in prokaryotic membrane proteins: the dense alignment surface method. *Protein Eng* 10:673-676

Cunningham SA, Awayda MS, Bubien JK, Ismailov, II, Arrate MP, Berdiev BK, Benos DJ, Fuller CM (1995) Cloning of an epithelial chloride channel from bovine trachea. *J Biol Chem* 270:31016-31026

Davis E, Rush BR (2002) Equine recurrent airway obstruction: pathogenesis, diagnosis, and patient management. *Vet Clin North Am Equine Pract* 18:453-467

Duan D, Winter C, Cowley S, Hume JR, Horowitz B (1997) Molecular identification of a volume-regulated chloride channel. *Nature* 390:417-421

Eggermont J (2004) Calcium-activated chloride channels: (un)known, (un)loved? *Proc Am Thorac Soc* 1:22-27

Elble RC, Ji G, Nehrke K, DeBiasio J, Kingsley PD, Kotlikoff MI, Pauli BU (2002) Molecular and functional characterization of a murine calcium-activated chloride channel expressed in smooth muscle. *J Biol Chem* 277:18586-18591

Elble RC, Pauli BU (2001) Tumor suppression by a proapoptotic calcium-activated chloride channel in mammary epithelium. *J Biol Chem* 276:40510-40517

Elble RC, Walia V, Cheng HC, Connon CJ, Mundhenk L, Gruber AD, Pauli BU (2006) The putative chloride channel hCLCA2 has a single carboxy-terminal transmembrane segment. *J Biol Chem* 281:29448-29454

Elble RC, Widom J, Gruber AD, Abdel-Ghany M, Levine R, Goodwin A, Cheng HC, Pauli BU (1997) Cloning und characterization of lung-endothelial cell adhesion molecule-1 suggest it is an endothelial chloride channel. *J Biol Chem* 272:27853-27861

Evans SR, Thoreson WB, Beck CL (2004) Molecular und functional analyses of two new calcium-activated chloride channel family members from mouse eye und intestine. *J Biol Chem* 279:41792-41800

Gabriel SE, Racette KJ, Gaspar KJ, Forsyth GW (1992) Inhibition of ileal brush-border chloride conductance by specific antibody. *J Membr Biol* 129:323-328

Gandhi R, Elble RC, Gruber AD, Schreur KD, Ji HL, Fuller CM, Pauli BU (1998) Molecular und functional characterization of a calcium-sensitive chloride channel from mouse lung. *J Biol Chem* 273:32096-32101

Gaspar KJ, Racette KJ, Gordon JR, Loewen ME, Forsyth GW (2000) Cloning a chloride conductance mediator from the apical membrane of porcine ileal enterocytes. *Physiol Genomics* 3:101-111

Gibson A, Lewis AP, Affleck K, Aitken AJ, Meldrum E, Thompson N (2005) hCLCA1 und mCLCA3 are secreted non-integral membrane proteins und therefore are not ion channels. *J Biol Chem* 280:27205-27212

Gottlieb RA, Dosanjh A (1996) Mutant cystic fibrosis transmembrane conductance regulator inhibits acidification und apoptosis in C127 cells: possible relevance to cystic fibrosis. *Proc Natl Acad Sci U S A* 93:3587-3591

Gottlieb RA, Giesing HA, Zhu JY, Engler RL, Babior BM (1995) Cell acidification in apoptosis: granulocyte colony-stimulating factor delays programmed cell death in neutrophils by up-regulating the vacuolar H(+)-ATPase. *Proc Natl Acad Sci U S A* 92:5965-5968

Greenwood IA, Miller LJ, Ohya S, Horowitz B (2002) The large conductance potassium channel beta-subunit can interact with and modulate the functional properties of a calcium-activated chloride channel, CLCA1. *J Biol Chem* 277:22119-22122

Grubb BR, Boucher RC (1999) Pathophysiology of gene-targeted mouse models for cystic fibrosis. *Physiol Rev* 79:S193-214

