

CURRICULUM VITAE

Mark F. Walker, M.D.

Current as of: October 2013

Address: Department of Neurology
Louis Stokes Cleveland VAMC
10701 East Blvd.
Cleveland, OH 44106

Current Appointments

Associate Professor (Tenure Track), Department of Neurology, Case Western Reserve University, Cleveland, OH
Staff Neurologist, Louis Stokes Cleveland Veterans Affairs Medical Center, Cleveland, OH Part-time Staff, Neurological Institute, University Hospitals of Cleveland Case Medical Center, Cleveland, OH

Education And Training

- 1986 B.S., Electrical Engineering (*summa cum laude*), Rensselaer Polytechnic Institute, Troy, NY
- 1990-2 Howard Hughes Medical Institute / National Institutes of Health Research Scholar (worked in the Laboratory of Sensorimotor Research, National Eye Institute, under the supervision of Dr. Michael Goldberg)
- 1993 M.D., The Johns Hopkins University, Baltimore, MD
- 1993-4 Intern, Department of Medicine, The University of Michigan, Ann Arbor, MI
- 1994-7 Resident, Department of Neurology, The University of Michigan, Ann Arbor, MI
- 1997-9 Post-doctoral fellow, Neuro-otology, Department of Neurology, The Johns Hopkins University, Baltimore, MD

Professional Experience

- 1999-2000 Instructor, Departments of Neurology and Ophthalmology, The Johns Hopkins University, Baltimore, MD
- 2000-7 Assistant Professor, Departments of Neurology and Ophthalmology, The Johns Hopkins University, Baltimore, MD
- 1999-2007 Active Staff – Full Time, The Johns Hopkins Hospital, Baltimore, MD
- 2003-7 Active Staff – Courtesy Staff, The Johns Hopkins Bayview Medical Center, Baltimore, MD
- 2006-7 Research Sabbatical, Laboratory of Sensorimotor Research (Dr. Lance Optican), National Eye Institute, National Institutes of Health, Bethesda, MD
- 2007- Associate Professor (Tenure Track), Department of Neurology, Case Western Reserve University, Cleveland, OH
- 2007- Staff Neurologist, Louis Stokes Cleveland Veterans Affairs Medical Center, Cleveland, OH

2009- Part-time Staff, Neurological Institute, University Hospitals of Cleveland Case Medical Center

