

## Donald M. Caspary, Ph.D.

Department of Pharmacology

---

### EDUCATION

B.A., University of Wisconsin, Zoology  
 M.S., Syracuse University, Zoology/Sensory Communication  
 Ph.D., New York University, Biology/Neurobiology

---

### PROFESSIONAL EXPERIENCE

Southern Illinois Univ. School of Med., Spfld, IL, Distinguished Scholar and Res. Professor of Pharmacology & Surgery 2012-  
 Southern Illinois University School of Medicine, Spfld, IL, Distinguished Scholar and Professor of Pharmacology, 2004-2012  
 Southern Illinois University School of Medicine, Assistant Dean for Faculty Development (10%-time) 1998-2007  
 Southern Illinois University School of Medicine, Springfield, IL, Professor of Pharmacology and Surgery, 1989-2004  
 Southern Illinois Univ. Sch. of Med., Springfield, IL, Associate Professor of Pharmacology and Surgery, 1979-1989  
 Southern Illinois Univ. Sch. of Med., Springfield, IL, Assoc. Prof. Med. Sciences (Neurobiology), 1976-1979  
 Southern Illinois Univ. Sch. of Med., Springfield, IL, Assistant Prof., Dept. of Medical Sciences, 1973-1976  
 SUNY-Albany, Albany, New York, NINCDS (NIH) Postdoctoral Fellow, August, 1971 to Dec., 1972  
 New York University, Graduate Teaching Associate, Fall 1968 to Spring 1969  
 Syracuse University, Research Assistant, Laboratory of Sensory Communication, Fall 1967  
 Syracuse University, Graduate Teaching Assistant, 1966-1967

### TEACHING EXPERIENCE

**Medical Courses:** Medical Neuroscience, Medical Pharmacology, Advanced Therapeutics, Anatomy and Physiology of Sensory Systems, Research in Auditory Pharmacology

**Graduate Courses:** Neuroscience, Adv. Pharmacology, Methods in Pharmacology, Cell & Molecular Biology

### PROFESSIONAL SERVICE

#### **Honors and Awards** (see also invited symposia)

Founders Day Award, New York University, New York  
 Certificate of Merit, American Speech and Hearing Association  
 Advisor to the Committee on Hearing and Bioacoustics, National Academy of Science  
 Claude Pepper Award from the National Institute on Deafness and Other Communicative Disorders  
 Council Member, Association for Research in Otolaryngology  
 Founding member and Chair, Animal Research Committee, Association for Research in Otolaryngology (7 years)  
 Member, Board of Directors, Center for Neural Communication Technology-University of Michigan  
 Nineteenth Outstanding Scholar, Southern Illinois University, 2003  
 Distinguished Scholar, Southern Illinois University, 2004  
 Sigma Xi Kaplan Research Award, 2005  
 Life Science Innovator-Illinois Biotechnology Industrial Organization-2006  
 Tinnitus Research Consortium (Board Member-2005-present)  
 Scientific Advisory Committee, American Tinnitus Association, 2005-2012  
 Teacher of the Year, Southern Illinois University-School of Medicine-2009  
 Guest Editor: Special Issue of Hearing Research- *Aging and Hearing*-2010

Knowles Hearing Center Speaker-Northwestern University 2014  
 Guest instructor, Neurobiology of Hearing Course, Salamanca Spain 2016  
 Invited Speaker, Gordon Research Conference 2018

### **Membership in Professional Associations:**

ASPET - American Soc. for Pharm. and Exp. Therapeutics  
 Society for Neuroscience  
 Association for Research in Otolaryngology  
 Sigma Xi  
 American Tinnitus Association

