

Curriculum Vitae

Name: Jerod Scott Denton
Office Phone: 615-343-7385
Office Address: Department of Anesthesiology 1161 21st Ave Room T-4208 MCN
Nashville Tennessee, 37232 (2520)
Work Email: jerod.s.denton@Vanderbilt.Edu

Training

08/1990 - 05/1995 B.S. in Biology from University of Central Arkansas, AR United States
08/1995 - 05/1997 M.S. in Physiology from University of Central Arkansas, AR United States
08/1995 - 12/2001 Ph.D. in Physiology from Dartmouth College, NH United States
01/2001 - 06/2005 Post-Doc Research in Ion channel physiology from Vanderbilt University School of Medicine, Nashville, TN

Academic Appointments

2005 - Present Assistant Professor, Vanderbilt University School of Medicine
01/2005 - 06/2005 Research Assistant Professor, Vanderbilt University (Nashville, Tennessee)
07/2005 - 03/2014 Assistant Professor of Pharmacology, Vanderbilt University (Nashville, Tennessee)
07/2005 - 03/2014 Assistant Professor of Anesthesiology, Vanderbilt University (Nashville, Tennessee)
07/2005 - Present Member, Vanderbilt Digestive Disease Research Center
10/2010 - Present Member, Vanderbilt Institute of Chemical Biology
04/2014 - Present Associate Professor of Pharmacology, Vanderbilt University (Nashville, Tennessee)
04/2014 - Present Associate Professor of Anesthesiology, Vanderbilt University (Nashville, Tennessee)

Professional Organizations

1999 Americal Physiological Society, member
2009 Southern Salt Water and Kidney Club, member

Professional Activities

Intramural

08/2003 - 07/2004 Vanderbilt Post-doc Association, Co-chair
04/2006 - 08/2007 Ph.D. thesis committee for Emily Schwartz, Neuroscience, Member
04/2006 - 08/2009 Ph.D. thesis committee for Wen-Yi Lo, Neuroscience, Member
01/2008 - Present BH Robbins Scholars Program, Vanderbilt, Anesthesiology, Co-Director
01/2008 - 07/2010 Ph.D. thesis committee for Sonya Dave, Molecular Physiology :BIOPHYSICS, Member
03/2009 - Present Anesthesiology Research Executive Committee, Anesthesiology, Member
04/2009 - 11/2009 Research Strategic Plan Committee, Anesthesiology, Chair
05/2009 - Present Ph.D. thesis committee for Kris Burkewitz, Pharmacology, Chair

Teaching Activities

04/2005 - 2007 IGP flextime group leader, Vanderbilt University School of Medicine
02/2009 - Present Instructor-Bioelectricity module, NURO 345 course, Vanderbilt University School of Medicine

Research Supervision / Mentorship

03/2005 - 05/2009 Katherine Fallen, B.S. University of Minnesota, Current Position: Ph.D. candidate in Neuroscience. (Undergraduate, Research)
01/2007 - 05/2010 Rishin Kadakia, B.S. Vanderbilt University School of Medicine, Current Position: Medical Student. (Undergraduate, Research)
01/2008 - 05/2010 Gautam Bhave, M.D., Ph.D. Vanderbilt University School of Medicine, Current Position: Instructor, Department of Nephrology. (Post-doc Fellow, Research)
05/2009 - Present Daniel Lonergan, M.D. Vanderbilt University School of Medicine, Current Position: Fellow in Anesthesiology. (Post-doc Fellow, Research)
01/2010 - Present Thuy T. Nguyen, B.S. Vanderbilt University School of Medicine, Current Position: Ph.D. candidate in Pharmacology. (Graduate Student, Research)
01/2010 - 05/2010 Noel Bennett, B.S. University of Minnesota, Current Position: Intern. (Undergraduate, Research)
02/2010 - Present Rene Raphemot, B.S. Vanderbilt University School of Medicine, Current Position: Ph.D. candidate in Pharmacology. (Graduate Student, Research)
01/2011 - 08/2011 Rishin Kadakia, B.S. Vanderbilt University School of Medicine, Current Position: Medical Student/Emphasis scholar. (Medical Student, Research)

Grants and Funding

1R21NS057041-01 07/2006 - 06/2007
National Institute of Neurological Disorders and Stroke
Identification of Novel Modulators of ROMK K⁺ Channel Activity
Role: Principal Investigator
Total Cost: \$76,500.00