RESEARCH ACTIVITIES

Publications

Peer reviewed

- Fisher BL, Parsons M, Durgerian S, Reece C, Mourany L, Lowe MJ, Beall EB, Koenig KA, Jones S, Newsome M, Scheibel R, Wilde EA, Troyanskaya M, Merkle TL, **Walker M**, Levin H, Rao SM. Neural activation during response inhibition differentiates blast from mechanical causes of mild to moderate traumatic brain injury. *J Neurotrauma* (epub ahead of print)
doi:10.1089/neu.2013.2877
- Thurtell MJ, Joshi AC, **Walker MF**. Three-dimensional kinematics of saccadic and pursuit eye movements in humans: Relationship between Donders' and Listing's laws. *Vision Res* 60:7-15, 2012.
- Walker MF**, Liao K. The human translational vestibulo-ocular reflex in response to complex motion *Ann N Y Acad Sci* 1233:242-48, 2011.
- Thurtell MJ, Joshi AC, Leigh RJ, **Walker MF**. Three-dimensional kinematics of saccadic eye movements in humans: Is the "half-angle rule" obeyed? *Ann N Y Acad Sci* 1233:34-40, 2011.
- Walker MF**, Tian J, Shan X, Tamargo RJ, Ying H, Zee DS. The cerebellar nodulus/uvula integrates otolith signals for the translational vestibulo-ocular reflex. *PLoS ONE* 5(11): e13981. doi:10.1371/journal.pone.0013981, 2010.
- Joshi AC, Thurtell MJ, **Walker MF**, Serra A, Leigh RJ. Effect of vergence on human ocular following response (OFR). *J Neurophysiol* 102(1):513-22, 2009.
- Walker MF**, Tian J, Shan X, Ying H, Tamargo RJ, Zee DS. Enhancement of the bias component of downbeat nystagmus after lesions of the nodulus and uvula. *Ann N Y Acad Sci* 1164:482-5, 2009.
- Liao K, **Walker MF**, Joshi A, Reschke M, Strupp M, Leigh RJ. The human vertical translational vestibulo-ocular reflex. Normal and abnormal responses. *Ann N Y Acad Sci* 1164:68-75, 2009.
- Walker MF**, Tian J, Shan X, Tamargo RJ, Ying H, and Zee DS. Lesions of the cerebellar nodulus and uvula impair downward pursuit. *J Neurophysiol* 100:1813-23, 2008.
- Walker MF**, Tian J, Shan X, Tamargo RJ, Ying H, Zee DS. Lesions of the cerebellar nodulus and uvula in monkeys: effect on otolith-ocular reflexes *Prog Brain Res* 171:167-72, 2008.
- Walker MF**, Tian J, Shan X, Tamargo RJ, Ying H, and Zee DS. Effect of cerebellar lesions in monkey on gaze stability. In: Leigh RJ and Devereaux MW (eds.). *Advances in Understanding Mechanisms and Treatment of Infantile Forms of Nystagmus*. New York: Oxford University Press, 2008.
- Liao K, **Walker MF**, Joshi A, Reschke M, Wang Z, Leigh RJ. A reinterpretation of the purpose of the translational vestibulo-ocular reflex in human subjects. *Prog Brain Res* 171:295-302, 2008.
- Liao K, **Walker MF**, and Leigh RJ. Abnormal vestibular responses to vertical head motion in cerebellar ataxia. *Ann Neurol* 64:224-7, 2008.
- Quaia C, Shan X, Tian J, Ying H, Optican LM, **Walker M**, Tamargo R, Zee DS. Acute superior oblique palsy in the monkey: effects of viewing conditions on ocular alignment and modeling of the ocular motor plant. *Prog Brain Res* 171:47-52, 2008.
- Tian J, Shan X, Ying HS, **Walker MF**, Tamargo RJ, Zee DS. The effect of acute superior oblique palsy on vertical pursuit in monkeys. *Invest Ophthalmol Vis Sci* 49:3927-32, 2008.

