

CURRICULUM VITAE

Dianne Durham, Ph.D.

Professor of Otolaryngology-Head and Neck Surgery
University of Kansas Medical Center

Education

Purdue University West Lafayette, Indiana	B.S. (Biology)	1976
Neural Science doctoral program Div. Biology and Biomedical Sciences Washington University St. Louis, Missouri	Ph.D. (Neural Science)	1976-1982 1982
Postdoctoral Fellow Department of Otolaryngology University of Virginia Medical Center Charlottesville, Virginia		1982-1986

Faculty Appointments

Professor and Director of Research Department of Otolaryngology (Joint, Anatomy/Cell Biology, Hearing and Speech) University of Kansas Medical Center Kansas City, Kansas	July, 2003 - present
Associate Professor and Director of Research Department of Otolaryngology (Joint, Anatomy/Cell Biology, Hearing and Speech) University of Kansas Medical Center Kansas City, Kansas	Sept, 1991 – June, 2003
Research Scientist - Neuroscience Medical Research Service Veterans Affairs Medical Center Kansas City, MO	Aug, 1997 – June 2003
Research Assistant Professor Departments of Otolaryngology/Head and Neck Surgery and Biological Structure University of Washington Seattle, Washington	1986-Aug, 1991

Honors and Awards

- Jesse R. Singleton Award, Purdue University (best honors thesis) 1976
- National Science Foundation Predoctoral Fellowship 1976-1979
- Trachy Award, Department of Otolaryngology, U. Washington 1988
- Student Voice Teaching Award, KUMC 1996, 1997
- Student Voice Teaching Award, KUMC, Neuroscience Course 2004
- Ruth Bohan Teaching Professor Award, KUMC 2001
- Chancellor's Distinguished Teaching Award 2006

Memberships

- Society for Neuroscience
- Association for Research in Otolaryngology

Teaching

Otolaryngology Residents

- 2-4 basic science lectures per year as part of didactic curriculum
- Chair of Resident Research Committee to oversee resident research projects,
- 2-4 research talks per year as part of didactic curriculum

Medical Students

- Course Director for Medical Neuroscience Course, 2003 - 2006
Enrollment is 175 medical students, (spring semester, first year course)
18 lecture hours; 44 hours student contact time in laboratory; responsible for organization of neuroanatomy laboratory section, including syllabus, instructor preparation (20 hours contact time), exams
- Module Director for Brain and Behavior Course, 2007 - present
Enrollment is 175 medical students, (fall semester, second year course)
Expanded version of Medical Neuroscience, taught in the new KUMC medical curriculum. Responsible for developing the module as well as serving as Director.

Graduate Students

- Advanced Neuroscience Course (one semester course for graduate students)
20 hours lecture; 3 hours student contact time in laboratory; responsible for teaching neuroanatomy in this graduate course; 5-11 students/semester
- Neuroscience section, Module 5, first year IGPBS curriculum
6 hours lecture, 2 hours laboratory student contact time; neuroanatomy and sensory neuroscience section of first year IGPBS graduate curriculum; 20 students per semester
- Vestibular Disorders (Audiology 880)
10 hours lecture on anatomy and physiology of the vestibular system; required course in Hearing and Speech Audiology Masters curriculum; 12 students per semester
- Auditory and Vestibular Anatomy and Physiology
Intensive 2-week course taught Nov 1998 in Audiology Masters Program, University of Lisbon Medical School, Lisbon, Portugal; 20 student contact hours; responsible for teaching entire course

Research Interests

- CNS response to changes in sensory input
- Auditory sensory hair cell regeneration
- Age and noise-related hearing loss
- Mechanisms of neuronal cell death

