CURRICULUM VITAE
Joseph P. Walton, Ph.D.

Personal information

Address:
Department of Communication Sciences and Disorders
University of South Florida
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Birth place Fort Knox, KY

Education

1976	B.A. (Hearing Science)	University of Florida
1982	M.A. (Audiology)	University of Florida
1984	Ph.D.	University of Florida

Employment

9/84 to 8/90	Assistant Professor, Dept. of Surgery, Division of Otolaryngology, University of Rochester
9/86 to 6/87	Adjunct Assistant Professor, Center for Brain Research, University of Rochester
9/97 to present	Adjunct Associate Professor, Dept. of Communication Disorders, University of Buffalo
9/99 to present	Associate Professor, Dept. of Neurobiology and Anatomy, University of Rochester
9/90 to 10/10	Associate Professor, Dept. of Otolaryngology, University of Rochester
10/10 to present	Professor, Dept. of Communication Sciences and Disorders and School of Aging Studies, University of South Florida

Certification and Licensure

New York State Audiology License, 1984 - 2010
Certificate of Clinical Competency of Audiology American Speech, Language and Hearing Association, 1984 - present

Hospital Appointments

1984 - 2010 Clinical Audiologist Strong Memorial Hospital, Rochester, NY

Mentorship

Adithya Chandreqowda	PhD Student Lab Rotation	2011-present
Alex Elkins	AUD Student Advisor	2011-present
Paulcy Pynadath	AUD Student Advisor	2011-present
Adam Dziorny	MD/PhD Co-Advisor	2007-2010
Daniel Stolzberg	Doctoral Student Co-Advisor	2009-present

Dawn Lee	Doctoral Student Co-Advisor	2009-2010
Megan Glaspie	Doctoral Audiology Intern	2007-2009
Kathy Barsz, Ph.D	Postdoctoral Fellow	1995-2010
Owen Brimijoin, PhD	Postdoctoral Fellow	2007-2009
U-Cheng Leong, PhD	Postdoctoral Fellow	2007-2009
Jordan Schramn	Graduate Student Co-Advisor	2007-2008
Marie Diehl	Graduate Student Co-Advisor	2006-2007
Dan Rossi	Undergraduate	2006-2008
Arie Gordin, MD	Visiting Scientist	2006-2007
Anita Jeyakumar, MD	Resident Research Advisor	2005
Henry Simon, MS	Research Advisor	2002-2004
Nicholas Schmuck	Undergraduate	2002-2004
Paul Allen, PhD	Postdoctoral Fellow	1999-2005
Mark Winkle, MD	Resident Research Advisor	1999-2000
Michael Villano, MD	Resident Research Advisor	1998-2000
Luisa Scott, PhD	Graduate Student Advisor	1998-2002
Jonathan Byrd	Undergraduate	1996-1998
Jason Castro	Undergraduate	2000-2002
Willard Wilson, PhD	Postdoctoral Fellow	1996-1999
Peter Benson MD	Medical Student	1994-1996
Harold Lesser, MD/PhD	Dissertation Committee	1991-1993
Willard Wilson, PhD	Dissertation Committee	1993-1994
Michael Gordon Ph	Dissertation Committee	1994-1998
Joseph Columbo, PhD	Dissertation Committee	1992-1994
Walter Murphy, PhD	Dissertation Committee	1991-1992
Chun-Xiao Qiu, PhD	Dissertation Committee	1993-1995
Garry Crummer, MD	Masters Thesis Co-Advisor	1990-1993
Sarah Chung, PhD	Undergraduate	1991-1993

COURSES TAUGHT AND OTHER TEACHING ACTIVITES

Fundamentals of Hearing (University of Florida)
Auditory Evoked Potentials (University of Florida)
Research Methods in Digital Sound Processing (University of Florida)
Audition (Lecturer, University of Rochester)
Auditory Brainstem Responses in Neurological Disease, Neurology Department – Grand Rounds, University of Rochester
Molecular Biology of Congenital Hearing Loss, Rochester School for the Deaf
Neuroscience Undergraduate Independent Study (University of Rochester)
Neuroscience Graduate Independent Study (University of Rochester)
Undergraduate Clinical Supervision: University of Florida Speech-Language-Hearing Clinic
Graduate Clinical Supervision: University of Rochester, Audiology Department, Strong Memorial Hospital, University oi Rochester
Pediatric and Adult Applications of Auditory Evoked Responses (Otolaryngology Resident Training, University of Rochester)
Multiple In-services, Department of Audiology (University of Rochester)
Developed Graduate Course “Hearing and Balance: Structure, Function and Disease” (University of Rochester School of Medicine)