Gruber AD, Elble RC, Ji HL, Schreur KD, Fuller CM, Pauli BU (1998a) Genomic cloning, molecular characterization, and functional analysis of human CLCA1, the first human member of the family of Ca²⁺-activated Cl⁻ channel proteins. *Genomics* 54:200-214

Gruber AD, Fuller, C.M., Elble, R.C., Benos, DJ, Pauli, BU (2000) The CLCA Gene Family: A Novel Family of Putative Chloride Channels. *Current Genomics* 1:201-222

Gruber AD, Gandhi R, Pauli BU (1998b) The murine calcium-sensitive chloride channel (mCaCC) is widely expressed in secretory epithelia and in other select tissues. *Histochem Cell Biol* 110:43-49

Gruber AD, Pauli BU (1999a) Molecular cloning and biochemical characterization of a truncated, secreted member of the human family of Ca²⁺-activated Cl⁻ channels. *Biochim Biophys Acta* 1444:418-423

Gruber AD, Pauli BU (1999b) Tumorigenicity of human breast cancer is associated with loss of the Ca²⁺-activated chloride channel CLCA2. *Cancer Res* 59:5488-5491

Gruber AD, Schreur KD, Ji HL, Fuller CM, Pauli BU (1999) Molecular cloning and transmembrane structure of hCLCA2 from human lung, trachea, and mammary gland. *Am J Physiol* 276:C1261-1270

Hartzell C, Putzier I, Arreola J (2005) Calcium-activated chloride channels. *Annu Rev Physiol* 67:719-758

Hauber HP, Tsicopoulos A, Wallaert B, Griffin S, McElvaney NG, Daigneault P, Mueller Z, Olivenstein R, Holroyd KJ, Levitt RC, Hamid Q (2004) Expression of HCLCA1 in cystic fibrosis lungs is associated with mucus overproduction. *Eur Respir J* 23:846-850

Hirokawa T, Boon-Chieng S, Mitaku S (1998) SOSUI: classification und secondary structure prediction system for membrane proteins. Bioinformatics 14:378-379

Hirschberg K, Miller CM, Ellenberg J, Presley JF, Siggia ED, Phair RD, Lippincott-Schwartz J (1998) Kinetic analysis of secretory protein traffic und characterization of golgi to plasma membrane transport intermediates in living cells. J Cell Biol 143:1485-1503

Hoffmann W, Jagla W, Wiede A (2001) Molecular medicine of TFF-peptides: from gut to brain. Histol Histopathol 16:319-334

Hofman K, Stoffel W (1993) TMbase - A database of membrane spanning proteins segments. BiolChemHoppe-Seyler 374:166

Holtzman MJ, Battaile JT, Patel AC (2006) Immunogenetic programs for viral induction of mucous cell metaplasia. Am J Respir Cell Mol Biol 35:29-39

Hoshino M, Morita S, Iwashita H, Sagiya Y, Nagi T, Nakanishi A, Ashida Y, Nishimura O, Fujisawa Y, Fujino M (2002) Increased expression of the human Ca²⁺-activated Cl⁻ channel 1 (CaCC1) gene in the asthmatic airway. Am J Respir Crit Care Med 165:1132-1136

Huang P, Liu J, Di A, Robinson NC, Musch MW, Kaetzel MA, Nelson DJ (2001) Regulation of human CLC-3 channels by multifunctional Ca²⁺/calmodulin-dependent protein kinase. J Biol Chem 276:20093-20100

Jentsch TJ, Stein V, Weinreich F, Zdebik AA (2002) Molecular structure und physiological function of chloride channels. Physiol Rev 82:503-568

Jeong SM, Park HK, Yoon IS, Lee JH, Kim JH, Jang CG, Lee CJ, Nah SY (2005) Cloning und expression of Ca²⁺-activated chloride channel from rat brain. Biochem Biophys Res Commun 334:569-576

Komiya T, Tanigawa Y, Hirohashi S (1999) Cloning und identification of the gene gob-5, which is expressed in intestinal goblet cells in mice. Biochem Biophys Res Commun 255:347-351