- Shan X, Tian J, Ying HS, **Walker MF**, Guyton D, Quaia C, Optican LM, Tamargo RJ, Zee DS. The effect of acute superior oblique palsy on torsional optokinetic nystagmus in monkeys. *Invest Ophthalmol Vis Sci* 49:1421-8, 2008.
- Liao K, **Walker MF**, Joshi A, Reschke M, and Leigh RJ. Vestibulo-ocular responses to vertical translation in normal human subjects. *Experimental Brain Research* 185:553-62, 2008
- Liao K, Wagner J, Joshi A, Estrovich I, **Walker MF**, Strupp M, and Leigh RJ. Why do patients with PSP fall? Evidence for abnormal otolith responses. *Neurology* 70:802-809, 2008.
- Steffen H, Straumann DS, **Walker MF**, Miller NR, Guyton DL, Repka MX, and Zee DS. Torsion in patients with superior oblique palsies: dynamic torsion during saccades and changes in Listing's plane. *Graefes Arch Clin Exp Ophthalmol* 246:771-8, 2008.
- Walker MF**, Tian J, and Zee DS. Kinematics of the rotational vestibulo-ocular reflex: role of the cerebellum. *J Neurophysiol* 98:295-302, 2007.
- Tian J, Shan X, Zee DS, Ying HS, Tamargo RJ, Quaia C, Optican LM, and **Walker MF**. Acute superior oblique palsy in monkeys: III. Relationship to Listing's Law. *Invest Ophthalmol Vis Sci* 48:2621-2625, 2007.
- Shan X, Ying HS, Tian J, Quaia C, **Walker MF**, Optican LM, Tamargo RJ, and Zee DS. Acute superior oblique palsy in monkeys: II. Changes in dynamic properties during vertical saccades. *Invest Ophthalmol Vis Sci* 48:2612-2620, 2007.
- Shan X, Tian J, Ying HS, Quaia C, Optican LM, **Walker MF**, Tamargo RJ, and Zee DS. Acute superior oblique palsy in monkeys: I. Changes in static eye alignment. *Invest Ophthalmol Vis Sci* 48:2602-2611, 2007.
- Tian J, Zee DS, and **Walker MF**. Rotational and translational optokinetic nystagmus have different kinematics. *Vision Res* 47:1003-1010, 2007.
- Tian J, Zee DS, and **Walker MF**. Eye-position dependence of torsional velocity during step-ramp pursuit and transient yaw rotation in humans. *Exp Brain Res* 171:225-230, 2006.
- Walker MF** and Zee DS. Cerebellar disease alters the axis of the high-acceleration vestibulo-ocular reflex. *J Neurophysiol* 94:3417-29, 2005.
- Walker MF** and Zee DS. Asymmetry of the pitch vestibulo-ocular reflex in patients with cerebellar disease. *Ann N Y Acad Sci* 1039: 349-358, 2005.
- Walker MF**, Shelhamer M and Zee DS. Eye-position dependence of torsional velocity during interaural translation, horizontal pursuit, and yaw-axis rotation in humans. *Vision Res* 44: 613-620, 2004.
- Straumann D, Steffen H, Landau K, Bergamin O, Mudgil AV, **Walker MF**, Guyton DL and Zee DS. Primary position and Listing's Law in acquired and congenital trochlear nerve palsy. *Invest Ophthalmol Vis Sci* 44: 4282-4292, 2003.
- Eggers SD, De Pennington N, **Walker MF**, Shelhamer M and Zee DS. Short-term adaptation of the VOR: non-retinal-slip error signals and saccade substitution. *Ann N Y Acad Sci* 1004: 94-110, 2003.
- Zee DS, **Walker MF**, and Ramat S. The cerebellar contribution to eye movements based upon lesions: binocular three-axis control and the translational vestibulo-ocular reflex. *Ann.N.Y.Acad.Sci.* 956:178-189, 2002.
- Mudgil AV, **Walker M**, Steffen H, Guyton DL, Zee DS. Motor mechanisms of vertical fusion in individuals with superior oblique paresis. *JAAPOS.* 6 (3):145-153, 2002.
- Steffen H, **Walker M**, and Zee DS. Changes in Listing's plane after sustained vertical fusion. *Invest Ophthalmol.Vis.Sci.* 43 (3):668-672, 2002.
- Steffen H, **Walker MF**, and Zee DS. Rotation of Listing's plane with convergence: independence from eye position. *Invest Ophthalmol.Vis.Sci.* 41 (3):715-721, 2000.
- Walker MF** and Zee DS. Directional abnormalities of vestibular and optokinetic responses in cerebellar disease. *Ann.N.Y.Acad.Sci.* 871:205-220, 1999.

- Walker MF** and Zee DS. The effect of hyperventilation on downbeat nystagmus in cerebellar disorders. *Neurology* 53 (7):1576-1579, 1999.
- Walker MF**, Fitzgibbon EJ, and Goldberg ME. Neurons in the monkey superior colliculus predict the visual result of impending saccadic eye movements. *J. Neurophysiol.* 73 (5):1988-2003, 1995.
- Dumoulin CL, Cline HE, Souza SP, Wagle WA, and **Walker MF**. Three-dimensional time-of-flight magnetic resonance angiography using spin saturation. *Magn. Reson. Med.* 11:35-46, 1989.
- Dumoulin CL, Souza SP, **Walker MF**, and Wagle W. Three-dimensional phase-contrast angiography. *Magn. Reson. Med.* 9:139-149, 1989.
- Dumoulin CL, Souza SP, Walker MF, Yoshitome E. Time-resolved magnetic resonance angiography. *Magn. Reson. Med.* 6:275-286, 1988.
- Walker MF**, Souza SP, and Dumoulin CL. Quantitative flow measurement in phase contrast MR angiography. *J. Comput. Assist. Tomogr.* 12:304-313.

