

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE

BIOGRAPHICAL

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EDUCATION AND TRAINING

<u>Dates Attended</u>	<u>Name and Location of Institution</u>	<u>Degree Received and Year</u>	<u>Major Subject and Mentor</u>
<u>UNDERGRADUATE</u>			
1978-1981	University of Florida Gainesville, FL	B.S., 1981	Neuroscience
<u>GRADUATE</u>			
1982-1986	University of Florida Gainesville, FL	Ph.D., 1986	Neuroscience Floyd Thompson, Ph.D.
<u>POST GRADUATE</u>			
1986-1989	Rockefeller University New York, NY		Neurophysiology Victor Wilson, Ph.D.

APPOINTMENTS AND POSITIONS

<u>Years Inclusive</u>	<u>Name and Location of Institution</u>	<u>Title</u>
1989-1990	Laboratory of Neurophysiology Rockefeller University New York, NY	Research Associate
1990-1994	Laboratory of Neurophysiology Rockefeller University New York, NY	Assistant Professor
1994-1998	Department of Otolaryngology University of Pittsburgh School of Medicine Pittsburgh, PA	Assistant Professor

APPOINTMENTS AND POSITIONS, CONT.

<u>Years Inclusive</u>	<u>Name and Location of Institution</u>	<u>Title</u>
1994-1998	Department of Neuroscience University of Pittsburgh College of Arts and Sciences Pittsburgh, PA	Assistant Professor Secondary Appointment
1998-2003	Department of Otolaryngology University of Pittsburgh School of Medicine Pittsburgh, PA	Associate Professor <i>(with tenure)</i>
1998-2003	Department of Neuroscience University of Pittsburgh College of Arts and Sciences Pittsburgh, PA	Associate Professor Secondary Appointment
2003-Present	Department of Otolaryngology University of Pittsburgh School of Medicine Pittsburgh, PA	Professor <i>(with tenure)</i>
2003-Present	Department of Neuroscience University of Pittsburgh College of Arts and Sciences Pittsburgh, PA	Professor Secondary Appointment

MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

<u>Year</u>	<u>Organization</u>
1984	Society for Neuroscience
1984	International Brain Research Organization
1984	American Physiological Society
1987	American Association for Advancement of Science
1988	The Bárány Society
1994	Association for Research in Otolaryngology
1995	New York Academy of Sciences
1996	International Society of Gravitational Physiology
1996	International Society for Autonomic Neuroscience
2000	Neural Control of Movement Society

HONORS

Awards and Recognitions

1981	Elected to Phi Beta Kappa
1983, 1984	Recipient of University of Florida Medical Guild Graduate Student Research Award
1992	Irma T. Hirschl Career Research Scientist Award
1995	Invited Speaker, NIH, NIDCD Council Meeting
2006-2014	Section Editor for <i>Experimental Brain Research</i>
2008-2014	Editorial Board Member, <i>International Journal of Otolaryngology</i>
2010	Recipient of Chancellor's Distinguished Teaching Award, University of Pittsburgh
2010-2014	Associate Editor, <i>Frontiers in Respiratory Physiology</i>
2014-	Editor-in-Chief, <i>Journal of Neurophysiology</i>

Board and Advisory Committee Appointments

1994	Member of NIH, NIDCD panel for updating the balance and balance disorders section of the National Strategic Research Plan
1996-2003	Member of External Advisory Panel, National Space Biomedical Research Institute
1999-2006	Member, Steering Committee of the Central Nervous System Section of American Physiological Society (<i>Secretary-Treasurer from 2002-2006</i>)
2000-2006	Member, American Physiological Society's "Committee on Committees"
2003-2005	Member, International Multidisciplinary Artificial Gravity Review Team (NASA Representative)
2003-	Member, Board of Scientific Councilors, National Space Biomedical Research Institute
2005-2007	Chair, International Multidisciplinary Artificial Gravity Review Team (NASA representative)
2007-2009	Member, American Physiological Society's Animal Care and Experimentation Committee
2009	Peer reviewer, National Academies of Science study on Scientific and Humane Issues in the Use of Random-Source Dogs and Cats
2009-2018	Member, Board of Directors, Americans for Medical Progress
2010-2012	Chair, American Physiological Society's Animal Care and Experimentation Committee
2010-2015	Member, Board of Trustees, AAALAC International (Designate of American Physiological Society)
2014	Member, AAALAC Budget and Finance Committee
2013-	Member, Ethics Committee for International Union of Physiological Sciences
2014-2017	Council Member (<i>elected by Society membership</i>), American Physiological Society
2015	Member of Executive Committee, AAALAC International
2016-2017	Member, National Academies of Science Committee to Review NASA's Evidence Reports on Human Health Risks.

Grant Review Appointments

1996, 1999-2002 Member of NASA Grant Study Section

2001 Member, NIH Special Emphasis Panel

2003 Chair, NASA Grant Study Section for Neuroscience

2004-2005 Ad Hoc Reviewer, NIH Sensorimotor Integration Study Section

2004 Ad Hoc Reviewer, NIH Study Section for Fellowships in Systems and Cognitive Neuroscience (ZRG1-F02B)

2005-2008 Charter (“Permanent”) Member, NIH Sensorimotor Integration Study Section

2007 Member of NASA/NSBRI Study Section for Postdoctoral Research Proposals

2008, 2009 Chairperson, NIH Special Emphasis Panels for Auditory and Vestibular Neuroscience (ZRG1 IFCNB-02 and 2010/01 ZRG1 IFCN-B (02) M)

2008 Member, NIH Special Emphasis Panel for Training Grants in Deafness and Communication Disorders (ZDC1 SRB-L-47)

2008 External reviewer, NASA Lunar Science Institute Cooperative Agreement Solicitation

2009 Member, NIH Special Emphasis Panel to Review Clinical Research Center Application

2009 Member, NIH Special Emphasis Panel to Review Challenge Grants

2009 Member, NIH Special Emphasis Panel in Sensory Neuroscience (2009/10 ZRG1 IFCN-E (97) S)

2010-2012 Member of NIH’s “College of CSR Reviewers”

2010, 2012 Member of NIH Special Emphasis Panel to Review Loan Repayment Applications

2013 Member of NIH Special Emphasis Panel “Control of Breathing/Pulmonary Vascular Biology,” (2013/05 ZRG1 CVRS-G-03 M)

2013 Member of NIH Special Emphasis Panel “Member Conflicts: Respiratory Diseases,” (2013/10 ZRG1 CVRS-M-03 M)

Jan, Sept. 2015 Member, NIH Sensorimotor Integration Study Section (SMI)

2016 Member of 4 separate NASA grant study sections

2016-2020 Chartered Member, National Library of Medicine Literature Selection Committee

2017 Member of NASA grant study section

2017 Member of NIH Special Emphasis Panel “Translational Grants Review HB,” 2017/10 ZDC1 SRB-R (37)

2017 Member, NIH Sensorimotor Integration Study Section (SMI)

2018 Mail Reviewer, NASA grants

PUBLICATIONS

Publication List on Google Scholar: <http://scholar.google.com/citations?hl=en&user=W90c-LcAAAAJ>

Publication List on NCBI:

<http://www.ncbi.nlm.nih.gov/sites/myncbi/1hoAgCbgPeIkk/bibliography/40717419/public/?sort=date&direction=descending>

1) Refereed Articles

- 1) **Yates, B. J.**, Thompson, F. J. and Mickle, J. P. Origin and properties of spinal cord field potentials. *Neurosurgery* 11: 439-450, 1982.
- 2) Thompson, F. J., **Yates, B. J.**, Franzen, O. G. and Wald, J. R. Lumbar spinal cord responses to limb vein distention. *J. Autonom. Nerv. Syst.* 9: 531-546, 1983.
- 3) **Yates, B. J.** and Thompson, F. J. Properties of spinal cord processing of femoral venous afferent input revealed by the analysis of evoked potentials. *J. Autonom. Nerv. Syst.* 14: 201-207, 1985.
- 4) **Yates, B. J.** and Thompson, F. J. Activation of spinal cord interneurons which process inputs from the femoral-saphenous vein. *Brain Res.* 359: 383-387, 1985.
- 5) Thompson, F. J. and **Yates, B. J.** Properties of femoral venous afferent input and lumbosacral distribution of spinal evoked activity. *J. Autonom. Nerv. Syst.* 15: 245-261, 1986.
- 6) **Yates, B. J.**, Mickle, J. P., Hedden, W. J. and Thompson, F. J. Tracing of afferent pathways from the femoral-saphenous vein to the dorsal root ganglia using transport of horseradish peroxidase. *J. Autonom. Nerv. Syst.* 20: 1-11, 1987.
- 7) Kasper, J., Schor, R. H., **Yates, B. J.** and Wilson, V. J. Three dimensional sensitivity and caudal projection of neck spindle afferents. *J. Neurophysiol.* 59: 1497-1509, 1988.
- 8) **Yates, B. J.**, Kasper, J., Brink, E. E. and Wilson, V. J. Peripheral input to L4 neurons whose activity is modulated by neck rotation. *Brain Res.* 449: 377-380, 1988.
- 9) **Yates, B. J.**, Thompson, F. J. and Mickle, J. P. Responses of localized spinal cord neurons following stimulation of A- β femoral-saphenous venous afferent fibers. *Brain Res.* 451: 285-294, 1988.
- 10) **Yates, B. J.**, Kasper, J. and Wilson, V. J. Effects of muscle and cutaneous hindlimb afferents on L4 neurons whose activity is modulated by neck rotation. *Exp. Brain Res.* 77: 48-56, 1989.
- 11) Kasper, J., Wilson, V. J., Yamagata, Y. and **Yates, B. J.** Neck muscle spindle activity in the decerebrate, unparalyzed cat: dynamics and influence of vestibular stimulation. *J. Neurophysiol.* 62: 917-923, 1989.
- 12) **Yates, B. J.** and Yamagata, Y. Convergence of cardiovascular and vestibular inputs on neurons in the medullary paramedian reticular formation. *Brain Res.* 513: 166-170, 1990.
- 13) Wilson, V. J., Yamagata, Y., **Yates, B. J.**, Schor, R. H. and Nonaka, S. Response of vestibular neurons to head rotations in vertical planes. III. Response of vestibulocollic neurons to vestibular and neck stimulation. *J. Neurophysiol.* 64: 1695-1703, 1990.
- 14) Yamagata, Y., **Yates, B. J.** and Wilson, V. J. Participation of IA reciprocal inhibitory neurons in the spinal circuitry of the tonic neck reflex. *Exp. Brain Res.* 84: 461-464, 1991.

