

CURRICULUM VITAE

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REGULAR CONTACT INFORMATION

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EDUCATION/TRAINING

- 1981-1985 Bachelor's Degree (B.A.): Dept. of Biology, Gustavus Adolphus College, St. Peter, MN
- 1987-1992 Doctoral Degree (Ph.D.) Dept. of Anatomy & Neurobiology, University of Tennessee Health Science Center, Memphis TN;
Dissertation Title: "Histaminergic Modulation of Immunohistochemically Identified Vasopressin Neurons in the Rat Supraoptic Nucleus".
Advisor: William E. Armstrong, Ph.D.
Thesis Committee: William E. Armstrong, Ph.D., William R. Crowley, Ph.D., Robert C. Foehring, Ph.D., Hitoshi Kita, Ph.D., Kafait U. Malik, Ph.D.
- 1992-1995 Postdoctoral Fellow, Neurophysiology/Epilepsy, Colorado State University, Fort Collins, CO, Dept. of Anatomy & Neurobiology.
Advisor: F. Edward Dudek, Ph.D.
- 1995-1998 Postdoctoral Research Associate, Neurophysiology/Epilepsy, Colorado State University, Dept. of Anatomy & Neurobiology
Advisor: F. Edward Dudek, Ph.D.
- 1998 Postdoctoral Research Associate, Hypothalamic Neurophysiology, Dept. of Anatomy & Neurobiology, Colorado State University,
Advisors: F. Edward Dudek, Ph.D., Gary E. Pickard, Ph.D.

PROFESSIONAL EXPERIENCE

- 06/84-09/84 Research Assistant/Normal Volunteer, National Institutes of Health
- 10/84-06/85 Undergraduate Research, Gustavus Adolphus College
- 08/87-09/92 Graduate Teaching Assistant, Dept. of Anatomy & Neurobiology
University of Tennessee Health Science Center
- 09/92-10/95 Postdoctoral Fellow, Dept. of Anatomy & Neurobiology, Colorado State University
- 10/95-09/98 Postdoctoral Research Associate, Dept. of Anatomy & Neurobiology
Colorado State University

10/98-07/99 Assistant Professor (Research), Dept. of Anatomy & Neurobiology
Colorado State University
07/99-06/04 Assistant Professor (tenure-track), Dept. Cell & Molecular Biology,
Tulane University
07/01-06/06 Adjunct Assistant Professor, Dept. Neurosurgery, Tulane Univ. School
of Medicine
07/04-06/06 Associate Professor (tenured), Dept. Cell & Molecular Biology and the
Neuroscience Graduate Training Program, Tulane University
07/06-06/10 Adjunct Professor of Cell & Molecular Biology, Tulane University
07/06-06/11 Associate Professor (tenured), Department of Physiology, College of
Medicine, University of Kentucky (UK)
07/10-08/16 Director of Graduate Studies, Department of Physiology, UK
12/10-present Faculty Associate, Spinal Cord and Brain Injury Research Center, UK
07/11-present Professor, Department of Physiology, College of Medicine, UK
08/13-present Director, Epilepsy Center (EpiC), College of Medicine, UK
07/16-03/18 Interim Chair, Dept. of Neuroscience, College of Medicine, UK
03/18-present Chair and Professor, Dept. of Neuroscience, College of Medicine, UK

HONORS AND AWARDS

10/84-6/85 Undergraduate Research Award : Sigma Xi
8/87-7/88 Predoctoral Fellowship: Dept. of Anatomy and Neurobiology, Univ. Tenn.
8/88-8/92 Predoctoral Fellowship: State of Tennessee Neuroscience Center of
Excellence
7/89-8/92 National Institutes of Health (NIH) Predoctoral National Research Service
Award (NRSA): National Institute of Mental Health (NIMH), F31-MH09933
"Histaminergic control of neuroendocrine function"
9/92-9/95 NIH Postdoctoral NRSA: National Institute of Neurological Disease and
Stroke (NINDS) F32-NS09289 "Ontogeny and mechanisms of CRH-
induced seizure activity"
7/96-6/97 American Heart Association (AHA), Colorado/Wyoming Affiliate:
Postdoctoral Fellowship CFWF0396; "Mechanism of glutamate-mediated
activation of vasopressin neurons"
2000-2001 Georges M. Lurcy Grant Program; Research Grants for Tulane College
Students (S. Misra and R. Tompkins).
2001-2002 Georges M. Lurcy Grant Program; Research Grants for Tulane College
Students (J. Fernandez, C. Hasney, T. Kubal, J.L. LaFleur).
2002-2003 Georges M. Lurcy Grant Program; Research Grants for Tulane College
Students (J. Fernandez, T. Kubal).
2002-2003 Newcomb Foundation Grant, Newcomb Fellows Program (C. Poole)
2003-2004 Mortarboard citation for teaching excellence, Newcomb College, Tulane
University
2004, 2005 Outstanding Funded Faculty Award, Liberal Arts and Sciences (LAS)
Dean, Tulane University
2007-2018 Wethington Award for Excellence in Research, UKCOM
2010-2016 Dr. Thomas L. Skinner Professorship in Physiology
2012 Holsinger Award for Excellence in Teaching, Dept of Physiology
2013 Abraham Flexner Master Educator Award (Leadership), UKCOM
2016 University Research Professorship, UK
2018 Alumni Endowed Chair in Anatomy (Neuroscience)

RESEARCH INTERESTS

Synaptic organization of brain systems controlling visceral/autonomic functions in metabolic disorders; synaptic reorganization and neuroplasticity in epilepsy

PUBLICATIONS (PEER REVIEWED)

1. **Smith**, B.N. and Armstrong, W.E. (1990) Tuberal supraoptic neurons--I: Morphological and electrophysiological characteristics observed with intracellular recording and biocytin filling *in vitro*. *Neuroscience*, 38:469-483.
2. Armstrong, W.E. and **Smith**, B.N. (1990) Tuberal supraoptic neurons--II: Electrotonic properties. *Neuroscience*, 38:485-494.
3. Nelson, R.J., **Smith**, B.N. and Douglas, V.D. (1991) Relationships between sensory responsiveness and premovement activity of quickly adapting neurons in areas 3b and 1 of monkey primary somatosensory cortex. *Exp. Brain Res.*, 85:75-90.
4. **Smith**, B.N. and Armstrong, W.E. (1993) Histamine enhances the depolarizing afterpotential of immunohistochemically identified vasopressin neurons in the rat supraoptic nucleus via H₁-receptor activation. *Neuroscience*, 53:855-864.
5. Armstrong, W.E., **Smith**, B.N., and Tian, M. (1994) Electrophysiological characteristics of immunochemically identified oxytocin and vasopressin neurons *in vitro*. *J. Physiol. (Lond.)*, 475:115-128.
6. **Smith**, B.N. and Dudek, F.E. (1994) Age-related epileptogenic effects of corticotropin-releasing hormone in the isolated CA1 region of rat hippocampal slices. *J. Neurophysiol.*, 72:2328-2333.
7. **Smith**, B.N. and Armstrong, W.E. (1996) The ionic dependence of the histamine-induced depolarization of vasopressin neurones in the rat supraoptic nucleus. *J. Physiol. (Lond.)*, 495:465-478.
8. **Smith**, B.N. and Dudek, F.E. (1996) Amino acid-mediated regulation of spontaneous synaptic activity patterns in the rat basolateral amygdala. *J. Neurophysiol.*, 76:1958-1967.
9. **Smith**, B.N. and Dudek, F.E. (1997) Enhanced population responses in the basolateral amygdala of kainate-treated, epileptic rats *in vitro*. *Neurosci. Letts.*, 222:1-4.
10. **Smith**, B.N., Dou, P., Barber, W.D., and Dudek, F.E. (1998) Vagally-evoked synaptic activity in the immature rat nucleus tractus solitarius in an intact *in vitro* preparation. *J. Physiol. (Lond.)*, 512:149-162.
11. Pickard, G.E., **Smith**, B.N., Belenky, M., Rea, M.A., Dudek, F.E., Sollars, P.J. (1999) 5-HT_{1B} receptor-mediated presynaptic inhibition of retinal input to the suprachiasmatic nucleus. *J. Neurosci.*, 19:4034-4045.
12. **Smith**, B.N., Choi, B.-J., Roper, S.N., and Dudek, F.E. (1999) Electrophysiological responses in vivo of hippocampal CA1 pyramidal neurons in an animal model of neuronal migration disorders. *Dev. Neurosci.*, 21:374-384.
13. **Smith**, B.N., Dudek, F.E., and Roper, S.N. (1999) Synaptic responses of neurons in heterotopic gray matter in an animal model of cortical dysgenesis. *Dev. Neurosci.*, 21:365-373.
14. **Smith**, B.N., Banfield, B., Smeraski, C.A., Wilcox, C.L., Dudek, F.E., Enquist, L.W., and Pickard, G.E. (2000) Pseudorabies virus expressing enhanced green fluorescent protein: a tool for in vitro electrophysiological analysis of transsynaptically labeled neurons in identified central nervous system circuits *Proc. Natl. Acad. Sci. (USA)*, 97:9264-9269.