0865106E 07/2008 - 06/2010
American Heart Association
Molecular and Cellular Mechanisms of Kir1.1 Potassium Channel Dysfunction in Antenatal Bartter Syndrome
Role: Principal Investigator
Total Cost: \$132,000.00

000 07/2009 - 06/2010
National Kidney Foundation
Characterization of Novel ROMK Antagonists
Role: Mentor
Total Cost: \$100,000.00

5R21AI079523-02 07/2009 - 06/2011
National Institute of Allergy and Infectious Diseases
Regulation of macrophage activation state by intracellular triglyceride
Role: Principal Investigator
Total Cost: \$387,344.00

1R21NS073097-01 09/2010 - 08/2011
National Institute of Neurological Disorders and Stroke
Chemical probes of the astroglial potassium channel Kir4.1
Role: Principal Investigator
Total Cost: \$155,167.00

1R01DK082884-01A2	09/2010 - 08/2015
National Institute of Diabetes & Digestive & Kidney Disease	
Molecular pharmacology and physiology of kidney potassium transport	
Role: Principal Investigator	
Total Cost: \$1,352,794.00	
1R01DC011338-01	12/2010 - 11/2015
National Institute on Deafness and Other Communication Disor	
Molecular Pathophysiology of Acute Phonotrauma	
Role: Co-Investigator	
Total Cost: \$1,869,184.00	
Grant number unavailable	09/2011 - 08/2014
Foundation for the National Institutes of Health	
High-throughput discovery of chemicals that induce 'kidney' failure in the malarial vector <i>Anopheles gambiae</i>	
Role: Co-Principal Investigator	
Total Cost: \$1,400,000.00	

Honors / Awards

08/1995	Teaching Fellow, University of Central Arkansas, Department of Biology
08/1997	Predoctoral Fellow, Dartmouth Medical School, NIH
07/2000	Albert J. Ryan Predoctoral Fellow, Dartmouth Medical School
06/2001	Grass Fellow in Neuroscience, Marine Biological Laboratory, Woods Hole, MA, Grass Foundation
01/2002	Postdoctoral Fellow, Vanderbilt University Medical Center, NIH
07/2003	Ruth Kirchstein Postdoctoral Fellow, Vanderbilt University Medical Center, NIH
04/2008	Best Presentation, Anesthesiology Research Retreat, Vanderbilt
06/2011	Maren Fellow in Regenerative Biology, MDIBL
06/2011	B.E. Smith Mentorship Award, Department of Anesthesiology

Publications

Peer Reviewed Publications

Research Articles

- Denton, J**, Boahene, D, Moran, WM. Luminal L-alanine stimulates exocytosis at the K⁺-conductive apical membrane of *Aplysia* enterocytes. [Am J Physiol](#) 1998; 275(5 Pt 1) PMID: 9814979.
- Chalfant, ML, **Denton, JS**, Berdiev, BK, Ismailov, II, Benos, DJ, Stanton, BA. Intracellular H⁺ regulates the alpha-subunit of ENaC, the epithelial Na⁺ channel. [Am J Physiol](#) 1999; 276(2 Pt 1) PMID: 9950776.
- Chalfant, ML, **Denton, JS**, Langloh, AL, Karlson, KH, Loffing, J, Benos, DJ, Stanton, BA. The NH₂ terminus of the epithelial sodium channel contains an endocytic motif. [J Biol Chem](#) 1999; 274(46) PMID: 10551853.
- Moran, WM, **Denton, J**, Wilson, K, Williams, M, Runge, SW. A simple, inexpensive method for teaching how membrane potentials are generated. [Am J Physiol](#) 1999; 277(6 Pt 2) PMID: 10644260.
- Moyer, BD, **Denton, J**, Karlson, KH, Reynolds, D, Wang, S, Mickle, JE, Milewski, M, Cutting, GR, Guggino, WB, Li, M, Stanton, BA. A PDZ-interacting domain in CFTR is an apical membrane polarization signal. [J Clin Invest](#) 1999; 104(10) PMID: 10562297 PMID: 409842.
- Moyer, BD, Duhaime, M, Shaw, C, **Denton, J**, Reynolds, D, Karlson, KH, Pfeiffer, J, Wang, S, Mickle, JE, Milewski, M, Cutting, GR, Guggino, WB, Li, M, Stanton, BA. The PDZ-interacting domain of cystic fibrosis transmembrane conductance regulator is required for functional expression in the apical plasma membrane. [J Biol Chem](#) 2000; 275(35) PMID: 10852925.
- Denton, JS**, Leiter, JC. Anomalous effects of external TEA on permeation and gating of the A-type potassium current in *H. aspersa* neuronal somata. [J Membr Biol](#) 2002; 190(1) PMID: 12422269.
- Rutledge, E, **Denton, J**, Strange, K. Cell cycle- and swelling-induced activation of a *Caenorhabditis elegans*

ClCchannel is mediated by CeGLC-7alpha/beta phosphatases. J Cell Biol 2002; 158(3) PMID: 12163466 PMCID: 2173826.