- Koumi S, Sato R, Aramaki T (1994) Characterization of the calcium-activated chloride channel in isolated guinea-pig hepatocytes. *J Gen Physiol* 104:357-373
- Kyte J, Doolittle RF (1982) A simple method for displaying the hydropathic character of a protein. *J Mol Biol* 157:105-132
- Laemmli UK (1970) Cleavage of structural proteins during the assembly of the head of bacteriophage T4. *Nature* 227:680-685
- Lee D, Ha S, Kho Y, Kim J, Cho K, Baik M, Choi Y (1999) Induction of mouse Ca(2+)-sensitive chloride channel 2 gene during involution of mammary gland. *Biochem Biophys Res Commun* 264:933-937
- Leguillette R (2003) Recurrent airway obstruction--heaves. *Vet Clin North Am Equine Pract* 19:63-86
- Leverkoehne I, Gruber AD (2002) The murine mCLCA3 (alias gob-5) protein is located in the mucin granule membranes of intestinal, respiratory, und uterine goblet cells. *J Histochem Cytochem* 50:829-838
- Leverkoehne I, Holle H, Anton F, Gruber AD (2006) Differential expression of calcium-activated chloride channels (CLCA) gene family members in the small intestine of cystic fibrosis mouse models. *Histochem Cell Biol* 126:239-250
- Leverkoehne I, Horstmeier BA, von Samson-Himmelstjerna G, Scholte BJ, Gruber AD (2002) Real-time RT-PCR quantitation of mCLCA1 und mCLCA2 reveals differentially regulated expression in pre- und postnatal murine tissues. *Histochem Cell Biol* 118:11-17
- Liu H, Mamoon AM, Farley JM, Sr (2005) Prostanoids secreted by alveolar macrophages enhance ionic currents in swine tracheal submucosal gland cells. *J Pharmacol Exp Ther* 315:729-739
- Loewen ME, Bekar LK, Gabriel SE, Walz W, Forsyth GW (2002) pCLCA1 becomes a cAMP-dependent chloride conductance mediator in Caco-2 cells. *Biochem Biophys Res Commun* 298:531-536

Loewen ME, Bekar LK, Walz W, Forsyth GW, Gabriel SE (2004) pCLCA1 lacks inherent chloride channel activity in an epithelial colon carcinoma cell line. Am J Physiol Gastrointest Liver Physiol 287:G33-41

Loewen ME, Smith NK, Hamilton DL, Grahn BH, Forsyth GW (2003) CLCA protein und chloride transport in canine retinal pigment epithelium. Am J Physiol Cell Physiol 285:C1314-1321

Long AJ, Sypek JP, Askew R, Fish SC, Mason LE, Williams CM, Goldman SJ (2006) Gob-5 contributes to goblet cell hyperplasia und modulates pulmonary tissue inflammation. Am J Respir Cell Mol Biol 35:357-365

Maley F, Trimble RB, Tarentino AL, Plummer TH (1989) Characterization of glycoproteins and their associated oligosaccharides through the use of endoglycosidases. Anal Biochem 180:195-204

Mall M, Gonska T, Thomas J, Schreiber R, Seydewitz HH, Kuehr J, Brandis M, Kunzelmann K (2003) Modulation of Ca²⁺-activated Cl⁻ secretion by basolateral K⁺ channels in human normal und cystic fibrosis airway epithelia. Pediatr Res 53:608-618

McFadden ER, Jr, Gilbert IA (1992) Asthma. N Engl J Med 327:1928-1937

McNamara N, Gallup M, Khong A, Sucher A, Maltseva I, Fahy J, Basbaum C (2004) Adenosine up-regulation of the mucin gene, MUC2, in asthma. FASEB J 18:1770-1772

Morris AP, Frizzell RA (1993) Ca(2+)-dependent Cl⁻ channels in undifferentiated human colonic cells (HT-29). I. Single-channel properties. Am J Physiol 264:C968-976