15. Suter, K.S., Wuarin, J.-P., **Smith**, B.N., Dudek, F.E., and Moenter, S.M. (2000) Whole-cell recordings from preoptic/hypothalamic slices reveal burst firing in gonadotropin-releasing hormone neurons identified with green fluorescent protein in transgenic mice. *Endocrinology*, 141:3731-3736.
16. **Smith**, B.N. and Dudek, F.E. (2001) Short- and long-term changes in CA1 network excitability after kainate treatment in rats. *J. Neurophysiol.*, 85:1-9.
17. **Smith**, B.N., Dudek, F.E., Sollars, P.J., and Pickard, G.E. (2001) Serotonergic modulation of retinal input to the mouse suprachiasmatic nucleus mediated by 5-HT_{1B} and 5-HT₇ receptors. *J. Biol. Rhythms*, 16:25-38.
18. **Smith**, B.N. and Dudek, F.E. (2002) Network interactions mediated by new excitatory connections between CA1 pyramidal cells in rats with kainate-induced epilepsy. *J. Neurophysiol.*, 87:1655-1658.
19. Shibley, H. and **Smith**, B.N. (2002) Pilocarpine-induced status epilepticus results in mossy fiber sprouting and spontaneous seizures in C57BL/6 and CD-1 mice. *Epilepsy Res.*, 49:109-120.
20. **Smith**, B.N., Davis, S.F., van den Pol, A.N, and Xu, W. (2002) Selective enhancement of excitatory synaptic activity in the rat nucleus tractus solitarius by hypocretin 2. *Neuroscience*, 115:707-714.
21. Davis, S.F., Williams, K.W., Xu, W., Glatzer, N.R., and **Smith**, B.N. (2003) Selective enhancement of synaptic inhibition by hypocretin (orexin) in rat vagal motor neurons: Implications for autonomic regulation. *J. Neurosci.*, 23:3844-3854.
22. Glatzer, N.R., Hasney, C.P., Bhaskaran, M.D., and **Smith**, B.N. (2003) Synaptic and morphological properties in vitro of premotor rat nucleus tractus solitarius neurons labeled transneuronally from the stomach. *J. Comp. Neurol.*, 464:525-539.
23. Winokur, R.S., Kubal, T., Liu, D., Davis, S.F., and **Smith**, B.N. (2004) Recurrent excitation in the dentate gyrus of a murine model of temporal lobe epilepsy. *Epilepsy Res.* 58:93-105.
24. Davis, S.F., Derbenev, A.V., Williams, K.W., Glatzer, N.R., and **Smith**, B.N. (2004) Convergent excitatory and inhibitory local circuit input to the rat dorsal motor nucleus of the vagus originating from the nucleus tractus solitarius. *Brain Res.* 1017:208-217.
25. Derbenev, A.V., Stuart, T.C., and **Smith**, B.N. (2004) Cannabinoids suppress synaptic input to neurones of the rat dorsal motor nucleus of the vagus nerve. *J. Physiol. (Lond.)* 559:923-938.
26. Glatzer, N.R. and **Smith**, B.N. (2005) Modulation of synaptic transmission in the rat nucleus of the solitary tract by endomorphin-1. *J. Neurophysiol.* 93:2530-2540.
27. Williams, K.W. and **Smith**, B.N. (2006) Rapid inhibition of neural excitability in the nucleus tractus solitarii by leptin: implications for ingestive behaviour. *J. Physiol (Lond)* 573:395-412.
28. Derbenev, A.V., Monroe, M.J., Glatzer, N.R., and **Smith**, B.N. (2006) Vanilloid-mediated heterosynaptic facilitation of inhibitory input to neurons of the rat dorsal motor nucleus of the vagus. *J. Neurosci.* 26:9666-9672.
29. Williams, K.W., Zsombok, A., and **Smith**, B.N. (2007) Rapid inhibition of neurons in the dorsal motor nucleus of the vagus by leptin. *Endocrinology* 148:1868-1881.
30. Glatzer, N.R., Derbenev, A.V., Banfield, B.W., and **Smith**, B.N. (2007) Endomorphin-1 modulates intrinsic inhibition in the dorsal vagal complex. *J Neurophysiol.* 98:1591-9.
31. Chen, J., Paudel, K.S., Derbenev, A.V., **Smith**, B.N., and Stinchcomb, A.L. (2009) Simultaneous Quantification of Anandamide and Other Endocannabinoids in Dorsal Vagal Complex of Rat Brainstem by LC-MS. *Chromatographia.* 69:1-7.

32. Duale, H., Hou, S., Derbenev, A.V., **Smith, B.N.**, and Rabchevsky, A.G. (2009) Spinal cord injury reduces the efficacy of pseudorabies virus labeling of sympathetic preganglionic neurons. *J Neuropath Exp Neurol.* 68:168-78.
33. Gao, H., Glatzer, N.R., Williams, K.W., Derbenev, A.V., Liu, D., and Smith, B.N. (2009) Morphological and electrophysiological features of motor neurons and putative interneurons in the dorsal vagal complex of rats and mice. *Brain Res.* 1291:40-52.
34. Hunt, R.F., Scheff, S.W., and **Smith, B.N.** (2009) Posttraumatic epilepsy after controlled cortical impact injury in mice. *Exp. Neurol.* 215(2):243-52.
35. Bhaskaran, M.D. and **Smith, B.N.** (2010) Effects of TRPV1 activation in the dentate gyrus of a mouse model of TLE. *Exp. Neurol.* 223:529-36.
36. Bhaskaran, M.D. and **Smith, B.N.** (2010) Cannabinoid modulation of excitability in the dentate gyrus of pilocarpine-treated epileptic mice. *PLoS One.* 5(5):e10683 (1-10).
37. Derbenev, A.V., Duale, H., Rabchevsky, A.G. and **Smith, B.N.** (2010) Electrophysiological characteristics of identified kidney-related neurons in adult rat spinal cord slices. *Neurosci Letts.* 474:168-172.
38. Gao, H. and **Smith, B.N.** (2010) Tonic GABA-mediated inhibition in the rat dorsal motor nucleus of the vagus. *J. Neurophysiol.* 103:904-14.
39. Gao, H. and **Smith, B.N.** (2010) Zolpidem effects on GABA currents in the rat dorsal motor nucleus of the vagus. *Neuropharmacology.* 58:1220-1227.
40. Hunt, R.F., Scheff, S.W., and **Smith, B.N.** (2010) Regionally localized recurrent excitation in the dentate gyrus of a cortical contusion model of posttraumatic epilepsy. *J. Neurophysiol.* 103:1490-1500.
41. Duale, H., Lyttle, T.S. and **Smith B.N.**, Rabchevsky, A.G. (2010) Noxious colorectal distention in spinalized rats reduces pseudorabies virus labeling of sympathetic neurons. *J. Neurotrauma.* 27:1369-78.
42. Hunt, R.F., Scheff, S.W., and **Smith, B.N.** (2011) Increased local excitatory input to hilar GABAergic interneurons accompanies reduced synaptic inhibition of granule cells after traumatic brain injury. *J. Neuroscience* 31:6880-6890.
43. Zsombok, A., Bhaskaran, M.D., Gao, H., Derbenev, A.V., and **Smith, B.N.** (2011) Functional plasticity of central TRPV1 Receptors in brainstem dorsal vagal complex circuits of streptozotocin-treated hyperglycemic mice. *J. Neuroscience* 31:14024-31.
44. Bach, E.C. and **Smith, B.N.** (2012) Presynaptic NMDA receptor-mediated modulation of excitatory neurotransmission in the mouse dorsal motor nucleus of the vagus. *J. Neurophysiol.* 108:1484-91.
45. Blake, C.B. and **Smith, B.N.** (2012) Insulin reduces excitation in gastric-related neurons of the dorsal motor nucleus of the vagus. *Am J. Physiol. Reg.* 303:807-14.
46. Doolen, S., Blake, C.B., **Smith, B.N.**, and Taylor, B.K. (2012) Peripheral nerve injury increases glutamate-evoked calcium mobilization in adult spinal cord neurons. *Mol Pain* 8:56.
47. Hunt, R.F., Haselhorst, L.A., Schoch, K.M., Bach, E.C., Rios-Pilier, J., Scheff, S.W., Saatman, K.E., and **Smith, B.N.** (2012) Posttraumatic mossy fiber sprouting is related to the degree of cortical damage in three mouse strains. *Epilepsy Res.* 99:167-170.
48. Boychuk, C.R.*, Zsombok, A.*, Tasker, J.G., and **Smith, B.N.** (2013) Glucocorticoid-induced activation of TRP and CB1 receptors causes biphasic modulation of glutamate release in gastric-related hypothalamic preautonomic neurons. *authors contributed equally; *Front. Neurosci.* 7(3):1-12.

