

# 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>
<b><u>UNDERGRADUATE</u></b>			
1978-1981	University of Florida Gainesville, FL	B.S., 1981	Neuroscience
<b><u>GRADUATE</u></b>			
1982-1986	University of Florida Gainesville, FL	Ph.D., 1986	Neuroscience Floyd Thompson, Ph.D.
<b><u>POST GRADUATE</u></b>			
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.

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 (with tenure)
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 (with tenure)
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

<u>Year</u>	<u>Award or Honor</u>
1981	Elected to Phi Beta Kappa
1983, 1984	Recipient of University of Florida Medical Guild Graduate Student Research Award
1986-1989	NIH Postdoctoral Fellowship Award
1992	Irma T. Hirschl Career Research Scientist Award

## HONORS, Cont.

<u>Year</u>	<u>Award or Honor</u>
1994	Member of NIH, NIDCD panel for updating the balance and balance disorders section of the National Strategic Research Plan
1995	Invited Speaker, NIH, NIDCD Council Meeting
1996, 1999-2002	Member of NASA Grant Study Section
1996-2003	Member of External Advisory Panel, National Space Biomedical Research Institute
2001	Member, NIH Special Emphasis Panel
2003	Chair, NASA Grant Study Section for Neuroscience
2003-2005	Member, International Multidisciplinary Artificial Gravity Review Team (NASA Representative)
2003-	Member, Board of Scientific Councilors, National Space Biomedical Research Institute
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
2005-2007	Chair, International Multidisciplinary Artificial Gravity Review Team (NASA representative)
2006-	Senior Editor for <i>Experimental Brain Research</i>
2007	Member of NASA/NSBRI Study Section for Postdoctoral Research Proposals
2008,2009	Finalist for Chancellor’s Distinguished Teaching Award, University of Pittsburgh
2008-	Editorial Board Member, <i>International Journal of Otolaryngology</i>
2008	Chairperson, NIH Special Emphasis Panel for Auditory and Vestibular Neuroscience (ZRG1 IFCNB-02)
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	Peer reviewer, National Academies of Science study on Scientific and Humane Issues in the Use of Random-Source Dogs and Cats
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)
2009	Chairperson, NIH Special Emphasis Panel in Auditory and Vestibular Neuroscience (2010/01 ZRG1 IFCN-B (02) M)
2009-2012	Member, Board of Directors, Americans for Medical Progress

## PUBLICATIONS

### 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. Auton. 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. Auton. 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. Auton. 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. Auton. 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- $\beta$  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.
- 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.
- 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.
- 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 cholecystokinin. *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.
- 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 C<sub>5</sub>-C<sub>6</sub> 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.
- 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 C<sub>1</sub>-C<sub>2</sub> spinal cord projecting to the C<sub>5</sub>-C<sub>6</sub> 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.
- 93) Sheetz, M., Swanson, D., and **Yates, B.J.** Physical presence during gamma stereotactic radiosurgery. *Operational Radiation Safety* 96, Suppl. 1:S11-S15, 2009.
- 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.
- 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. In press in *J. Vestibular Res.*

### ***Submitted papers***

- 98) 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. Submitted to *Exp. Brain Res.*

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

- 1) Wilson, V. J., Bolton, P. S., Goto, T., Schor, R. H., Yamagata, Y. and **Yates, B. J.** Spatial transformation in the vertical vestibulocollic reflex. *Annals of the New York Academy of Sciences* 656: 500-506, 1992.
- 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. Trough, 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.
- 7) **Yates, B. J.** and Miller, A. D. Vestibulo-respiratory regulation. IN: *Neural Control of Respiratory Muscles*, edited by A. D. Miller, A. L. Bianchi and B. P. Bishop. CRC Press, Boca Raton, FL, 1996, pp. 273-285.
- 8) **Yates, B. J.** Vestibular influences on autonomic control. *Annals of the New York Academy of Sciences* 781: 458-473, 1996.
- 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.
- 18) **Yates, B.J.** and Toth, L. Is it time to re-define "major operative procedures?" (Editorial). *JAALAS*, in press.
- 19) **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, in press.