Naim HY, Lacey SW, Sambrook JF, Gething MJ (1991) Expression of a full-length cDNA coding for human intestinal lactase-phlorizin hydrolase reveals an uncleaved, enzymatically active, und transport-competent protein. J Biol Chem 266:12313-12320

Naim HY, Sterchi EE, Lentze MJ (1987) Biosynthesis und maturation of lactase-phlorizin hydrolase in the human small intestinal epithelial cells. Biochem J 241:427-434

Nakai K, Horton P (1999) PSORT: a program for detecting sorting signals in proteins und predicting their subcellular localization. Trends Biochem Sci 24:34-36

Nakanishi A, Morita S, Iwashita H, Sagiya Y, Ashida Y, Shirafuji H, Fujisawa Y, Nishimura O, Fujino M (2001) Role of gob-5 in mucus overproduction und airway hyperresponsiveness in asthma. Proc Natl Acad Sci U S A 98:5175-5180

Nilius B, Prenen J, Szucs G, Wei L, Tanzi F, Voets T, Droogmans G (1997) Calcium-activated chloride channels in bovine pulmonary artery endothelial cells. J Physiol 498 (Pt 2):381-396

Nishimoto I, Wagner JA, Schulman H, Gardner P (1991) Regulation of Cl⁻ channels by multifunctional CaM kinase. Neuron 6:547-555

Offner GD, Troxler RF (2000) Heterogeneity of high-molecular-weight human salivary mucins. Adv Dent Res 14:69-75

Pagano JS, Vaheri A (1965) Enhancement of infectivity of poliovirus RNA with diethylaminoethyl-dextran (DEAE-D). Arch Gesamte Virusforsch 17:456-464

Papassotiriou J, Eggemont J, Droogmans G, Nilius B (2001) Ca(2+)-activated Cl⁻ channels in Ehrlich ascites tumor cells are distinct from mCLCA1, 2 und 3. Pflugers Arch 442:273-279

Patel AC, Morton JD, Kim EY, Alevy Y, Swanson S, Tucker J, Huang G, Agapov E, Phillips TE, Fuentes ME, Iglesias A, Aud D, Allard JD, Dabbagh K, Peltz G, Holtzman MJ (2006) Genetic segregation of airway disease traits despite redundancy of calcium-activated chloride channel family members. Physiol Genomics 25:502-513

Pawlowski K, Lepisto M, Meinander N, Sivars U, Varga M, Wieslander E (2006) Novel conserved hydrolase domain in the CLCA family of alleged calcium-activated chloride channels. Proteins 63:424-439

Qu Z, Fischmeister R, Hartzell C (2004) Mouse bestrophin-2 is a bona fide Cl(-) channel: identification of a residue important in anion binding und conduction. J Gen Physiol 123:327-340

- Qu Z, Hartzell C (2004) Determinants of anion permeation in the second transmembrane domain of the mouse bestrophin-2 chloride channel. *J Gen Physiol* 124:371-382
- Qu Z, Wei RW, Mann W, Hartzell HC (2003) Two bestrophins cloned from *Xenopus laevis* oocytes express Ca(2+)-activated Cl(-) currents. *J Biol Chem* 278:49563-49572
- Racette KJ, Gabriel SE, Gaspar KJ, Forsyth GW (1996) Monoclonal antibody against conductive chloride transport in pig ileal apical membrane vesicles. *Am J Physiol* 271:C478-485
- Ran S, Benos DJ (1992) Immunopurification und structural analysis of a putative epithelial Cl- channel protein isolated from bovine trachea. *J Biol Chem* 267:3618-3625
- Ran S, Benos DJ (1991) Isolation und functional reconstitution of a 38-kDa chloride channel protein from bovine tracheal membranes. *J Biol Chem* 266:4782-4788
- Ran S, Fuller CM, Arrate MP, Latorre R, Benos DJ (1992) Functional reconstitution of a chloride channel protein from bovine trachea. *J Biol Chem* 267:20630-20637
- Riordan JR, Rommens JM, Kerem B, Alon N, Rozmahel R, Grzelczak Z, Zielenski J, Lok S, Plavsic N, Chou JL, Drumm ML, Iannuzzi MC, Collins FS, Tsui LC (1989) Identification of the cystic fibrosis gene: cloning und characterization of complementary DNA. *Science* 245:1066-1073
- Ritzka M, Weinel C, Stanke F, Tummler B (2003) Sequence comparsion of the whole murine and human CLCA locus reveals conserved synteny between both species. *Genome Letters* 2:149-154
- Ritzka M, Stanke F, Jansen S, Gruber AD, Pusch L, Woelfl S, Veeze HJ, Halley DJ, Tummler B (2004) The CLCA gene locus as a modulator of the gastrointestinal basic defect in cystic fibrosis. *Hum Genet* 115:483-491