Refereed Articles, Cont.

- 15) **Yates, B. J.**, Yamagata, Y. and Bolton, P. S. The ventrolateral medulla of the cat mediates vestibulosympathetic reflexes. *Brain Res.* 552: 265-272, 1991.
- 16) Bolton, P. S., Goto, T., Schor, R. H., Wilson, V. J., Yamagata, Y. and **Yates, B. J.** Response of pontomedullary reticulospinal neurons to vestibular stimuli in vertical planes: their role in vertical vestibulospinal reflexes. *J. Neurophysiol.* 67: 639-647, 1992.
- 17) **Yates, B. J.** Vestibular influences on the sympathetic nervous system. *Brain Res. Reviews* 17: 51-59, 1992.
- 18) **Yates, B. J.**, Goto, T. and Bolton, P. S. Responses of neurons in the caudal medullary raphe nuclei of the cat to stimulation of the vestibular nerve. *Exp. Brain Res.* 89: 323-332, 1992.
- 19) **Yates, B. J.**, Goto, T. and Bolton, P. S. Responses of neurons in the rostral ventrolateral medulla of the cat to natural vestibular stimulation. *Brain Res.* 601: 255-264, 1993.
- 20) Miller, A. D. and **Yates, B. J.** Evaluation of role of upper cervical inspiratory neurons in respiration, emesis and cough. *Brain Res.* 606: 162-166, 1993.
- 21) **Yates, B. J.**, Goto, T., Kerman, I. and Bolton, P. S. Responses of caudal medullary raphe neurons to natural vestibular stimulation. *J. Neurophysiol.* 70: 938-946, 1993.
- 22) **Yates, B. J.**, Jakus, J. and Miller, A. D. Vestibular effects on respiratory outflow in the decerebrate cat. *Brain Res.* 629: 209-217, 1993.
- 23) Endo, K., Kasper, J., Wilson, V. J. and **Yates, B. J.** Response of commissural and other upper cervical ventral horn neurons to vestibular stimuli in vertical planes. *J. Neurophysiol.* 71: 11-16, 1994.
- 24) **Yates, B. J.** and Miller, A. D. Properties of sympathetic reflexes elicited by natural vestibular stimulation: implications for cardiovascular control. *J. Neurophysiol.* 71: 2087-2092, 1994.
- 25) **Yates, B. J.**, Grélot, L., Kerman, I., Balaban, C. D., Jakus, J. and Miller, A. D. The organization of vestibular inputs to nucleus solitarius and adjacent structures in the cat brainstem. *Am. J. Physiol.* 267: R974-R983, 1994.
- 26) Bankoul, S., Goto, T., **Yates, B. J.** and Wilson, V. J. Primary afferent projection from the neck to an area where vestibulospinal neurons projecting to the cervical dorsal horn are found. An anterograde and retrograde tracing study in the cat. *J. Comp. Neurol.* 353: 529-538, 1995.
- 27) Schor, R. H. and **Yates, B. J.** Horizontal rotation responses of medullary reticular neurons in the decerebrate cat. *J. Vestibular Res.* 5: 223-228, 1995.
- 28) Miller, A. D., Yamaguchi, Y., Siniatia, M. and **Yates, B. J.** Ventral respiratory group bulbospinal inspiratory neurons participate in vestibular-respiratory reflexes. *J. Neurophysiol.* 73: 1303-1307, 1995.
- 29) Endo, K., Thomson, D. B., Wilson, V. J., Yamaguchi, Y. and **Yates, B. J.** Vertical vestibular input to and projections from the caudal parts of the vestibular nuclei of the decerebrate cat. *J. Neurophysiol.* 74: 428-436, 1995.
- 30) **Yates, B. J.**, Siniatia, M. and Miller, A. D. Descending pathways necessary for vestibular influences on sympathetic and inspiratory outflow. *Am. J. Physiol.* 268: R1381-R1385, 1995.

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- 31) **Yates, B. J.**, Balaban, C. D., Miller, A. D., Endo, K. and Yamaguchi, Y. Vestibular inputs to the lateral tegmental field of the cat: potential role in autonomic control. *Brain Res.* 689: 197-206, 1995.
- 32) Rossiter, C. D. and **Yates, B. J.** Vestibular influences on hypoglossal nerve activity in the cat. *Neurosci. Lett.* 211: 25-28, 1996.
- 33) Miller, A. D., Jakus, J., Nonaka, S. and **Yates, B. J.** Modulation of vomiting by the medullary midline. *Brain Res.* 737: 51-58, 1996.
- 34) Rossiter, C. D., Hayden, N. L., Stocker, S. and **Yates, B. J.** Changes in outflow to respiratory pump muscles produced by natural vestibular stimulation. *J. Neurophysiol.* 76: 3274-3284, 1996.
- 35) Steinbacher, B. C. and **Yates, B. J.** Brainstem interneurons necessary for vestibular influences on sympathetic outflow. *Brain Res.* 720: 204-210, 1996.
- 36) Steinbacher, B. C. and **Yates, B. J.** Processing of vestibular and other inputs by the caudal ventrolateral medullary reticular formation. *Am. J. Physiol.* 271: R1070-R1077, 1996.
- 37) Woodring, S.F., Rossiter, C. D. and **Yates, B. J.** Pressor response elicited by nose-up vestibular stimulation in cats. *Exp. Brain Res.* 113: 165-168, 1997.
- 38) Card, J. P., Enquist, L. W., Miller, A. D. and **Yates, B. J.** Differential tropism of pseudorabies virus for cat sensory and motor neurons. *J. NeuroVirology* 3: 49-61, 1997.
- 39) Brophy, G.D., Rossiter, C.D., Bolton, P.S. and **Yates, B. J.** Vestibular influences on cat lumbar paravertebral muscles. *Neurosci. Lett.* 223: 189-192, 1997.
- 40) Stocker, S.D., Steinbacher, B. C., Balaban, C.D. and **Yates, B. J.** Connections of the caudal ventrolateral medullary reticular formation in the cat brainstem. *Exp. Brain Res.* 116: 270-282, 1997.
- 41) Woodring, S.F. and **Yates, B. J.** Responses of ventral respiratory group neurons of the cat to natural vestibular stimulation. *Am. J. Physiol.* 273: R1946-R1956, 1997.
- 42) **Yates, B. J.** and Miller, A. D. Physiological evidence that the vestibular system participates in autonomic and respiratory control. *J. Vestibular Res.* 8: 17-25, 1998.
- 43) Schor, R. H., Steinbacher, B. C. and **Yates, B. J.** Response of medial vestibular nucleus neurons to horizontal linear and angular stimulation of the decerebrate cat. *J. Vestibular Res.* 8: 107-116, 1998.
- 44) **Yates, B. J.** and Stocker, S.D. Integration of somatic and visceral inputs by the brainstem: functional considerations. *Exp. Brain Res.* 119: 269-275, 1998.
- 45) Kerman, I. A. and **Yates, B.J.** Regional and functional differences in the distribution of vestibular-sympathetic reflexes. *Am. J. Physiol.* 275: R824-R835, 1998.
- 46) **Yates, B. J.** and Kerman, I. A. Post-spaceflight orthostatic intolerance: possible relationship to microgravity-induced plasticity in the vestibular system. *Brain Res. Rev.* 28: 73-82, 1998.
- 47) **Yates, B. J.**, Miller, A. D. and Lucot, J.B. The physiological basis and pharmacology of motion sickness: An update. *Brain Research Bull.* 47: 395-406, 1998.
- 48) Bolton, P.S., Kerman, I.A., Woodring, S.F. and **Yates, B. J.** Influences of neck afferents on sympathetic and respiratory nerve activity. *Brain Research Bull.* 47: 413-419, 1998.

Refereed Articles, Cont.