Research Support

Previous

- 1) NIDCD Program Project grant "Hearing Development"
Edwin W Rubel, University of Washington, PI
Subproject #5 "Afferent Control of Central Auditory Metabolism"
Dianne Durham, P.I.,
Total Direct Cost 7/1/88 - 6/30/93: \$380,840
- 2) Deafness Research Foundation grant
"Ultrastructural correlates of central auditory neuronal death"
Dianne Durham, Greg Hyde Co-PI
Total Direct Cost 1/1/90 - 12/31/92: \$40,911
- 3) KU Medical Center Research Institute Grant
"Cellular Processes of Central Auditory Neuronal Death"
Total direct cost 7/1/93 - 3/31/94: \$24,865
- 4) NIDCD K08 "Early Detection of Endolymphatic Hydrops"
Gregory A Ator, MD, Principal Investigator
Dianne Durham, Ph.D. and Mark Chertoff, Ph.D., Co-Sponsors
Total Project Period: 7/1/98 - 6/30/02
Total direct cost: \$414,500
- 5) KU Medical Center Research Institute Grant
"Cellular Processes of Central Auditory Neuronal Death"
Total direct cost 2/12/99 - 10/31/99: \$25,000
- 6) Veterans Affairs Medical Center Type II Merit Review Proposal, "Peripheral and CNS auditory changes during ototoxic damage and recovery". Douglas A. Girod, MD, PI; Dianne Durham, PhD., Co-Investigator/Mentor
Total project period: 04/1/98 - 03/31/01
Total direct costs: \$165,000
- 7) Lied Basic Science Endowment Grant "Physiological measures of mechanoelectric transduction in regenerated cochlear sensory hair cells"
Doug Girod, P.I., Dianne Durham and Mark Chertoff, Co-Investigators
Total project period 02/01/00 – 01/31/01
Total direct cost: \$35,000
- 8) Veterans Affairs Medical Center Merit Review Entry Program Proposal, "CNS response to vestibular sensory regeneration in the inner ear"
Terry Tsue, MD, PI; Dianne Durham, PhD., Co-Investigator/Mentor
Total project period: 10/01/00 – 06/30/03
Total direct costs: \$165,000

- 9) NIDCD RO1 "Cellular Processes of Central Auditory Neuronal Death"
Dianne Durham, P.I., Total project period 1/1/95 – 11/30/05
Total direct cost 1/1/95 – 11/30/05: \$1,421,701
Total direct cost 12/1/04 – 11/30/05: \$183,000
- 10) NIDCD R21 "Effects of Acoustic Trauma on Age-Related Hearing Loss"
Dianne Durham, Ph.D., Principal Investigator
Doug Girod, M.D. and Mark Chertoff, Ph.D. Co-Investigators
Total Project Period 9/26/01 - 8/31/04
Total Direct Cost: \$200,000
- 11) NIDCD R01 Central Auditory System Effects of Auditory Deprivation
Debara Tucci, MD, Principal Investigator
Dianne Durham, PhD, Co-Investigator (10% Effort)
Total Direct Cost 4/1/02 - 3/31/07: \$1,250,000
Total Direct Cost KUMC Subcontract: \$190,000

Current

- 1) Tinnitus Research Consortium "A Neural Correlate of Tinnitus"
Thomas J. Imig, PhD, Principal Investigator
Dianne Durham, PhD, Co-Investigator (10% Effort)
Total Direct Cost 7/1/05 – 6/30/08: \$300,000
- 2) Royal National Institute for Deaf People "Diagnosing Auditory Nerve Fiber Degeneration"
Mark Chertoff, PhD, Principal Investigator
Dianne Durham, PhD, Collaborator (5% Effort)
Total Direct Cost 9/1/06 – 8/31/09: \$268,509
- 3) NIA P01 AG012993-11A2 "Reactive Oxygen Species and Aging"
Elias Michaelis, MD/PhD, Principal Investigator
Dianne Durham, PhD, Co-Leader, Core C (15% effort)
Total Direct Cost 4/1/08 – 3/31/12, Core C, \$264,215

Service:

External

- American Academy of Otolaryngology/HNS - Research Committee 1996-1997
Research Forum Co-Chair 1996-1997
- Association for Research in Otolaryngology (ARO) Candidate for Council 1996
Nominating Committee 2000
Candidate for Secretary/Treasurer 2001
- NIDCD R21, R03, Special Emphasis Study Sections 2002, 2005, 2007, 2008
- NIH IFCN6 Study Section, Ad hoc 2003
- Association for Research in Otolaryngology (ARO) Physician Research and Training Committee 2003-2007
- Purdue University Department of Biological Sciences Alumni Advisory Board 2005 - present

Institutional (selected)