Intellectual Property –United States

Walton, J.P., Miller, K., Taylor, J., Fuller, L. & Frisina, R.D. “Aid to Hearing Speech in a Noisy Environment”, Patent# : 5,285,502 (February 1994)

Miller, K., Fuller, L., Taylor, J., Frisina, R.D. & **Walton, J. P**. "Hearing Aid with a Pre-Adjusted Frequency Response". Patent# : 8,302,638 (September 1994)

Miller, K., Fuller, L., Taylor, J., Frisina, R.D. & **Walton, J. P**. "Hearing Aid with a Permanently-Adjusted Frequency Response", Patent# : 5,406,633 (April 1995)

Intellectual Property – International

Walton, J. P., Miller, K., Taylor, J., Fuller, L. & Frisina, R.D. "Aid to Hearing Speech in Noisy Environment", Serial# : PCT/US 93908361.4 (1996)

Awards

Fellow American Academy of Audiology, 1992-1997.
2001-2002 American Federation of Research Grant Recipient; Mentor (K. Barsz)
2004-2005 American Federation of Aging Research Grant Recipient (P. Allen)
First Place Award Research Presentation in 1993 Otolaryngology Research Forum
Second Place Award Research Presentation in 1994 Otolaryngology Research Forum

Professional Associations

1984 - present	American Speech and Hearing Association
1988 - present	Sigma Xi, The Scientific Research Society
1990 – 2009	Acoustical Society of America
1990 - present	Association for Research in Otolaryngology
1990 - present	Founding Member International Center for Hearing and Speech National Technical Institute for the Deaf

Research Funding

Current

NIH-National Institute on Aging :
"The Aging Auditory System: Presbycusis and Its Neural Bases"
ID#: P01 AG0952-06
P.I.: D. Robert Frisina, Ph.D.
Neurophysiology Project 3, Director: Joseph P. Walton, Ph.D.
Animal Behavior Project 2, Director: Joseph P. Walton, Ph.D.
Animal Core B, Director: Joseph P. Walton, Ph.D.
Effort: 40%
Total Costs: $4,800,000
Inclusive Dates: 9-16-10 to 07-31-15

PENDING

NIH/NIDCD R01
"Development and Aging of the Cochlear Stria Vascularis"
Effort: 20%
$250,000 / year Direct Costs
Role: Co-I

NIH/NIA R01: "NIH Toolbox for Assessment Neurological and Behavioral Function: Auditory Subdomain"

Effort: 33%
Role: Co-I
235,000/year Direct Costs
Inclusive Dates: 1-31-11 to 6-31-11

Completed
NIH/NICHD R01: "Integrated Multidisciplinary Approach for Analyzing Diffuse Myelinization Disorders"
Effort: 23%
Role: Co-I
325,000 / year Direct Costs
Inclusive Dates: 01-01-10 to 10-08-10

NIH-National Institute on Aging :
"The Aging Auditory System: Presbycusis and Its Neural Bases"
ID#: P01 AG0952-06
P.I.: D. Robert Frisina, Ph.D., RICHS Director
Neurophysiology Project Director: Joseph P. Walton, Ph.D.
Effort: 68%
Total Costs: $5,500,000
Inclusive Dates: 5-1-98 to 4-30-03

Schmitt Grant: "Photic sensitivity in old mice: a study of changing visual function, retinal degeneration, and protein expression "
Co-Principle Investigator**:** Joseph P. Walton, Ph.D.
Total Costs: $10,000
Inclusive Dates: 4-1-04 to 3-31-05

Schmitt Grant: "Age changes in K+ Channel Gene Expression and Hearing"
Co-Principle Investigator**:** Joseph P. Walton, Ph.D.
Total Costs: $20,000
Inclusive Dates: 8-1-00 to 7-31-04

NIH-National Institute on Aging :
"The Aging Auditory System: Presbycusis and Its Neural Bases"
ID#: P01 AG0952-06
P.I.: D. Robert Frisina, Ph.D., RICHS Director
Neurophysiology Project Director: Joseph P. Walton, Ph.D.
Effort: 68%
Total Costs: $4,200,000
Inclusive Dates: 5-1-92 to 3-31-98

NIH-NIDCD: "Neural Encoding of Dynamic Features of Complex Sounds"
ID#: R29 NS24745-02
P.I.: Robert D. Frisina, Ph.D.
Co-I.: Joseph P. Walton, Ph.D.
Effort: 20%
Total Costs: $525,000
Inclusive Dates: 7-1-88 to 6-30-94