### **Offices Held in Professional Associations:**

1980 – 1981 Vice-president, Sangamon Chapter of Sigma Xi  
 1980 - 1981 Secretary/Treasurer, Sangamon Chapter of Sigma Xi  
 1984 - 1985 Organizer and host of 9th Annual Midwest Neurobiology Meeting  
 1986 - 1989 Member Long-Range Planning Committee, ARO  
 1986- 1992 Advisor, Committee on Hearing and Bioacoustics, NAS  
 1987 NIH, Workshop on the Pharmacology of Hearing, Bethesda, MD  
 1987 - 1988 Board Member, Springfield Neuroscience Chapter  
 1989 - 1990 President, Springfield Neuroscience Chapter  
 1988 - 1990 Council Member, Sigma Xi  
 1991 - 1992 Panel for Hearing and Hearing Impairment-Advisory Board of NIDCD  
 1993 - 1994 Organizer and host of 17th Annual Midwest Neurobiology Meeting  
 1994 - 1997 Council Member, Assn. for Research in Otolaryngology  
 1990 - 1998 Chair, Use of Animals in Research-Assn. for Res. in Otolaryngology (ARO)  
 2005 - 2016 Board Member, Tinnitus Research Consortium

### **Evaluation of Manuscripts for Journals: (subset)**

Hearing Research	Journal of Comparative Neurology
Journal of Neurophysiology	Journal of Biochemistry
Journal of Neuroscience	Neuroscience Letters
Neuroscience	Science
Experimental Brain Research	Behavioral Neuroscience
Journal of Experimental Biology	European Journal of Neuroscience
Cortex	Journal of Neurochemistry
TINS	Nature Neuroscience

### **Evaluation of Grant Proposals for Agencies:**

National Institutes of Health (AUD, Ad Hoc. NIDCD review committees).  
 National Science Foundation (sensory review panel member, *ad hoc.* reviewer)  
 Scientific Advisory Committee, American Tinnitus Association- 2005-2011 (6 Year term)  
 American Institute of Biological Sciences: Peer Reviewed Medical Research Program (DOD grants) -2010  
 Chair, PRMRP-AIBS tinnitus review panel for US Army Medical Research and Materiel Command-2011.  
 National Institute on Aging External review: USF Global Center for Hearing & Speech Research - 2012  
 Chair, CDMRP tinnitus and TBS review panel for US Army Medical Research and Materiel Command-2016.

### **UNIVERSITY SERVICE**

**College and University Committees and Councils:** (present)

Conflict of Interest Committee

**Past Committees:**

Promotion and Tenure Committee  
 Misconduct in Science Committee  
 Faculty Council (elected) (President (three times), Vice President and Secretary)  
 Education Policy Committee (elected)  
 Information Technology Committee  
 Grievance Committee (Chairman) (elected)  
 Search Committee-Associate Dean for Information Resources  
 Central Research Committee  
 Sophomore Education Committee  
 Internal Medicine & Psychiatry Departmental Review Committees  
 Executive Committee of the Medical School (as Faculty Council President)  
 Pharmacology Chairman Search Committee  
 Laboratory Animal Care and Use Committee (Chairman-5 years)  
 Industrial Relations Task Force

**SERVICE**

1974 - 1980 Evoked Response Audiometry Clinic  
 1992 - 1995 Director, Electron Microscopy Facility (1974-1980)  
 1984 - 1998 Music in Elementary Schools  
 1990 - 1991 Director of Parents Group Campaign for Assn. for Retarded Citizens  
 1992 - 2004 Lectures/workshops on the use of Animals in Research (Children, Adults)  
 1998 - 2003 Lectures in Mini-Medical School and Brain Awareness Week  
 2003 - 2005 District 186 Parents Planning Committee  
 2009 & 2012 Registering Voters in Rural Missouri  
 2007-2016 Fund raising NPR

**Postdoctoral Fellows**

M. J. Moore,  
 P. G. Finlayson  
 P. Backoff  
 R. Cai  
 B.I. Kalappa  
 S.P. Kommajosyula

**Doctoral Students**

A. Raza  
 P. S. Palombi  
 J. C. Milbrandt  
 H. Wang  
 B. Richardson  
 S. Sottile

**Masters Students**

S. D. Abbott

**Visiting Graduate Students**

Daniel Duque Doncos

**RESEARCH****Research Interest and Specialties:**

Central Auditory Age-Related Hearing Loss (drug therapy for age-related hearing loss)  
 Central Sensory Plasticity and Tinnitus  
 Sensory Pharmacology, Anatomy, Physiology, and Neurochemistry (Auditory System)

**Current Research Projects:**

Molecular neurochemistry of attentional nicotinic cholinergic neurotransmission in Plasticity and Aging  
 Electrophysiology of the Aging Rat Auditory System  
 Molecular neurochemistry of attentional nicotinic cholinergic neurotransmission and electrophysiology in Tinnitus models

**Grants Received (Active):**

National Institutes of Health NIDCD, RO1 DC00151- *Coding in Auditory Neurons: Effects of Amino Acids*, \$1,600,000, 12/1/15-11/31/20, Principal Investigator (Years 33-38).