- Research Advisory Council (Advisory to Executive Vice Chancellor) (June 2003 to present)
- Faculty Council, Otolaryngology Department Representative (Sept, 1992 to 2005)
- Vice Chair, Faculty Council (September 2003 – September 2004)
- Institutional Animal Care and Use Committee (IACUC) (Dec. 1992 to March, 1996)
 Chairman, Feb, 1994 to March, 1996
- Biomedical Research Training Program, Director (January 2006 – present)
- School of Medicine Space Allocation Advisory Committee (April, 1994 to 2004)
 Vice Chairman, Sept 1995 to Aug 1997; Nov 99 to 2004
- School of Medicine Education Council (Sept, 1998 to present)
 Chairman, Sept 1999 to Sept 2001
- School of Medicine Academic Committee (Sept 1999 to Sept 2002)
 Chairman, Sept 2001 to Sept 2002
- School of Medicine Admissions Committee (Sept 1999 to Sept 2002)
- School of Medicine Executive Committee (Sept 1999 to Sept 2002; January 2003 to Sept 2004)
- School of Medicine, MD/PhD Advisory Committee (Sept 2006 to present)
- School of Medicine, Phase I Curriculum Oversight Committee (Sept 2004 to present)
- School of Medicine, Promotion and Tenure Committee (Sept 2006 – present)
- Neuroscience Program Steering Committee (June 2000 to present)
- Scientific Director, Biobehavioral Imaging and Graphics Core, Kansas Intellectual and Developmental Disabilities Research Center (January 2003 – present)
- Secretary, Kansas City Chapter of Sigma Xi (May, 1995 to May, 1998)
- Otolaryngology Department Research Committee (Chairman, July 1998 to present)
- Otolaryngology Department Promotion and Tenure Committee (Chairman, July, 1998 to present)
- Anatomy and Cell Biology Department Medical Education Committee (April 1996 to present)
- Anatomy and Cell Biology Department Graduate Committee (April 1997 to present)

Student Committees

Masters and PhD Students working in laboratory

1987 – 92	Greg E. Hyde, M.D. (University of Washington)	Mitochondrial upregulation during neuronal cell death	Ph.D. (May, 1995)
1995 - 99	Debra L. Park	CNS plasticity during hair cell loss and regeneration	Ph.D. (March, 2000)
1999 -00	Susan Smittkamp	CNS response to age-related hearing loss	M.S. (June, 2000)
1999 -now	Susan Smittkamp	CNS response to age-related hearing loss	Ph.D. (June, 2004)
2000 - 2001	Susan Gibson	CNS metabolic response to reversible cochlear damage	M.S. (August, 2001)
2001 - 2005	Christina Kaiser	Age-related cochlear degeneration	Ph.D. (Aug, 2005)
2002 – 2003	Jeffrey Lichtenhan	Age related changes in avian cochlear physiology	PhD (June 2007)
2002-2003	Katie Brummell	Innervation of cochlear nucleus	M.S. (June 2003)

2003 – 2004	April Mullinex	during hair cell loss and regeneration Mechanisms of tinnitus	Ph.D. (LOA)
2006 – now	Hope Nicely	Mechanisms of neuronal cell death	MD/PhD (2009)

Advising (Thesis committee/student academic group/individual)

1997-present	Department of Anatomy and Cell Biology	Graduate committee member
1991-1993	Dale Hogan, Anat/Cell Biology Dept.	Member, PhD dissertation comm
1992-1994	Frank Sampson, Physiology Dept.	Member, PhD dissertation comm
1994-1998	Lynnette Sheffield, Anat/Cell Biology Dept.	Member, PhD dissertation comm
1994-1997	Anne Sojka, Anat/Cell Biology Dept.	Member, PhD dissertation comm
1995-present	Brooke Steenhard, Anat/Cell Biology Dept.	Member, PhD dissertation comm
1996 - 2000	Elena Zoubina, Physiology Dept.	Member, PhD dissertation comm
1996-1999	YoungSoo Lee, Physiology Dept.	Member, PhD dissertation comm
1996-2002	Michael Park, Physiology Dept.	Member, PhD dissertation comm
1996 – 2003	Don Warn, Physiology Dept	Member, PhD dissertation comm
1997-2001	Jena Steinle, Physiology Dept.	Member, PhD dissertation comm
1996-2001	Michelle Muessel, Anat/Cell Biology Dept.	Member, PhD dissertation comm
1996-2001	Melissa Jones, Anat/Cell Biology Dept.	Member, PhD dissertation comm
1998 - 2003	Julie Carlsten, Anat/Cell Biology Dept	Member, PhD dissertation comm
1999 – 2001	Chul-Hee Choi, Hearing and Speech	Member, PhD dissertation comm
2001 – present	Joe MacDonald, Physiology Dept	Member, PhD dissertation comm
2001 – 2005	Numa Dancause, Physiology Dept	Member, PhD dissertation comm
2001 – 2004	Audrey Blacklock, Physiology Dept	Member, PhD dissertation comm
2002 – 2006	Vanja Duric, Pharmacology Dept	Member, PhD dissertation comm
2003 – 2006	Rohan Gandhi, Anat/Cell Biology Dept	Member, PhD dissertation comm
2004 – present	Darcy Griffin, Physiology Dept	Member, PhD dissertation comm
2004 – present	Alexandra Knudsen, Anat/Cell Biol Dept	Member, PhD dissertation comm
2004 – 2007	Greg Onyszchuk, Physiology Dept	Member, PhD dissertation comm
2005 – 2007	Melinda Arnett, Anat/Cell Biology Dept	Member, PhD dissertation comm
1991-1992	Lisa Geier, Hearing and Speech Dept.	Member, Masters thesis comm
1994-1995	Debra Park, Hearing and Speech Dept.	Member, Masters thesis comm
1995-1998	Kelly Humphreys, Physiology Dept.	Member, Masters thesis comm
1996-1998	Yueping Hue, Physiology Dept.	Member, Masters thesis comm
1997-1999	Lin Bien, Hearing and Speech Dept.	Member, Masters thesis comm
1999 - 2000	Heath Steele, Hearing and Speech Dept.	Member, Masters thesis comm