Deafness Research Foundation: "Neural correlates of temporal processing deficits in progressive sensorineural hearing loss"

P.I.: Joseph P. Walton, Ph.D.
Total Costs: $25,000

National Institute on Aging: "Neuropsychology of Music in Aging and Alzheimer's Dementia"
P.I.: Kenneth P. Swartz, Ph.D.
Co-I.: Joseph P. Walton, Ph.D.
Effort: 10%
Direct Costs: $350,000
Inclusive Dates: 3-1-90 to 2-28-92

NIH-NIDCD: "Neural Basis of Music Cognition"
P.I.: Edwin C. Hantz, Ph.D.
Co-I.: Joseph P. Walton, Ph.D.
Effort: 10%
Direct Costs: $370,426
Inclusive Dates: 4-1-90 to 3-31-92

Peer Reviewed Publications

Margolis, R., Frisina, R., Walton, J. (in press) AMTAS® - Automated Method for Testing Auditory Sensitivity: III. Air Conduction Audiograms in Children and Adults. Internat. J. Audiology.

Polesskaya , O, Cunningham , L.L., Francis, S.P., Luebke, A.E., Zhu, X., Collins, D., Vasilyeva , O., Sahler, J., Desmet, E., Gelbard, H.A., Maggirwar, S.B., **Walton, J.P.** Frisina, R.D., Dewhurst, S. (submitted) Mixed lineage kinase 3 ablation does not protect from ototoxicity induced by acoustic trauma or aminoglycoside exposure. Hearing Research.

Walton J. P. 2010. Timing is Everything: Temporal Processing Deficits in the Aged Auditory Brainstem. Hearing Res. 264: 63-69.

Vasilyeva, O., Luebke, A., **Walton, J.** (in preparation) Central auditory temporal processing deficits in an animal model of congenital sensorineural hearing loss. Hearing Res.

Walton J. P., Barsz, K. B., and Wilson, W. W. (in preparation) Auditory midbrain neurons specialized for extracting silent intervals in background noise. Nature Neurosci.

Allen, P.D., Barsz, K., Ison, J. R., **Walton. J. P**. (in preparation) Age-related decline in behavioral and neural correlates of spatial release from masking in a mouse model of presbycusis. Neurobiology of Aging.

Vasilyeva, O., Zhu, X., **Walton, J.P.** and Frisina, RF. 2009 Interactions of hearing loss and Diabetes Mellitus in the CBA/CaJ mouse model of presbycusis. Hearing Res. 249:44-53.

Leong, U., Barsz, K., Allen, P.D. and **Walton, J.P.** 2009. Neural correlates of age-related declines in frequency selectivity in the auditory midbrain. (DOIin press) Neurobiology of Aging.

Walton, J., Wilson, W., Barsz. (2008) Sensorineural hearing loss and neural correlates of temporal acuity in the inferior colliculus of the C57Bl/6 mouse. J. Assoc. Res. Otolaryngology. 9: 12-22.

Allen, P.D., Schmuck N., Ison, J.R., **Walton, J.P** (2008) Kv1.1 potassium ion channels do not appear to play a critical role in temporal processing as assessed by gap detection measures. Hearing Res. 246: 52-58.

Jones, L., Prins, J., Park, S., **Walton, J.P**., Luebke, A. and Lurie, D. Lead exposure during development results in increased neurofilament phosphorylation, neuritic beading, and

temporal processing deficits within the murine auditory brainstem. J. Comp. Neurol. 506: 1003-1017, 2007.

Barsz, K., Wilson, W., and **Walton, J. P.** Reorganization of receptive field maps following hearing loss in inferior colliculus neurons. Neurosci. 147: 532-545, 2007.

Frisina, R.D., and **Walton, J.P.** Age-related structural and functional changes in the cochlear nucleus. Hearing Res. 217: 216-233, 2006.

Simon, H., Frisina, R.D. and **Walton, J.P**. Age and stimulus rise time alter response latency of mouse inferior colliculus neurons. J. Acoustical Soc. Am. 116(1): 469-77, 2004.

Allen, P.D., Burkard, R.F., Ison, J.R. and **Walton, J.P**. Impaired gap encoding in aged mouse inferior colliculus at moderate but not high stimulus levels. Hearing Res. 186: 17-29, 2004.

Ison, JR., Castro J., Allen, PD., Virag, T and **Walton, JP**. The relative detectability for mice of gaps having different ramp durations at their onset and offset boundaries. J. Acoustical Soc. Am. 112(2): 740-7, 2002.