Office of Naval Research, *Targeting attentional mechanisms in tinnitus*, \$879,325, 4/22/16-4/21/19, Principal Investigator

**PUBLICATIONS** ([100 peer reviewed](https://scholar.google.com/citations?user=zSosgP8AAAAJ&hl=en&oi=sra)) (<https://scholar.google.com/citations?user=zSosgP8AAAAJ&hl=en&oi=sra>)

### Articles in Professional Journals:

Caspary, D.M.: Classification of Subpopulations of Neurons in the Cochlear Nuclei of the Kangaroo Rat. Exp. Neurol., 37:131-151, 1972, PMID: 5077556.

Faingold, C.L. and D.M. Caspary: Changes in Reticular Formation Unit Response Patterns Associated with Pentylentetrazol-Induced Enhancement of Sensory Evoked Responses. Neuropharmacology, 16:143-147, 1977, PMID: 840372.

Rupert, A.L., D.M. Caspary and G. Moushegian: Response Characteristics of Cochlear Neurons to Vowel Sounds. Ann. Otol. Rhinol. Laryngol., 63:37-49, 1977, PMID: 835971.

Caspary, D.M., A.L. Rupert and G. Moushegian: Neuronal Coding of Vowel Sounds in the Cochlear Nuclei. Exp. Neurol., 54:414-431, 1977, PMID: 844520, PMID: 844520.

Faingold, C.L. and D.M. Caspary: Frequency Following Responses in Primary Auditory and Reticular Formation Structures: Alteration of Response Components with Masking and Pentobarbital. Electroenceph. Clin. Neurophysiol., 47:12-20, 1979, PMID: 88357.

Caspary, D.M., D.C. Havey and C.L. Faingold: Effects of Microiontophoretically Applied Glycine and GABA on Neuronal Response Patterns in the Cochlear Nuclei. Brain Res., 172:179-185, 1979, PMID: 466463 .

Havey, D.C. and D.M. Caspary: A Simple Technique for Constructing "Piggy-Back" Multibarrel Microelectrodes. Electroenceph. Clin. Neurophysiol., 48:249-251, 1980, PMID: 615334.

Caspary, D.M., D.C. Havey and C.L. Faingold: Glutamate and Aspartate: Alteration in Threshold and Response Patterns of Auditory Neurons. Hearing Res., 4:325-333, 1981, PMID: 6267001.

Faingold, C.L., W.E. Hoffmann and D.M. Caspary: On the Site of Pentylentetrazol-Induced Enhancement of Auditory Responses of the Reticular Formation: Localized Cooling and Electrical Stimulation Studies. Neuropharmacology, 22:961-970, 1983, PMID: 6621826.

Moore, M.J. and D.M. Caspary: Strychnine Blocks Binaural Inhibition in Lateral Superior Olivary Neurons. J. Neurosci., 3:237-242, 1983, PMID 6822858.

Faingold, C.L., W.E. Hoffmann and D.M. Caspary: Bicuculline-Induced Enhancement of Sensory Responses and Cross-Correlations between Reticular Formation and Cortical Neurons. Electroenceph. Clin. Neurophysiol., 55:301-313, 1983, PMID: 6186462.

Caspary, D.M. and D.C. Havey: Effects of Acetylcholine on Cochlear Nucleus Neurons. Exp. Neurol., 82:491-498, 1983, PMID: 6628633.

Faingold, C.L., W.E. Hoffmann and D.M. Caspary: Effects of Iontophoretic Application of Convulsants on the Sensory Responses of Neurons in the Brain Stem Reticular Formation. Electroenceph. Clin. Neurophysiol., 58:55-64, 1984, PMID: 6203703.

Caspary, D.M., L. Rybak and C.L. Faingold: Baclofen Reduces Tone-Evoked and Spontaneous Activity of Cochlear Nucleus Neurons. Hearing Res., 13:113-122, 1984, PMID: 6325378.