1999 – 2000	Susan Smittkamp, Hearing and Speech	Chair, Masters thesis committee
2000 – 2001	Susan Gibson, Hearing and Speech	Chair, Masters thesis committee
2002 – 2003	Katie Brummel, Hearing and Speech	Chair, Masters thesis committee
1998	Melissa Jones, Anat/Cell Biology Dept.	Chair, Comp. Exam Committee
1998	Tim Burnett, Anat/Cell Biology Dept.	Chair, Comp. Exam Committee
1999	Justin Ricker, Anat/Cell Biology Dept.	Chair, Comp. Exam Committee
2000	Julie Carlsten, Anat/Cell Biology Dept.	Chair, Comp. Exam Committee
2003	Rohan Gandhi, Anat/Cell Biology Dept	Chair, Comp. Exam Committee
2007	Karra Jones, Anat/Cell Biology Dept	Chair, Comp. Exam Committee
2008	Shary Shelton, Pharmacology/Toxicology	Comp. Exam Committee
2008	Mary Shawgo, Pharmacology/Toxicology	Comp. Exam Committee

Otolaryngology Resident Research Projects Supervised (selected)

1997-8	Doug Nuckols, MD	Auditory CNS metabolism during transient hair cell loss
1997-8	Ann Robinson, MD	Auditory CNS metabolism during transient hair cell loss
1997-8	Olrik Streubel, MD	Recovery of hair cell function after aminoglycoside damage (year long project)
1999-0	Elise Jaeckel, MD	Hair cell loss during aging in the avian cochlea
2000	Anand Devaiah, M.D.	Apoptotic cell death after deafferentation
2000	Andreas Werle, M.D.	CNS activity changes during unilateral cochlear hair cell loss and regeneration
2000-01	Adrienne DeWitt, MD	Physiological recording of DPOAEs from avian cochlea
2001	Travis Tollefson, MD	Aminoglycoside pharmacokinetics in vestibular inner ear*
2001-02	Adam Morgan, M.D.	Ganglion cell death following gentamicin cochlear damage
2002	Keith Sale, M.D.	CNS protein synthesis after gentamicin cochlear damage
2002-03	David Rouse, M.D.	CNS response to chemical cochlear ablation
2003	Andy Celmer, M.D.	CNS oxidative changes following chemical cochlear ablation

Other Student Projects Supervised (selected)

1997-1998	Adam Morgan, Otolaryngology	Functional recovery of the cochlear during hair cell loss and regeneration (year-long project)
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1998-1999	Spencer Sands, Otolaryngology	Afferent innervation of sensory neurons in adult cochlear nucleus (year long project)
1999-01	Methapon Arunakul, MPH Student (winner of 2003 Coghill Award)	CNS vestibular plasticity (year project)
1997	Kathrin Husmann, KUMC Med Student (winner of 2000 Coghill Award)	Development of method for topical administration of gentamicin (summer project)
1999-2001	Amanda Colgan, Medical Student	Anatomical and physiological changes during avian age-related hearing loss (3 summer projects)
2000	Carl vanTassel, KUMC Med Student	CNS neuronal proliferation after cochlear damage (summer project)
2000	Eric Fry, KUMC Medical Student	CNS vestibular cell death during inner ear hair cell loss (summer project)
2002	Gena Johnson, Medical Student	CNS metabolic changes after unilateral gentamicin application (summer project)
2002	Tyler Grindal, Medical Student	Cochlear supporting cell loss during age-related hearing loss (summer)
2003	Mike Newcomer, Medical Student	Cochlear ganglion cell changes during hair cell loss and regeneration (summer)
2006	John Tanksley, Medical Student	Evaluation of apoptosis during deafferentation-induced neuronal cell death (summer)