49. Derbenev, A.V. and **Smith, B.N.** (2013) Dexamethasone rapidly increases GABA release in the dorsal motor nucleus of the vagus via retrograde messenger-mediated enhancement of TRPV1 activity. *PLoS One*. 8(7):e70505.
50. Blake, C.B. and **Smith, B.N.** (2014) cAMP-dependent insulin modulation of synaptic inhibition in neurons of the dorsal motor nucleus of the vagus is altered in diabetic mice. *Am J Physiol Reg*. 307:R711-20.
51. Bach, E.C., Halmos, K.C., and **Smith, B.N.** (2015) NMDA receptor modulation in the vagal complex of normal and diabetic mice. *PLoS-One*. 10(3)e0121022.
52. Boychuk, C.R.*, Gyarmati, P.*, Xu, H., and **Smith, B.N.** (2015) Glucose sensing in the nucleus tractus solitarius is mediated by GABAergic neurons. *J Neurophysiol*. 114:999-1007.
53. Boychuk, C.R., Halmos, K.C., and **Smith, B.N.** (2015) Tonic GABA currents in the dorsal motor nucleus of the vagus are altered after streptozotocin-induced diabetes. *J Neurophysiol*. 114:698-706.
54. Halmos, K.C., Gyarmati, P., Xu, H., Maimaiti, S., Jancso, G., Benedek, G., and **Smith, B.N.** (2015) Molecular and functional changes in glucokinase expression in the brainstem dorsal vagal complex in a murine model of type 1 diabetes. *Neuroscience* 306:115-122.
55. Raible, D., Frey, L.C., Del Angel, Y.C. Carlsen, J., Hund, D., Russek, S.J., **Smith, B.**, and Brooks-Kayal, A. (2015) JAK/STAT pathway regulation of GABA_A receptor expression after differing severities of experimental TBI. *Exp. Neurol*. 271:445-456.
56. Xu, H., Boychuk, J.A., Boychuk, C.R., Uteshev, V., and **Smith, B.N.** (2015) Nicotinic modulation of inhibitory neural circuitry in the mouse dorsal vagal complex. *J Neurophysiol*. 113:1165-74.
57. Xu, H. and **Smith, B.N.** (2015) Presynaptic ionotropic glutamate receptors regulate GABA release in the mouse dorsal motor nucleus of the vagus. *Neuroscience* 308:95-105.
58. Butler, C.R., Boychuk, J.A. and **Smith, B.N.** (2015) Rapamycin treatment reduces neurogenesis and synaptic reorganization after controlled cortical impact injury in the mouse dentate gyrus. *Front. Syst. Neurosci*. 9:163:1-14.
59. Boychuk, J.A., Butler, C.R., Halmos, K.C. **Smith, B.N.** (2016) Enduring changes in tonic inhibition in dentate gyrus granule cells after controlled cortical impact injury in mice. *Exp. Neurol*. 277:178-189.
60. Butler, C.R., Boychuk, J.A. and **Smith, B.N.** (2016) Differential effects of rapamycin treatment on GABAergic inhibition in mouse dentate granule cells after focal brain injury. *Exp. Neurol*. 280:30-40.
61. Boychuk, C.R. and **Smith, B.N.** (2016) Glutamatergic drive facilitates synaptic inhibition of dorsal vagal motor neurons after experimentally-induced diabetes in mice. *J. Neurophysiol*. 116:1498-506.
62. Boychuk, C.R., Smith, K.C., and **Smith, B.N.** (2017) Functional and molecular plasticity of gamma and alpha 1 GABAA receptor subunits in the dorsal motor nucleus of the vagus after experimentally-induced diabetes. *J Neurophysiol*. 118:2833-2841.
63. Butler, C.R., Boychuk, J.A. and **Smith, B.N.** (2017) Brain injury-induced synaptic reorganization in hilar inhibitory neurons is differentially suppressed by rapamycin. *eNeuro* 4:e0134-17.2017 1–15.
64. Derera, I., Delisle, B.A., and **Smith, B.N.** (2017) Pilocarpine-induced status epilepticus is associated with altered brainstem function and increased risk of sudden death. *eNeuro*. 4:e0319-17.2017 1-13.

65. Boychuk, C.R., Smith, K.C., Peterson, L.E., Boychuk, J.A., Butler, C.R., Derera, I.D., McCarthy, J.J., and **Smith, B.N.** (2019) A hindbrain inhibitory microcircuit mediates vagally-coordinated glucose regulation. *Sci. Rep.* 9:2722.
66. Derera, I.D., Smith, K.C., and **Smith, B.N.** (2019) Altered A-type potassium channel function in the nucleus tractus solitarii in acquired temporal lobe epilepsy. (2019) *J. Neurophysiol.* 121:177-187.
67. Butler, C.R., Boychuk, J.A., Pomerleau, F., Alcalá, R., Huettl, P., Ai, Y., Jakobsson, J., Whiteheart, S.W., Gerhardt, G.A., **Smith, B.N.**, and Slevin, J.T. Use of optogenetics to modulate epileptogenesis. Submitted.
68. Custodio-Patsey, L. Donahue, R., Fu, W., Lambert, J., **Smith, B.N.**, and Taylor, B.K. Sex Differences in Kappa Opioid Receptor Inhibition of Latent Postoperative Pain and pERK expression in Dorsal Horn. Submitted.
69. Kahle, M.P.*, Salmeron, K.*, Marcelo-McCabe, A., Roberts, J., Boychuk, J.A., Boychuk, C.R., de Hoog, L., Grupke, S.L., Berretta, A., Gowing, E., Gorman, A., **Smith, B.N.**, Clarkson, A.N., Bix, G.J. Delayed Domain-V Treatment Enhances Post-stroke neurogenesis and function in mice. *Authors contributed equally. In revision.
70. Boychuk, J.A., Butler, C.R., Frey, L., Brooks-Kayal, A., and **Smith, B.N.** Changes in inhibitory signaling to dentate granule cells following traumatic brain injury: Effects of JAK/STAT inhibition. In preparation.
71. **Smith, B.N.**, Blake, C.B., Derbenev, A.V., Gyarmati, P. and Yang, S., Depolarization-induced modulation of synaptic transmission mediated by cannabinoid and vanilloid receptors in the dorsal motor nucleus of the vagus. In Preparation.
72. Smith, KCs*, Boychuk, CR*, Butler, CR, Wean, J., Boychuk, JA, and **Smith, B.N.** Parasympathetic output contributes to the resolution of uncontrolled diabetic hyperglycemia by vertical sleeve gastrectomy in a murine model of type 1 diabetes. In Preparation.