Faingold, C.L., W.E. Hoffmann and D.M. Caspary: Mechanisms of Sensory Seizures: Brain-Stem Neuronal Response Changes and Convulsant Drugs. Fed. Proc., 44:2436-2441, 1985, PMID: 3886431.

Faingold, C.L., W.E. Hoffmann and D.M. Caspary: Comparative Effects of Convulsant Drugs on Sensory Responses of Neurons in the Amygdala and Reticular Formation. Neuropharmacology, 12:1221-1230, 1985, PMID: 4094658.

Faingold, C.L., M.A. Travis, G. Gehlbach, W.E. Hoffmann, P.C. Jobe, H.E. Laird and D.M. Caspary: Neuronal Response Abnormalities in the Inferior Colliculus of the Genetically Epilepsy Prone Rat. Electroenceph. Clin. Neurophysiol., 63:296-305, 1986, PMID: 2419087.

Faingold, C.L., G. Gehlbach and D.M. Caspary: Decreased Effectiveness of GABA-Mediated Inhibition in the Inferior Colliculus of the Genetically Epilepsy-Prone Rat. Exp. Neurol., 93:145-159, 1986, PMID: 3732456.

Faingold, C.L., G. Gehlbach, M.A. Travis and D.M. Caspary: Inferior Colliculus Neuronal Response Abnormalities in Genetically Epilepsy-Prone Rats: Evidence for a Deficit of Inhibition. Life Sci., 39:869-878, 1986, PMID: 3747711.

Caspary, D.M., K.E. Pazara, M. Kössl and C.L. Faingold: Strychnine Alters the Fusiform Cell Output from the Dorsal Cochlear Nucleus. Brain Res., 417:273-282, 1987, PMID: 3651816.

Finlayson, P.G. and D.M. Caspary: Synaptic Potentials of the Principal Cells of the Chinchilla Lateral Superior Olivary Nucleus. Hearing Res., 38:221-228, 1989, PMID: 254013.

Faingold, C.L., W.E. Hoffmann and D.M. Caspary: Effects of Iontophoresis of Agents Affecting the Action of Excitant Amino Acids on the Acoustic Responses of Neurons in the Inferior Colliculus. Hearing Res., 40:127-136, 1989, PMID: 2570054.

Gates, G.A., Caspary, D.M., Clark, W., Pillsbury, H.C., Brown, H.C., Dobie, R.A.: Presbycusis, Invitational Geriatric Otorhinolaryngology Workshop, Otolaryngology, Head and Neck Surgery, 100:266-271, 1989, PMID .

Caspary, D.M. and C.L. Faingold: Non-NMDA Receptors May Mediate Ipsilateral Excitation at LSO Principal Cell Synapses. Brain Res., 503(1):83-90, 1989.

Faingold, C. L., G. Gehlbach and D.M. Caspary: On the Role of GABA as an Inhibitory Neurotransmitter in Inferior Colliculus Neurons: Iontophoretic Studies. Brain Res., 500(1):302-312, 1989.

Caspary, D.M., A. Raza, B.A. Lawhorn-Armour, J. Pippen and S.P. Arneric: Immunocytochemical and Neurochemical Evidence for Age-related Loss of GABA in the Inferior Colliculus: Implications for Neural Presbycusis. J. Neurosci., 10(7):2363-2372, 1990.

Faingold, C.L., C. Boersma Anderson, and D.M. Caspary: Involvement of GABA in Acoustically-Evoked Inhibition in Inferior Colliculus Neurons. Hearing Res., 52:201-216, 1991.

Finlayson, P.G. and D.M. Caspary: Low Frequency Neurons in the Lateral Superior Olive Exhibit Phase-Sensitive Binaural Inhibition. J. Neurophysiol., 65(3):598-605, 1991.

Palombi, P.S. and D.M. Caspary: GABA<sub>A</sub> Receptor Antagonist Bicuculline Alters Response Properties of Posteroventral Cochlear Nucleus Neurons. J. Neurophysiol., 67:738-746, 1992.

Finlayson, P.G. and D.M. Caspary: Excitatory and Inhibitory Response Properties In Young and Old Fisher-344 Rat Lateral Superior Olivary Nucleus. Neurobiol. of Aging, 14:127-139, 1993.