Robichaud A, Tuck SA, Kargman S, Tam J, Wong E, Abramovitz M, Mortimer JR, Burston HE, Masson P, Hirota J, Slipetz D, Kennedy B, O'Neill G, Xanthoudakis S (2005) Gob-5 is not essential for mucus overproduction in preclinical murine models of allergic asthma. *Am J Respir Cell Mol Biol* 33:303-314

Robinson NC, Huang P, Kaetzel MA, Lamb FS, Nelson DJ (2004) Identification of an N-terminal amino acid of the CLC-3 chloride channel critical in phosphorylation-dependent activation of a CaMKII-activated chloride current. *J Physiol* 556:353-368

Rogers DF (2003) The airway goblet cell. *Int J Biochem Cell Biol* 35:1-6

Romio L, Musante L, Cinti R, Seri M, Moran O, Zegarra-Moran O, Galietta LJ (1999) Characterization of a murine gene homologous to the bovine CaCC chloride channel. *Gene* 228:181-188

Rozmahel R, Wilschanski M, Matin A, Plyte S, Oliver M, Auerbach W, Moore A, Forstner J, Durie P, Nadeau J, Bear C, Tsui LC (1996) Modulation of disease severity in cystic fibrosis transmembrane conductance regulator deficient mice by a secondary genetic factor. *Nat Genet* 12:280-287

Schlenker T, Fitz JG (1996) Ca(2+)-activated Cl⁻ channels in a human biliary cell line: regulation by Ca²⁺/calmodulin-dependent protein kinase. *Am J Physiol* 271:G304-310

Schwiebert EM, Benos DJ, Fuller CM (1998) Cystic fibrosis: a multiple exocrinopathy caused by dysfunctions in a multifunctional transport protein. *Am J Med* 104:576-590

Selim AA, Mahon M, Juppner H, Bringhurst FR, Divieti P (2006) Role of calcium channels in carboxyl-terminal parathyroid hormone receptor signaling. *Am J Physiol Cell Physiol* 291:C114-121

Snapper JR (1986) Large animal models of asthma. *Am Rev Respir Dis* 133:351-352

Stobrawa SM, Breiderhoff T, Takamori S, Engel D, Schweizer M, Zdebik AA, Bosl MR, Ruether K, Jahn H, Draguhn A, Jahn R, Jentsch TJ (2001) Disruption of ClC-3, a chloride channel expressed on synaptic vesicles, leads to a loss of the hippocampus. *Neuron* 29:185-196

Sun H, Tsunenari T, Yau KW, Nathans J (2002) The vitelliform macular dystrophy protein defines a new family of chloride channels. *Proc Natl Acad Sci U S A* 99:4008-4013

Suzuki M, Mizuno A (2004) A novel human Cl(-) channel family related to Drosophila flightless locus. *J Biol Chem* 279:22461-22468

Szabo I, Lepple-Wienhues A, Kaba KN, Zoratti M, Gulbins E, Lang F (1998) Tyrosine kinase-dependent activation of a chloride channel in CD95-induced apoptosis in T lymphocytes. *Proc Natl Acad Sci U S A* 95:6169-6174