### 3) Books

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

### 4) Published Abstracts (Since 2004 Only)

- 1) **Yates, B.**, Cass, S., Cotter, L., Jian, B., Arendt, H., Olsheski, C. and Wilkinson, K. Effects of postural changes and vestibular lesions on genioglossal muscle activity in conscious cats. *Association for Research in Otolaryngology Abstracts* 27: 373, 2004.
- 2) Cotter, L.A., Arendt, H.E., Cass, S.P., Jian, B.J., Olsheski, C.J., Mays, D.F., Wilkinson, K.A. and **Yates, B.J.** Effects of postural changes and vestibular lesions on genioglossal muscle activity in conscious cats. *FASEB J.* 18: A718, 2004.
- 3) Wilkinson, K.A., Maurer, A.P., Sadacca, B.A., and **Yates, B.J.** Responses of feline medial medullary reticular formation neurons with projections to the C5-C6 ventral horn to vestibular stimulation. *FASEB J.* 18: A719, 2004.
- 4) **Yates, B.J.**, Billig, I., Cotter, L., Anker, A., Shintani, T., and Wilkinson, K. The role of the vestibular system in respiratory regulation. *J. Vestib. Res.* 14: 95-96, 2004.
- 5) Sadacca, B.A., Anker, A.R., and **Yates, B.J.** Vestibular inputs to premotor respiratory interneurons in the feline C1 spinal cord. *FASEB J.* 19: 697.8, 2005.
- 6) Anker, A.R., Sadacca, B.A., and **Yates, B.J.** Response of feline C1 premotor respiratory interneurons to natural vestibular stimulation. *FASEB J.* 19: 697.9, 2005.
- 7) Wilson, T.D., Cotter, L.A., Sabol, R.J., and **Yates, B.J.** Regional vascular response to natural vestibular stimulation in the feline. *FASEB J.* 19: 915.4, 2005.
- 8) Giaconi, E., Deriu, F., Tolu, E., **Yates, B.J.**, and Billig, I. Transneuronal tracing of vestibulo-trigeminal pathways innervating the masseter muscle in the rat. *Soc. Neurosci. Abstr.* 290.6, 2005.
- 9) Wilson, T.D., Cotter, L.A., Sabol, R.J., Misra, S.P., Cass, S.P., and **Yates, B.J.** Effects of postural changes and removal of vestibular inputs on carotid blood flow in conscious felines. *Soc. Neurosci. Abstr.* 932.6, 2005.
- 10) Sabol, R.J., Arshian, M., and **Yates, B.J.** Effects of postural alterations on the volume, pressure, and flow rate of air inspired and expired by conscious felines. *FASEB J.* 20: 231.9, 2006.

