BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Delpire, Eric J. Y.	Associate Professor
eRA COMMONS USER NAME (credential, e.g., agency login) delpirej	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
University of Liège, Belgium	B.S.	1981	Biology
University of Liège, Belgium	M.S.	1983	Physiology
University of Liège, Belgium	Ph.D.	1989	Cell Physiology

A. Positions and Honors

Positions and Employment

1983-1988 Assistant Laboratory of Animal Physiology, University Liège, Belgium
1989-1991 Research Associate Department of Physiology and Biophysics, Wright State University, Dayton
1991-1994 Instructor in Medicine Harvard Med. Sch., Renal Div., Brigham & Women's Hospital
1994-1996 Assistant Professor Harvard Med. Sch., Renal Div., Brigham & Women's Hospital
1994-1997 Assistant Professor Harvard Med. Sch., Critical Care Research, Children's Hospital
1997-2000 Assistant Professor Department of Anesthesiology, Vanderbilt University, Nashville
2000-pres Associate Professor Anesthesiology and Molecular Physiology & Biophysics, Vanderbilt University

Honors and Memberships

Member of the Center for Molecular Neuroscience, Vanderbilt Brain Institute, Kennedy Center for Research on Human Development. Established Investigator from the American Heart Association (1997-2000)
Member of European Society for Comparative Physiology and Biophysics
Society of General Physiologists
Red Cell Club
Biophysical Society
American Physiological Society
American Association for the Advancement of Science
Society for Neuroscience
Editorial Board, *American Journal of Physiology-Renal Physiology*

B. Selected peer-reviewed publications (in chronological order)

Delpire, E., & Gullans, S. R. (1994). Cell volume and K+ transport during differentiation of mouse erythroleukemia (MEL) cells. *Am J Physiol (Cell Physiol), 266*, C515-C523.

Delpire, E., Rauchman, M. I., Beier, D., Hebert, S. C., & Gullans, S. R. (1994). Molecular cloning and chromosome localization of a putative basolateral Na-K-2Cl cotransporter from mouse inner medullary collecting duct (mIMCD-3) cells. *J Biol Chem, 269*, 25677-25683.

Wasserman, J. C., Delpire, E., Kojima, R., Tonidandel, W., & Gullans, S. R. (1994). Molecular cloning of ROSIT, a novel renal osmotic stress-induced Na+-Cl--organic solute cotransporter. *Am J Physiol, 267*, F688-F694.

Soybel, D., Gullans, S. R., Maxwell, F., & Delpire, E. (1995). Role of basolateral Na-K-2Cl cotransport in HCl secretion by amphibian gastric mucosa. *Am J Physiol (Cell Physiology)*. 269, C242-C249.

Delpire, E., Kaplan, M. R., Plotkin, M. D., & Hebert, S. C. (1996). The Na-(K)-Cl cotransporter family in the mammalian kidney: molecular identification and function(s). *Nephrol Dial Transplant, 11*, 1967-1973.

Kaplan, M. R., Mount, D. B., Delpire, E., Gamba, G., & Hebert, S. C. (1996). Molecular mechanisms of NaCl cotransport. *Annu Rev Physiol, 58*, 649-668.

Kaplan, M. R., Plotkin, M. D., Brown, D., Hebert, S. C., & Delpire, E. (1996). Expression of the mouse Na-K-2Cl cotransporter, mBSC2, in the terminal IMCD, the glomerular and extraglomerular mesangium and the glomerular afferent arteriole. *J Clin Invest, 98*(3), 723-730.

Plotkin, M. D., Kaplan, M. R., Peterson, L. R., Gullans, S. R., Hebert, S. C., & Delpire, E. (1997). Expression of the Na-K-2Cl cotransporter, BSC2, in the nervous system. *Am J Physiol (Cell Physiology), 272*, C173-C183.

Plotkin, M. D., Snyder, E. Y., Hebert, S. C., & Delpire, E. (1997). Expression of the Na-K-2Cl cotransporter is developmentally regulated in postnatal rat brains. *J Neurobiol, 33*(6) 781-795.

Randall, J, Throne, T., & Delpire, E. (1997). Partial cloning and characterization of *Slc12a2*: the gene encoding the secretory Na-K-2Cl cotransporter. *Am J Physiol (Cell Physiol), 273*, C1267-C1277.

Hallonquist, H., Cima, R. R., Klingensmith, M. E., Purdy, M. J., Delpire, E., Zinner, M. J., & Soybel, D. I. (1998). Selective increase in gastric mucosal mRNA encoding basolateral cotransporter following ileostomy in the rat. *J Gastrointest Surg, 2*(3), 238-43.

Mount, D. B., Delpire, E., Gamba, G., Hall, A. E., Poch, E., Hoover, R. S., Jr., & Hebert, S. C. (1998). The electroneutral cationchloride cotransporters. *J Exp Biol, 201*, 2091-2102.

Wu, Q., Delpire, E., Hebert, S. C., & Strange, K. (1998). Functional demonstration of Na-K-2Cl cotransporter activity in isolated, polarized choroid plexus cells. *Am J Physiol* (*Cell Physiol), 275*, C1565-C1572.

