

# Curriculum Vitae

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## 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 National Institute of Neurological Disorders and Stroke Identification of Novel Modulators of ROMK K <sup>+</sup> Channel Activity Role: Principal Investigator Total Cost: \$76,500.00	07/2006 - 06/2007
0865106E 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	07/2008 - 06/2010
000 National Kidney Foundation Characterization of Novel ROMK Antagonists Role: Mentor Total Cost: \$100,000.00	07/2009 - 06/2010
5R21AI079523-02 National Institute of Allergy and Infectious Diseases Regulation of macrophage activation state by intracellular triglyceride Role: Principal Investigator Total Cost: \$387,344.00	07/2009 - 06/2011
1R21NS073097-01 National Institute of Neurological Disorders and Stroke Chemical probes of the astroglial potassium channel Kir4.1 Role: Principal Investigator Total Cost: \$155,167.00	09/2010 - 08/2011
1R01DK082884-01A2 National Institute of Diabetes & Digestive & Kidney Disease Molecular pharmacology and physiology of kidney potassium transport Role: Principal Investigator Total Cost: \$1,352,794.00	09/2010 - 08/2015
1R01DC011338-01 National Institute on Deafness and Other Communication Disor Molecular Pathophysiology of Acute Phonotrauma Role: Co-Investigator Total Cost: \$1,869,184.00	12/2010 - 11/2015
Grant number unavailable Foundation for the National Institutes of Health High-throughput discovery of chemicals that induce 'kidney' failure in the malarial vector <i>Anopheles gambiae</i>	09/2011 - 08/2014

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

1. **Denton, J**, Boahene, D, Moran, WM. Luminal L-alanine stimulates exocytosis at the K<sup>+</sup>-conductive apical membrane of Aplysia enterocytes. *Am J Physiol* 1998; 275(5 Pt 1) PMID: 9814979.
2. 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.
3. 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 PMCID: 409842.
4. Chalfant, ML, **Denton, JS**, Langloh, AL, Karlson, KH, Loffing, J, Benos, DJ, Stanton, BA. The NH(2) terminus of the epithelial sodium channel contains an endocytic motif. *J Biol Chem* 1999; 274(46) PMID: 10551853.
5. Chalfant, ML, **Denton, JS**, Berdiev, BK, Ismailov, II, Benos, DJ, Stanton, BA. Intracellular H<sup>+</sup> regulates the alpha-subunit of ENaC, the epithelial Na<sup>+</sup> channel. *Am J Physiol* 1999; 276(2 Pt 1) PMID: 9950776.
6. 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.
7. Rutledge, E, **Denton, J**, Strange, K. Cell cycle- and swelling-induced activation of a Caenorhabditis elegans Cl<sup>-</sup> channel is mediated by CeGLC-7alpha/beta phosphatases. *J Cell Biol* 2002; 158(3) PMID: 12163466 PMCID: 2173826.
8. **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.
9. **Denton, J**, Nehrke, K, Rutledge, E, Morrison, R, Strange, K. Alternative splicing of N- and C-termini of a C. elegans Cl<sup>-</sup> channel alters gating and sensitivity to external Cl<sup>-</sup> and H<sup>+</sup>. *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 Cl<sup>-</sup> 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 Cl<sup>-</sup> 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 Cl<sup>-</sup> channel gating and extracellular cysteine reactivity. *Biophys J* 2006; 90(10) PMID: 16500974 PMCID: 1440737.
13. **Denton, JS**, McCann, FV, Leiter, JC. CO<sub>2</sub> chemosensitivity in Helix aspersa: three potassium currents mediate pH-sensitive neuronal spike timing. *Am J Physiol Cell Physiol* 2007; 292(1) PMID: 16928774.
14. 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.

15. Chernov, MM, Daubenspeck, JA, **Denton, JS**, Pfeiffer, JR, Putnam, RW, Leiter, JC. A computational analysis of central CO<sub>2</sub> chemosensitivity in *Helix aspersa*. Am J Physiol Cell Physiol 2007; 292(1) PMID: 16928773.
16. Nehrke, K, **Denton, J**, Mowrey, W. Intestinal Ca<sup>2+</sup> 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, Bhave 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. Bhave 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. Bhave 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.