Publications

- Green MC, **Durham D**, Mayer TC, and Hoppe PC: Evidence from chimaeras for the pattern of proliferation of epidermis in the mouse. Genet. Research. (Camb.) 29:279-284, 1977.
- Durham D** and Woolsey TA: Barrels and columnar cortical organization: Evidence from 2-deoxyglucose (2-DG) experiments. Brain Research, 137:169-174, 1977.
- Durham D** and Woolsey TA: Acute whisker removal reduces neuronal activity in barrels of mouse Sml cortex. J. Comp. Neurol., 178:629-644, 1978.
- Durham D**, Woolsey TA, and Kruger L: Cellular localization of 2-[³H]deoxy-D-glucose from paraffin-embedded brains. J. Neurosci., 1:519-526, 1981.
- Dietrich WD, **Durham D**, Lowry OH and Woolsey TA: Quantitative histochemical effects of whisker damage on single identified cortical barrels in the adult mouse. J. Neurosci., 1:929-935, 1981.
- Woolsey TA, **Durham D**, Harris RM, Simons DJ and Valentino KL: Somatosensory Development. In: Development of Perception. Psychobiological Perspectives. RN Aslin, JR Roberts and MR Peterson (Eds.) Academic Press, New York, pp. 259-292, 1981.
- Dietrich WD, **Durham D**, Lowry OH and Woolsey TA: "Increased" sensory stimulation leads to changes in energy-related enzymes in the brain. J. Neurosci., 2:1608-1613, 1982.

- Simons DJ, **Durham D** and Woolsey TA: Functional organization of mouse and rat Sml barrel cortex following vibrissal damage on different postnatal days. Somatosens. Research, 1:207-245, 1984.
- Durham D** and Woolsey TA: Effects of neonatal whisker lesions on mouse central trigeminal pathways. J. Comp. Neurol., 223:424-447, 1984.
- Rubel EW, Born,DE, Deitch JS and **Durham, D**: Recent advances toward understanding auditory system development. In: Hearing Science. C.I. Berlin (Ed.) College Hill Press, San Diego, pp. 109-157, 1984.
- Durham D** and Rubel E.W: Afferent influences on brain stem auditory nuclei of the chicken: Changes in succinate dehydrogenase activity following cochlea removal. J. Comp. Neurol., 231:446-456, 1985.
- Durham D** and Woolsey TA: Functional organization in cortical barrels of normal and vibrissae-damaged mice: A (³H) 2-deoxyglucose study. J. Comp. Neurol., 235:97-110, 1985.
- Durham D**, Rubel EW and Steel KS: Cochlear ablation in *deafness* mutant mice: 2-deoxyglucose analysis suggests no spontaneous activity of cochlear origin. Hearing Research, 43:39-46, 1989.
- Rubel EW, Hyson RL and **Durham D**: Afferent regulation of neurons in the brain stem auditory system. J. Neurobiol. 21:169-196, 1990.
- Richardson BE and **Durham, D**: Blood flow changes in chicken brain stem auditory nuclei following cochlea removal. Hearing Research 46:53-62, 1990.
- Hyde GE and **Durham D**: Cytochrome oxidase response to cochlea removal in chicken auditory brainstem neurons. J. Comp. Neurol. 297:329-339, 1990.
- Code RA, **Durham D** and Rubel EW: Effects of cochlea removal on GABAergic terminals in nucleus magnocellularis of the chicken. J. Comp. Neurol. 301:643-654, 1990.
- Born DE, **Durham D** and Rubel EW: Afferent influences on brainstem auditory nuclei in the chick: Nucleus magnocellularis neuronal activity following cochlea removal. Brain Research 557:37-47, 1991.
- Durham D**, Matschinsky FM and Rubel EW: Altered malate dehydrogenase activity in n. magnocellularis of the chicken following cochlea removal. Hearing Research, 70:151-159, 1993.
- Hyde GE and **Durham D**: Rapid increase in mitochondrial volume in nucleus magnocellularis neurons following cochlea removal. J. Comp. Neurol. 339:27-48, 1994.
- Hyde GE and **Durham D**: Increased deafferentation-induced cell death in chick brainstem auditory neurons following blockade of mitochondrial protein synthesis with chloramphenicol. J. Neuroscience 14:291-300, 1994.
- Husmann KR, Morgan AS, Girod DA and **Durham D**: Round window administration of gentamicin: A new method for the study of ototoxicity of cochlear hair cells. Hearing Research, 125:109-119, 1998.
- Park DL, Girod DA and **Durham D**: Evidence for loss and recovery of chick brainstem auditory neurons during gentamicin-induced cochlear damage and regeneration. Hearing Research, 126:84-98, 1998.
- Edmonds J, Hoover LA and **Durham D**: Breed differences in deafferentation-induced neuronal cell death and shrinkage in chick cochlear nucleus. Hearing Research, 127:62-76, 1999.
- Tucci DL, Cant NB and **Durham D**: Conductive hearing loss results in a decrease in central auditory system activity in the young gerbil. Laryngoscope, 109:1359-1371, 1999
- Park DL, Girod DA and **Durham, D**: Tonotopic changes in 2-deoxyglucose activity in chick cochlear nucleus during hair cell loss and regeneration. Hearing Research, 138:45-55, 1999.
- Durham D**, Park DL and Girod DA: Central nervous system plasticity during hair cell loss and regeneration. Hearing Research, 147:145-159, 2000.
- Lurie DI and **Durham D**: Neuronal death, not axonal degeneration, results in significant gliosis within the cochlear nucleus of adult chickens. Hearing Research, 149:178-188, 2000.

