

Mark Daniel Parker

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Present Employment:

Instructor (since 1 Oct 2008)

Case Western Reserve University School of Medicine, Department of Physiology and Biophysics, 2109 Adelbert Road, Cleveland, OH 44106.

PI: Walter Boron (Structure and function of Na⁺-coupled HCO₃⁻ transporters)

Working with a range of techniques and technologies such as molecular biology, ion-selective microelectrodes, two-electrode voltage clamp, immunocytochemistry, surface plasmon resonance, insect cell culture, protein expression and purification, yeast two-hybrid screening and isotopic ion-transport measurements.

Employment History:

Senior Research Associate (Oct 2007-Oct 2008)

Case Western Reserve University School of Medicine, Department of Physiology and Biophysics, 10900 Euclid Avenue, Cleveland, OH 44106.

PI: Walter Boron (Structure and function of Na⁺-coupled HCO₃⁻ transporters)

Associate Research Scientist (Aug 2003-Oct 2007)

Yale University School of Medicine. Department of Cellular and Molecular Physiology, 333 Cedar Street, New Haven, CT 06511

PI: Walter Boron (Structure and function of Na⁺-coupled HCO₃⁻ transporters)

Postdoctoral Research Assistant (Apr 2003-Jul 2003)

University of Bristol Medical School. Department of Biochemistry, University Walk. Bristol, BS8 1TH, UK.

PI: Lydia Henderson (Cloning *Xenopus* orthologs of NADPH oxidase)

Postdoctoral Research Assistant (May 2000-Mar 2003)

University of Bristol Medical School. Department of Biochemistry, University Walk. Bristol, BS8 1TH, UK.

PI: Michael Tanner (Cloning and characterization of novel bicarbonate transporters)

Education:

Ph.D. (Oct 1995-Apr 1999; award date Jun 2000)

University of Bristol Medical School. Department of Biochemistry, University Walk. Bristol, BS8 1TH, UK.

PI: Michael Tanner (Overexpression and characterization of the human red cell anion exchanger AE1 in *Saccharomyces cerevisiae*)

B.Sc. Hons. (Oct 1992-Jun 1995; award date Jun 1995)

University of Bristol Medical School, University Walk. Bristol, BS8 1TH, UK.
Biochemistry (III)

Teaching experience

Case Western Reserve University:

Medical School Small Group Teaching (March 2009, February 2010, February 2011)
Cardiac muscle contraction, Membrane transport, Cardiac electrophysiology, Cardiac signaling, Action potential lab. (Block 4: Homeostasis)

Medical School Small Group Teaching (August 2009) Cell signaling

Department of Physiology and Biophysics. PHOL 432 (September 2009) Basic genetic mechanism I, Basic genetic mechanisms II

Department of Physiology and Biophysics. PHOL 456 (November 2009, September 2010) cDNA and genomic cloning, Reverse genetics and eukaryotic expression systems, Transgenic animal models, Gene regulation analysis.

Publications:

Zhang K, Yin L, Zhang M, Parker MD, Binder HJ, Salzman P, Zhang L, Okunieff P, Vidyasagar S

Radiation decreases murine small intestinal HCO₃⁻ secretion.

Int. J. Radiat. Biol. (2011) In press.

Boron WF, Musa-Aziz R and Parker MD

Using fluorometry and ion-sensitive microelectrodes to study the functional expression of heterologously-expressed ion channels and transporters in *Xenopus* oocytes

Methods (2010); 51; 134-145.

Leviel F, Hübner CA, Houillier P, Morla L, El Moghrabi S, Brideau G, Hatim H, Parker MD, Kurth I, Kougioumtzes A, Sinning A, Pech V, Riemondy KA, Miller RL, Hummler E, Shull GE, Aronson PS, Doucet A, Wall AM, Chambrey R and Eladari D

The Na⁺-dependent chloride-bicarbonate exchanger SLC4A8 mediates an electroneutral Na⁺ reabsorption process in the renal cortical collecting ducts of mice

J. Clin. Invest. (2010); 120; 1627-1635.

Wu F, Saleem M, Ni L, Kampik NB, Toth T, Williamson R, White G, Young MT, Parker MD, Alper SL, Kretzler M, Wagner CA and Toyne AM

Anion exchanger 1 interacts with nephrin in podocytes

J. Am. Soc. Nephrol. (2010); 21; 1456-1467.

Liu Y, Xu K, Chen L-M, Sun X, Parker MD, Kelly ML, LaManna JC and Boron WF

Distribution of NBCn2 (SLC4A10) splice variants in mouse brain

Neuroscience (2010); 169; 951-964.