Takahashi T, Neher E, Sakmann B (1987) Rat brain serotonin receptors in *Xenopus* oocytes are coupled by intracellular calcium to endogenous channels. *Proc Natl Acad Sci U S A* 84:5063-5067

Taylor CJ, Baxter PS, Hardcastle J, Hardcastle PT (1988) Failure to induce secretion in jejunal biopsies from children with cystic fibrosis. *Gut* 29:957-962

Thevenod F, Roussa E, Benos DJ, Fuller CM (2003) Relationship between a HCO₃⁻-permeable conductance and a CLCA protein from rat pancreatic zymogen granules. *Biochem Biophys Res Commun* 300:546-554

Torian BE, Kenny GE (1986) A new metabolic labelling medium for *Trichomonas vaginalis* and *Tritrichomonas foetus* using ³⁵S methionine. *Proc Soc Exp Biol Med* 181:620-623

Tsunenari T, Sun H, Williams J, Cahill H, Smallwood P, Yau KW, Nathans J (2003) Structure-function analysis of the bestrophin family of anion channels. *J Biol Chem* 278:41114-41125

Tusnady GE, Simon I (2001) The HMMTOP transmembrane topology prediction server. *Bioinformatics* 17:849-850

Wang YX, Kotlikoff MI (1997) Inactivation of calcium-activated chloride channels in smooth muscle by calcium/calmodulin-dependent protein kinase. Proc Natl Acad Sci U S A 94:14918-14923

Welsh MJ, Tsui LC, Boat TF, Beaudet AL (1995) Cystic fibrosis. In The Metabolic und Molecular Basis of Inherited Disease. New York, McGraw-Hill Press, pp. 3799-3876

Whitehead GS, Walker JK, Berman KG, Foster WM, Schwartz DA (2003) Allergen-induced airway disease is mouse strain dependent. Am J Physiol Lung Cell Mol Physiol 285:L32-42

Whittaker CA, Hynes RO (2002) Distribution und evolution of von Willebrand/integrin A domains: widely dispersed domains with roles in cell adhesion und elsewhere. Mol Biol Cell 13:3369-3387

Willumsen NJ, Boucher RC (1989) Activation of an apical Cl⁻ conductance by Ca²⁺ ionophores in cystic fibrosis airway epithelia. Am J Physiol 256:C226-233

Winpenny JP, Lavery WL, Watson N, Chazot PL (2002) Biochemical and elektrophysiological characterisation of the GOB5 (mCLCA3) chloride ion channel protein after expression in HEK293 cells. J Physiol 539:2P

Worrell RT, Frizzell RA (1991) CaMKII mediates stimulation of chloride conductance by calcium in T84 cells. Am J Physiol 260:C877-882

Yamazaki J, Okamura K, Ishibashi K, Kitamura K (2005) Characterization of CLCA protein expressed in ductal cells of rat salivary glands. Biochim Biophys Acta 1715:132-144

Zhou Y, Dong Q, Louahed J, Dragwa C, Savio D, Huang M, Weiss C, Tomer Y, McLane MP, Nicolaides NC, Levitt RC (2001) Characterization of a calcium-activated chloride channel as a shared target of Th2 cytokine pathways und its potential involvement in asthma. Am J Respir Cell Mol Biol 25:486-491

Zhou Y, Shapiro M, Dong Q, Louahed J, Weiss C, Wan S, Chen Q, Dragwa C, Savio D, Huang M, Fuller C, Tomer Y, Nicolaides NC, McLane M, Levitt RC (2002) A calcium-activated chloride channel blocker inhibits goblet cell metaplasia und mucus overproduction. Novartis Found Symp 248:150-165; discussion 165-170, 277-182

Zhu DZ, Cheng CF, Pauli BU (1991) Mediation of lung metastasis of murine melanomas by a lung-specific endothelial cell adhesion molecule. Proc Natl Acad Sci U S A 88:9568-9572

Zhu DZ, Pauli BU (1991) Generation of monoclonal antibodies directed against organ-specific endothelial cell surface determinants. J Histochem Cytochem 39:1137-1142