Delpire, E., Lu, J., England, R., Dull, C., & Throne, T. (1999). Deafness and imbalance associated with inactivation of the secretory Na-K-2Cl cotransporter. *Nature Genet, 22*, 192-195.

Klingensmith, M. E., Neville, L. J, Delpire, E., Wolfe, M. M., & Soybel, D. I. (1999). Soybel. Gastrin-mediated effects of omeprazole on rat colon mucosa. *Surgery, 126*(2), 272-8.

Lu, J, Karadsheh, M., & Delpire, E. (1999). Developmental regulation of the neuronal-specific isoform of the K-Cl cotransporter, KCC2, in postnatal rat brains. *J Neurobiol, 39*, 558-568.

Mount, D. B., Mercado, A., Song, L, Xu, J., George, A., Delpire, E., & Gamba, G. (1999). Cloning and characterization of KCC3 and KCC4, new members of the cation-chloride cotransporter gene family. *J Biol Chem, 274*, 16355-16362.

Delpire, E. (2000). Cation-chloride cotransporters in neuronal communication. *NIPS, 15*, 309-312.

Strange, K., Singer, T. D., Morrison, R., & Delpire, E. (2000). Dependence of KCC2 K-Cl cotransporter activity on a conserved carboxy terminus tyrosine residue. *Am J Physiol (Cell Physiol), 279*, C860-C867.

Sung, K. -W., Kirby, M., McDonald, M. P., Lovinger, D. M., & Delpire, E. (2000). Abnormal GABAA-receptor mediated currents in dorsal root ganglion neurons isolated from Na-K-2Cl cotransporter *null* mice. *J Neurosci, 20*(20), 7531-7538.

Karadsheh, M. F. & Delpire, E. (2001). A neuronal restrictive silencing element is found in the KCC2 gene: Molecular Basis for KCC2 specific expression in neurons. *J NeuroPhysiol, 85*, 995-997.

Lauf, P. K., Zhang, J., Gagnon, K. B. E., Delpire, E., Fyffe, R. E. W., & Adragna, N. C. (2001). K-Cl cotransport: Immunological and ion flux studies in human embryonic kidney (HEK293) cells transfected with full length and C-terminal-domaintruncated KCC1 cDNAs. *Cell Physiol Biochem, 11*(3), 143-160.

Pearson, M. M., Lu, J., Mount, D. B., & Delpire, E. (2001). Cellular localization of KCC3 in the central and peripheral nervous systems: Expression in choroid plexus, large neurons, & white matter tracts. *Neuroscience, 103*(2), 483-493.

Delpire, E., & Mount, D. B. (2002). Human and mouse phenotypes associated with defects in cation-chloride cotransporters. *Ann Rev Physiol, 64*, 803-843.

Howard, H. C., Mount, D. B., Rochefort, D., Byun, N., Dupré, N., Lu, J., Fan, X., Song, L., Rivière, J. -B., Prévost, C., Welch, R., England, R., Zhan, F. Q., Mercado, A., Siesser, W. B., George, A. L., Horst, J., Simonati, A., McDonald, M. P., Bouchard, J. -P., Mathieu, J., Delpire, E., & Rouleau, G. A. (2002). The K-Cl cotransporter KCC3 is mutant in a severe peripheral neuropathy associated with agenesis of the corpus callosum *Nat Genet, 32*, 384-392.

Piechotta, K., Lu, J., & Delpire, E. (2002). Cation-chloride cotransporters interact with the stress-related kinases SPAK and OSR1. *J Biol Chem, 277*(52), 50812-50819.

Woo, N. -S., Lu, J., England, R., McClellan, R., Dufour, S., Mount, D. B., Deutch, A. Y., Lovinger, D. M., & Delpire, E. (2002). Hyper-excitability and epilepsy associated with disruption of the mouse neuronal-specific K-Cl cotransporter gene. *Hippocampus, 12*, 458-468.

Thomson, R. B., Mentone, S. A., Kim, R., Earle, K., Delpire, E., Somlo, S., Aronson, P. S. (2003). Histopathological analysis of renal cystic epithelia in the Pkd2$^{WS25/-}$ mouse model of ADPKD. *Am. J. Physiol. Renal. Physiol.* 285(5):F870-80.

Piechotta, K., Garbarini, N. J., England, R. & Delpire. E. (2003). Characterization of the interaction of the stress kinase SPAK with the Na +-K+-2Cl- cotransporter in the nervous system: Evidence for a scaffolding role of the kinase. *J. Biol. Chem*. 278:52848-52856, 42.

Karadsheh, M. F., Byun N., Mount, D. B, & Delpire, E. (2004). Localization of the KCC4 K-Cl cotransporter in the nervous system. *Neuroscience*. 123: 381-392.

Laird, J. M. A., García-Nicas, E., Delpire, E. & Cervero, F. (2004). Presynaptic inhibition and spinal pain processing: a possible role of the NKCC1 cation-chloride co-transporter in hyperalgesia. *Neurosci. Lett.* 361:200-203.