Chapters and Reviews

- Ruff RL, Riechers RG, **Walker MF**, and Ruff S. Headache. In: Arciniegas DB, Zasler ND, Vanderploeg RD, and Jaffee MS (eds.). *Management of Adults with Traumatic Brain Injury*. Washington, DC: American Psychiatric Publishing, 2013.
- Walker MF** and Kline LB. Supranuclear and Internuclear Gaze Palsies. In: Kline LB and Forozzan R (eds.). *Neuro-ophthalmology: Review Manual (7th ed.)*. Thorofare, NJ: Slack, Inc., 2013.
- Walker MF** and Kline LB. Nystagmus and Related Ocular Oscillations. In: Kline LB and Forozzan R (eds.). *Neuro-ophthalmology: Review Manual (7th ed.)*. Thorofare, NJ: Slack, Inc., 2013.
- Goldberg ME, **Walker MF**, Hudspeth AJ. The vestibular system (ch. 40). In: Kandel ER, Schwartz JH, Jessell TM, Siegelbaum SA, and Hudspeth AJ (eds.). *Principles of Neural Science (5th ed.)*, New York: McGraw-Hill, 2012.
- Goldberg ME, **Walker MF**. The control of gaze (ch. 39). In: Kandel ER, Schwartz JH, Jessell TM, Siegelbaum SA, and Hudspeth AJ (eds.). *Principles of Neural Science (5th ed.)*, New York: McGraw-Hill, 2012.
- Walker MF** and Daroff RB. Dizziness and vertigo (ch. 21). In: Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, and Loscalzo J. (eds.). *Harrison's Principles of Internal Medicine (18th ed.)*, New York: McGraw-Hill, 2011.
- Liao K, **Walker MF**, Joshi AC, Reschke M, Strupp M, Wagner J, Leigh RJ. The linear vestibulo-ocular reflex, locomotion and falls in vestibular disorders. *Restor Neurol Neurosci.* 28:91, 2010.
- Walker MF**. Vestibular Neuritis. *Curr Treat Options Neurol* 11:41-5, 2009.
- Walker MF** and Kline LB. Supranuclear and Internuclear Gaze Palsies. In: Kline, LB (ed.). *Neuro-ophthalmology: Review Manual (6th ed.)*. Thorofare, NJ: Slack, Inc., 2008.
- Walker MF** and Kline LB. Nystagmus and Related Ocular Oscillations. In: Kline, LB (ed.). *Neuro-ophthalmology: Review Manual (6th ed.)*. Thorofare, NJ: Slack, Inc., 2008.
- Magaziner JL and **Walker MF**. Dizziness, Vertigo, Motion Sickness, Syncopye and Near-Syncope and Disequilibrium. In: Fiebach NH, Kern DE, Thomas PA, and Ziegelstein RC (eds.). *Principles of Ambulatory Medicine (7th ed.)*. Philadelphia: Lippincott, Williams, and Wilkins (2007).

- Walker MF.** Vertigo & Disequilibrium. In: Johnson RT, Griffin JW, and McArthur JC (eds.). *Current Therapy in Neurologic Disease (7th ed.)*. St. Louis: Mosby, 2006.
- Sisson SD and **Walker MF.** Dizziness, Vertigo, Motion Sickness, Syncope and Near Syncope, and Disequilibrium. In: Barker LR, Burton JR and Zieve PD (eds.). *Principles of Ambulatory Medicine (6th ed.)*. Philadelphia: Lippincott, Williams, and Wilkins, 2003, p. 1409-1430.
- Walker MF** and Zee DS. Approach to the patient with dizziness and vertigo. In: Humes, HD (ed.). *Kelley's Textbook of Internal Medicine*, 4th ed., Philadelphia: Lippincott, Williams, and Wilkins, 2000.
- Stern BJ, Wityk RJ and **Walker MF.** The cranial nerves. In: Joynt RJ and Griggs RC (eds.). *Baker's Clinical Neurology*. Philadelphia: Lippincott, Williams, and Wilkins, 2000.
- Walker MF,** Zee DS. Cerebellar Control of Gaze. In: Sharpe JA, editor. *Neuro-ophthalmology at the Beginning of the New Millennium*. Englewood, NJ: Medimond, 2000: 71-81.
- Walker MF** and Zee DS. Bedside vestibular examination. In: Shepard NT and Solomon D, eds. *Otolaryngologic Clinics of North America* 33:495-506, 2000.
- Walker MF** and Zee DS. Eye-movement recordings in the evaluation of ophthalmologic and neurologic disorders. *Curr.Opin.Ophthalmol.* 10 (6):401-404, 1999.