CHAPTERS, REVIEWS, AND COMMENTARIES

1. **Smith, B.N.** and Dudek, F.E. (1998) Intracellular recording in hypothalamic cells that regulate neuroendocrine function. In: *Methods in Neuroendocrinology, The Cellular and Molecular Neuropharmacology Series.* L.D. Van de Kar, ed., CRC Press, Boca Raton, FL, pp. 95-113.
2. Dudek, F.E., **Smith, B.N.**, Suter, K.J., and Wuarin, J.-P. (1999) Electrophysiology of hypothalamic neurons. In: *Neuroendocrinology in Physiology and Medicine.* P.M. Conn and M.E. Freeman, eds., The Humana Press, Inc., Totowa, NJ, pp. 527-539.
3. Suter, K.J., **Smith, B.N.**, and Dudek, F.E. (1999) Electrophysiological recording from brain slices. *Methods*, 18:86-90.
4. Dudek, F.E., Wuarin, J.-P., **Smith, B.N.**, and Hellier, J.L. (2000) In vitro electrophysiological studies on the mechanisms of epileptogenesis using human and animal brain slices. In: *Epilepsy Surgery.* H.O. Luders and Y. Comair, eds., Lippincott Williams & Wilkins, New York, NY, pp. 927-934.
5. Zsombok, A. and **Smith, B.N.** (2009) Plasticity of central autonomic neural circuits in diabetes. *Biochim Biophys Acta: Molecular Basis of Disease.* 1792:423-431.
6. Galanopoulou AS, Buckmaster PS, Staley KJ, Moshé SL, Perucca E, Engel J Jr, Löscher W, Noebels JL, Pitkänen A, Stables J, White HS, O'Brien TJ, Simonato M, American Epilepsy Society Basic Science Committee* And The International League Against Epilepsy Working Group On Recommendations For Preclinical

- Epilepsy Drug Discovery (2012) Identification of new epilepsy treatments: issues in preclinical methodology. *Epilepsia*. 53:571-82. PMID:22292566.
7. **Smith, B.N.** (2012) Reactive Plasticity With a Kainate Receptor Twist: Rhythmic Firing in Granule Cells Breaks Down the Gate? *Epilepsy Curr.* 12(4):1-2.
 8. **Smith, B.N.** (2012) Hot Spots Light Up the Recurrent Excitation Hypothesis of Temporal Lobe Epilepsy. *Epilepsy Curr.* 12(6):220-221.
 9. **Smith, B.N.** (2013) 'Maestro' Hub Neurons Orchestrate the Immature GABA Network Symphony. *Epilepsy Curr.* 13(2):93-4.
 10. Hunt, R.F., Boychuk, J.A., and **Smith, B.N.** (2013) Neural circuit mechanisms of posttraumatic epilepsy. *Front. Cell. Neurosci.* 7:89: 1-14.
 11. **Smith, B.N.** (2013) The right cells, the right place, the right result: transplants to alleviate seizures take a step forward. *Epilepsy Curr.* 13:262-3.
 12. **Smith, B.N.** (2014) Prophylaxis for post-traumatic epilepsy: Can your kinase do that? *Epilepsy Curr.* 14:38-40.
 13. **Smith, B.N.** (2014) Inhibitory neurons cut a new path in epilepsy development. *Epilepsy Curr.* 14:213-214.
 14. **Smith, B.N.** and Delisle, B.P. (2015) The long and the short of it: Seizures induce cardiac remodeling and arrhythmia? *Epilepsy Curr.* 15:90-91.
 15. **Smith, B.N.** (2015) One mutation deserves another in the quest for anti-epileptogenesis. *Epilepsy Curr.* 15:217-18.
 16. **Smith, B.N.** (2015) The wanderer falters: central vagal dysregulation triggers SUDEP. *Epilepsy Curr.* 15:269-70.
 17. **Smith, B.N.** (2016) Breathe easy: modifying mitochondrial respiration to treat seizures. *Epilepsy Curr.* 16:34-35.
 18. **Smith, B.N.** (2016) Seizures, epilepsy, and SUDEP: A change of heart? *Epilepsy Curr.* 16:166-167.
 19. **Smith, B.N.** (2016) How and why study posttraumatic epilepsy in animal models? *Epilepsy Curr.* 16:393-396.
 20. **Smith, B.N.** (2017) Sprouted mossy fiber connections of adult-born granule cells: Detonate or fizzle? *Epilepsy Curr.* 17:379-80.
 21. **Smith, B.N.** (2018) Neuroinflammation and Seizures After Pediatric Brain Injury: What a Headache! *Epilepsy Curr.* 18:246-47.

ABSTRACTS AND PROCEEDINGS

1. **Smith, B.N.** and Armstrong, W.E. (1988) Intracellular labeling of electrophysiologically identified neurons in the tuberal portion of the supraoptic nucleus. *Soc. Neurosci. Abstr.*, 14:1180.
2. **Smith, B.N.** and Armstrong, W.E. (1990) The effects of histamine on the membrane potential of rat magnocellular supraoptic neurons recorded intracellularly *in vitro*. *Soc. Neurosci. Abstr.*, 16: 68.
3. Armstrong, W.E., **Smith, B.N.**, and Tian, M. (1991) Electrophysiological differences between identified oxytocin and vasopressin neurons recorded intracellularly from rat supraoptic nucleus *in vitro*. *Soc. Neurosci. Abstr.*, 17:1189.
4. **Smith, B.N.** and Armstrong, W.E. (1991) The effects of histamine on immunocytochemically identified vasopressin neurons in rat supraoptic nucleus recorded intracellularly *in vitro*. *Soc. Neurosci. Abstr.*, 17:1189.
5. **Smith, B.N.** and Dudek, F.E. (1993) Age-related epileptogenic effects of corticotropin releasing hormone on evoked field responses in the isolated CA1 pyramidal cell layer of rat hippocampal slices. *Soc. Neurosci. Abstr.*, 19:1464.

6. Armstrong, W.E. and **Smith**, B.N. (1994) Ionic dependence of the depolarizing afterpotential (DAP) in vasopressin neurons: Enhancement by histamine. *Soc. Neurosci. Abstr.*, 20:1177.
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RESEARCH FUNDING

Current Research Support

"Neural circuitry in the dorsal vagal complex"

Agency: NIH (NIDDK)

Type: Research Project Grant R01 DK056132 12-16

Role on project: PI

Dates: 04/15-03/20

Objective: To identify the mechanisms underlying and effects of altered GABAergic inhibition of vagal motorneurons in mouse models of diabetes.

“Graduate Training in Integrative Physiology”

Agency: NIH (NIGMS)

Type: Training Grant 1T32 GM118292-01A1

Role on Project: PD

Dates: 07/17-06/22

Objective: To fund training for PhD students studying integrative aspects of physiology at the behavioral, systems, cellular, and molecular levels.

“Administrative Supplement: Graduate Training in Integrative Physiology”

Agency: NIH (NIGMS)

Type: Training Grant 1T32 GM118292-02S1

Role on Project: PD

Dates: 07/18-06/19

Objective: To restructure an existing course based in the College of Medicine at the University of Kentucky to include more extensive training focused on the principles of scientific rigor and research transparency..

“Contribution of adult neurogenesis to epileptogenesis and recovery after TBI”

Agency: NIH (NINDS)

Type: Research Project Grant R01 NS092552-01A1

Role on project: PI

Dates: 06/18-05/23

Objective: To identify the effect of modifying post-injury neurogenesis in the dentate gyrus on functional behavioral recovery and epileptogenesis.

“The impact of PERK on posttraumatic tauopathy in Alzheimer’s Disease”

Agency: Dept. of Defense, CDMRP

Type: Convergence Science Research Award GRANT11811993

Role on project: PI

Dates: 10/18 –9/19 (NCE)

Objective: to dissect the mechanistic role of protein kinase R-like ER kinase (PERK) activation in tau pathology in response to traumatic brain injury (TBI).

“Stimulation of posttraumatic neurogenesis by IGF-1 overexpression”

Agency: KSCHIRT

Type: Research Project 14-12A

Role on Project: Co-I (Saatman)

Dates: 01/15-12/19 (NCE)

Objective: To identify effects of IGF-1 on neurogenesis in the dentate gyrus after brain injury.

Pending/Planned grant applications

“Central vagal remodeling and SUDEP in TLE”

Agency: NIH (NINDS)

Type: R21

Role on Project: PI

Dates proposed: 12/18-11/20

Status: Reviewed; resubmission planned 2018.

Objective: To identify heart rate variability and cellular activity changes in the vagal complex associated with recurrent seizures and SUDEP.

“Optogenetics: A tool to probe mechanism and an agent to block TBI-induced epileptogenesis”

Agency: VA

Type: MERIT Award

Role on project: Co-I (Slevin, J)

Dates proposed: 10/18-09/22

Status: submitted

Objective: Modify posttraumatic epilepsy disease progression using optogenetics

“Diabetes and glucose sensing in the nucleus tractus solitarius”

Agency: NIH (NIDDK)

Type: Research Project Grant

Role on project: PI

Dates proposed: 07/19-06/24

Status: Submitted. Review 02/2019.