Parker MD, Musa-Aziz RA and Boron WF

The use of extracellular, ion-selective microelectrodes to study the function of heterologously expressed transporters in *Xenopus* oocytes

Am J Physiol Cell Physiol. (2009); 296; C1243.

Boron WF, Chen LM and Parker MD

Modular structure of sodium-coupled bicarbonate transporters

J Exp Biol. (2009); 212; 1697-1706.

Parker MD, Bouyer P, Daly CM, and Boron WF

Cloning and characterization of novel human *SLC4A8* gene products encoding Na⁺-driven Cl-HCO₃ exchanger variants NDCBE-A, -C and -D

Physiological Genomics (2008); 34; 265-276.

Parker MD, Musa-Aziz R, Rojas JD, Choi I, Daly CM, and Boron WF

Characterization of human *SLC4A10* as an electroneutral Na/HCO₃ cotransporter (NBCn2) with Cl⁻-self exchange activity

J. Biol.Chem. (2008); 283; 12777-12788.

Chen L-M, Kelly ML, Parker MD, Bouyer P, Gill HS, Felie JM, Davis BA, Boron WF

Expression and localization of Na⁺-driven Cl-HCO₃ exchanger (*SLC4A8*) in rodent CNS

Neuroscience (2008); 153; 162-174.

Chen L-M, Kelly ML, Rojas JD, Parker MD, Gill HS, Davis BA, Boron WF.

Use of a new polyclonal antibody to study the distribution and glycosylation of the sodium-coupled bicarbonate transporter NCBE in rodent brain.

Neuroscience (2008); 151; 374-385.

Parker MD and Boron WF

Sodium-Coupled Bicarbonate Transporters.

In *Seldin and Giebisch's The Kidney: Physiology and Pathophysiology*, edited by RJ Alpern and SH Hebert, Philadelphia: Elsevier, (2007).

Parker MD, Young MT, Daly CM, Meech RW, Boron WF, and Tanner MJ.

A Conductive Pathway Generated From Fragments Of The Human Red Cell Anion Exchanger, AE1.

J. Physiol. (2007); 581; 33-50.

Toye AM, Parker MD, Daly CM, Lu J, Virkki LV, Pelletier MF, Boron WF.

The human NBCe1-A mutant R881C, associated with proximal renal tubular acidosis, retains function but is mistargeted in polarized renal epithelia.

Am. J. Physiol. Cell Physiol. (2006); 291; C788-C801.

Lu J, Daly CM, Parker MD, Gill HS, Piermarini PM, Pelletier MF, Boron WF.

Effect of human carbonic anhydrase II on the activity of the human electrogenic Na/HCO₃ cotransporter NBCe1-A in *Xenopus* oocytes.

J. Biol. Chem. (2006); 281; 19241-19250.

Parker MD and Tanner MJ

The disruption of the third extracellular loop of the red cell anion exchanger AE1 does not affect electroneutral Cl/HCO₃⁻ exchange activity

Blood Cells Mol. Dis. (2004); 32: 379-383.

Parker MD, Ourmozdi EP, and Tanner MJ

Human BTR1, a new bicarbonate transporter superfamily member and human AE4 from kidney

Biochem. Biophys. Res. Commun. (2001); 282: 1103-1109.

Groves JD, Parker MD, Askin D, Falson P, le Maire M and Tanner MJ

Heterologous expression of the red-cell anion exchanger (band 3; AE1)

Biochem. Soc. Trans. (1999); 27: 917-923.