- 49) Billig, I., Foris, J. M., Card, J. P., and **Yates, B. J.** Transneuronal tracing of neural pathways controlling an abdominal muscle, rectus abdominis, in the ferret. *Brain Res.* 820: 31-44, 1999.
- 50) **Yates, B. J.**, Smail, J. A., Stocker, S. D. and Card, J. P. Transneuronal tracing of neural pathways controlling activity of diaphragm motoneurons in the ferret. *Neurosci.* 90: 1501-1513, 1999.
- 51) **Yates, B.J.**, Aoki, M., Burchill, P., Bronstein, A.M., and Gresty, M.A., Cardiovascular responses elicited by linear acceleration in humans. *Exp. Brain Res.* 125: 476-484, 1999.
- 52) Jian, B. J., Cotter, L. A., Emanuel, B. A., Cass, S. P. and **Yates, B. J.** Effects of bilateral vestibular lesions on orthostatic tolerance in awake cats. *J. Appl. Physiol.* 86:1552-1560, 1999.
- 53) Kerman, I.A. and **Yates, B.J.**, Patterning of somatosympathetic reflexes. *Am. J. Physiol.* 277: R716-R724, 1999.
- 54) Aoki, M., Burchill, P., **Yates, B.J.**, Golding, J.F., and Gresty, M.A. Graviceptive control of blood pressure in man. *Archives Italiennes de Biologie* 138: 93-97, 2000.
- 55) **Yates, B.J.**, Jian, B.J., Cotter, L.A., and Cass, S.P. Responses of vestibular nucleus neurons to tilt following chronic bilateral removal of vestibular inputs. *Exp. Brain Res.* 130: 151-158, 2000.
- 56) Kerman, I.A., **Yates, B.J.**, and McAllen, R.M. Anatomical patterning in the expression of vestibulosympathetic reflexes. *Am. J. Physiol.* 279: R109–R117, 2000.
- 57) Kerman, I.A., Emanuel, B.A., and **Yates, B.J.** Vestibular stimulation leads to distinct hemodynamic patterning. *Am. J. Physiol.* 279: R118–R125, 2000.
- 58) Billig, I., Foris, J.M., Enquist, L.W., Card, J. P., and **Yates, B.J.** Definition of neuronal circuitry controlling the activity of phrenic and abdominal motoneurons in the ferret using recombinant strains of pseudorabies virus. *J. Neurosci.* 20:7446-7454, 2000.
- 59) **Yates, B.J.**, Holmes, M.J., and Jian, B.J. Adaptive plasticity in vestibular influences on cardiovascular control. *Brain Research Bull.* 53: 3-9, 2000.
- 60) Kerman, I.A., McAllen, R.M., and **Yates, B.J.** Patterning of sympathetic nerve activity in response to vestibular stimulation. *Brain Research Bull.* 53: 11-16, 2000.
- 61) Mori, R.L., Bergsman, A.E., Holmes, M.J., and **Yates, B.J.** Role of the medial medullary reticular formation in relaying vestibular signals to the diaphragm and abdominal muscles. *Brain Res.* 902: 82-91, 2001.
- 62) Cotter, L.A., Arendt, H.E., Jasko, J.G., Sprando, C., and **Yates, B.J.** Effects of postural changes and vestibular lesions on diaphragm and rectus abdominis activity in awake cats. *J. Appl. Physiol.* 91: 137-144, 2001.
- 63) Billig, I., Hartge, K., Card, J.P., and **Yates, B.J.** Transneuronal tracing of neural pathways controlling abdominal musculature in the ferret. *Brain Res.* 912: 24-32, 2001.
- 64) Billig, I., **Yates, B.J.**, and Rinaman, L. Plasma hormone levels and central c-fos expression in ferrets after systemic administration of cholecystikinin. *Am. J. Physiol.* 281: R1243-R1255, 2001.
- 65) **Yates, B.J.**, Billig, I., Cotter, L.A., Mori, R.L., and Card, J.P. Role of the vestibular system in regulating respiratory muscle activity during movement. *Clinical and Experimental Pharmacology and Physiology* 29: 112-117, 2002.

Refereed Articles, Cont.

- 66) Holmes, M.J., Cotter, L.A., Arendt, H.E., Cass, S.P., and **Yates, B.J.** Effects of lesions of the caudal cerebellar vermis on cardiovascular regulation in awake cats. *Brain Res.* 938: 62-72, 2002.
- 67) Jian, B.J., Shintani, T., Emanuel, B.A., and **Yates, B.J.** Convergence of limb, visceral, and vertical semicircular canal or otolith inputs onto vestibular nucleus neurons. *Exp. Brain Res.* 144: 247-257, 2002.
- 68) Brown, J.E., **Yates, B.J.** and Taube, J.S. Does the vestibular system contribute to shaping the response properties of head direction cells? *Physiology and Behavior* 77: 743-748, 2002.
- 69) Billig, I., Card, J.P., and **Yates, B.J.** Neurochemical phenotypes of medullary reticular formation neurons influencing diaphragm and rectus abdominis activity. *J. Appl. Physiol.* 94: 391-398, 2003.
- 70) Shintani, T., Mori, R.L. and **Yates, B.J.** Locations of neurons with respiratory-related activity in the ferret brainstem. *Brain Res.* 974: 236-242, 2003.
- 71) Kerman, I.A., Enquist, L.W., Watson, S.J. and **Yates, B.J.** Brainstem substrates of sympathomotor circuitry identified using transsynaptic tracing with pseudorabies virus recombinants. *J. Neurosci.* 23: 4657-4666, 2003.
- 72) Shintani, T., Anker, A.R., Billig, I., Card, J.P. and **Yates, B.J.** Transneuronal tracing of neural pathways influencing both diaphragm and genioglossal muscle activity in the ferret. *J. Appl. Physiol.* 95: 1453-1459, 2003.
- 73) Anker, A.R., Ali, A., Arendt, H.E., Cass, S.P., Cotter, L.A., Jian, B.J., Tamrazi, B., and **Yates, B.J.** Use of electrical vestibular stimulation to alter genioglossal muscle activity in awake cats. *J. Vestibular Res.* 13: 1-8, 2003.
- 74) **Yates, B.J.**, Holmes, M.J. and Jian, B.J. Plastic changes in processing of graviceptive signals during spaceflight potentially contribute to postflight orthostatic intolerance. *J. Vestibular Res.* 13: 395-404, 2003.
- 75) Cotter, L.A., Arendt, H.E., Cass, S.P., Jian, B.J., Mays, D.F., Olsheski, C.J., Wilkinson, K.A., and **Yates, B.J.** Effects of postural changes and vestibular lesions on genioglossal muscle activity in conscious cats. *J. Appl. Physiol.* 96: 923-930, 2004.
- 76) Wilkinson, K.A., Maurer, A.P., Sadacca, B.F., and **Yates, B.J.** Responses of feline medial medullary reticular formation neurons with projections to the C₅-C₆ ventral horn to vestibular stimulation. *Brain Res.* 1018: 247-256, 2004.
- 77) Mori, R.L., Cotter, L.A., Arendt, H.E., Olsheski, C.J., and **Yates, B.J.** Effects of vestibular nucleus lesions on blood pressure regulation during postural changes in conscious cats. *J. Appl. Physiol.* 98: 526-533, 2005.
- 78) Brown, J.E., Card, J.P., and **Yates, B.J.** Polysynaptic pathways from the vestibular nuclei to the lateral mammillary nucleus of the rat: substrate for vestibular input to head direction cells. *Exp. Brain Res.* 161: 47-61, 2005.
- 79) Jian, B.J., Acernese, A.W., Lorenzo, J., Card, J.P., and **Yates, B.J.** Afferent pathways to the region of the vestibular nuclei that participates in cardiovascular and respiratory control. *Brain Res.* 1044: 241-250, 2005.
- 80) Wilkens, E.P. and **Yates, B.J.** Pretreatment with ondansetron blunts plasma vasopressin increases associated with morphine administration in ferrets. *Anesth. Analges.* 101: 1029-1033, 2005.

Refereed Articles, Cont.

- 81) **Yates, B.J.** and Bronstein, A.M. The effects of peripheral vestibular lesions on autonomic regulation: observations, mechanisms, and clinical implications. *J. Vestibular Res.* 15: 119-129, 2005.
- 82) Anker, A. R., Sadacca, B. F. and **Yates, B. J.** Vestibular inputs to propriospinal interneurons in the feline C₁-C₂ spinal cord projecting to the C₅-C₆ ventral horn. *Exp. Brain Res.* 170: 39-51, 2006.
- 83) Wilson, T.D., Cotter, L.A., Draper, J.A., Misra, S.P., Rice, C.D., Cass, S.P. and **Yates, B.J.** Effects of postural changes and removal of vestibular inputs on blood flow to the head of conscious felines. *J. Appl. Physiol.* 100: 1475–1482, 2006.
- 84) Giaconi, E., Deriu, F., Tolu, E., Cuccurazzu, B., **Yates, B. J.** and Billig, I. Transneuronal tracing of vestibulo-trigeminal pathways innervating the masseter muscle in the rat. *Exp. Brain Res.* 171: 330–339, 2006.
- 85) Wilson, T.D., Cotter, L.A., Draper, J.A., Misra, S.P., Rice, C.D., Cass, S.P. and **Yates, B.J.** Vestibular inputs elicit patterned changes in limb blood flow in conscious felines. *J. Physiol.* 575: 671–684, 2006.
- 86) Cuccurazzu, B., Deriu, F., Tolu, E., **Yates, B.J.**, and Billig, I. A monosynaptic pathway links the vestibular nuclei and masseter muscle motoneurons in rats. *Exp. Brain Res.* 176: 665-671, 2007.
- 87) Lee, T.K., Lois, J.H., Troupe, J.H., Wilson, T.D., and **Yates, B.J.** Transneuronal tracing of neural pathways that regulate hindlimb muscle blood flow. *Am. J. Physiol.* 292: R1532-R1541, 2007.
- 88) Arshian, M, Holtje, R. J., Cotter, L.A., Rice, C.D., Cass, S.P., and **Yates, B.J.** Effects of postural changes and vestibular lesions on the movement of air in and out of the lungs of conscious felines. *J. Appl. Physiol.* 103: 347-352, 2007.
- 89) Miller, D.M., Cotter, L.A., Gandhi, N.J., Schor, R.H., Cass, S.P., Huff, N.O., Raj, S.G., Shulman, J.A., and **Yates, B.J.** Responses of caudal vestibular nucleus neurons of conscious cats to rotations in vertical planes, before and after a bilateral vestibular neurectomy. *Exp. Brain Res.* 188: 175–186, 2008.
- 90) Miller, D.M., Cotter, L.A., Gandhi, N.J., Schor, R.H., Huff, N.O., Raj, S.G., Shulman, J.A., and **Yates, B.J.** Responses of rostral fastigial nucleus neurons of conscious cats to rotations in vertical planes. *Neuroscience* 155: 317-325, 2008.
- 91) Lane, M.A., White, T.E., Coutts, M.A., Jones, A.L., Sandhu. M.S., Bloom, D.C., Bolser, D.C., **Yates, B.J.**, Fuller, D.D., and Reier, P.J. Cervical prephrenic interneurons in the normal and lesioned spinal cord of the adult rat. *J. Comp. Neurol.* 511: 692-709, 2008.
- 92) Lois, J.H., Rice, C.D., and **Yates, B.J.** Neural circuits that control diaphragm function in the cat revealed by transneuronal tracing. *J. Appl. Physiol.* 106: 138-152, 2009.
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- 94) Miller, D.M., Reighard, D.A., Mehta, A.S., Mehta, A.S., Kalash, R., and **Yates, B.J.** Responses of thoracic spinal interneurons to vestibular stimulation. *Exp. Brain Res.* 195:89–100, 2009.
- 95) Rice, C.D., Lois, J.H., Kerman, I.A., and **Yates, B.J.** Localization of serotonergic neurons that participate in regulating diaphragm activity in the cat. *Brain Res.* 1279:71-81, 2009.