Objective: To identify effects of diabetes on glucose sensing and effects of gastric bypass surgery on glucose sensitivity in the NTS.

Completed

“Neuropeptidergic Inhibition of Spinal Pain Transmission”

Agency: NIH (NINDS)

Type: Research Project Grant R01NS045954-11

Role on project: Co-I (PI: B. Taylor)

Dates: 12/16-03/18

Objective: To identify the mechanisms underlying spinal NPY receptor plasticity in chronic pain

“PPAR gamma Inhibition of Spinal Pain Transmission”

Agency: NIH (NINDS)

Type: Research Project Grant R01NS062306-07A1

Role on project: Co-I (PI: B. Taylor)

Dates: 04/17-03/18

Objective: Extends studies to develop PPAR gamma agonists for chronic pain, with a focus on metabolic mechanisms of painful diabetic neuropathy.

“Long-term activation of spinal opioid analgesia after inflammation”

Agency: NIH (NIDA)

Type: Research Project Grant R01 DA037621-1

Role on project: Co-I (B. Taylor)

Dates: 07/15-03/18

Objective: To identify the mechanisms underlying spinal opioid receptor plasticity in chronic pain.

“NMDA modulation of diabetes-induced glutamate synaptic plasticity”

Agency: NIH (NICHD)

Type: Exploratory/Developmental Research Grant #R21 HD079256

Role on Project: PI

Dates: 04/14-03/17

Objective: To study altered NMDA function in the dorsal vagal complex in a mouse model of diabetes.

“Optogenetic Mapping of Adult Newborn Neuron Projections”

Agency: NIH (NINDS)

Type: Exploratory/Developmental Research Grant #R21 NS088608

Role on Project: PI

Dates: 02/15-08/17

Objective: To identify how newly-born neurons in the dentate gyrus integrate into hippocampal circuitry and how this changes in epilepsy, using optogenetic manipulation of newly-born granule cell excitability.

“Functional Relevance of Reactive Adult Neurogenesis in Alcohol Dependence”

Agency: IRC-Igniting Research Collaboration

Type: IRC

Role on project: Co-I (Nixon, K)

Dates: 6/16-12/16

Objective: *Determine electrophysiological differences in new granule cell neurons born during reactive neurogenesis after alcohol withdrawal.*

“Neural circuitry in the dorsal vagal complex”

Agency: NIH (NIDDK)

Type: Research Project Grant #R01 DK056132 07A1-11

Role on project: PI

Dates: 07/09-06/15 (NCE)

Objective: To identify the mechanisms and patterns of amino acid-mediated neural connections between neurons in the NTS, identified as gastric-related by transynaptic viral labeling.

“Glucocorticoids and endocannabinoids in vagal complex”

Agency: NIH, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

Type: Research Project Grant R01 DK080101 01A2-05

Role on project: PI

Dates: 2/09-11/14

Objective: To identify effect of glucocorticoid actions endogenous cannabinoids at CB1R and VR1 in the vagal complex

“Responsiveness to nicotine of nucleus tractus solitarius neurons”

Agency: NIH (NIDDK)

Type: Research Project Grant #R01 DK082625 01A1-05

Role on project: Co-PI (V. Uteshev, PI)

Dates: 09/09-08/14

Objective: To identify the mechanisms by which nicotine modulates specific synaptic connections in the NTS.

“JAK/STAT inhibition to prevent post-traumatic epileptogenesis”

Agency: Department of Defense (DOD)

Type CDMRP: PRMRP #W81XWH-11-1-052

Role on project: PI (multi-PI grant with A. Brooks-Kayal and L. Frey)

Dates: 6/11-5/14

Objective: To identify effects of JAK/STAT inhibition on the progression of epileptogenesis after head injury.

“A role for cytokine interleukin-6 in post-traumatic epileptogenesis”

Agency: Epilepsy Society

Type: Postdoctoral Fellowship

Role on Project: Sponsor (J. Boychuk, PI)

Dates: 01/12-12/13

Objective: To determine the disease-modifying effects of IL-6 on trauma-induced epilepsy development.

“Insulin effects in the vagal complex”

Agency: NIH (NIDDK)

Type: F32 Postdoctoral NRSA #F32DK089717

Role on Project: Sponsor (C. Blake, PI)

Dates: 12/10-11/13

Objective: To examine the effects of insulin on vagal complex neurons related to gastrointestinal control.

“Olympus BX-DSU Live-cell disk scanning imaging/electrophysiology system”

Agency: NIH National Center for Research Resources (NCRR)

Type: Small equipment grant #1S10RR027400-01

Role on project: Co-PI (B. Taylor, PI)

Dates: 04/10-03/11

Small equipment grant to obtain spinning disk confocal/electrophysiology system.

“Peptidergic modulation of GABA neurons in the dorsal vagal complex”

Agency: National Science Foundation (NSF)

Type: Grant – Functional and Regulatory Systems Cluster #IOB-0518209

Role on project: PI

Dates: 08/05-07/09

Objective: To identify effects of mu-opioids on electrical properties of identified GABA neurons in the NTS.

“Cannabinoid modulation of epileptiform activity in mice”

Agency: NIH (NINDS)

Type: Exploratory/Developmental Research Grant R21 NS052302

Role on project: PI

Dates: 07/05-06/09

Objective: To identify mechanisms by which cannabinoid agonists modulate neural excitability in the dentate gyrus of a mouse model of temporal lobe epilepsy.

“Intraspinal Plasticity contributing to Autonomic Dysreflexia following SCI”

Agency: Paralyzed Veterans of America, Research Foundation Grant # 2561

Type: Postdoctoral Fellowship

Role on Project: Co-I (Duale, PI)

Dates: 01/08-09/09

Objective: To identify neurons in spinal cord that mediate reflexive blood pressure increases after bowel stimulation.

"Posttraumatic epileptiform activity following controlled cortical impact in mice"

Agency: Epilepsy Foundation of America (EFA)

Type: Predoctoral Fellowship

Role on Project: Advisor (Hunt, PI)

Dates: 01/08-12/08

Objective: To study the relationship between non-penetrating head injury and mossy fiber sprouting, synaptic reorganization and enhanced synaptic excitability in the dentate gyrus.

"Neural Circuitry in the Caudal Solitary Complex"

Agency: NIH (NIDDK)

Type: Research Project Grant #R59 DK056132-07A1

Role on project: PI

Dates: 07/08-06/09

Objective: Bridge funds to identify the mechanisms and patterns of amino acid-mediated neural connections between neurons in the NTS, identified as gastric-related by transynaptic viral labeling.

"Neural Circuitry in the Caudal Solitary Complex"

Agency: NIH (NIDDK)

Type: Research Project Grant #R01 DK056132-01A2-07

Role on project: PI

Dates: 07/01-06/08

Objective: To identify the mechanisms and patterns of amino acid-mediated neural connections between neurons in the NTS, identified as gastric-related by transynaptic viral labeling.

"Glucocorticoid actions in the brainstem"

Agency: NIH (NIDDK)

Type: Supplement (SCRO) to DK056132-04

Role on project: PI

Dates: 9/04-05/07

Objective: To identify mechanisms of glucocorticoid modulation of synaptic input to brainstem and hypothalamic neurons regulating the stomach.

"Cannabinoid modulation of excitability in the dentate gyrus of the epileptic mouse"

Agency: Epilepsy Foundation

Type: Research Grant

Role on project: PI

Dates: 07/04-06/05

Objective: To identify the mechanisms by which cannabinoid agonists modulate neural excitability in the dentate gyrus of a mouse with pilocarpine-induced temporal lobe epilepsy.

"Peptidergic Modulation of Synaptic Circuitry in the Dorsal Vagal Complex"

Agency: NSF

Type: Grant – Neuronal and Glial Mechanisms Program #IBN-0080322

Role on project: PI

Dates: 07/00-06/04

Objective: To identify mechanisms by which the neuropeptide hypocretin (orexin) effects synaptic connectivity in the dorsal vagal complex.

"Functional GABAergic Circuitry Involved in Cardiovascular Regulation"

Agency: American Heart Association, National Center

Type: Scientist Development Grant, #0030284N

Role on project: PI

Dates: 01/00-12/04

Objective: To identify the mechanisms by which local GABAergic synaptic circuitry in the medial nucleus tractus solitarius (mNTS) in the brainstem contributes to integration of afferent cardiovascular input.