- Girod DA, Park RH, Park DL and **Durham D**: Morphological and functional changes in the avian cochlea after single high-dose gentamicin. Am. J. Otolaryngology, 21:379-388; 2000.
- Tucci DL, Cant NB and **Durham D**: Effects of conductive hearing loss on gerbil central auditory system activity in silence. Hearing Research, 155:124-132, 2001.
- Tucci DL, Cant NB and **Durham D**: Conductive hearing loss results changes in cytochrome oxidase activity in gerbil central auditory system. J. Assoc. Res. Otolaryngol, 3:89-106, 2002.
- Durham D**, Park DL and Girod DA: Breed differences in cochlear integrity in adult, commercially raised chickens. Hearing Research, 166:82-95, 2002.
- Park DL, Girod DA and **Durham, D**: Avian brainstem neurogenesis is stimulated during cochlear hair cell regeneration. Brain Resesarch, 949:1-10, 2002.
- Smittkamp SE, Colgan AL, Park DL, Girod DA and **Durham D**: Time course and quantification of changes in cochlear integrity observed in commercially-raised broiler chickens. Hearing Research, 170:139-154, 2002.
- Smittkamp SE, Park DL, Girod DA and **Durham, D**: Effects of age and cochlear damage on the metabolic activity of the avian cochlear nucleus. Hearing Research, 175:101-111, 2003.
- Paolo AM, Bonaminio GA, **Durham D** and Stites SW: Comparison and cross-validation of simple and multiple logistic regression models to predict USMLE step 1 performance. Teach Learn Med., 16:69-73, 2004.
- Bunting EC, Park DL, **Durham D** and Girod DA: Gentamicin pharmacokinetics in the chicken inner ear. J. Assoc. Res. Otolaryngol., 5:144-152, 2004.
- Smittkamp SE and **Durham D**: Contributions of age, cochlear integrity, and auditory environment to avian cochlear nucleus metabolism. Hearing Research, 195:79-89, 2004.
- Lichtenhan JT, Chertoff ME, Smittkamp SE, **Durham D** and Girod DA: Predicting severity of cochlear hair cell damage in adult chickens using DPOAE input-output functions. Hearing Research, 201:109-20, 2005.
- Smittkamp SE and **Durham D**: Effect of cochlear integrity on cochlear nucleus neuron glucose metabolism in aged adult broiler chickens. Hearing Research, 202:209-21, 2005.
- Kaiser CL, Girod DA and **Durham D**: Breed-dependent susceptibility to acute sound exposure in young chickens. Hearing Research, 203:101-11, 2005.
- Smittkamp SE, Girod DA and **Durham D**: Role of cochlear integrity in cochlear nucleus glucose metabolism and neuron number after cochlea removal in aging broiler chickens. Hearing Research, 204:48-59, 2005.
- Imig TJ and **Durham D**: Effect of unilateral noise exposure on the tonotopic distribution of spontaneous activity in the cochlear nucleus and inferior colliculus in the cortically intact and decorticate rat. J. Comp. Neurol. 490:391-413, 2005.
- Morgan AS, Nuckols D, **Durham D** and Girod DA: Anatomical and functional recovery of chicken cochlea following topical, unilateral application of gentamicin. Hearing Research, In Revision.