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Mercado, A., Cortes, R., Song, L., Vazquez, N., Welch, R., Enck, A.H., Delpire, E., Gamba, G., and Mount, D.B. (2005). Amino-Terminal Heterogeneity in the KCC3 K^+-$C1^-$ Cotransporter. *Am. J. Physiol. Renal* 289:F1246-F1261.

Dzhala, V., Talos, D., Sdrulla, D., Brumback, A., Mathews, G., Benke, T., Delpire, E., Jensen, F., and Staley, K. (2005). NKCC1 transporter facilitates seizures in the developing brain. *Nat. Med.* 11:1205-1213.

Gagnon, K.B., England, R. and Delpire, E. (2006). Volume sensitivity of cation-chloride contransporters is modulated by the interaction of two kinases: SPAK and WNK4. *Am. J. Physiol. Cell Physiol.* (First published June 2005; doi: 10.1152/ajpcell.00037.2005) 290: C134-C142.

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Gagnon, K.B., England, R., and Delpire, E. (2006). Characterization of SPAK and OSR1, regulatory kinases of the Na-K-2C1 cotransporter. *Mol. Cell Biol.* 26:689-698.

Blaesse, P., Guillemin, I., Schindler, J., Schweizer, M., Kranz, T.M., Delpire, E., Khiroug, L., Friauf, E., and Nothwant, H.G. (2006). Oligomerization of KCC2 correlates with onset of $C1^-$ extrusion in the developing brainstem. *J. Neurosci.* 26(41):10407-10419.

Delpire, E. and Gagnon, K.B. (2007). Genome-wide analysis of SPAK/OSR1 binding motifs. *Physiol. Gen.* 28(2):223-231.

Garzón-Muvdi, T., Pacheco-Alvarez, D., Gagnon, K.B.E., Vázquez, N.,Ponce-Coria, J., Moreno, E., Delpire, E., and Gamba, d. (2007). WNK4 kinase is a negative regulator of K^+-$C1^-$ cotransporters. *Am. J. Physiol. Renal Physiol.* 292:1197-1207.

Gagnon, K.B., England, R., and Delpire, E. (2007). A single binding motif is required for SPAK activation of the Na-K-2C1 cotransporter. *Cell Physiol. Biochem.* 20:131-142.

Gagnon, K.B., England, R., Diehl, L., and Delpire, E. (2007). Apoptosis associated tyrosine kinase scaffolding of protein phosphatase 1 and SPAK reveals a novel pathway for Na-K-2C1 cotransporter regulation. *Am J. Physiol. Cell Physiol.* 292(5):C1809-C1815.

Pieraut, S., Matha, v., Star, C., Hubert, T., Méchaly, I., Hilaire, C., Mersel, M., Delpire, E., Valmier, J., and Scamps, F. (2007). NKCC1 Phosphoorylation Stimulates Neurite Growth of Injured Adult Sensory Neurons. *J. Neurosci.* 27(25):6751-6759.

Zhang, L., Delpire, E., and Vardi, N. (2007). NKCC1 does not accumulate chloride in developing retinal neurons. *J. Neurophysiol.* 98(1):266-277.

Byun, N. and Delpire, E. (2007). Axonal and periaxonal swelling precede peripheral neurodegeneration in KCC3 knockout mice. *Neurobiol. Disease*. 28:39-51. (PMC 2242858).

Uvarov, P., Ludwig, A., Markkanen, M., Pruunsild, P., Kaila, K., Delpire, E., Timmusk, T., Rivera, C., and Airaksinen, M.S. (2007). Novel N-terminal Isoform of the Neuron-Specific K-C1 Cotransnporter KCC2. *J. boil. Chem.* 282:30570-30576.

Zhu, L., Polley, N., Mathews, G.C., and Delpire, E. (2008). NKCC1 and KCC2 Prevent Hyperexcitability in the Mouse. *Epilepsy Res.* 79:97-108. (PMC 2394664).

Garbarini, N. and Delpire, E. (2008). The RCC1 domain of Protein Associated with Mye (PAM) interacts with and regulates KCC2. *Cell Physiol. Biochem.* 22:31-44.

C. Research Support

Ongoing Research Support

U01AA013514 Delpire (PI) 01/01/02 - 01/31/12
NIAAA
Gene-Targeted Mouse Core
The goal of this Core is to develop and provide new animal knockout models for research in the alcohol field. This Core is part of an Integrative Neuroscience Initiative on Alcoholism examining the relationship between stress and alcohol.
Role: PI

R01GM074771 Delpire (PI) 04/01/09 – 01/31/11
NIGMS
Kinases in Ion Contrasporter Function
These studies will elucidate novel aspects of cation-chloride cotransporter function and regulation and provide a better understanding of cation-chloride cotransporter links to CNS-related disorders. \
Role: PI

R01NS036758 Delpire (PI) 07/30/99 - 11/30/13
NINDS
Molecular Physiology of Brain Cation-Chloride Cotransporters
The goal of this project is to characterize the role of cation-chloride cotransporters in regulating intracellular Cl in hippocampal neurons and characterize the developmental regulation of these cotransporters in neurons during brain development.
Role: PI

Completed Research Support
None