"Inhibitory Mechanisms Regulating Brainstem Viscerosensory Integration"

Agency: Louisiana Board of Regents

Type: Research Competitiveness Subprogram, #LEQSF(2000-03)-RD-A-35

Role on project: PI

Dates: 07/00-06/04

Objective: To identify the mechanisms by which local inhibitory circuits integrate specific sympathetic nervous system afferents in the brainstem, identified by transynaptic "pre-labeling" of ocular projecting cells.

"Brainstem circuits involved in adrenal regulation"

Agency: NIH (NIMH)

Type: Postdoctoral NRSA F32MH064248

Role on project: Sponsor (Davis, PI)

Dates: 09/02-02/04

Objective: To identify and characterize brainstem circuitry involved in sympathetic regulation of the adrenal gland.

TEACHING EXPERIENCE OVERVIEW

Tulane University

Systems Neuroscience (course instructor); 80-100 undergraduate, 10 graduate students (45 lecture hours)

Neuroanatomy Laboratory (course instructor); 65 undergraduate students (20 lecture hours)

Cellular Neurophysiology (course instructor); 8-12 graduate and undergraduate students (37.5 lecture hours)

Neuroscience Methods (team taught); 20 undergraduate and graduate students (3-5 lecture hours)

Synaptic Organization of the Brain (team taught); 20 graduate students (2.5 lecture hours)

Graduate Neuroscience (team taught); 10-12 graduate students (1 lecture hour)

Trends in Neuroscience (team taught journal club course); 15-20 graduate students

University of Kentucky

Medical Neuroscience (team taught) 116-150 medical and graduate students; (11 lecture hours); 2010-2018 (Co-Course Director, 2012)

Physiology Experimental Design (team taught); 9 graduate students; Summer 2011-2013 (2 lecture hours)

Physiology 412G; Fall, 2012; (2 lecture hours)

Neuroscience ANA636 (team taught); 6-9 graduate students; Fall 2017-2019 (6 lecture hours)

UNIVERSITY/DEPARTMENT COMMITTEE SERVICE – TULANE UNIVERSITY

Undergraduate Neuroscience Major Faculty Committee	1999-2006
Cell and Molecular Biology (CMB) Graduate Program Committee	2000-2002
CMB Master’s Program Committee (Co-Director)	2000-2001
Steering Committee, Neuroscience 4+1 Masters Program	2001-2006
CMB Faculty Search Committee	2002, 2004
Co-Director, Neurobiotechnology Molecular Core Facility	2002-2006
Health Professions Committee	2002-2006
CMB Seminars Committee	2002-2006
CMB Space Committee	2005-2006
School of Science and Engineering Undergraduate Curriculum Committee	2006

UNIVERSITY/DEPARTMENT SERVICE –UNIVERSITY OF KENTUCKY

College of Medicine Admissions Interview Panel	2007-2016
SCoBIRC 6 Year External Review Committee	2008
College of Medicine Admissions Committee	2008-2016
Neuro/ENT Curriculum Committee	2011-2012
Graduate Affairs Committee, Dept Physiology (Chair, 2010-2016)	2010-2018
Research Title Review Committee, Dept Physiology	2010-2011
Physiology Scholars Committee	2010-2018
Education Committee, Dept Physiology	2010-2018
Director of Graduate Studies, Dept Physiology	2010-2016
Research Committee, Dept Physiology	2011-2018
Physiology Chair Transition Advisory group	2013-2014
Founding Director, Epilepsy Research Center (EpiC)	2013-present
Vice President for Research Task Force on Policies and Procedures for Centers and Institutes	2016
Faculty Search Committee – Physiology	2016
COM Council of Chairs	2016- present
COM Basic Science Chairs and Directors	2016- present
Executive Board, Undergraduate Neuroscience Major	2016- present
UK Research Foundation Board of Directors	2018- present
MRISC board of Directors	2018-present

OTHER ACTIVITIES

Memberships

Society for Neuroscience 1989-present
 Greater New Orleans Society for Neuroscience 1999-2006 (Secretary, 1999-2000)
 Newcomb Fellows, Tulane University 2003-2006
 Bluegrass Chapter of the Society for Neuroscience 2006-present

American Epilepsy Society 2007-present

- Member, Basic Science Committee 2009-2012
- Member, Epilepsy Currents Editors Committee 2012-2018
- Member, Scientific Program Committee 2014-2017
- Member, Investigator's Workshop Committee 2015-2018
- Member, Epilepsy Research Benchmarks Stewards Committee 2017-present

International Society of Neurogastroenterology, Founding Board Member, 2014-present

Association of Medical School Neuroscience Department Chairpersons, 2019-present

Editorial

Epilepsy Currents (Contributing Editor) 2012-2018

Editorial Review (recent ad hoc)

American Journal of Physiology	Brain Research
Endocrinology	Hypertension
Journal of Neurophysiology	Journal of Physiology (Lond)
Journal of Neuroscience	Journal of Virology
Neuroscience	Neuroendocrinology
Neuropharmacology	Pharmacology, Biochemistry and Behavior
Proc Nat'l Acad Sci	Expert Opinion on Therapeutic Targets
Experimental Neurology	Biological Psychiatry
Frontiers in Neuroscience	Chemical Senses
Annals of Neurology	eNeuro
Exp Neurology	

Grant Review

National Science Foundation (ad hoc 2003, 2008-10)

The Wellcome Trust (ad hoc 2006)

National Institutes of Health, Clinical Neuroplasticity and Neurotransmitters (CNNT) study section (ad hoc 2005-2008; 8 meetings);

National Institutes of Health, ZRG1 IFCN-A Special Emphasis Panel: Anxiety, Feeding, and Gastric Function (2007);

National Institutes of Health, Neurobiology of Motivated Behavior (NMB) study section (ad hoc 2009)

Citizens United for Research in Epilepsy (CURE) (ad hoc 2009)

National Institutes of Health, ZRG1 IFCN-C 85S Special Emphasis Panel: ARRA Supplements (2010)

National Institutes of Health, 2011/01 ZNS1 SRB-B (24) NIH NINDS Epilepsy EUREKA program (2010)

National Institutes of Health, Neuroendocrinology, Neuroimmunology, and Behavior (NNB) study section (Regular member, 2009-2010)

National Institutes of Health, Neuroendocrinology, Neuroimmunology, Rhythms and Sleep (NNRS) study section; Chartered member, 2010-2013 (note: this is a re-formed study section, combining former NNB with BRS panels)

National Institutes of Health, ZHD1 DSR-Y (42), NIH NICHD, Program Project review panel (10/2013)

National Institutes of Health, 2014/05 ZRG1 MDCN-N (05) M Member Conflict:
Channels, Transporters and Addiction, Special Emphasis Panel (02/2014)
National Institutes of Health, NIH NINDS 201505 ZNS1 SRB-B (43) NINDS Epilepsy
Center Without Walls (03/2015)
National Institutes of Health, 2015/05 ZRG1 MDCN-R (04) S Special Emphasis Panel
(04/2015)
National Institutes of Health, Clinical Neuroplasticity and Neurotransmitters (CNNT)
study section (06/2015; 02/2016; 10/2016)
American Epilepsy Society, Postdoctoral Fellowship Review Panel (03/2016)
National Institutes of Health, NIH NINDS ZNS1 SRB-L (07) 2016/08 Epilepsy Center
Without Walls (06/2016)
CURE/DoD Posttraumatic Epilepsy Initiative Awards (12/16; 2/17)
National Institutes of Health, NINDS Special Emphasis Panel ZNS1 SRB-M (02) F32
and K22 applications (06/2017)
**National Institutes of Health, Clinical Neuroplasticity and Neurotransmitters
(CNNT) study section (Regular Member, 2017-2021).**

Public Service

Kentucky Senate Health and Welfare Committee: Expert witness testimony (02/2014).
Use of Cannabidiol for the treatment of childhood epilepsies.

President's roundtable discussion with Senate Majority Leader Mitch McConnell:
Industrial hemp markets and research at UK (08/2015).

External review and site visit: Penn State Neuroscience Graduate Program (03/2018)

Symposia

1998 Symposium Participant: "Axon Sprouting in Cortical Pyramidal Cells:
Implications for Epileptogenesis", Spring Hippocampal Research Conference, Grand
Cayman, BWI. Summarized by E. Buhl and G. Buzsaki, Neuron 21:27-35, 1998.