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- 97) Yavorcik, K.J., Reighard, D.A., Misra, S.P., Cotter, L.A., Cass, S.P., Wilson, T.D., and **Yates, B.J.** Effects of postural changes and removal of vestibular inputs on blood flow to and from the hindlimb of conscious felines. *Am. J. Physiol.* 297: R1777–R1784, 2009.
- 98) **Yates, B.J.** and Miller, D.M. Integration of nonlabyrinthine inputs by the vestibular system: role in compensation following bilateral damage to the inner ear. *J. Vestibular Res.* 19: 183-189, 2009.
- 99) Badami, V.M., Rice, C.D., Lois, J.H., Madrecha, J. and **Yates, B.J.** Distribution of hypothalamic neurons with orexin (hypocretin) or melanin concentrating hormone (MCH) immunoreactivity and multisynaptic connections with diaphragm motoneurons. *Brain Res.* 1323: 119-126, 2010.
- 100) Rice, C.D., Weber, S.A., Waggoner, A.L., Jessell, M.E. and **Yates, B.J.** Neural pathways that influence diaphragm activity and project to the lumbar spinal cord in cats. *Exp. Brain Res.* 203: 205–211, 2010.
- 101) Sugiyama, Y., Suzuki, T. and **Yates, B.J.** Role of the rostral ventrolateral medulla (RVLM) in the patterning of vestibular system influences on sympathetic nervous system outflow to the upper and lower body. *Exp. Brain Res.* 210: 515-527, 2011.
- 102) DeStefino, V.J., Reighard, D.A., Sugiyama, Y., Suzuki, T., Cotter, L.A., Larson, M.G., Gandhi, N.J., Barman, S, M. and **Yates, B.J.** Responses of neurons in the rostral ventrolateral medulla (RVLM) to whole-body rotations: comparisons in decerebrate and conscious cats. *J. Appl. Physiol.* 110: 1699-1707, 2011.
- 103) Barman, S, M., Sugiyama, Y., Suzuki, T., Cotter, L.A., DeStefino, V.J., Reighard, D.A., Cass, S.P., and **Yates, B.J.** Rhythmic activity of neurons in the rostral ventrolateral medulla of conscious cats: effect of removal of vestibular inputs. *Am. J. Physiol.* 301: R937-R946, 2011.
- 104) Sugiyama, Y., Suzuki, T., DeStefino, V.J., and **Yates, B.J.** Integrative responses of neurons in nucleus tractus solitarius to visceral afferent stimulation and vestibular stimulation in vertical planes. *Am. J. Physiol.* 301:R1380-R1390, 2011.
- 105) McCall, A.A. and **Yates, B.J.** Compensation following bilateral vestibular damage. *Front. Neur.* 2:88, 2011.
- 106) Suzuki, T., Sugiyama, Y., and **Yates, B.J.** Integrative responses of neurons in parabrachial nuclei to a nauseogenic gastrointestinal stimulus and vestibular stimulation in vertical planes. *Am. J. Physiol.* 302:R965-R975, 2012.
- 107) Gowen, M.F., Ogburn, S.W., Suzuki, T., Sugiyama, Y., Cotter, L.A., and **Yates, B.J.** Collateralization of projections from the rostral ventrolateral medulla to the rostral and caudal thoracic spinal cord in felines. *Exp. Brain Res.* 220:121–133, 2012.
- 108) Moy, J.D., Miller, D.J., Catanzaro, M.F., Boyle, B.M., Ogburn, S.W., Cotter, L.A., **Yates, B.J.**, and McCall, A.A. Responses of neurons in the caudal medullary lateral tegmental field to visceral inputs and vestibular stimulation in vertical planes. *Am. J. Physiol.* 303: R929–R940, 2012.

Refereed Articles, Cont.

- 109) McCall, A.A., Moy, J.D., DeMayo, W.M., Puterbaugh, S.R., Miller, D.J., Catanzaro, M.F., and **Yates, B.J.** Processing of vestibular inputs by the medullary lateral tegmental field of conscious cats: Implications for generation of motion sickness. *Exp. Brain Res.* 225: 349–359, 2013.
- 110) McCall, A.A., Moy, J.D., Puterbaugh, S.R., DeMayo, W.M., and **Yates, B.J.** Responses of vestibular nucleus neurons to inputs from the hindlimb are enhanced following a bilateral labyrinthectomy. *J. Appl. Physiol.* 114: 742-751, 2013.
- 111) Horn, C.C., Kimball, B.A., Wang, H., Kaus, J., Dienel, S., Nagy, A., Gathright, G.R., **Yates, B.J.**, and Andrews, P.L.R. Why can't rodents vomit? A comparative behavioral, anatomical, and physiological study. *PLoS ONE* 8:e60537, 2013.
- 112) Arshian, M.S., Puterbaugh, S.R., Miller, D.J., Catanzaro, M.F., Hobson, C.E., McCall, A.A., and **Yates, B.J.** Effects of visceral inputs on the processing of labyrinthine signals by the inferior and caudal medial vestibular nuclei: Ramifications for the production of motion sickness. *Exp. Brain Res.* 228: 353-363, 2013.
- 113) Balaban, C.D., Ogburn, S.W., Warshafsky, S.G., Ahmed, A.-K., and **Yates, B.J.** Identification of neural networks that contribute to motion sickness through principal components analysis of Fos labeling induced by galvanic vestibular stimulation. *PLoS ONE* 9(1): e86730, 2014.
- 114) Horn, C.C., Meyers, K., Lim, A., Dye, M., Pak, D., Rinaman, L., and **Yates, B.J.** Delineation of vagal emetic pathways: Intragastric copper sulfate-induced emesis and viral tract tracing in musk shrews. *Am. J. Physiol.* 306: R341-351, 2014.
- 115) **Yates, B.J.**, Bolton, P.S., and Macefield, V.G. Vestibulo-sympathetic responses. *Compr. Physiol.* 4:851-887, 2014.
- 116) Arshian, M.S., Hobson, C.E., Catanzaro, M.F., Miller, D.J., Puterbaugh, S.R., Cotter, L.A., **Yates, B.J.**, and McCall, A.A., Vestibular nucleus neurons respond to hindlimb movement in the decerebrate cat. *J. Neurophysiol.* 111: 2423-2432, 2014.
- 117) **Yates, B.J.**, Catanzaro, M.F., Miller, D.J., and McCall, A.A. Integration of vestibular and emetic gastrointestinal signals that produce nausea and vomiting: potential contributions to motion sickness. *Exp. Brain Res.* 232: 2455-2469, 2014.
- 118) Catanzaro, M.F., Miller, D.J., Cotter, L.A., McCall, A.A., and **Yates, B.J.** Integration of vestibular and gastrointestinal inputs by cerebellar fastigial nucleus neurons: multisensory influences on motion sickness. *Exp. Brain Res.* 232: 2581-2589, 2014.
- 119) Whitman, G.T. and **Yates, B.J.** Orthostatic intolerance in acute vestibular neuritis. *Mayo Clin. Proc.* 90: 308-309, 2015.
- 120) McCall, A.A., Miller, D.J., Catanzaro, M.F., Cotter, L.A. and **Yates, B.J.** Hindlimb movement modulates the activity of rostral fastigial nucleus neurons that process vestibular input. *Exp. Brain Res.* 233: 2411-2419, 2015.
- 121) McCall, A.A., Miller, D.M., DeMayo, W.M., Bourdages, G.H., and **Yates, B.J.** Vestibular nucleus neurons respond to hindlimb movement in the conscious cat. *J. Neurophysiol.* 116: 1785-1794, 2016.

Refereed Articles, Cont.