Walton, J.P., Simon, H. and Frisina, R.D. Age-related alterations in the neural coding of envelop periodicities. J. Neurophysiol. 88: 565–578 2002.

Barsz, K., Ison, J., Snell, K. B., and **Walton, J. P.,** Behavioral and neural measures of auditory temporal acuity in aging humans and mice. Neurobiol. Aging, 23: 565-578, 2002.

Wilson, W.W. and **Walton, J. P.,** Background noise improves gap detection in tonically inhibited inferior colliculus neurons. J. Neurophysiol. 87: 240-249, 2002.

Barsz, K., Wilson, W.W. and **Walton, J.P.** Background noise differentially effects temporal coding by tonic units in the mouse inferior colliculus. Hearing Res. 150: 149-160, 2000.

Walton, J.P., Orlando, M.S. and Burkard, R. Auditory brainstem response forward-masking recovery functions in older humans with normal hearing. Hearing Res. 127: 86-94, 1999.

Frisina, R.D., **Walton, J.P.**, Lynch-Armour, M. and Byrd, J.D. Inputs to a physiologically-characterized region of the inferior colliculus of the young adult CBA mouse. Hearing Res.115, 61-81, 1998.

Barsz, K., Benson, P.K and **Walton, J.P.** Gap encoding by inferior collicular neurons is altered by minimal changes in signal envelope. Hearing Res. 115, 13-26, 1998.

Walton, J.P., Frisina, R.D, and O'Neill, W.E. Age-related alteration in processing of temporal sound features in the auditory midbrain of the CBA mouse. J. Neurosci.18, 2764-2776, 1998.

Ison, J.R., Payman, G., Palmer, M.J. and **Walton, J.P.** Nimodipine at a dose that slows ABR latencies does not protect the ear against noise. Hearing Res. 106, 179-183, 1997.

Walton, J.P., Frisina, R.D, Ison, J.R. and O'Neill, W.E. Neural correlates of behavioral gap detection in the inferior colliculus of the young CBA mouse. J. Comp. Physiol. 181, 161-176, 1997.

Frisina, R.D., Karcich, K.J., Tracy, T., Sullivan, D.M., **Walton, J.P**. and Colombo, J.C. Preservation of amplitude modulation coding in the presence of background noise by chinchilla auditory nerve fibers. J. Acoustical Soc. Am. 99, 475-490, 1996.

Kazee, A.M., Han, L., Spongr, V.P., **Walton, J.P.,** Salvi, R.J. and Flood, D.G. Synaptic loss in the central nucleus of the inferior colliculus correlates with sensorineural hearing loss in the C57BL/6 mouse model of presbycusis. Hearing Res. 89, 109-120, 1996.

Frisina, R.D., Zettel, M., **Walton, J.P**. and Kelly, P.J. Distribution of calbindin D28k immunoreactivity in the cochlear nucleus of the young chinchilla. Hearing Research 85, 53-68, (1995).

Walton, J.P., Frisina, R.D. and Meierhans. L.R. Sensorineural hearing loss effects recovery from short term adaptation in the C57BL/6 and CBA models of presbycusis. Hearing Res. 88, 19-26, 1995.

Frisina, R.D., **Walton, J.P.,** and Karcich, K.J. Dorsal cochlear nucleus single neurons can enhance temporal processing capabilities in background noise. Exp. Brain Res. 102, 160-164, 1994.

Swartz, K., **Walton, J.P.,** Hantz, E., Goldhammer,E., Crummer, G.C., and Frisina, R.D. P3 event-related potentials and performance of young and old subjects for music perception tasks. International J. Neuroscience, 78, 223-229, (1994).

Crummer, G.C., **Walton, J.P.,** Hantz, E. and Frisina, R.D. Neural processing of timbre and non-musical stimuli by musicians, non-musicians and musicians processing absolute pitch. J. Acoustical Society of America, 95: 2720-2728, (1994).

Swartz, K., **Walton, J.P**., Crummer, G.C., Hantz, E.C. and Frisina, R.D. P3 event-related potentials and performance of healthy old and Alzheimer's dementia subjects for music perception tasks. Psychomusicology, 11, 96-118 (1992).

Wayman, J., Frisina, R., Hantz, E., Crummer, G.C. and **Walton, J.P.** Effects of musical training and absolute pitch on neural processing of sine-tones. J. Acoustical Society America, 91, 3527-3531 (1992).