- 11) Misra, S.A., Wilson, T.D., Draper, J.A., Cotter, L.A., Rice, C.D., Cass, S.P., and **Yates, B.J.** Effects of vestibular lesions on blood flow to the head of conscious felines. *FASEB J.* 20: 474.24, 2006.
- 12) Wilson, T.D., Draper, J.A., Cotter, L.A., Misra, S.P., Rice, C.D., Cass, S.P., and **Yates, B.J.** Consequences of removal of vestibular inputs on patterning of blood flow to the limbs during postural alterations in conscious felines. *FASEB J.* 20: 474.25, 2006.
- 13) Lee, T.K., Lois, J.H., Troupe, J.H. and **Yates, B.J.** Transneuronal tracing of brainstem circuitry controlling blood flow to skeletal muscle using pseudorabies virus (PRV) recombinants in rats. *FASEB J.* 20: LB157, 2006.
- 14) 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. *Soc. Neurosci. Abstr.* 550.17, 2006.
- 15) Troupe, J.H., Lee, T.K., Lois, J.H. and **Yates, B.J.** Can the sympathetic nervous system independently control blood flow to left and right hindlimb muscles of rats? *FASEB J.* 21: 751.5, 2007.
- 16) Lois, J.H., Lee, T.K., Troupe, J.H., Wilson, T.D. and **Yates, B.J.** Transneuronal tracing of neural pathways regulating muscle blood flow in the rat. *FASEB J.* 21: 751.6, 2007.
- 17) Arshian, M., Holtje, R.J., Cotter, L.A., Rice, C.D., Cass, S.P., and **Yates, B.J.** Role of vestibular inputs in modulating ventilation during postural alterations in conscious felines. *FASEB J.* 21: 918.3, 2007.
- 18) Miller, D.M., Cotter, L.A., Gandhi, N.J., Schor, R.H., and **Yates, B.J.** Responses of caudal vestibular nucleus neurons of conscious cats to rotations in vertical planes. *Soc. Neurosci. Abstr.* 180.12, 2007.
- 19) **Yates, B.J.**, Cotter, L.A., Gandhi, N.J., Schor, R.H., Cass, S.P. and Miller, D.M. Effects of removal of vestibular inputs on activity of caudal vestibular nucleus neurons in conscious cats. *Soc. Neurosci. Abstr.* 180.13, 2007.
- 20) Miller, D.M., Cotter, L.A., Gandhi, N.J., Schor, R.H., Huff, N.O., Shulman, J.A., Raj, S.G., and **Yates, B.J.** Responses of cerebellar fastigial nucleus neurons to whole-body rotations in vertical planes. *FASEB J.* 22: 946.4, 2008.
- 21) Rice, C.D., Lois, J.H., Mehta, A.S., Mehta, A.S., Kalash, R. and **Yates, B.J.** Mapping of spinal cord and brainstem inputs to phrenic motoneurons using transneuronal transport of rabies virus N2C in the cat. *FASEB J.* 22: 954.1, 2008.
- 22) Lois, J.H., Rice, C.D., Mehta, A.S., Mehta, A.S., Kalash, R. and **Yates, B.J.** Mapping of multisynaptic inputs from the midbrain, diencephalon, and cerebral cortex to phrenic motoneurons using transneuronal transport of rabies virus N2C in the cat. *FASEB J.* 22: 954.2, 2008.
- 23) **Yates, B.J.** Integration of nonlabyrinthine inputs by the vestibular system: role in compensation. *Association for Research in Otolaryngology Abstracts*, 266, 2009.
- 24) Miller, D.M., Mehta, A.S., Mehta, A.S., Reighard, D.A. and **Yates, B.J.** Role of thoracic spinal interneurons in generating vestibulo-autonomic responses in decerebrate cats. *Association for Research in Otolaryngology Abstracts*, 956, 2009.
- 25) Yavorcik, K.J., Erwin, M., Misra, S.P., Cotter, L.A., Reighard, D.A. Wilson, T.D., Cass S.P. and **Yates, B.J.** Vestibular effects on relative arterial blood flow to and venous return from the limbs during postural changes of conscious felines. *FASEB J.* 23: 611.5, 2009.

- 26) Misra, S.P., Yavorcik, K.J., Erwin, M., Cotter, L.A., Reighard, D.A. Wilson, T.D. and **Yates, B.J.** Effects of postural changes on arterial to venous blood flow in the dependent limbs of conscious cats. *FASEB J.* 23: 611.6, 2009.
- 27) Rice, C.D., Lois, J.H. and **Yates, B.J.** Mapping of serotonergic and nonserotonergic connections from the medullary midline to diaphragm motoneurons in the cat. *FASEB J.* 23: 783.5, 2009.
- 28) Miller, D.M., Mehta, A.S., Mehta, A.S., Reighard, D.A. and **Yates, B.J.** Responses of thoracic spinal interneurons to vestibular stimulation in decerebrate cats. *FASEB J.* 23: 1010.11, 2009.
- 29) 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. *Experimental Biology 2010 Meeting, Anaheim, CA.*
- 30) Badami, V.M, Rice, C.D., Lois, J.H., Madrecha, J. and **Yates, B.J.** Localization of hypothalamic neurons that contain orexin or melanin concentrating hormone peptides and regulate diaphragm activity in cats. *Experimental Biology 2010 Meeting, Anaheim, CA.*
- 31) Barman, S.M., Cotter, L.A., DeStefino, V.J., Reighard, D.A., and **Yates, B.J.** Activity of neurons in the rostral ventrolateral medulla (RVLM) of conscious cats. *Experimental Biology 2010 Meeting, Anaheim, CA.*