2000 Symposium Chair: "The Synaptic Physiology of Central Autonomic Regulation",
Annual Meeting of the Society for Neuroscience, New Orleans, LA.

2002 Keynote Speaker: "Synaptic Integration in the Nucleus Tractus Solitarius", Club
Vagus, Annual Meeting of the Society for Neuroscience, New Orleans, LA.

2006 Symposium Participant: "Cannabinoid modulation of dentate gyrus excitability in
a murine model of temporal lobe epilepsy" UACOM Mini-Symposium University of
Arizona, Dept. of Basic Medical Sciences, Phoenix, AZ.

2006 Symposium Participant: "Modulation of neural connections in the vagal complex
by endocannabinoids: Implications for autonomic reflexes" 5th Annual Neuroethology
Symposium, University of Maryland, College Park, MD.

2012 Nanosymposium Chair: Anatomy and Function of Autonomic Outflow; “Tonic GABA currents in the dorsal motor nucleus of the vagus are altered after streptozotocin-induced diabetes” Annual Meeting of the Society for Neuroscience, New Orleans, LA.

2013 Panel Speaker: “Neurons as metabolic sensors and regulators of energy homeostasis”; Neurons as metabolic sensors: Glucose-sensing in the vagal complex. Winter Conference on Brain Research, Breckenridge, CO.

2014 Panel Speaker: When ski helmets aren’t enough: emerging therapies for TBI and post-traumatic epilepsy. Winter Conference on Brain Research, Steamboat, CO.

2015 Panel Speaker: “The Brain’s Control of Eating, Energy Balance, and Metabolism” First Annual International Society of Neurogastronomy Symposium, Lexington, KY.

2015 Platform Moderator: Translational Research Platform Session. 69th Annual Meeting of the American Epilepsy Society, Philadelphia, PA.

2016 Panel Speaker: Traumatic Brain injury: Complex Pathologies Contributing to a Difficult Problem. Winter Conference on Brain Research, Breckenridge, CO

2017 Chair, Investigator Workshop: Are animal models of post-traumatic epilepsy translational? Annual Meeting of the American Epilepsy Society, Washington, DC

2018 Presidential Symposium: Uncovering the Cells and Circuits for Glucose Monitoring in the Hindbrain, “The role of glucose-sensing inhibitory neurons in the nucleus tractus solitarius in metabolic regulation”. Society for the Study of Ingestive Behavior, Bonita Springs, FL.

Selected Seminars

2001 Louisiana State University Medical Center, New Orleans, Dept of Cell Biology and Anatomy, “Epileptogenesis and synaptic reorganization in the temporal lobe”

2001 Tulane University School of Medicine, Dept. of Neurosurgery, “Epileptogenesis and synaptic reorganization in the temporal lobe”

2002 Tulane University School of Medicine, Dept of Physiology, “Synaptic regulation of gastric-related neurons in the dorsal vagal complex”

2002 Harvard University, Division of Neuroscience, McClean Hospital, “Differential modulation of brainstem vagal circuitry by hypocretin/orexin: Implications for autonomic coordination”

2003 University of Tennessee Health Science Center, Dept of Anatomy and Neurobiology, “Modulation of synaptic activity in the vagal complex: Implications for autonomic coordination”

2004 Tulane University, LAS Deans Steering Committee, “Neuroscience Research on Tulane’s Uptown campus”

- 2005 University of Utah, Dept of Physiology, "Modulation of synaptic activity in the vagal complex: Implications for autonomic reflexes"
- 2005 University of Arizona College of Medicine, Phoenix, Dept of Basic Sciences, "Modulation of synaptic activity in the vagal complex: Implications for autonomic reflexes"
- 2006 University of Texas Health Science Center-San Antonio, Dept of Physiology, "Modulation of synaptic activity in the vagal complex by cannabinoids: Implications for autonomic reflexes"
- 2006 Georgetown University School of Medicine, Dept of Pharmacology, "Modulation of synaptic activity in the vagal complex by cannabinoids: Implications for autonomic reflexes"
- 2007 Southern Illinois University (Springfield), Dept. of Pharmacology, "Modulation of synaptic activity in the vagal complex by cannabinoids: Implications for autonomic reflexes"
- 2007 Tulane University Dept. of Cell and Molecular Biology, "Cannabinoid modulation of dentate gyrus excitability in a murine model of temporal lobe epilepsy"
- 2008 The Swedish University of Agricultural Sciences & The National Veterinary Institute, Department of Virology, Uppsala, Sweden, "Functional studies of neural circuitry identified using pseudorabies virus labels"
- 2009 University of Kentucky, Dept. of Molecular and Biomedical Pharmacology, "Modulation of Synaptic Activity in the Vagal Complex by Cannabinoids: Implications for Metabolic Regulation"
- 2009 Medical College of Georgia, Dept of Physiology, "Synaptic information processing in the vagal complex: Implications for metabolic regulation"
- 2009 Budapest University of Technology and Economics, EPIFSANS Program, Budapest, Hungary, "Information and decision structure of the human body: autonomic mechanisms of the human nervous system"
- 2009 University of Colorado Denver, Dept of Pediatrics; Dept of Pharmaceutical Sciences, "Synaptic network modification in models of post-traumatic epilepsy"
- 2010 University of Kentucky, Spinal Cord and Brain Injury Research Center, "Synaptic network modification in models of post-traumatic epilepsy"
- 2010 University of Kentucky, Dept of Physiology, "Synaptic information processing in the vagal complex: Implications for metabolic regulation"
- 2010 University of California, Irvine, Dept of Anatomy & Neurobiology, EpiCenter Seminar series, "Synaptic network modification in models of post-traumatic epilepsy"
- 2011 University of North Texas Health Science Center, Dept of Physiology, "Synaptic information processing in the vagal complex: Implications for metabolic regulation"

2012 Pennsylvania State University, Department of Neural and Behavioral Sciences, “Synaptic information processing the vagal complex: Implications for metabolic regulation”

2012 University of Kentucky, Spinal Cord and Brain Injury Research Center, “Synaptic reorganization and epileptogenesis after traumatic brain injury”

2014 University of Kentucky, Department of Neurology and Kentucky Neuroscience Institute, Grand Rounds, “Synaptic reorganization and epileptogenesis after traumatic brain injury”

2014 University of Szeged, Department of Physiology, Faculty of Medicine, Szeged, Hungary. “Synaptic reorganization and epileptogenesis after traumatic brain injury”

2014 University of Louisville, Combined Neuroscience, Grand Rounds, “Hippocampal synaptic reorganization and epileptogenesis after traumatic brain injury”

2016 University of California, Riverside, Division of Biomedical Sciences, “Reactive neuroplasticity and epileptogenesis after traumatic brain injury”

2017 Annual Meeting of the American Epilepsy Society, Washington, DC Investigator Workshop, “Reactive neuroplasticity after traumatic brain injury”.

2018 University of Cincinnati Neuroscience Seminar Series, “Synaptic reorganization and epileptogenesis after traumatic brain injury”.

2018 University of Missouri, Department of Biomedical Sciences, “Synaptic information processing in the vagal complex: Implications for metabolic regulation”.

2018 Southern Illinois University College of Medicine, Department of Physiology, “Synaptic reorganization and epileptogenesis after traumatic brain injury”.

LABORATORY TRAINEES/PERSONNEL

Tulane Undergraduate Honors Thesis Research director for **10** students (2000-2006)

Undergraduate Research Project director for **18** students (2000-2006)

Rotating PhD Student Project Advisor **11** Tulane students (2000-2006);

Rotating PhD Student Project Advisor **22** UK students (2007-2018)

University of Kentucky undergraduate research advisor for **9** students (2007-2018)

Physiology Scholars Advisor **2** UK undergraduate students (2011)

Lab Technician (Danielle Ronis; 2011-2013)

Physiology Scholars Advisor **1** UK undergraduate student (Shaniya Maimaiti; 2012)

Scientist III (Katalin Halmos, MPH; 2012-present; PhD advisor 2014-2015 through

University of Szeged, Dept. Physiology, Szeged, Hungary,)

High School Student (MSTC, Dunbar HS; Sriyanshi (Chinni) Suryadevaia; 2013-2015)

Lab technician (Jelena Juras; 2018-now)

USTiCR Fellow (Kaitlyn Samuels) 2018

Master’s Degree Advisor:

Weiye Xu, MS, Cell & Molecular Biology, Tulane University (2001) Research topic:
Electrophysiological effects of hypocretin in the vagal complex.