Kelly, P., Frisina, R.D., Zettel, M., and **Walton, J.P.** Differential calbindin-like immunoreactivity in the brainstem auditory system of the chinchilla. J. Comparative Neurology, 320 196-212 (1992).

Hantz, E.C., Crummer, G.C., Wayman, J.W., **Walton, J.P**. and Frisina, R.D. Effects of musical training and absolute pitch on the neural processing of melodic intervals: A P3 event-related study. Music Perception, 10, 25-42 (1992).

Gerhardt, K.G. and **Walton, J.P.** Binaural acoustic reflex activity after short-term noise exposure in the decerebrate chinchilla. International J. of Audiol. 25, 309-320, 1987.

Dolan, D.F., Teas, D.C. and **Walton, J.P.** Postnatal development of physiological responses in auditory nerve fibers. J. Acoustical Soc. Am. 78, 544-554, 1985.

Dolan, D.F., Teas, D.C. and **Walton, J.P.** Relation between discharges in auditory nerve fibers and the whole-nerve response by forward masking: An empirical model for the AP. J. Acoustical Soc. Am. 73, 580-591, 1983.

Book Chapters

Canlon, B. , Illing, R.B. and **Walton, J. P.** The cell biology and physiology of the aging central auditory pathway. *The Aging Auditory System, Ed*. Gordon-Salant, Frisina, R.D., Popper, A.N., Fay R.R. Springer Press. 2009.

Frisina, R. D. and **Walton, J. P.,** Aging of the mouse central auditory system. *Handbook of Mouse Auditory Research: From Behavior to Molecular Biology,* Ed. James P. Willott, CRC Press, NY Chapter, 22, 2001.

Ison, J. R., **Walton, J. P.,** Frisina, R. D. and O'Neill, W. E. Elicitation and inhibition of the startle reflex by acoustic transients: Studies of age-related changes in temporal processing. *Handbook of Mouse Auditory Research: From Behavior to Molecular Biology* J.F. Willott, Ed. CRC Press, Chapter 25, 2001.

Frisina R. D. and **Walton, J. P.,** Neuroanatomy of the Mouse Central Auditory System. *Handbook of Mouse Auditory Research: From Behavior to Molecular Biology* eds. J. Willott, CRC Press. Chapter 18, 2001.

Walton, J. P. and Burkard, R. Neurophysiological manifestations of aging in the peripheral and central auditory nervous system. *Functional Neurobiology of Aging* eds. P. R. Hof and C. V. Mobbs, Academic Press, 581-599.

Published Abstracts

Stolzberg, D., Dziorny A.C., Salvi, R., Walton J.P. (2010) Salicylate-Induced Tinnitus: Alterations in Neuronal Activity in the Inferior Colliculus of Tranquilized Mice. Assoc. Res. Otolaryngology Abstracts.

Dziorny A.C., Luekbe A.E., Walton J.P. (2009) Rescuing temporal processing with a novel augmented acoustic environment in an animal model of congenital sensorineural hearing loss: Is there a critical period? Assoc. Res. Otolaryngology Abstracts.

Vollo, J., Polesskaya, O., Luebke, A.E., Collins, D., Zhu, X., Walton, J.P., Frisina, R.D., Dewhurst, S. (2009) Novel cochlear-specific isoform of mixed lineage kinase 3. Society for Neuroscience.

Dziorny A.C., Luekbe A.E., Walton J.P. (2009) Rescuing temporal processing with a novel augmented acoustic environment in an animal model of congenital sensorineural hearing loss: Is there a critical period? Assoc. Res. Otolaryngology Abstracts.

Dziorny A.C., Luekbe A.E., Walton J.P. (2008) Central auditory temporal and spectral processing deficits in the prestin-null mouse. Program No. 168, Society for Neuroscience.

Brimijoin, W. O., Walton, J. P. (2008) Aging Affects Nonlinear Features of Post-Excitatory Suppression in the Mouse. Assoc. Res. Otolaryngology Abstracts.

Leong, U., Barsz, K., Allen, PD and Walton, J. (2008) Neural correlates of age-related declines in frequency selectivity in the auditory midbrain. Assoc. Res. Otolaryngology Abstracts.

Eddins, D. A., Gordin, A., Brimijoin, W. O., Walton, J. P. (2008) Far-field auditory evoked responses to amplitude modulated noise in young and aged mice. Assoc. Res. Otolaryngology Abstracts.

Brimijoin, W. O., Walton, J. P. (2008) Aging affects the strength and frequency-dependence of a potential echo-suppression mechanism in the inferior colliculus. British Society of Audiology Ann. Convention, .