## **PROFESSIONAL ACTIVITIES**

### **Teaching (Since 2005 Only)**

Spring, 2005	Lecturer and "Block Coordinator," Graduate Course in Systems Neuroscience
Fall, 2005	Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070)
Fall, 2005	Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070)
Spring, 2006	Lecturer, Graduate Course in Systems Neuroscience
Spring, 2006	Lecturer, Undergraduate Course in Neural Control of Movement (NROSCI 1035)
Fall, 2006	Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070)
Fall, 2006	Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070)
Fall, 2006	Lecturer, Undergraduate Course in Functional Neuroanatomy (NROSCI 1011)
Spring, 2007	Lecturer, Graduate Course in Systems Neuroscience
Spring, 2007	Lecturer, Undergraduate Course in Neural Control of Movement (NROSCI 1035)
Fall, 2007	Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070)
Fall, 2007	Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070)
Fall, 2007	Lecturer, Undergraduate Course in Functional Neuroanatomy (NROSCI 1011)
Spring, 2008	Lecturer, Graduate Course in Systems Neuroscience

Spring, 2008 Lecturer, Undergraduate Course in Neural Control of Movement (NROSCI 1035)

Spring, 2008 Lecturer, Neuroscience Course for Medical Students

Fall, 2008 Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070)

Fall, 2008 Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070)

Fall, 2008 Lecturer, Undergraduate Course in Functional Neuroanatomy (NROSCI 1011)

Fall, 2008 Lecturer, Undergraduate Course in Human Physiology (BIOSC/NROSCI 1250)

Spring, 2009 Lecturer and Problem Based Learning Session Facilitator, Neuroscience Course for Medical Students

Spring, 2009 Lecturer, Graduate Course in Systems Neuroscience

Spring, 2009 Lecturer, Undergraduate Course in Neural Control of Movement (NROSCI 1035)

Fall, 2009 Organizer and Lecturer, Undergraduate Honors Course in Human Physiology (NROSCI/BIOSC 1070)

Fall, 2009 Organizer and Lecturer, Graduate Course in Human Physiology (NROSCI 2070)

Fall, 2009 Lecturer, Undergraduate Course in Functional Neuroanatomy (NROSCI 1011)

Fall, 2009 Lecturer, Undergraduate Course in Human Physiology (BIOSC/NROSCI 1250)

### **Teaching-Related Appointments and Awards**

1997 Elected to Graduate Faculty Status, University of Pittsburgh

2008, 2009 Finalist for Chancellor's Distinguished Teaching Award

### **Undergraduate Thesis Students**

1995-1997	Sean Stocker	2002-2005	Brian Sadacca
1996-1997	Kevin Patterson	2003-2006	Sunil Misra
1996-1997	Brian Jian	2004-2007	Milad Arshian
1998-1999	Aaron Crookshank	2005-2006	James Lois
1998-2000	Jeffrey Jasko	2005-2007	Joseph Troupe
1998-2000	Justin Weigle	2005-2008	Cory Rice
2000-2001	Ryan Mori	2006-2008	Joshua Shulman
2001-2002	Arju Ali	2006-2008	Shiv Raj
2002-2003	Adam Anker	2007-2008	Nicholas Huff
2002-2004	Katie Wilkinson	2007-2009	Ronny Kalash