Selected Abstracts/Presentations:

- Smittkamp, SE, Girod, DA, and **Durham, D** Auditory brainstem neuronal activity decreases following cochlea removal in aging broiler chickens with normal cochleae. ARO Abstracts 26:182, 2003
- Burroughs, BA, **Durham, D.**, Arunakul, M and Tsue, TT Short term metabolic changes in avian tangential nucleus after vestibular end-organ damage. ARO Abstracts 26:82, 2003.
- Park, DL, Girod, DA, and **Durham, D** Tonotopic nucleus magnocellularis neuron loss following cochlear ablation. ARO Abstracts 26:38, 2003.

- Kaiser, CL, Girod, DA, and **Durham, D** Breed-dependent susceptibility to acute noise exposure in young chickens. Soc. for Neuroscience Abstracts 388.18 On line, 2003.
- Imig, TJ, Hall, A and **Durham, D** Unilateral noise damage alters spontaneous metabolic activity in the rat's auditory system: A neural correlate of tinnitus? Soc. for Neuroscience Abstracts 189.10 On line, 2003.
- Lichtenhan, J, Chertoff, M, Smittkamp, S, **Durham, D** and Girod, D Predicting severity of cochlear hair cell damage in adult chickens using distortion product otoacoustic emission input-output functions. ARO Abstracts 27: 109, 2004.
- Imig, T.J., Mullinex, A.H. **Durham, D**. Decorticate rat: a model for the study of mechanisms of tinnitus in the unanesthetized brainstem. ARO Abstracts 27: 338, 2004.
- Smittkamp, SE and **Durham, D** Effects of age on the metabolic activity of the avian cochlear nucleus. ARO Abstracts 27: 644, 2004.
- Kaiser, DL, Girod, DA and **Durham, D** Effects of acute noise damage on oxidative metabolism in chick cochlear nucleus. ARO Abstracts 27: 892, 2004.
- Kaiser, C., Girod, D., **Durham, D**. Breed differences in mitotic activity in young chickens following acute sound exposure. ARO Abstracts 28, 2005.
- Hutson, K., **Durham, D.**, Tucci, D.L. Protein synthesis in central auditory system nuclei following conductive hearing loss. ARO Abstracts 28, 2005.
- Imig, T.J., **Durham, D**. Unilateral noise exposure causes low-frequency enhancement of spontaneous activity in the ipsilateral cochlear nucleus and the contralateral inferior colliculus of intact and decorticate rats. ARO Abstracts 28, 2005
- Kaiser, C.K., Girod, D., **Durham, D**. Caspase-3 activation in NM neurons following cochlea removal and topical gentamicin application. . ARO Abstracts 29, 2006.
- Hutson, K., **Durham, D.**, Imig, T.J., Tucci, D.L. Unilateral Conductive Hearing Loss Results in Disparate Changes in Neuronal Activity in Inferior Colliculus and Auditory Cortex. ARO Abstracts 29, 2006
- Karnes, HE, Tanksley, J, Girod, DA, and **Durham, D** Deafferentation-induced DNA fragmentation in chick cochlear nucleus neurons. ARO Abstracts 30:49, 2007
- Imig, T, Heffner, H, Koay, G, and **Durham, D** Time course of recovery of spontaneous activity (SA) in the rat inferior colliculus (IC) following unilateral acoustic trauma. ARO Abstracts 30:53, 2007
- Ursick J, **Durham, D**, Staecker, H, Lefebvre, P, Schoenen, J Scholsem, M and Imig, T. Effect of vagal nerve stimulation on a rat tinnitus model. ARO Abstracts 30:108, 2007
- Nicely, H.K., Girod, D.A. and Durham, D.