Walton, J.P. (2007). Neural correlates of temporal processing deficits in a mouse model of presbycusis. Program No. 167 San Diego, CA: Society for Neuroscience.

Diehl, M, O'Neill, W. and Walton, J.P. (2007) Alteration in auditory midbrain receptive fields following exposure to an augmented acoustic environment. Program No. 167 San Diego, CA: Society for Neuroscience.

Walton J.P., Allen P.D., Schmuck. (2007). Increasing GABA alters receptive field properties in the inferior colliculus of old CBA mice. Assoc. Res. Otolaryngology Abstracts.

Barsz, K., Allen, P., Schmuck, N., Walton, J. (2007) Encoding of brief gaps between cross-azimuth markers in auditory midbrain neurons from young and old CBA mice. Assoc. Res. Otolaryngology Abstracts.

Brimijoin, O. and Walton, J. (2007) Tonal Patterns Reveal Complex Post-Excitatory Suppression in Mouse Inferior Collicular Neurons. Assoc. Res. Otolaryngology Abstracts.

Vasilyeva, O., Luebke, A., Zuo, J., Walton, J.P. (2006). Prestin Knock-Out Mice Exhibit Temporal-Processing Deficits in the Inferior Colliculus. Assoc. Res. Otolaryngology Abstracts.

Walton J.P., Allen P.D., O'Neill W.E., N. Schmuck. (2005) Age-related decline in temporal processing of spatial gap encoding in the inferior colliculus of the mouse. Program No. 164.20. Washington, DC: Society for Neuroscience

Schmuck N., Allen P.D., Walton, J.P (2005) Neural Correlates of Across Channel Gap Detection in the Mouse Inferior Colliculus. Assoc. Res. Otolaryngology Abstracts,.

Walton J.P., Allen P.D., Barsz, K. (2005) Comparison of online and offline spike sorting to classify multi-channel receptive field recordings from mouse inferior colliculus neurons. Assoc. Res. Otolaryngology Abstracts.

Barsz K., Walton J.P. (2005). Inferior Colliculus Neurons Extract Temporal Features of Signals Presented in Background Noise. Assoc. Res. Otolaryngology Abstracts.

Jeyakumar, A., Schmuck N., Allen P.D., Joho, R., Walton, J.P (2005). Neural Correlates of Temporal Processing in the Inferior Colliculus of Mice Lacking the Kv3.1 Voltage-Gated Potassium Channel. Assoc. Res. Otolaryngology Abstracts, Abstr 28.

Allen P.D., Barsz K., Ison J.R., Walton J.P.(2005) Effects of age on behavioural and electrophysiological measures of auditory signal-in-noise processing. Program No. 164.3. Washington, DC: Society for Neuroscience, 2005.

Barsz, K. and Walton, J.P. Masked Thresholds in the Inferior Colliculus: Relationships to Gap Encoding and Frequency Selectivity. Assoc. Res. Otolaryngology Abstracts, 2004.

Walton, J.P., Schmuck, N., and Allen, P.D. Neural Correlates of Temporal Processing in the Inferior Colliculus of Mice Lacking the Kv1.1 Voltage-Gated Potassium Channel. Assoc. Res. Otolaryngology Abstracts, 2004.

Barsz, K. Ison, J. R., Allen, P. D., Walton, J. P. Behavioral and single-unit IC responses of CBA mice to partially filled gaps in noise. Assoc. Res. Otolaryngology Abstracts, 2004.

Schmuck, N., Allen, P., Ison, J., Walton, J.P. Neural representation of amplitude modulated sounds in the cochlear nucleus of mice lacking the Kv1.1 potassium channel. Assoc. Res. Otolaryngology Abstracts, 2004.

Allen, P.D., Ison, J.R. Bowers, W.J., Patel, M., Frisina, R.D., Walton, J.P. KCNA1 Knockout Mice Have Deficits in High Frequency SAM Evoked Potentials Recorded in the Inferior Colliculus. Assoc. Res. Otolaryngology Abstracts. 2002.

Barsz, K. and Walton, J. P. Mouse inferior colliculus neurons alter their coding of amplitude modulated signals under conditions of spatial masking. Assoc. Res. Otolaryngology Abstracts. 2002.

Ison, J.R., Allen, P.D., Walton, J.P., Bowers, W.J. and Frisina, R.D. Normal threshold and suprathreshold ABR and ASR responses to acoustic onsets in KCNA1 Knockout Mice, but a reduced response to offsets. Assoc. Res. Otolaryngology Abstracts, 2002.