9. **Denton, J**, Nehrke, K, Rutledge, E, Morrison, R, Strange, K. Alternative splicing of N- and C-termini of a C. elegans ClC channel alters gating and sensitivity to external Cl⁻ and H⁺. J Physiol 2004; 555(Pt 1) PMID: 14565992 PMCID: 1664825.
10. **Denton, J**, Nehrke, K, Yin, X, Morrison, R, Strange, K. GCK-3, a newly identified Ste20 kinase, binds to and regulates the activity of a cell cycle-dependent ClC anion channel. J Gen Physiol 2005; 125(2) PMID: 15684092 PMCID: 2217494.
11. **Denton, J**, Nehrke, K, Yin, X, Beld, AM, Strange, K. Altered gating and regulation of a carboxy-terminal ClC channel mutant expressed in the Caenorhabditis elegans oocyte. Am J Physiol Cell Physiol 2006; 290(4) PMID: 16306126.
12. He, L, **Denton, J**, Nehrke, K, Strange, K. Carboxy terminus splice variation alters ClC channel gating and extracellular cysteine reactivity. Biophys J 2006; 90(10) PMID: 16500974 PMCID: 1440737.
13. Chernov, MM, Daubenspeck, JA, **Denton, JS**, Pfeiffer, JR, Putnam, RW, Leiter, JC. A computational analysis of central CO₂ chemosensitivity in Helix aspersa. Am J Physiol Cell Physiol 2007; 292(1) PMID: 16928773.
14. **Denton, JS**, McCann, FV, Leiter, JC. CO₂ chemosensitivity in Helix aspersa: three potassium currents mediate pH-sensitive neuronal spike timing. Am J Physiol Cell Physiol 2007; 292(1) PMID: 16928774.
15. Yin, X, **Denton, J**, Yan, X, Strange, K. Characterization of a novel voltage-dependent outwardly rectifying anion current in Caenorhabditis elegans oocytes. Am J Physiol Cell Physiol 2007; 292(1) PMID: 16899547.
16. Nehrke, K, **Denton, J**, Mowrey, W. Intestinal Ca²⁺ wave dynamics in freely moving C. elegans coordinate execution of a rhythmic motor program. Am J Physiol Cell Physiol 2008; 294(1) PMID: 17942636.
17. Fallen, K, Banerjee, S, Sheehan, J, Addison, D, Lewis, LM, Meiler, J, **Denton, JS**. The Kir channel immunoglobulin domain is essential for Kir1.1 (ROMK) thermodynamic stability, trafficking and gating. Channels (Austin) 2009; 3(1):57-68. PMID: 19221509.
18. Lewis LM, Bhavé G, Chauder BA, Banerjee S, Lornsen KA, Redha R, Fallen K, Lindsley CW, Weaver CD, **Denton JS**. High-throughput screening reveals a small-molecule inhibitor of the renal outer medullary potassium channel and Kir7.1. Molecular pharmacology 2009 Nov;76(5):1094-1103. PMID: 19706730 PMCID: PMC2774996.
19. Bhavé G, Chauder BA, Liu W, Dawson ES, Kadakia R, Nguyen TT, Lewis LM, Meiler J, Weaver CD, Satlin LM, Lindsley CW, **Denton JS**. Development of a selective small-molecule inhibitor of Kir1.1, the renal outer medullary potassium channel. Molecular pharmacology 2011 Jan;79(1):42-50. PMID: 20926757 PMCID: PMC3014278.

Review Articles

1. Strange, K, **Denton, J**, Nehrke, K. Ste20-type kinases: evolutionarily conserved regulators of ion transport and cell volume. Physiology (Bethesda) 2006; 21: PMID: 16443823.
2. Bhavé G, Lonergan D, Chauder BA, **Denton JS**. Small-molecule modulators of inward rectifier K channels: recent advances and future possibilities. Future medicinal chemistry 2010 May;2(5):757-774. PMID: 20543968 PMCID: PMC2883187.