### **Medical Student Research Project Advisees**

2008-2009 Sunil Misra

## **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)

## **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)
2008-2009	Joost Wagenaar (Ph.D. thesis committee)

## **Postdoctoral Fellows and Research Associates**

1991-1993	Philip Bolton	2001-2003	Toshiharu Shintani
1995-1996	Christina Rossiter	2004-2005	Tim Wilson
1998-2001	Isabelle Billig	2005-2006	Tae-Kyeong Lee
2000	Ilan Kerman		

## **UNIVERSITY SERVICE ACTIVITIES**

### **University Committees**

- 1996-1997 Co-Chairman of Committee to Organize the 1997 Center for Neuroscience (CNUP) Retreat
- 1997-1998 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- Member, Utilization Committee for Regional Bioterrorism Laboratory (RBL)

### **Other Service Activities**

- 1996- Faculty Advisor, University of Pittsburgh Chapter of the Alpha Epsilon Delta Premedical Honor Society
- 1998-2001 Treasurer, Pittsburgh Chapter of *Society for Neuroscience*

## RESEARCH

### 1. Grant Support

#### Active

<u>Investigator and Amount</u>	<u>Years</u>	<u>Grant Number and Title</u>	<u>Source</u>
<b>B.J. Yates, PI</b> 30% effort \$320,391 annual award	2008-2012	R01-DC00693-(20-23) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD
<b>B. J. Yates, PI</b> 38% effort \$268,823 annual award	2005-2010	R01-DC03732-(08-11) Vestibular Regulation of Respiratory Muscle Activity	NIH, NIDCD
<b>B. J. Yates, PI</b> \$119,203 annual award	2009-2010	3R01DC003732-11S1 Vestibular Regulation of Respiratory Muscle Activity ( <i>Administrative Supplement through ARRA funds</i> )	NIH, NIDCD
<b>B. J. Yates, Co-I</b> D.J. Webber, PI 3% effort	2007-2011	R01-ENG3815093-(01-04) Somatosensory Feedback Controlling a Neuroprosthesis	NIH, NIBIB
<b>B. J. Yates, Co-I</b> C.D. Balaban, PI 5% effort	2009-2010	R01-DC000739-18A1 Vestibulo-Cerebellar Circuits	NIH, NIDCD

#### Previous (PI and Co-PI Only)

<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>B. J. Yates, PI</b> 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>B. J. Yates, PI</b> 60% effort	1993-1996	R01-DC00693-(04-07) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD

**Previous Grants (PI and Co-PI Only)**

<b>B. J. Yates, PI</b> 0% effort	1995-1996	NASA NAGW-4857 Grant to Support Workshop on Vestibular Autonomic Regulation	NASA
A. D. Miller and <b>B. J. Yates,</b> Co-PIs 25% effort	1995-1998	R01-DC02644-(01-03) Vestibular Regulation of Respiratory Muscle Activity	NIH, NIDCD
<b>B. J. Yates, PI</b> 50% effort	1996-2000	R01-DC00693-(08-11) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD
<b>B. J. Yates, PI</b> 25% effort	1998-2002	R01-DC03732-(01-04) Vestibular Regulation of Respiratory Muscle Activity	NIH, NIDCD
<b>B. J. Yates, PI</b> 0% effort	2000-2001	A900-0001 Modulation of Respiratory Muscle Activity Using Electrical Vestibular Stimulation	Respironics, Inc.
<b>B. J. Yates, PI</b> 0% effort	2001-2002	0109649 Efficacy of Electrical Vestibular Stimulation for Treating Obstructive Sleep Apnea	Respironics, Inc.
<b>B.J. Yates, PI</b> 50% effort	2000-2004	R01-DC00693-(12-15) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD
<b>B. J. Yates, PI</b> 25% effort	2002-2005	R01-DC03732-(05-07) Vestibular Regulation of Respiratory Muscle Activity	NIH, NIDCD
<b>B.J. Yates, PI</b> 20% effort	2005-2006	Contract: Vestibular Stimulation Parameters Required to Modulate Blood Pressure and Respiratory Activity	Respironics, Inc.
<b>B. J. Yates, PI</b> 20% effort	2003-2006	R21-DC006049-(01-02) Vestibular Influences on Head Direction Cell Activity	NIH, NIDCD
<b>B.J. Yates, PI</b> 35-50% effort	2004-2008	R01-DC00693-(16-19) Vestibular Influences on the Sympathetic Nervous System	NIH, NIDCD