Patel, M., Castro, J., Walton, J.P. Inferior colliculus (IC) near-field evoked responses following central reorganization in the C57Bl/6J mouse. Assoc. Res. Otolaryngology Abstracts. 2002.

Simon, H., and Walton, J.P. Age-related alterations in rate encoding of amplitude modulated sounds in inferior colliculus neurons in the CBA mouse. Assoc. Res. Otolaryngology Abstracts, 2001.

Walton, J.P. and Winkle, M. GABA and glycine sculpt modulation transfer functions of neurons in the inferior colliculus of the CBA mouse. Assoc. Res. Otolaryngology Abstracts, 2001.

Allen, P.D., Burkard, R., Ison, J.R., O'Neill, W.E., and Walton, J.P. Impaired temporal acuity in the inferior colliculus of old mice, as revealed by prolonged recovery functions of near-field potentials to gaps in noise. Assoc. Res. Otolaryngology Abstracts, 2001.

Barsz, K., Ison, J.R. and Walton, J.P. Masked thresholds in the mouse: Comparable results from single cells in the inferior colliculus and from behavior. Assoc. Res. Otolaryngology Abstracts, 2001.

Virag, T., Allen, P.D., Ison, J.R. and Walton, J.P. Human observers are equally sensitive to differences in rise versus fall time at the edge of an asymmetric gap envelope for gap detection and salience. Assoc. Res. Otolaryngology Abstracts, 2001.

Allen, P.D., Barsz, K., Ison, J.R., O'Neill, W.E. and Walton, J.P. Gap-detection in behaving mice for octave band noise compared to inferior colliculus (IC) gap-detection for neurons of different best frequency (BF). Society of Neuroscience Abstracts, 2000.

Barsz, K., Walton, J.P., and Wilson, W.W. Tonic units in the mouse inferior colliculus (IC) differentially encode gaps in background noise. . Assoc. Res. Otolaryngology Abstracts 131, (1999).

Walton, J.P., Barsz, K., and Wilson, W.W. Age-related alterations in processing amplitude modulated signals in background noise in the mouse inferior colliculus. Assoc. Res. Otolaryngology Abstracts 130, (1999).

Walton, J.P., Barsz, K. and Ison, J.R. Age-related indices of response variability are found in single-unit correlates of gap detection. Assoc. Res. Otolaryngology Abstracts. 21, 208, 1998.

Walton, J.P., Barsz, K., Wilson, W.W., Lynch-Armour, M. and Frisina, R.D. Aging and

sensorineural hearing loss affect the neural processing of temporal gaps in ongoing sound. Society of Neuroscience Abstracts 23, 2069 (1997).

Walton, J.P. Barsz, K. and Thomas, G. Age-related changes in the neural processing of gaps presented in quiet and in background noise in the mouse inferior colliculus. Society of Neuroscience Abstracts 22, 1822 (1996).

Spongr, V. Walton, J.P., Frisina, R., Kazee, A.M. and Salvi, R.J. Hair cell loss and synaptic loss in the inferior colliculus of the C57Bl/6 mouse and its relationship to abnormal temporal processing. Acoustical Signal Processing in the Central Auditory System, (1996).

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Invited Talks

"Age-related changes in neural processing of complex sounds: Implications of a loss of inhibition in the auditory midbrain" Communication Sciences Dept., University of Buffalo. November 2009.

"Neural correlates of temporal processing deficits in a mouse model of presbycusis, sensory impairment, and treatment induced plasticity" Dept. of Otolaryngology Research Forum. February 2008.

"Neural correlates of temporal processing deficits in a mouse model of presbycusis" Society for Neuroscience, Mini-symposium. San Diego, CA, November 2007.

"Molecular genetics and the biology of deafness: The potential impact," Rochester School for the Deaf, Rochester, NY, February, 2002

"Neural correlates of temporal processing deficits in the inferior colliculus of aged mice," Acoustical Society of America, Atlanta, GA, June 2000.

"Functional specialization of auditory midbrain neurons for encoding sound intensity decrements in the presence of background noise," Advances in Hearing Science, University of Syracuse, June 1999.

"The efficacy of universal newborn hearing screening," Grand Rounds, University of Buffalo, Department of Communication Disorders, August 1998.

"The role of temporal processing in pure word deafness and language-based learning impairment", Audiology and Speech Pathology In-Service, April 1997.

"Age-related changes in temporal resolution in the auditory midbrain: single-unit gap detection", Advances in Hearing Science, University of Buffalo, September 1996.