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- 123) Miller, D.M., DeMayo, W.M., Bourdages, G.H., Wittman, S.R., **Yates, B.J.**, and McCall, A.A. Neurons in the pontomedullary reticular formation receive converging inputs from the hindlimb and labyrinth. *Exp. Brain Res.* 235:1195–1207, 2017.
- 124) McCall, A.A., Miller, D.M., and **Yates, B.J.** Descending influences on vestibulospinal and vestibulosympathetic reflexes. *Front. Neurol.* 8:112, 2017. DOI: 10.3389/fneur.2017.00112
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- 126) Barman, S.M. and **Yates, B.J.** Deciphering the neural control of sympathetic nerve activity: Status report and directions for future research. *Front. Neurosci.* 11(730), 2017. DOI: 10.3389/fnins.2017.00730
- 127) Patel, N.M., Baker, E.A.G., Wittman, S.R., Engstrom, I.C., Bourdages, G.H., McCall, A.A., Miller, D.M. and **Yates, B.J.** Cardiovascular adjustments during anticipated postural changes. *Physiol. Rep.*, 6(1), e13554, 2018. DOI: <https://doi.org/10.14814/phy2.13554>.

2) Book Chapters, Editorials, and Non-Refereed Articles

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- 2) Schor, R. H., Wilson, V. J., **Yates, B. J.**, Yamagata, Y. and Nonaka, S. Vestibulocollic neurons and the vestibulocollic reflex. IN: *Vestibular and Brain Stem Control of Eye, Head and Body Movements*, edited by H. Shimazu and Y. Shinoda. Japan Scientific Societies Press, Tokyo, 1992, pp. 69-77.
- 3) **Yates, B. J.**, Bolton, P. S., Goto, T., Kerman, I. A. and Miller, A. D. The role of the ventral brainstem in vestibulosympathetic and vestibulorespiratory reflexes. IN: *Ventral Brainstem Mechanisms and Control Functions*, edited by C. O. Truth, R. M. Millis, H. Kiwull-Schöne and M. E. Schläfke. Marcel Dekker, New York, 1995, pp. 181-191.
- 4) **Yates, B. J.** and Miller, A. D. Overview of vestibular autonomic regulation. IN: *Vestibular Autonomic Regulation*, edited by B. J. Yates and A. D. Miller. CRC Press, Boca Raton, FL, 1996, pp. 1-3.
- 5) **Yates, B. J.** Vestibular influences on cardiovascular control. IN: *Vestibular Autonomic Regulation*, edited by B. J. Yates and A. D. Miller. CRC Press, Boca Raton, FL, 1996, pp. 97-111.
- 6) Miller, A. D. and **Yates, B. J.** Vestibulo-respiratory connections. IN: *Vestibular Autonomic Regulation*, edited by B. J. Yates and A. D. Miller. CRC Press, Boca Raton, FL, 1996, pp. 113-125.

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- 9) Steinbacher, B. C., Jr. and **Yates, B. J.** Brainstem integrative sites for vestibulo-sympathetic reflexes. *Annals of the New York Academy of Sciences* 781: 700-702, 1996.
- 10) **Yates, B. J.**, Sklare, D.A. and Frey, M.A. Vestibular autonomic regulation: Overview and conclusions of a recent workshop at the University of Pittsburgh. *J. Vestibular Res.* 8: 1-5, 1998.
- 11) **Yates, B. J.** Autonomic reaction to vestibular damage. *Otolaryngology: Head and Neck Surgery* 119: 106-112, 1998.
- 12) **Yates, B.J.**, Holmes, M.J., Jian, B.J., and Kerman, I.A. Vestibular influences on cardiovascular control during movement. IN: *Textbook of Audiological Medicine*, edited by L. M. Luxon. Taylor and Francis, London, 2003, pp. 691-700.
- 13) Balaban, C.D. and **Yates, B.J.** Vestibulo-autonomic interactions: a teleologic perspective. IN: *Anatomy and Physiology of the Central and Peripheral Vestibular System*, edited by S. M. Highstein, R. R. Fay, and A. N. Popper. Springer-Verlag, Heidelberg, 2004, pp. 286-342.
- 14) **Yates, B.J.** The vestibular system and cardiovascular responses to altered gravity. *Am. J. Physiol.* 286: R23, 2004.
- 15) **Yates, B.J.** Motion sickness. In: *Encyclopedia of Neuroscience*, edited by M.D. Binder, N. Hirokawa, U. Windhorst. Springer, Heidelberg, 2009, pp. 2410-2413.
- 16) **Yates, B.J.** and Wilson, T.D. Vestibulo-autonomic responses. IN: *Encyclopedia of Neuroscience, Vol. 10*, edited by L. R. Squire. Academic Press, Oxford, 2009, 133-138.
- 17) **Yates, B.J.** 'Random-source' dogs, cats needed for medical research (Letter to the Editor). *The Hill*. Aug. 5, 2009, p. 14.
- 19) Peusner K., Vidal, P.P., Minor, L., Cullen, K., **Yates, B.J.**, Shao, M., and Dutia. M. Vestibular compensation: new clinical and basic science perspectives. *J. Vestib. Res.* 19: 143-146, 2009.
- 20) **Yates, B.J.** and Toth, L. Is it time to re-define "major operative procedures?" (Editorial). *Journal of the American Association for Laboratory Animal Science* 49: 8, 2010.
- 21) **Yates, B.J.** and Newsome, J. Response to protocol review: Study section's opinion matters. *Lab. Animal* 39: 259-260, 2010.
- 22) Cullen, K.E. and **Yates, B.J.** Vestibular neurophysiology: a collection of papers in honor of the career of Jay Goldberg. *Exp. Brain Res.* 210: 327-329, 2011.
- 23) Prentice, E.D., James, M.L., **Yates, B.J.**, Dixon, R.S., and Rosenquist, T.H. USDA practices that negatively impact biomedical research. *Medical Research Law & Policy Report*, 10 MRLR 613, 09/07/2011.
- 24) **Yates, B.J.**, and Barrett, K.E. Reporting of studies using animal and human subjects in APS journals: how the society protects authors from ethical minefields. *The Physiologist* 55: 8-10, 2012.

- 25) **Yates, B.J.**, Kerman, I.A., Jian, B.J., and Wilson, T.D. The vestibulo-autonomic system. IN: *Vertigo and Imbalance (Oxford Textbook in Clinical Neurology)*, edited by A. Bronstein. Oxford University Press, Oxford, 2013, pp. 49-62.
- 26) **Yates, B.J.** and Bronstein, A.M. Vestibular system influences on respiratory muscle activity and cardiovascular functions. IN: *Autonomic Failure: A Textbook of Clinical Disorders of the Autonomic Nervous System*, edited by C. J. Mathias and Sir R. Bannister. Oxford University Press, Oxford, 2013, pp. 97-107.
- 27) **Yates, B.J.** The evolution of a distinguished neuroscience journal. *J. Neurophysiol.* 112: 1-4, 2014.
- 28) Horn, C.C. and **Yates, B.J.** Biology and control of nausea and vomiting: Outcomes of the 2013 University of Pittsburgh conference. *Exp. Brain Res.* 232: 2451-2453, 2014.
- 29) **Yates, B.J.** The relationship between the IACUC and principal investigators. IN: *The Care and Feeding of an IACUC: The Organization and Management of an Institutional Animal Care and Use Committee*, edited by W. Petrie and S. L. Wallace. Taylor & Francis, Boca Raton, 2015, pp. 134-143.
- 30) **Yates, B.J.** The evolution of a distinguished neuroscience journal: a progress report. *J. Neurophysiol.* 114: 1483–1485, 2015.
- 31) **Yates, B.J.** Strategies to increase rigor and reproducibility of data in manuscripts. *J. Neurophysiol.* 116: 1538, 2016.
- 32) Horn, C.C. and **Yates, B.J.** Biology and control of nausea and vomiting 2015: Perspectives and overview of the conference. *Autonomic Neuroscience: Basic and Clinical* 202: 3-4, 2017.
- 33) **Yates, B.J.** The "new realities" of peer review. *J. Neurophysiol.* 117: 869-871, 2017.
- 34) **Yates, B.J.** Vestibulo-Autonomic Responses. IN: *Reference Module in Neuroscience and Biobehavioral Psychology*, edited by J. Stein. Elsevier, 2017, pp. 1-6. (ISBN: 9780128093245)
- 35) **Yates, B.J.** The continuing evolution of the *Journal of Neurophysiology*: 2018 update. *J. Neurophysiol.* 119: 765-766, 2018.
- 36) **Yates, B.J.** Happy 80th birthday to the *Journal of Neurophysiology*!. *J. Neurophysiol.*, in press, 2018.

3) Books

Yates, B. J. and Miller, A. D., Eds. *Vestibular Autonomic Regulation*. CRC Press, Boca Raton, FL, 1996.

Suckow, M.A. and **Yates, B. J.** *Research Regulatory Compliance*. Academic Press, New York, 2015.