## 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
- 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
- June 2004 Keynote Speaker, 1<sup>st</sup> International Symposium of Vestibulocochlear System, Wonkwang University, Iksan, Jeonbuk, South Korea
- June 2004 Keynote Speaker, 8<sup>th</sup> Congress of the Korean Balance Society, Seoul, South Korea
- January 2006 Department of Physiology, Howard University, Washington, DC
- June 2006 General Clinical Research Center, Penn State College of Medicine, Hershey, PA

## **2. Invited Seminars, Lectures and Workshops, Cont.**

- March 2007 Faculty Member, Vestibular Rehabilitation: An Advanced Course and Update, Pittsburgh, PA
- August 2007 Neuroscience Lecture Series, University of Mississippi, Jackson, MS
- October 2007 Neuroscience Seminar Series, University of Florida, Gainesville, FL
- March 2008 Faculty Member, Vestibular Rehabilitation: An Advanced Course and Update, Pittsburgh, PA
- June 2008 Seminar Series, Department of Anatomy & Cell Biology, University of Western Ontario, London, Canada
- October 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
- February 2009 Seminar Series, Department of Ophthalmology, University of Pittsburgh
- February 2009 Invited Speaker for Symposium "Vestibular Compensation: New Clinical and Basic Science Perspectives." Association for Research in Otolaryngology, 2009 Midwinter Meeting
- April 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"
- December 2009 Invited speaker for 2009 SCAW meeting in San Antonio, TX. Topic: "Promoting a Partnership between Investigators and the IACUC".

## **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 23<sup>rd</sup> Bárány Society International Congress, Paris, France

### **3. Research-Related Activities**

#### **Peer-Review Committees**

- 1996, 1999-2002 Member of NASA Grant Study Section
- 2001 Member of NIH Special Emphasis Panel to review R03 proposals
- 2003 Chair of NASA Grant Study Section for Neuroscience
- 2004-2005 Ad-hoc Member, NIH Sensorimotor Integration (SMI) Study Section
- 2004-2005 Ad Hoc Reviewer, NIH Study Section for Fellowships in Systems and Cognitive Neuroscience (ZRG1-F02B)
- 2005 Member of NASA Non-Advocate Scientific Review Panel
- 2005-2008 Charter (“Permanent”) Member, NIH Sensorimotor Integration Study Section
- 2007 Member of NASA/NSBRI Study Section for Postdoctoral Research Proposals
- 2008 Chairperson, NIH Special Emphasis Panel for Auditory and Vestibular Neuroscience (ZRG1 IFCNB-02)
- 2008 Member, NIH Special Emphasis Panel for Training Grants in Otolaryngology (ZDC1 SRB-L-47)
- 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)
- 2009 Chairperson, NIH Special Emphasis Panel in Auditory and Vestibular Neuroscience (2010/01 ZRG1 IFCN-B (02) M)

#### **Grant Reviews via Mail**

National Science Foundation

National Institutes of Health

The Wellcome Trust (United Kingdom)