Presentations

Invited Presentation - National

1. Drug Discovery for Ion Channels IX. Biophysical Society meeting; Boston, Massachusetts. 2009 Feb; Discovery of Novel ROMK Channel Inhibitors: One Step Closer to a Potassium-sparing Loop Diuretic?.
2. Nanion Users Group Meeting II. Nanion Technologies; San Francisco, California. 2009 Feb; Functional studies of small molecule-Kir channel interactions using the Patchliner automated patch clamp workstation.
3. Biophysical Society Meeting. San Francisco, California. 2009 Feb; Chemical synthesis of a highly selective probe of the renal outer medullary K channel (ROMK).
4. Experimental Biology meeting. American Physiological Society; New Orleans, Louisiana. 2009 Apr; High-throughput discovery of novel Kir1.1 channel modulators.
5. Experimental Biology meeting. American Physiological Society; New Orleans, Louisiana. 2009 Apr; The Kir channel immunoglobulin domain is essential for Kir1.1 (ROMK) thermodynamic stability, trafficking and gating.
6. Target Discovery World Congress. San Francisco, California. 2009 Aug; Small-molecule inhibitors of ROMK and GIRK.
7. Nanion Technologies User Group Meeting I. Biophysical Society; Boston, Massachusetts. 2010 Feb; Parallel patch clamp analysis of novel ROMK channel inhibitors using the Patchliner system.
8. Ion Channel Targets. Washington, District of Columbia. 2010 Sep; Small-molecule probes of inward rectifying potassium channels.
9. Ion Channels as Therapeutic Targets. Boston, Massachusetts. 2010 Nov; ROMK as a novel diuretic target.

Invited Presentation - International

1. Ion Channel Retreat. Aurora Biomed; Vancouver, B.C., Canada. 2010 Jun; Rational design of a highly selective small-molecule inhibitor of the renal outer medullary potassium channel (ROMK).
2. Ion Channel Targets. Select Biosciences; San Francisco, California. 2011 Sep 27; Small-molecule inhibitors of inward rectifier potassium channels: novel tools for integrative physiology and structure-function studies.

University Talk

1. University of Arkansas for Medical Sciences; 2006 Aug; Macrophage-adipocyte interactions in obesity: role of ER stress response pathways in inflammation.
2. Emory University; Atlanta, Georgia. 2008 Apr; Mechanisms of Kir1.1 channel dysfunction in Bartter syndrome and progress toward disease pharmacotherapy.
3. Interventional Pain Group. Vanderbilt School of Medicine; Nashville, Tennessee. 2009 Aug; Small-molecule antagonists of inward rectifying K channels: novel tools for integrative physiology.
4. University of Central Arkansas-Department of Biology; Conway, Arkansas. 2009 Sep; Small-molecule modulators of potassium channel function: building blocks for novel therapeutics.
5. Emory University; Department of Physiology; Atlanta, Georgia. 2010 Apr; Small-molecule probes of inward rectifier potassium channels: Novel tools for integrative physiology.
6. BH Robbins Scholars Program; Nashville, Tennessee. 2010 Apr; Academic drug discovery for ion channels.
7. Loyola University Institute for Signal Transduction; Chicago, Illinois. 2011 Sep 16; From mosquito to man: Inward rectifier potassium channels as novel disease targets.

Presentations at Scientific Meetings

1. Southeast Lipids Conference. 2007 Sep; Macrophage ER stress pathways in obesity.
2. Southern Salt, Water and Kidney Conference; Longboat Key, Florida. 2008 Dec; High-throughput discovery of novel ROMK channel inhibitors: Can we do better than Lasix?.
3. Lake Cumberland Biological Transport Meeting. Lake Cumberland, Kentucky. 2009 Jun; Mining small-molecule libraries for Kir channel antagonists.
4. Southern Salt, Water and Kidney Club Conference. Longboat Key, Florida. 2009 Dec; Small-molecule antagonists of inward rectifier K channels: novel tools for integrative physiology.
5. Lake Cumberland Biological Transport Meeting. Lake Cumberland, Kentucky. 2010 Jun; Rational design of a highly selective small-molecule inhibitor of the renal outer medullary potassium channel (ROMK).

Visiting Professor

1. Dartmouth Medical School; 2004 Sep; Integrative physiology of a cell cycle-regulated CIC channel in *C. elegans*.
2. Mount Desert Island Biological Laboratory; Salisbury Cove, Maine. 2010 Jul; Novel chemical probes for integrative potassium channel physiology.
3. Monday morning scientific talks. Mount Desert Island Biological Laboratory; Salisbury Cove, Maine. 2011 Jun 27; Electrical remodeling in the regenerating zebrafish heart.