Backoff, P.M. and D.M. Caspary: Age-Related Changes in Auditory Brainstem Responses in F-344 Rats: Effects of Rate and Intensity. Hearing Res., 73:163-172, 1994.

- Palombi, P.S., P.M. Backoff and D.M. Caspary: Paired Tone Facilitation in Dorsal Cochlear Nucleus Neurons: A Short Term Potentiation Model Testable *In Vivo*. Hearing Res., 75:175-183, 1994.
- Raza, A., S.P. Arneric, J. Milbrandt and D.M. Caspary: Age-Related Changes in Brainstem Auditory Neurotransmitters: Measures of GABA and Acetylcholine Function. Hearing Res., 77:221-230, 1994.
- Evans, M.S., K.E. Viola-McCabe, D.M. Caspary and C.L. Faingold: Loss of Synaptic Inhibition During Repetitive Stimulation in Genetically Epilepsy-Prone Rats (GEPR). Epilepsy Res., 18:97-105, 1994.
- Milbrandt, J. C., R. L. Albin and D.M. Caspary. Age-related Decrease in GABA<sub>B</sub> Receptor Binding in the Fischer-344 Rat Inferior Colliculus. Neurobio. Aging, 15(6):699-703, 1994. PMID: 7891824
- Nakayama, M., R.H. Helfert, H.R. Konrad and D.M. Caspary: Scanning Electron Microscopic Evaluation of Age-Related Changes in the Rat Vestibular Epithelium. Otolaryngol. Head and Neck Surg, 111:799-806, 1994. PMID: 7991262
- Caspary, D.M., P.M. Backoff, P.G. Finlayson and P.S. Palombi: Inhibitory Inputs Modulate Discharge Rate within Frequency Receptive Fields of Anteroventral Cochlear Nucleus Neurons. J. Neurophysiol, 72(5):2124-2133, 1994. PMID: 7884448
- Milbrandt, J. C., and D.M. Caspary. Age-Related Reduction of [3H]Strychnine Binding Sites in the Cochlear Nucleus of the Fisher 344 Rat. Neuroscience, 67(3):713-719, 1995. PMID: 7675197
- Caspary, D.M., J.C. Milbrandt and R.H. Helfert. Central Auditory Aging: GABA Changes in the Inferior Colliculus. Experimental Gerontology, 30 (3/4):349-360, 1995. PMID: 7556513
- Palombi, P.S. and D.M. Caspary. GABA Inputs Control Discharge Rate Primarily Within Frequency Receptive Fields of Inferior Colliculus Neurons, J. Neurophysiol., 75(6):2211-2219, 1996. PMID: 8793735
- Milbrandt, J.C., R. L. Albin, S. M. Turgeon and D. M. Caspary. GABA<sub>A</sub> Receptor Binding in the Aging Rat Inferior Colliculus, Neuroscience, 73 (2) 449-458, 1996. PMID: 8783261
- N'Gouemo, P., D.M. Caspary, and C.L. Faingold, Decreased GABA effectiveness in inferior colliculus neurons during ethanol withdrawal in rats susceptible to audiogenic seizures, Brain Res., 724(2):200-204, 1996. PMID: 8828569
- Palombi, P.S. and D.M. Caspary. Physiology of the Aging Fisher 344 Rat Inferior Colliculus: Responses to Contralateral Monaural Stimuli, J. Neurophysiol., 76(5):3114-3125, 1996. PMID: 8930259
- Palombi, P.S. and D.M. Caspary. Physiology of the Young Adult Fisher 344 Rat Inferior Colliculus: Responses to Contralateral Monaural Stimuli, Hearing Res., 100:41-58, 1996. PMID: 8922979
- Palombi, P.S. and D.M. Caspary. Responses of Young and Aged Fischer 344 Rat Inferior Colliculus Neurons to Binaural Tonal Stimuli, Hearing Res., 100:59-67, 1996. PMID: 8922980
- Milbrandt, J.C., C. Hunter and D.M. Caspary. Alterations of GABA<sub>A</sub> receptor subunit mRNA levels in the aging Fischer 344 rat inferior colliculus. J. Comp. Neurol. 379:455-465, 1997. PMID: 9067836
- Willott, J.F., J.C. Milbrandt, L. Seegers Bross and D.M. Caspary. Glycine Immunoreactivity and Receptor Binding in the Cochlear Nucleus of C57BL/6J and CBA/CaJ Mice: Effects of Cochlear Impairment and Aging. J. Comp. Neurol. 385:405-414, 1997. PMID: 9300767
- Backoff, P.M., P.S. Palombi, and D.M. Caspary. Glycinergic and GABAergic Inputs Affect Short-term Suppression in the Cochlear Nucleus Hearing Res. 110(1-2):155-163, 1997. PMID: 9282898
- Krenning, J., L.F. Hughes, D.M. Caspary, and R.H. Helfert. Age-related glycine receptor subunit changes in the cochlear nucleus of Fischer-344 rats. Laryngoscope 108(1):26-31, 1998. PMID: 9432062