4) Recent Published Abstracts (Since 2012 Only)

- 1) Sugiyama, Y., Suzuki, T., DeStefino, V.J., and **Yates, B.J.** Integrative responses of neurons in nucleus tractus solitarius to stimulation of visceral and vestibular afferents. *FASEB J* 26: 706.1, 2012.
- 2) Suzuki, T., Sugiyama, Y., and **Yates, B.J.** Effects of intragastric infusion of copper sulfate on the responses of parabrachial nucleus neurons to whole-body rotations in decerebrate felines. *FASEB J* 26: 706.2, 2012.
- 3) Carlino, L., Weber, S.A., Gowen, M.F., and **Yates, B.J.** Selective innervation of upper and lower thoracic spinal segments by medullary raphe neurons in felines. *FASEB J* 26:1091.2, 2012.
- 4) Gowen, M.F., Weber, S.A., Sugiyama, Y., Suzuki, T., and **Yates, B.J.** Collateralization of projections of rostral ventrolateral medulla (RVLM) neurons to levels of the thoracic spinal cord that regulate upper- and lower-body blood flow. *FASEB J* 26:1091.14, 2012.
- 5) **Yates, B.J.**, Moy, J.D., Miller, D.J., Catanzaro, M.F., Boyle, B.M., Ogburn, S.W., Cotter, L.A., and McCall, A.A. Responses of neurons in the caudal medullary lateral tegmental field to visceral inputs and vestibular stimulation in vertical planes. *FASEB J.* 27:932.4, 2013.
- 6) McCall, A.A., Moy, J.D., DeMayo, W.M., Puterbaugh, S.R., Miller, D.J., Catanzaro, M.F., and **Yates, B.J.** Processing of vestibular inputs by the medullary lateral tegmental field of conscious cats: Implications for generation of motion sickness. *FASEB J.* 27:932.5, 2013.
- 7) Arshian, M.S., Puterbaugh, S.R., Cotter, L.A., **Yates, B.J.**, and McCall, A.A. Responses of vestibular nucleus neurons to hindlimb movement in decerebrate cats. *FASEB J* 27:932.10, 2013.
- 8) McCall, A.A., Arshian, M.S., Puterbaugh, S.R., Hobson, C.E., Cotter, L.A., and **Yates, B.J.** Hindlimb motion alters caudal vestibular nucleus neuronal activity in decerebrate cats. *Soc. Neurosci. Abstr.*, 2013.
- 9) Catanzaro, M.F., Arshian, M.S., Miller, D.J., Cotter, L.A., McCall, A.A., and **Yates, B.J.** Effect of an emetic gastrointestinal input on the processing of labyrinthine inputs by cerebellar rostral fastigial nucleus neurons. *Association for Research in Otolaryngology*, 2014.
- 10) Catanzaro, M.F., Miller, D.J., Cotter, L.A., McCall, A.A., and **Yates, B.J.** Effect of an emetic gastrointestinal input on the processing of labyrinthine inputs by cerebellar rostral fastigial nucleus neurons. *FASEB J*, 28:1130.7, 2014.
- 11) McCall, A.A., Miller, D.J., Catanzaro, M.F., Cotter, L.A., and **Yates, B.J.** Central nervous system neurons that process vestibular afferent information respond to hindlimb movement: rostral fastigial nucleus and medial reticular formation neurons. *Soc. Neurosci. Abstr.*: 157.12, 2014.
- 12) Bourdages, G.H. and **Yates, B.J.** Feedforward mechanisms adjust cerebral blood flow during anticipated postural changes. *FASEB J*, 29:950.6, 2015.
- 13) Miller, D.M., Miller, D.J., Bourdages, G.H., Cotter, L.A., **Yates, B.J.** and McCall, A.A. Reticular formation neurons with vestibular inputs respond to hindlimb movement: comparisons between decerebrate and conscious cats. *Soc. Neurosci. Abstr.*, 2015.
- 15) McCall, A.A., Miller, D.M., DeMayo, W.M., **Yates, B.J.** and Bourdages, G.H. Vestibular nucleus neuron activity is modulated by hindlimb movement in the conscious cat. *ARO Abstracts* 39: 299, 2016.

Recent Published Abstracts, Cont.

- 14) McCall, A.A., Miller, D.M., DeMayo, W.M., **Yates, B.J.** and Bourdages, G.H. Hindlimb inputs alter the processing of vestibular signals. *FASEB J.*, 30: 1283.1, 2016.
- 15) Miller, D.M., Balaban, C.D., DeMayo, W.M., Bourdages, G.H., **Yates, B.J.** and McCall, A.A. Central vestibular neurons integrate inputs from limb and labyrinth in an additive manner. *Soc. Neurosci. Abstr.*, 2016.
- 16) Wittman, S.R., Miller, D.M., **Yates, B.J.**, and McCall, A.A. The Role of the vestibular nucleus in the multimodal coordination of balance. *FASEB J.*, 31: 869.4, 2017.
- 17) **Yates, B.J.**, Baker, E.A.G., Patel, N., Wittman, S.R., Miller, D.M., and McCall, A.A. Anticipatory control of blood pressure during postural alterations: neural mechanisms. *38th World Congress of the International Union of Physiological Sciences*, Rio de Janeiro, Brazil, 2017.

PROFESSIONAL ACTIVITIES

Recent Teaching (Since 2013)

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|--------------|--|
| Spring, 2013 | Lecturer, Neuroscience Course for Medical Students |
| Spring, 2013 | Lecturer, Graduate Course in Systems Neuroscience |
| Fall, 2013 | Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070) |
| Fall, 2013 | Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070) |
| Fall, 2013 | Lecturer and Workshop Facilitator, Body Fluid Homeostasis - Cardiovascular Course for Medical Students |
| Spring, 2014 | Lecturer and Problem Based Learning Session Facilitator, Neuroscience Course for Medical Students |
| Spring, 2014 | Lecturer, Graduate Course in Systems Neuroscience |
| Fall, 2014 | Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070) |
| Fall, 2014 | Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070) |
| Fall, 2014 | Lecturer and Workshop Facilitator, Body Fluid Homeostasis - Cardiovascular Course for Medical Students |
| Spring, 2015 | Lecturer, Lab Instructor, and Problem Based Learning Facilitator, Neuroscience Course for Medical Students |
| Spring, 2015 | Lecturer, Graduate Course in Systems Neuroscience |
| Fall, 2015 | Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070) |
| Fall, 2015 | Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070) |
| Fall, 2015 | Lecturer and Workshop Facilitator, Body Fluid Homeostasis - Cardiovascular Course for Medical Students |
| Spring, 2016 | Lecturer, Lab Instructor, and Problem Based Learning Facilitator, Neuroscience Course for Medical Students |

Recent Teaching, Cont.

Spring, 2016	Lecturer, Graduate Course in Systems Neuroscience
Fall, 2016	Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070)
Fall, 2016	Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070)
Fall, 2016	Lecturer and Workshop Facilitator, Body Fluid Homeostasis - Cardiovascular Course for Medical Students
Spring, 2017	Organizer, Journal Club for Center for Neuroscience Graduate Students.
Spring, 2017	Lecturer, Lab Instructor, and Problem Based Learning Facilitator, Neuroscience Course for Medical Students
Spring, 2017	Lecturer, Graduate Course in Systems Neuroscience
Fall, 2017	Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070)
Fall, 2017	Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070)
Fall, 2017	Lecturer and Workshop Facilitator, Body Fluid Homeostasis - Cardiovascular Course for Medical Students
Fall, 2017	Lecturer, Cell Communications and Pharmacology Course for Medical Students
Spring, 2018	Lecturer and Workshop Facilitator, Neuroscience Course for Medical Students
Spring, 2018	Lecturer, Graduate Course in Systems Neuroscience

Teaching-Related Appointments and Awards

1997	Elected to Graduate Faculty Status, University of Pittsburgh
2010	Recipient of Chancellor's Distinguished Teaching Award
2016-	Vice-Chair, Curriculum Committee, University of Pittsburgh School of Medicine

Undergraduate Thesis Students

1995-1997	Sean Stocker	2004-2007	Milad Arshian	2009-2012	Varun Badami
1996-1997	Kevin Patterson	2005-2006	James Lois	2009-2012	Vincent DeStefino
1996-1997	Brian Jian	2005-2007	Joseph Troupe	2010-2013	Daniel Miller
1998-1999	Aaron Crookshank	2005-2008	Cory Rice	2011-2014	Michael Catanzaro
1998-2000	Jeffrey Jasko	2006-2008	Joshua Shulman	2011-2014	Nevin Sastry
1998-2000	Justin Weigle	2006-2008	Shiv Raj	2013-2105	Ryan Rothman
2000-2001	Ryan Mori	2007-2008	Nicholas Huff	2014-2017	Ethan Baker
2001-2002	Arju Ali	2007-2009	Ronny Kalash	2014-2017	Neesirg Patel
2002-2003	Adam Anker	2009-2010	Jayesh Madrecha	2014-2017	Samuel Wittman
2002-2004	Katie Wilkinson	2009-2010	Mary Jessell	2015-2017	Ryan Lichtenberger
2002-2005	Brian Sadacca	2009-2011	Abdul Ahmed	2014-2017	George Bourdages
2003-2006	Sunil Misra	2009-2012	Sarah Ogburn		

K08 Trainee

2014-2019	Andrew McCall, M.D.
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Medical Student Research Project Advisees

2008-2010 Sunil Misra
2011-2012 Jennifer Moy (*NIH Predoctoral Trainee*)
2012-2013 Milad Arshian (*NIH Predoctoral Trainee*)

Predoctoral Students

1995-1996 Bernard Steinbacher (M.S. degree in Neuroscience)
1996-1999 Ilan Kerman (M.S. and Ph.D. degree in Neuroscience)
1998-2001 Michael Holmes (M.S. degree in Neuroscience)
2002-2003 Ryan Mori (M.S. degree in Neuroscience)
1998-2004 Brian Jian (Ph.D. degree in Neuroscience)
2001-2004 Joel Brown (Ph.D. degree in Neuroscience)
2004-2005 Adam Anker (M.S. degree in Neuroscience)
2004-2005 Elena Giaconi (Visiting Ph.D. Student from University of Sassari, Italy)
2005-2006 Bruna Cuccurazzu (Visiting Ph.D. Student from University of Sassari, Italy)
2007-2008 James Lois (M.S. degree in Neuroscience)