"A window to the cochlea: Otoacoustic emissions in the diagnosis of hearing loss", Department of Audiology, Board of Cooperative Extension, Buffalo, NY, October 1995.

"Gap detection by inferior colliculus neurons is altered by minimal changes in envelope rise time", Strong Children's Research Symposium, August 1995.

"Properties of inferior colliculus neurons that are specialized for encoding silent intervals in background noise", Dept. of Surgery, Otolaryngology Div. 3rd Annual Research Forum, June 1995.

"The Aging Auditory System: Neurophysiological correlates of presbycusis", Rochester Institute of Technology, Presidential Forum, May 1995.

“The Aging Auditory System: Presbycusis,” Presidential Colloquium, Rochester Institute of Technology, May 1995.

"Otoacoustic emissions in the assessment of hearing in high-risk graduates of intensive care nurseries", Dept. of Surgery, Otolaryngology Div. 2nd Annual Research Forum 1994.

"The application of compression amplification in preserving speech in the presence of background noise" Annual Convention, New York Speech-Hearing-Language Association, Rochester NY, 1993.

"Age-related alteration in the neural processing of acoustic transients in the CBA mouse model of presbycusis" Dept. of Surgery, Otolaryngology Div. 1st Annual Research Forum 1993.

"Current views on the early and middle auditory evoked potentials in the audiological test battery", Hearing and Speech Center of Rochester, 1993.

"Current views on the effect of sensorineural and conductive hearing loss on otoacoustic emissions" American Academy of Audiology. Nashville, TN, April 1992.

"Diagnosis, treatment and management of the hearing-impaired infant", Special Lecture series on Human Health and Illness, University of Rochester Medical Center, May, 1992.

"Hearing impairment and aging", Department of Neurology Grand Rounds, University of Rochester School of Medicine and Dentistry, October 1991.

"Neural mechanisms of music perception: From ear to brain", Third International Conference on Music, Growth and Aging. Rochester, NY, July, 1991.

"Recent advances in hearing technology and its impact on deaf education", International Congress on Deaf Education. Rochester, NY, July, 1990.

"Early detection of acoustic neuromas using neurophysiological assessment" Neurology Grand Rounds, University of Rochester Medical Center, June, 1990.

"Towards the establishment of a neural basis of music cognition", Canadian Acoustical Society. Toronto, Canada, October, 1988.

"Neural basis of music cognition: Biomedical implications and future directions", 1988 Symposium - Music and Medicine, University of Rochester, June 30, 1988.

"Incidence and etiology of sensorineural hearing loss in infants with persistent fetal circulation", Developmental Research Seminar Series, Psychology Department, University of Rochester, February 11, 1987.

"Detection of hearing loss in children", Board of Cooperative Education Services, State of New York, Rochester, New York, December, 1986.

"Auditory brainstem response in detection of eighth nerve and brainstem lesions", Otolaryngology Associates, Waterville, Maine, August, 1986.

"Current status of auditory brainstem response testing in the neonatal high-risk population", Pediatric Grand Rounds, Rochester General Hospital, May, 1986.

"Detection of hearing loss in at-risk infants", NYS-ASHA, April, 1986.

"Assessment of hearing in infants using the auditory brainstem response", New York Speech and Hearing Association annual meeting, April, 1986.

"Encoding of speech by the peripheral auditory system", Department of Audiology, University of Rochester Medical Center, Inservice, September, 1985.

"Auditory brainstem response in neurological and auditory assessment", Genesee Valley Speech and Hearing Association, September, 1985.

"Diagnostic significance of the acoustic reflex in retrocochlear pathology", Rochester Otolaryngology Seminars, Rochester Academy of Medicine, February, 1985.

“The new frontier: The role of molecular biology in treating genetic hearing loss,” Genesee Valley Speech and Hearing Association, Rochester, NY, March 2001.

"Effects of Aminoglycocides on Infant Hearing Sensitivity", Department of Audiology, University of Rochester Medical Center, In-service, November, 1984.

"Maturation of the Human Auditory Brainstem Response", Department of Otolaryngology, University of Rochester, School of Medicine, March, 1984.

"Frequency Specificity of the Cochlear Action Potential Derived from Auditory-Nerve Fiber Responses", Department of Communicative Disorders, Northern Illinois University, February, 1984.

Reviewer for Journals: Journal of Neuroscience, Neuroscience, Journal of Neurophysiology, Hearing Research, Ear and Hearing, International Journal of Audiology, Pediatrics, Journal of Speech and Hearing Research, Developmental Psychobiology, Journal of the Acoustical Society of America.