Abstracts / Presentations

- Walker MF,** Pan T, Liao K, Roenigk K, and Daly JJ. Impaired dynamic postural stability in veterans with mild TBI. *North American Brain Injury Society 10th Conference on Brain Injury*. Miami, FL, 2012.
- Walker MF,** Kadri M, and Liao K. The translational vestibulo-ocular reflex anticipates impending saccades. *2011 Abstract Viewer / Itinerary Planner*. Washington, DC: Society for Neuroscience, 2011. Online.
- Cheng R, Liao K, and **Walker MF.** Dynamic visual acuity during vertical translation in humans. *2011 Abstract Viewer / Itinerary Planner*. Washington, DC: Society for Neuroscience, 2011. Online.
- Walker MF,** Liao K, Pan T, Roenigk K, Daly JJ. Postural instability in blast-exposed veterans. Human Factors and Medicine Panel (HFM-207) – A Survey of Blast Injury Across the Full Landscape of Military Science. NATO Research and Technology Organization. Halifax, Canada, Oct. 2011.
- Liao K, Leigh RJ, and **Walker MF.** The frequency response of the human translational VOR. *2009 Abstract Viewer / Itinerary Planner*. Washington, DC: Society for Neuroscience, 2009. Online.
- Walker MF.** Disequilibrium after Traumatic Brain Injury: Vestibular mechanisms. Military Health Research Forum, Kansas City, MO, 2009.
- Thurtell MJ, **Walker MF,** Joshi AC, Leigh RJ. Vertical saccadic and smooth pursuit eye movements violate Listing's law in normal humans. Program No. 264.16. *2008 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2008. Online
- Joshi AC, Thurtell MJ, **Walker MF,** Serra A, Leigh R. Effects of horizontal divergence on vertical ocular following responses (OFR). Program No. 264.15. *2008 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2008. Online
- Walker MF,** Tian J, Shan X, Ying H, Tamargo RJ, and Zee DS. The cerebellar nodulus and uvula mediate integration of linear head acceleration. Program No. 861.3. *2007 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2007. Online

- Liao K, **Walker MF**, Joshi A, Reschke M, and Leigh R. Human vestibulo-ocular responses to rotating while translating. Program No. 720.4. *2007 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2007. Online
- Leigh RJ, Liao K, Wagner J, Joshi A, **Walker MF**, Strupp M, and Dell'Osso LF. Responses to rotating while translating in progressive supranuclear palsy (PSP). Program No. 720.12. *2007 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2007. Online
- Tian J, Shan X, Ying H, **Walker MF**, Tamargo R, and Zee DS. The effect of acute superior oblique palsy (SOP) on pursuit in monkey. Program No. 179.17. *2007 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2007. Online
- Ying HS, Shan X, Tian J, Guyton DL, Tamargo RJ, **Walker MF**, and Zee DS. Effect of corrective strabismus surgery on vertical saccade dynamics after unilateral IV nerve palsy in monkey. Program No. 718.18. *2007 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2007. Online
- Walker MF**, Tian J, Shan X, Ying H, Tamargo RJ, and Zee DS. Ablation of the cerebellar nodulus and uvula selectively impairs downward pursuit. *ARVO 2007*.
- Tian J, **Walker MF**, Shan X, Ying H, Tamargo R, Zee DS. Acute superior oblique palsy induces a temporal rotation of Listing's plane. Program No. 736.14. *2006 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2006. Online
- Shan X, **Walker MF**, Tian J, Ying H, Tamargo R, Zee DS. The effect of superior oblique palsy on torsional optokinetic nystagmus. Program No. 736.15. *2006 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2006. Online
- Tian J and **Walker MF**. Eye-position dependence of optokinetic nystagmus in the monkey. Program No. 745.6. *2005 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2005. Online
- Walker MF**, Tian J, and Zee DS. Cerebellar disease alters the behavior of the yaw-axis VOR with respect to Listing's Law. *Society for Neuroscience*, 2004.
- Tian J, Zee DS, and **Walker MF**. Orbital position dependence of torsional velocity during step-ramp pursuit and transient yaw rotation in humans. *Society for Neuroscience*, 2004.
- Walker MF**, Tian J, and Zee DS. Abnormal dynamics of head impulse responses in cerebellar disease. Presented at the XXIII meeting of the Bárány Society, Paris, 2004
- Walker MF** and Zee DS. Asymmetry of the pitch VOR in patients with cerebellar disease. Presented at *Clinical and Basic Ocular Motor Research*, Siena, Italy, 2004.
- de Pennington N, Zee DS, **Walker MF** and Shelhamer MJ. Adaptation of the vestibulo-ocular reflex without retinal image motion during head rotation. *Society for Neuroscience Abstracts* #323.10: 2002.
- Walker MF** and Zee DS. Rectified cross-axis adaptation of the vestibulo-ocular reflex in rhesus monkey. *Ann.N.Y.Acad.Sci.* 956:543-545, 2002.
- Vestal ML and **Walker MF**. Rectified cross-axis adaptation of the human vestibulo-ocular reflex. *Society for Neuroscience Abstracts* #403.22: 2001.
- Walker MF**, Zee DS, Shelhamer MJ, Roberts DC, and Lasker AG. Variation of eye velocity axis with vertical eye position during horizontal pursuit, interaural translation, and yaw rotation in normal humans. *Society for Neuroscience* 2000.
- Walker MF** and Zee DS. Directional Abnormalities of Horizontal Optokinetic Responses in Cerebellar Disease. *Neurology* 54 (Supp 3): A250, 2000.
- Walker MF**, Peng GCY, and Zee, DS. Directional cross-coupling of eye velocity in response to head impulses in patients with cerebellar disease. *Society for Neuroscience Abstracts* 25:659, 1999.