Postdoctoral Fellows and Research Associates

1991-1993	Philip Bolton	2004-2005	Tim Wilson
1995-1996	Christina Rossiter	2005-2006	Tae-Kyeong Lee
1998-2001	Isabelle Billig	2010-2011	Takeshi Suzuki
2000	Ilan Kerman	2010-2011	Yoichiro Sugiyama
2001-2003	Toshiharu Shintani	2014-2017	Derek Miller

Thesis and Comprehensive Exam Committees (Since 2002 Only)

2002 Sean Stocker (Chair, Ph.D. thesis committee)
2002 Chris Madden (Chair, Ph.D. thesis committee)
2002 Eric Abrahamson (Ph.D. thesis committee)
2002 Georgina Cano (Ph.D. thesis committee)
2002-2003 Brian Jian (Ph.D. comprehensive committee)
2002-2003 Joel Brown (Ph.D. comprehensive committee)
2002-2003 Edward Plowey (University of Illinois; Doctoral Examination Committee)
2003 Ryan Mori (M.S. comprehensive committee)
2003 Cyrus McCandless (Chair, Ph.D. comprehensive committee)
2003 Ryan Mori (M.S. thesis committee)
2004 Adam Anker (M.S. comprehensive committee)
2004 Adam Anker (M.S. thesis committee)
2008-2011 Joost Wagenaar (Ph.D. thesis committee)
2012 Peter Adelman (Ph.D. comprehensive committee)
2014 Elie Hamman (University of Western Sydney, Australia; Doctoral Examination Committee)

UNIVERSITY SERVICE ACTIVITIES

University Committees

1996-1997	Co-Chairman of Committee to Organize the 1997 Center for Neuroscience (CNUP) Retreat
1998-1999	Member, University Senate Admissions and Student Aid Committee
1998-1999	Member, Center for Neuroscience Activities Committee
2000-2004	Member, Institutional Animal Care and Use Committee (Vice-Chair of Committee from 2001-2004)
2002-2004	Member, Center for Neuroscience Admissions Committee
2004-2006	Chair, Institutional Animal Care and Use Committee
2006-	Co-Director, University of Pittsburgh's Research Conduct and Compliance Office
2006-	Member, University of Pittsburgh's Conflict of Interest Committee
2007-	Member, Radiation Safety Committee (Management Representative)
2009-2013	Member, Utilization Committee for Regional Bioterrorism Laboratory (RBL)
2016-	Vice-Chair, Curriculum Committee, University of Pittsburgh School of Medicine

Other Service Activities

1996-2017	Faculty Advisor, University of Pittsburgh Chapter of the Alpha Epsilon Delta Premedical Honor Society
1998-1999	Treasurer, Pittsburgh Chapter of <i>Society for Neuroscience</i>

RESEARCH

1. Grant Support

Active Grants

<u>Investigator and Amount</u>	<u>Years</u>	<u>Grant Number and Title</u>	<u>Source</u>
B. J. Yates, MPI S.M. Barman, MPI 30% effort	2015-2020	R01-DC013788-(01-05) Multisensory Control of Autonomic Function	NIH, NIDCD
K. Kandler, MPI B. J. Yates, MPI 10% effort	2016-2021	T32-DC011499-(06-10) Training in Auditory and Vestibular Neuroscience	NIH, NIDCD
C. Horn, PI B.J. Yates, Co-I	2017-2019	U18-TR002205-01 Closed-Loop Neuroelectric Control of Emesis and Gastric Motility	NIH, NCATS

Previous Grants

<u>Investigator and Amount</u>	<u>Years</u>	<u>Grant Number and Title</u>	<u>Source</u>
Postdoctoral Fellowship 100% effort	1986-1988	F32-NS08050-(01-02) Neck Afferent Modulation of Propriospinal Neurons	NIH, NINCDS
Postdoctoral Fellowship 100% effort	1988-1989	F32-NS08508-(01) Indirect Vestibular Control of the Forelimb	NIH, NINCDS
B. J. Yates, PI 100% effort	1990-1993	R01-DC00693-(01-03) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD
Irma T. Hirschl Career Service Award	1993-1994	Vestibular Regulation of Autonomic Functions	Irma T. Hirschl Foundation
B. J. Yates, PI 60% effort	1993-1996	R01-DC00693-(04-07) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD
B. J. Yates, PI 0% effort	1995-1996	NASA NAGW-4857 Grant to Support Workshop on Vestibular Autonomic Regulation	NASA
A. D. Miller and B. J. Yates, Co-PIs 25% effort	1995-1998	R01-DC02644-(01-03) Vestibular Regulation of Respiratory Muscle Activity	NIH, NIDCD
B. J. Yates, PI 50% effort	1996-2000	R01-DC00693-(08-11) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD
B. J. Yates, PI 25% effort	1998-2002	R01-DC03732-(01-04) Vestibular Regulation of Respiratory Muscle Activity	NIH, NIDCD
B. J. Yates, PI 0% effort	2000-2001	A900-0001 Modulation of Respiratory Muscle Activity Using Electrical Vestibular Stimulation	Respironics, Inc.
B. J. Yates, PI 0% effort	2001-2002	0109649 Efficacy of Electrical Vestibular Stimulation for Treating Obstructive Sleep Apnea	Respironics, Inc.

<u>Investigator and Amount</u>	<u>Years</u>	<u>Grant Number and Title</u>	<u>Source</u>
B.J. Yates, PI 50% effort	2000-2004	R01-DC00693-(12-15) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD
B. J. Yates, PI 25% effort	2002-2005	R01-DC03732-(05-07) Vestibular Regulation of Respiratory Muscle Activity	NIH, NIDCD
B.J. Yates, PI 20% effort	2005-2006	Contract: Vestibular Stimulation Parameters Required to Modulate Blood Pressure and Respiratory Activity	Respironics, Inc.
B. J. Yates, PI 20% effort	2003-2006	R21-DC006049-(01-02) Vestibular Influences on Head Direction Cell Activity	NIH, NIDCD
B.J. Yates, PI 35-50% effort	2004-2008	R01-DC00693-(16-19) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD
B. J. Yates, PI 38% effort	2005-2010	R01-DC03732-(08-11) Vestibular Regulation of Respiratory Muscle Activity	NIH, NIDCD
B. J. Yates, Co-I C.D. Balaban, PI 5% effort	2009-2010	R01-DC000739-18A1 Vestibulo-Cerebellar Circuits	NIH, NIDCD
B. J. Yates, PI \$119,203 annual award	2009-2010	3R01DC003732-11S1 Vestibular Regulation of Respiratory Muscle Activity (<i>Administrative Supplement through ARRA funds</i>)	NIH, NIDCD
B. J. Yates, Co-I D.J. Webber, PI 3% effort	2007-2011	R01-ENG3815093-(01-04) Somatosensory Feedback Controlling a Neuroprosthesis	NIH, NIBIB
B.J. Yates, PI 30% effort \$308,916 annual award	2008-2013	R01-DC00693-(20-23) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD
C. Horn, MPI B. J. Yates, MPI 1% effort \$16,916 annual award	2013-2014	R13-DK100181-01 International Conference on Nausea and Vomiting 2013	NIH, NIDDK

<u>Investigator and Amount</u>	<u>Years</u>	<u>Grant Number and Title</u>	<u>Source</u>
B. J. Yates, MPI C.D. Balaban, MPI 40% effort \$345,288 annual award	2010-2016	R01-DC03732-(12-16) Vestibular Regulation of Respiratory Muscle Activity	NIH, NIDCD
K. Kandler, MPI B. J. Yates, MPI 10% effort \$186,543 annual award	2011-2016	T32-DC011499-(01-05) Training in Auditory and Vestibular Neuroscience	NIH, NIDCD
C. Horn, MPI B. J. Yates, MPI	2015-2016	R13-DK107257-01 Biology and Control of Nausea and Vomiting 2015	NIH, NIDDK

2. Invited Seminars, Lectures and Workshops

Nov 1993	Satellite Symposium of Society for Neuroscience Meeting: Ventral Brainstem Mechanisms for Control of Respiration and Blood Pressure, Washington, DC
Feb 1994	Department of Physiology, Texas Tech University, Lubbock, TX
Jan 1995	Meeting of National Advisory Council of National Institute on Deafness and Other Communication Disorders, Bethesda, MD
Jun 1995	New York Academy of Sciences Symposium: New Directions in Vestibular Research, New York, NY
Jan 1996	Department of Neuroscience, University of Florida, Gainesville, FL
May 1996	1996 Conference at UCLA: Vestibular Adaptation, Los Angeles, CA
Aug 1996	Bárány Society Meeting, Sydney, Australia
Aug 1996	Department of Physiology, Univ. Newcastle, Newcastle, NSW, Australia
Aug 1996	Department of Physiology, Univ. Sydney, Sydney, Australia
Mar 1997	NASA Ames Research Center, Moffett Field, CA
Apr 1997	International Workshop on Neurosciences in Space, Paris, France
May 1997	International Workshop on Motion Sickness, Marabella, Spain
Sep 1997	NASA Johnson Space Center, Houston, TX
Sep 1997	Department of Neurology, University of Pittsburgh, Pittsburgh, PA
May 1998	Department of Neurology, University College, London, U.K.
Sep 1998	Bárány Society Satellite Meeting, Freiburg, Germany
Apr 2000	Neural Control of Movement Meeting, Key West, FL
Jun 2000	Department of Neuroscience, Brandeis University, Waltham, MA
Sep 2000	Department of Aeronautics and Astronautics, MIT, Boston, MA
Jan 2001	Department of Surgery, University of Mississippi, Jackson, MS

Invited Seminars, Lectures and Workshops, Cont.