New Zealand Neurological Foundation

Office of Naval Research

Florida Department of Health

John Sealy Memorial Endowment Fund for Biomedical Research

### **Other Advisory Committees**

- 1994 Member, National Institutes of Health (NIDCD) Panel for Updating the Balance and Balance Disorders Section of the National Strategic Research Plan
- 1996-2003 Member, Advisory Council of National Space Biomedical Research Institute
- 1999-2006 Member, Steering Committee of the Central Nervous System Section of American Physiological Society (*Secretary-Treasurer from 2002-2006*)
- 2000-2006 Member, American Physiological Society's "Committee on Committees"
- 2003-2007 Member and Chair, Review and Oversight Committee for NASA's Artificial Gravity Program
- 2003- Member, Board of Scientific Counselors of the National Space Biomedical Research Institute
- 2007-2009 Member, American Physiological Society's Animal Care and Experimentation Committee
- 2010-2012 Chair, American Physiological Society's Animal Care and Experimentation Committee
- 2009-2012 Member, Board of Directors of Americans for Medical Progress

## **Journal Reviews**

### **Editorships**

- 2006- Senior Editor for *Experimental Brain Research*  
2008- Member of Editorial Board for *International Journal of Otolaryngology*

### **Referee for the following journals and publishers:**

- |   |  |
|---|--|
| <i>American Journal of Physiology</i>         | <i>Journal of Physiology</i>                           |
| <i>Archives of Medical Research</i>           | <i>Journal of Vestibular Research</i>                  |
| <i>BiomedCentral Physiology</i>               | <i>Neuroscience</i>                                    |
| <i>Brain</i>                                  | <i>Neuroscience Letters</i>                            |
| <i>Brain Research</i>                         | <i>Neuroscience Research</i>                           |
| <i>Circulation</i>                            | <i>NeuroReport</i>                                     |
| <i>European Journal of Applied Physiology</i> | <i>Physiology and Behavior</i>                         |
| <i>Experimental Brain Research</i>            | <i>Proceedings of the National Academy of Sciences</i> |
| <i>Journal of Applied Physiology</i>          | <i>Respiratory Physiology &amp; Neurobiology</i>       |
| <i>Journal of Chemical Neuroanatomy</i>       | <i>Science</i>   |
| <i>Journal of Comparative Neurology</i>       | CRC Press ( <i>book publications</i> )                 |
| <i>Journal of Neuromusculoskeletal System</i> | Worth Publishers ( <i>book publications</i> )          |
| <i>Journal of Neurophysiology</i>             |  |
| <i>Journal of Neuroscience</i>                |  |
- 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

## **Current Research Interests**

### **Vestibular Influences on Autonomic Control**

A key role of the central nervous system is to provide for homeostasis, or a stable internal milieu. One of the most profound challenges to homeostasis occurs when a human or other animal moves or changes posture. In particular, some movements, such as standing in humans or nose-up body pitch in quadrupeds, can threaten the maintenance of stable blood pressure and blood oxygenation. Unless compensation takes place quickly, these movements produce (1) blood pooling in the lower body that results in orthostatic hypotension and (2) a change in the resting length of the respiratory muscles that results in decreased air flow through the lungs. Many body sensors, including arterial baroreceptors, receptors in the heart, receptors in limb veins, receptors in the lungs, stretch receptors in respiratory muscles, and central and peripheral chemoreceptors, detect disturbances in homeostasis and trigger appropriate compensatory responses. However, effective maintenance of homeostasis would seem to require that compensation for the effects of movement on circulation and respiration begin even *before* the internal environment has been affected. One mechanism for accomplishing this would be through the actions of the *vestibular system*, which detects head position and head movements, and could thus provide “feed-forward” information to the brainstem autonomic centers, resulting in corrections in blood pressure and ventilation during changes in body position. The major research in our laboratory looks at the role of the vestibular system in adjusting blood pressure and respiration during movement and changes in posture. We are also determining the neural pathways through which vestibular signals influence the sympathetic nervous system (which controls blood pressure) and respiratory motoneurons. Finally, we are interested in determining which neural pathways are responsible for producing an aberrant autonomic effect that can result from vestibular stimulation: motion sickness.