Steffen H, Walker MF, and Zee DS. Rotation of Listing's plane with convergence: independence from eye positions [ARVO Abstract]. *Invest Ophthalmol Vis Sci* 1999;40(4):S772. Abstract nr 4074.

Walker MF and Zee DS. Head-shaking and hyperventilation in cerebellar disease. *Conference on Otolith Function in Spatial Orientation and Movement*, Zurich, 1998.

Walker MF and Zee DS. Hyperventilation-induced downbeat nystagmus in cerebellar disease. *Neurology* 50 (Supp 4):A8, 1998.

Walker MF and Goldberg ME. Impending saccades shift visual responses in selected superior collicular neurons. *Society for Neuroscience Abstracts* 18:699, 1992.

Extramural Sponsorship

Current

Therapeutic Effects of Exercise on Parkinson's Disease (Alberts) Co-investigator (5 % effort)

Department of Veterans Affairs 4/1/2009-3/31/2013

The major goal of this study is to investigate whether assisted exercise will improve motor function and reduce disability in patients with Parkinson's disease.

Control of Seated Balance with Functional Neuromuscular Stimulation (FNS) (Audu) Co-investigator (10% effort)

Department of Defense (DoD, USAMRMC)
01/2011 – 12/13

Past

Disequilibrium after Traumatic Brain Injury: Vestibular Mechanisms (Walker)

Principal Investigator (30 % effort)
Department of Defense, USAMRMC
9/1/2008-8/30/2012

The major goal of this project is to investigate the contribution of disturbed otolith reflexes to chronic dizziness and imbalance following blast related traumatic brain injury in military veterans.

Restoration of Life Role Participation through Integrated Cognitive and Motor Training for Individuals with TBI (Daly)

Co-investigator (5 % effort)
Department of Defense, USAMRMC
9/15/2008-10/14/2012

The major goal of this study is to test an innovative integrated cognitive and motor intervention targeted to address the obstacles to functional independence and life role participation. The primary hypothesis is that integrated motor and cognitive training will produce a statistically greater gain versus conventional care, according to performance of life role participation.

Mechanisms and Rehabilitation of Cerebellar Ataxia (Bastian) Co-investigator (10% effort)

NIH / NIDCD

2/1/06 – 6/30/07

The goals of this project are to determine the most effective strategies for motor adaptation in people with cerebellar damage and to determine the effectiveness of physical therapy in improving gait ataxia.