- Jan 2001 Symposium on Spatial Cognition and Anxiety, Paris Collège de France, Paris, France
- Sep 2002 Keynote Speaker, Sixth Symposium on the Role of Vestibular Organs in Space Exploration, Portland, OR
- Jan 2003 Department of Neurology, Mt. Sinai School of Medicine, New York, NY
- Dec 2003 Department of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign
- Jun 2004 Keynote Speaker, 1st International Symposium of Vestibulocochlear System, Wonkwang University, Iksan, Jeonbuk, South Korea
- Jun 2004 Keynote Speaker, 8th Congress of the Korean Balance Society, Seoul, South Korea
- Jan 2006 Department of Physiology, Howard University, Washington, DC
- Jun 2006 General Clinical Research Center, Penn State College of Medicine, Hershey, PA
- 2007-2013 Faculty Member, Vestibular Rehabilitation: An Advanced Course and Update, Pittsburgh, PA
- Aug 2007 Neuroscience Lecture Series, University of Mississippi, Jackson, MS
- Oct 2007 Neuroscience Seminar Series, University of Florida, Gainesville, FL
- Jun 2008 Seminar Series, Department of Anatomy & Cell Biology, University of Western Ontario, London, Canada
- Oct 2008 Invited Presentation to the Committee on Scientific and Humane Issues in the Use of Random Source Dogs and Cats for Research, National Academy of Sciences, Institute for Laboratory Animal Research
- Feb 2009 Seminar Series, Department of Ophthalmology, University of Pittsburgh
- Feb 2009 Invited Speaker for Symposium “Vestibular Compensation: New Clinical and Basic Science Perspectives.” Association for Research in Otolaryngology, 2009 Meeting
- Apr 2009 Breakout session presenter at 2009 PRIM&R Meeting in San Diego, CA. Topic: "Partnerships Between the IACUC and Investigators: Strategies for Engaging Investigators in the Institution’s Commitment to Regulatory Compliance"
- Dec 2009 Invited speaker for 2009 SCAW meeting in San Antonio, TX. Topic: “Promoting a Partnership between Investigators and the IACUC”.
- Dec 2010 Invited speaker for 2010 SCAW meeting in San Antonio, TX. Topic: “‘Ain’t No Big Thing’? Major vs. Minor Surgical Procedures”.
- Dec 2010 Invited speaker at University of Nebraska Medical Center. Topic: “The partnership between the IACUC and investigators in maintaining regulatory compliance: a fragile relationship”.
- Jun 2011 Invited speaker at University of Nebraska Medical Center. Topic: “The role of an IACUC in animal research”
- Aug 2011 Invited speaker at meeting “U.S. and European Animal-Research Regulations: Impact on Neuroscience Research,” sponsored by the Institute of Medicine of the National Academies of Science. Topic: “Rodents in Neuroscience Research”

Invited Seminars, Lectures and Workshops, Cont.

- Dec 2011 Invited speaker in the Department of Anatomy, George Washington University, Washington, DC. Topic: "Multisensory Integration in the Vestibular system, and its Role in Cardiovascular Regulation"
- Feb 2012 Invited speaker in the Department of Pharmacology and Toxicology, Michigan State University, East Lansing, MI. Topic: "Cardiovascular Control During Movement: Role of the Vestibular System"
- Mar 2014 Invited speaker in the Center for Hearing and Balance, Johns Hopkins University, Baltimore, MD. Topic: "Vestibular System Influences on Cardiovascular Regulation"
- May 2015 Invited Speaker in the National Space Biomedical Research Institute, Baylor College of Medicine, Houston, TX. Topic: "Multisensory Control of Autonomic Function"
- Oct 2015 Invited Speaker at the Nebraska Physiological Society Meeting. Topic: "Multisensory Control of Autonomic Function"
- June 2016 Invited Speaker and Session Chair, 2016 Barany Society Meeting, Seoul, South Korea. Topic: "Vestibular-Autonomic Regulation"
- Dec 2016 Invited Speaker in the Department of Physiology, Emory University
Topic: "Vestibular Control of Autonomic Function"
- August 2017 Invited Speaker for the 38th World Congress of the International Union of Physiological Sciences, Rio de Janeiro, Brazil. Topic: "The Publication Crisis: Will It Destroy Science?"
- Apr 2018 Invited Speaker in the Department of Neurology, Mt. Sinai School of Medicine
Topic: "Controlling Blood Pressure Requires Inputs from Multiple Sensory Systems"

Meetings and Sessions Organized

- Apr 1996 NIH and NASA-sponsored workshop on Vestibular Autonomic Regulation, Pittsburgh, PA
- Sep 1999 Meeting on "Programming Autonomic Function for Action," Club Méditerranée Conference Center, Opio, France
- Nov 2000 Vestibular Social at 2000 Society for Neuroscience Meeting
- Apr 2001 Featured Topic on "Somatic Sensation during Movement and its Role in Autonomic Control" at 2001 Experimental Biology Meeting
- Jul 2004 Symposium on "Vestibulo-Autonomic Regulation" at the 23rd Bárány Society International Congress, Paris, France
- Apr 2010 Symposium on "Trends in Animal Rights Activism and Extremism" at the 2010 Experimental Biology Meeting
- Apr 2012 Symposium on "Public Outreach and Animal Research: A Toolkit for Investigators" at the 2012 Experimental Biology Meeting
- Oct 2013 NIH-sponsored meeting "Biology and Control of Nausea and Vomiting 2013" at the University of Pittsburgh, Pittsburgh, PA

Oct 2015 NIH-sponsored meeting “Biology and Control of Nausea and Vomiting 2015” at the University of Pittsburgh, Pittsburgh, PA

Journal Reviews

Editorships

2006-2014 Senior Editor for *Experimental Brain Research*
2008-2014 Member of Editorial Board for *International Journal of Otolaryngology*
2010-2014 Associate Editor, *Frontiers in Respiratory Physiology*
2014- Editor-in-Chief, *Journal of Neurophysiology*

Referee for the following journals and publishers:

American Journal of Physiology
Archives of Medical Research
BiomedCentral Physiology
Brain
Brain Research
Circulation
European Journal of Applied Physiology
Experimental Brain Research
Gait and Posture
Journal of Applied Physiology
Journal of Chemical Neuroanatomy
Journal of Comparative Neurology
Journal of Neuromusculoskeletal System
Journal of Neurophysiology
Journal of Neuroscience

Journal of Physiology
Journal of Vestibular Research
Neuroscience
Neuroscience Letters
Neuroscience Research
NeuroReport
Physiology and Behavior
Proceedings of the National Academy of Sciences
Respiratory Physiology & Neurobiology
Science
CRC Press (*book publications*)
Worth Publishers (*book publications*)

1997 Guest Editor of special issue of the *Journal of Vestibular Research* on Vestibular-Autonomic Regulation

2000 Guest Editor of special issue of the *Brain Research Bulletin* on Autonomic Regulation During Movement

Contributions to Science

Vestibular Influences on Cardiovascular Regulation.

Since 1990, NIH has funded our studies of the influences of the vestibular system on cardiovascular regulation. At the time we initiated these studies, there was rudimentary evidence that inputs from the vestibular system affect sympathetic nervous system activity, but our work was key in defining the physiological role of the vestibular system in regulating blood distribution in the body during movement and changes in posture. We also determined the neural pathways through which vestibulo-sympathetic interactions occur. Currently, we are ascertaining the effects of planning of movement on reflexes that participate in cardiovascular control. Our work has been a springboard for studies by a number of investigators, who have demonstrated the physiological importance of vestibulo-cardiovascular influences in a variety of species, including humans.

Neurobiology of Motion Sickness

Another theme of our work since 1993 is the neurobiology of motion sickness. We are one of the few laboratories that utilized modern neuroanatomical techniques and single unit recordings to define the neural circuitry that generates nausea and vomiting. As part of this work, we employed transneuronal tracing techniques soon after their inception to determine the pathways that elicit the co-contraction of respiratory muscles that result in emesis. By making use of a novel statistical approach for analyzing Fos labeling patterns, we also defined the networks of neurons that are activated during motion sickness. Other experiments focused on the integration of emetic signals by brainstem neurons that participate in generating nausea and vomiting.

Multisensory Integration of Signals by the Vestibular System

My third long-standing research theme is multisensory integration by the vestibular system. We have demonstrated that somatosensory and visceral signals from all body regions shape the responses of vestibular nucleus and cerebellar neurons to labyrinthine inputs. As part of this work, we also demonstrated that nonlabyrinthine inputs can substitute for lost vestibular signals following a bilateral labyrinthectomy. Although a number of laboratories have investigated neck afferent influences on the processing of vestibular signals, few other than ours have considered effects of sensory inputs from other body regions on the activity of vestibulospinal pathways.

Research Ethics

A fourth contribution to science has been in the arena of research ethics. I have contributed a number of lectures and manuscripts to the topic, particularly in relation to balancing regulatory burden with regulatory compliance. Another interest has been improving strategies that regulatory offices can employ to maintain good relationships with investigators. These strategies were formulated while I served as Chair of the University of Pittsburgh's IACUC and Co-Director of the University's Research Conduct and Compliance Office. A more recent interest is publication ethics, which emerged from my role as Editor-in-Chief of the *Journal of Neurophysiology*.