M. Deepak Bhaskaran, MS, Cell & Molecular Biology, Tulane University (2003)
Research topic: Gastric-related neuronal distribution in the dorsal vagal complex.

Christine T. Williams, MS, Neuroscience, Tulane University (2003) Thesis title, "The
divergence of the vagus nerve in the rat digestive system and the distribution of
nicotinic acetylcholine receptor subunits in the dorsal motor nucleus of the vagus
nerve"

Jennifer Rios-Pilier, Physiology, University of Kentucky College of Medicine (2009-2010)
Research Topic: Synaptic organization of autonomic circuits

Laura Haselhorst, Physiology, University of Kentucky College of Medicine (2009-2012).
Research Topic: Synaptic reorganization and temporal lobe epilepsy

Kara Dreher, Physiology, University of Kentucky College of Medicine (2012-2015).
Research Topic: Mitochondrial dysfunction in temporal lobe epilepsy

Visiting Scholar:

Liu Dan (2000-2006)

Doctoral Thesis Advisor:

Nicholas R. Glatzer, Cell and Molecular Biology; Tulane University (2000-2005)
Ph.D. awarded June, 2005. Dissertation title: "Opioid Modulation of Vagal
Circuitry".

Kevin W. Williams, Neuroscience; Tulane University (2001-2006).
Ph.D. awarded August, 2006. Dissertation title: "Rapid Inhibition of Neural
Excitability in the Rat Dorsal Vagal Complex".

Hong Gao, Cell and Molecular Biology; Tulane University (2002-2008)
Ph.D. awarded April, 2008. Dissertation title: "GABAergic Regulation of Neurons
in the Dorsal Motor Nucleus of the Vagus: Morphological and
Electrophysiological Properties"

M. Deepak Bhaskaran, Cell and Molecular Biology; Tulane University (2003-2008)
Ph.D. awarded April, 2008. Dissertation title: "Cannabinoid and Vanilloid
Modulation of Synaptic Activity in the Dentate Gyrus of a Mouse Model of
Temporal Lobe Epilepsy"

Robert F. Hunt III, Physiology; University of Kentucky College of Medicine (2005-2010)
Ph.D. awarded May, 2010. Dissertation title: "Local Synaptic Network
Interactions in the Dentate Gyrus of a Cortical Contusion Model of Posttraumatic
Epilepsy"

Eva C. Bach, Physiology; University of Kentucky College of Medicine (2009-2013).
Ph.D. awarded Dec, 2013. Dissertation title: "NMDA Receptors in the Dorsal Vagal Complex in Normal and Diabetic Mice"

Katalin Cs. Halmos, Physiology; University of Szeged, Faculty of Medicine, Szeged, Hungary and University of Kentucky College of Medicine (2014-2015). Ph.D. awarded Jan, 2016. Dissertation title: "Molecular and functional changes in glucokinase expression in the brainstem dorsal vagal complex in a murine model of type 1 diabetes."

Corwin R. Butler, Physiology, University of Kentucky College of Medicine (2011-2016).
PhD awarded May, 2016. Dissertation title: "Effects of mammalian target of rapamycin inhibition on circuitry changes in the dentate gyrus of mice after focal brain injury."

Isabel Derera, Physiology, University of Kentucky College of Medicine (2013-2018).
Ph.D. Awarded Dec, 2018. Dissertation title: Alterations in GABAergic NTS neuron function in association with TLE and SUDEP."

Jordan Wean, Physiology, University of Kentucky College of Medicine (2017-present).
Research Topic: Diabetes-induced neuromodulation in the vagal complex.

Ryan Cloyd, Physiology, University of Kentucky College of Medicine (2017-present).
Research topic: Posttraumatic cortical tauopathy.

Postdoctoral Advisor:

Scott F. Davis, Ph.D. Cell and Molecular Biology, Tulane University (2001-2004)
Thomas C. Stuart, Ph.D. Cell and Molecular Biology and Neurobiotechnology Molecular Core Facility, Tulane University (2002-2005)

Michael Monroe, Ph.D. Cell and Molecular Biology, Tulane University (2004-2005)
Andrei V. Derbenev, Ph.D. Cell and Molecular Biology, Tulane University (2001-2006);
Physiology, University of Kentucky (2006-2009)

Andrea Zsombok, Ph.D., Physiology, University of Kentucky (2006-2009)
M. Deepak Bhaskaran, M.B.B.S., Ph.D., Physiology, University of Kentucky (2008-2009)

Shouwei Yang, M.D., Ph.D., Physiology, University of Kentucky (2009)

Peter Gyarmati, Ph.D., Physiology, University of Kentucky (2009-2011)

Brent Hallahan, Ph.D., Physiology, University of Kentucky (2009-2010)

Camille Blake, Ph.D., Physiology, University of Kentucky (2009-2014)

James Heida, Ph.D., Physiology, University of Kentucky (2011)

Dimitrios Kouzoukas, Ph.D., Physiology, University of Kentucky (2011)

Hong Xu, MD, Ph.D., Physiology, University of Kentucky (2011-2015)

Carie R. Boychuk., Ph.D., Physiology, University of Kentucky (2012-2015; Research Assistant Professor, 2015-2017)

Jeffrey A. Boychuk., Ph.D., Physiology, University of Kentucky (2012-2015; Research Assistant Professor, 2015-2017)

Corwin R. Butler, Ph.D., Physiology, University of Kentucky (2016-2018)

Wudu Lado, Ph.D., Neuroscience, University of Kentucky (2018)

Additional Doctoral Dissertation Committees

Jennifer Brightwell, Neuroscience Program, Tulane University (P.Colombo, committee chair)
Renee Countryman, Neuroscience Program, Tulane University (P.Colombo, committee chair)
Renato Malcher-Lopez, Neuroscience Program, Tulane University (J. Tasker, committee chair)
Michael Monroe, Dept. of Pharmacology, LSUHSC (P.Hornby/E. Songu-Mize committee chairs)
Sen Wang, Dept. Cell & Molecular Biology, Tulane University (J. Tasker, committee chair)
Megan Bardgett, Dept. of Physiology, University of Kentucky (S. Stocker, committee chair)
Shaun Carlson, Dept. of Physiology, University of Kentucky (K. Saatman, committee chair)
Wil Lester, Dept. of Physiology, University of Kentucky (J. Satin, committee chair); ad hoc member
Jason Hinzman, Dept. of Anatomy and Neurobiology, University of Kentucky, (G. Gerhardt committee chair); outside examiner (2012)
Kathleen M Schoch Dept. of Physiology, University of Kentucky (K. Saatman, committee chair)
Amanda Bolton, Dept. of Physiology, University of Kentucky (K. Saatman, committee chair);
Erica Littlejohn, Dept. of Physiology, University of Kentucky (K. Saatman, committee chair)
Jenna Vanrooyen, Dept. of Physiology, University of Kentucky (A. Rabchevsky, committee chair)
Shaniya Maimaiti, Dept. of Pharmacology, University of Kentucky (O. Thibault, committee chair)
Kendra (Hargis) Staggs, Dept. of Pharmacology and Nutritional Sciences, University of Kentucky (E. Blalock, committee chair); outside examiner (2016)
Lilian Goncalves-Custodio, Dept. of Physiology, University of Kentucky (B. Taylor, committee chair)
Khalid Eldahan, Dept. of Physiology, University of Kentucky (A. Rabchevsky, committee chair)
Shelby Meier, Dept. of Physiology, University of Kentucky (J. Abisambra, committee chair)
Ben Shaw, Dept. of Physiology, University of Kentucky (B. Taylor, committee chair)
Katherine J Donohue, Dept. Molecular and Cellular Biochemistry, University of Kentucky (M. Gentry, committee chair)
Jacob Dunkerson, Dept. of Neuroscience, University of Kentucky, (E. Hall, committee chair)
Holden Williams, Dept. of Physiology, University of Kentucky, (L. Johnsonl, committee chair)

Other

Bjoern Bauer, PhD, College of Pharmacy, University of Kentucky: Faculty mentoring committee (2016-present).
Brent Sokola (PharmD/MSPS) College of Pharmacy, University of Kentucky (B. Bauer, committee chair)
Nader El Sablani, Dept of Pharmaceutical Sciences, University of Kentucky (B. Bauer, committee chair)