Three-axis Ocular Motor Control by the Cerebellum (K23 EY00400-04 – Walker)

Principal Investigator (70% effort)

NIH / NEI

9/30/99 – 9/29/04

The goals of this project are to study the role of the cerebellum in the three-axis control of eye movements, including the control of ocular torsion, and to elucidate the pathophysiology of three-axis eye movement abnormalities in patients with cerebellar disease.

ACADEMIC ACTIVITIES

Classroom Teaching

Vestibular Lecture, Foundations of Medicine and Health Block 6, CWRU School of Medicine, 2008-present.

Ocular motor system lecture, First year JHU medical school neuroscience course (Neuroscience A), 2001-2007

Ocular motor system lecture, First year JHU graduate school Neuroscience course (Neuroscience and Cognition II), 2003-2007

Discussion group leader, First year JHU medical school neuroscience course (Neuroscience A), 2006

CME Teaching

Acute Vertigo lecture, Neurology for the Primary Practitioner CME course, Baltimore, MD, 12/8/01

“Eye movement disorders in cerebellar disease” (course 2DS.010: Eye movement disorders and nystagmus), AAN annual meeting, Denver, CO, 4/02 and Honolulu, HI 4/03.

Neurology lecture, Family Medicine board review course, Baltimore, MD, 5/05, 6/06, 5/07.

Clinical Teaching

Facilitator, Neurology clerkship clinical case discussion series, 2009-present

Evaluation of dizziness in the outpatient setting, VAMC neurology residents' teaching series, 3/10/08 and 3/24/08.

Neurology service, Cleveland VAMC, outpatient and inpatient teaching of residents and students, 2007-present

Vestibular testing lecture, Neurophysiology lecture series, JHU, 2002-2005

Vestibular neuroanatomy lecture, neurology resident lecture series, JHU, 2003, 2005

Vertigo lecture, Neurology clerkship lecture series, JHU, 1999-2001

Neurology consult service – teaching of students and residents, JHU, 2000-2007

Clinical Skills – preceptor for second-year medical student Clinical Skills neurology practicum, JHU

Committees

Education Committee, Department of Neurology, Case Western Reserve University and University Hospitals of Cleveland, 2009-present; chair, Resident Scholarship subcommittee, 2009-present

Committee on Appointments, Promotion, and Tenure, Department of Neurology, Case Western Reserve University and University Hospitals of Cleveland, 2009-present
 Residency Interview Committee, Department of Neurology, Case Western Reserve University and University Hospitals of Cleveland, 2009-present
 Research and Development Committee, Louis Stokes Cleveland VA Medical Center, 2009-present; co-vice-chair, 2010-present.

Conferences

Organizer, Neurosciences Annual Research Day, CWRU, 2010, 2011, 2012

Mentoring

Ryan Hofler, medical student research block, CWRU, 2011.
 Roger Cheng, medical student research block, CWRU, 2010-1.
 Tao Pan, Ph.D., research engineer, CWRU, 2010-present
 Mujtaba Kadri, medical student research block, CWRU, 2010.
 Ke Liao, Ph.D., post-doctoral fellow, CWRU, 2008-2009.
 Jing Tian, Ph.D., post-doctoral fellow, JHU, 2003-2007 (supported by a Fight for Sight fellowship)
 Matthew Vestal, JHU undergraduate Neuroscience student, 2000-2003 (currently a medical student at Yale University)

Thesis committee participation

Anand Joshi, Ph.D. 2010, Department of Biomedical Engineering, Case Western Reserve University

Editorial activities

Associate Faculty, Faculty of 1000 Medicine (neuro-ophthalmology and neuro-otology), 2008-present
 Review Editor, *Frontiers in Neuro-Otology*, 2010-present
 Peer Reviewer: Journal of Neurophysiology, Neurology, Annals of Neurology, Investigative Ophthalmology and Visual Science, Journal of Neuro-ophthalmology, Brain, Archives of Ophthalmology, Journal of Neurology, Journal of the Neurological Sciences, Journal of Rehabilitation Research and Development, PNAS

Study sections / review panels

Sensorimotor review panel, NASA / NRESS, Washington, DC, January 2010
 Clinical Trials review panel (teleconference), NIH/NIDCD, October 2010, October 2011
 Special reviewer, Acute Neural Injury and Epilepsy study section, NIH CSR, June 2012, October 2012
 Sensory Systems and Communication Disorders review panel, VA RRD, August 2012

CURRENT CLINICAL ACTIVITIES

Inpatient and consult attending, Cleveland VAMC (6-8 weeks / year)
 Outpatient clinic, Cleveland VAMC
 Attend resident clinic (½ day / week)
 Multiple sclerosis / General neurology clinic (½ day / week)
 Traumatic Brain Injury clinic (½ day / week)
 Outpatient neuro-otology clinic, University Hospitals Case Medical Center, once monthly

Certification

Ohio Medical License # 89501

Board certified, American Board of Psychiatry and Neurology (Neurology), 1998, recertified 2008 (expires 2018)

MEMBERSHIPS

American Academy of Neurology

American Neurological Association (elected 2007)

Society for Neuroscience

RECOGNITION

Invited Talks

“Prediction in the Otolith Ocular Reflex,” The Vestibular System, Meeting in Honor of Professor Daniele Nuti, Siena, Italy, 4/6/12.

“Evaluation of Dizziness in the Primary Care Setting”, Advanced Practice Nurses Grand Rounds, Cleveland VAMC, 10/24/12.

“Imbalance due to Vestibular Disturbance in TBI,” Frontiers in Neuromuscular Disease and Neuro-Rehabilitation: A Conference to Honor Robert L. Ruff, MD, PhD. Cleveland, OH, 2012.

Invited Faculty, International Neuro-otology course, Mexico City, Mexico, 7/2010. Five lectures:

“The Cerebellum and Eye Movements”

“Abnormal Eye Movements in Cerebellar Disease: Saccades, Pursuit, and the Rotational VOR”

“Recording Eye Movements with Scleral Search Coils”

“The Translational VOR and Clinical Otolith Disorders”

“Vestibular Syndromes with Brainstem Lesions”

“The Translational VOR in Health and Disease: New Insights and Unanswered Questions,” Center for Hearing and Balance, Department of Biomedical Engineering, The Johns Hopkins University School of Medicine, Baltimore, MD, 10/1/09.

“Evaluation of Dizziness in the Outpatient Setting”, Advanced Practice Nurses Grand Rounds, Cleveland VAMC, 10/15/08.

“Connecting Bench and Bedside: Understanding Disorders of Vision and Balance in Cerebellar Disease,” National Eye Institute, Bethesda, MD, 7/23/08.

“Eye Movements and Vestibular Function in Cerebellar Ataxia,” Department of Neurology Grand Rounds, 3/7/08, Case Western Reserve University and University Hospitals, Cleveland, OH

“Vestibular Disorders and Disability,” Social Security Administration, Washington, DC, 11/8/05

“Eye Movements and Vestibular Function in Cerebellar Disease,” Neurology Grand Rounds, George Washington University, 4/20/05

“Eye Movements and Vestibular Function in Cerebellar Disease,” Neurology Grand Rounds, VA Medical Center, Washington, DC, 10/13/04

“Vision, Eye Movements, and Ataxia,” National Ataxia Foundation – Chesapeake Chapter, Annual Medical Meeting, 2004

“Three-axis Eye Movement Control and the Cerebellum”, Eye Movement Satellite Meeting, German Ophthalmological Society, Heidelberg, Germany, 10/12/02

“Eye Movements in PSP”, Society for Progressive Supranuclear Palsy Biennial Meeting, Linthicum, MD, 5/18/02

Neurology Grand Rounds and Research Seminar, Case Western University / University Hospitals of Cleveland, 3/9/01

“Nystagmus and Eye Movement Abnormalities in Cerebellar Ataxia,” National Ataxia Foundation – Chesapeake Chapter, Annual Medical Meeting, 1999.

Awards

Clinician Scientist Award, the Johns Hopkins University School of Medicine, 1999.

Joseph M. Foley Teaching Award, Department of Neurology, Case Western Reserve University, 2013.

COMMUNITY SERVICE

Volunteer, The Free Clinic of Greater Cleveland, 2/08-present: provide neurological consultations one evening (approximately 5 patients) per month