- Nakayama, M., D.M. Caspary, H.R. Konrad, J.C. Milbrandt, and R.H. Helfert. Age-related Changes in [3H]Strychnine Binding in the Vestibular Nuclei of Rats. Hearing Res. 127:103-107, 1999. PMID: 9925021
- Caspary, D.M., T.M. Holder, J.C. Milbrandt, R. McKernan, D.K. Naritoku. Age-Related Changes in GABA<sub>A</sub> Receptor Subunit Composition and Function in the Rat Auditory System. Neuroscience. 93(1):307-312, 1999. PMID: 10430494
- Abbott, S. D., L.F. Hughes, C.A. Bauer, R.J. Salvi and D.M. Caspary. Detection of Glutamic Acid Decarboxylase Isoforms in Rat Inferior Colliculus Following Acoustic Exposure. Neuroscience. 93:1375-1381, 1999. PMID: 10501462
- Gamma-aminobutyric acidergic and glycinergic inputs shape coding of amplitude modulation in the chinchilla cochlear nucleus. Hearing Res. 134:77-88, 1999. PMID: 10452378
- Wang, J., D.M. Caspary, R.J. Salvi. GABA<sub>A</sub> Antagonist Causes Dramatic Expansion of Tuning in Primary Auditory Cortex. Neuroreport 57:1137-1139, 2000. PMID: 10790896
- Mossop, J.E., M. Wilson, D.M. Caspary and D.R. Moore. Down-regulation of Inhibition Following Unilateral Deafening. , Hearing Res. 147:183-187, 2000. PMID: 10962184
- Milbrandt, J.C., T.M. Holder, M.C. Wilson, R.J. Salvi, D.M. Caspary. GAD Levels and Muscimol Binding in Rat Inferior Colliculus Following Acoustic Trauma., Hearing Res. 147:251-260, 2000. PMID: 10962189
- Bauer, C.A, T.J. Brozoski, T.M. Holder and D.M. Caspary. Effects of chronic salicylate on GABAergic activity in rat inferior colliculus. Hearing Res. 147:175-182, 2000. PMID: 10962183
- Palombi, P.S, P.M. Backoff and D.M. Caspary. Responses of young and aged rat inferior colliculus neurons to sinusoidally amplitude modulated stimuli. Hearing Res. 153:174-180, 2001. PMID: 11223307
- Brozoski, T.J, C.A. Bauer, D.M. Caspary: Elevated Fusiform Cell Activity in the Dorsal Cochlear Nucleus of Chinchillas with Psychophysical Evidence of Tinnitus. J.Neurosci. 22(6):2383-90, 2002. PMID: 11896177
- Wang, J., S.L. McFadden, D.M. Caspary, R.J. Salvi: Gamma-Aminobutyric Acid Circuits Shape Response Properties of Auditory Cortex Neurons. Brain Res. 944:219-231, 2002. PMID: 12106684
- Caspary, D.M, P.S. Palombi, L.F. Hughes: GABAergic Inputs Shape Responses to Amplitude Modulated Stimuli in the Inferior Colliculus. Hearing Res. 168:163-173, 2002. PMID: 12117518
- Turner, J.G., L.F. Hughes, D.M. Caspary: Divergent Response Properties of Layer V Neurons in Rat Primary Auditory Cortex. Hearing Res. 202:129-140, 2005. PMID: 15811705
- Turner, J.G., J.L. Parrish, L.F. Hughes, L.A. Toth, D.M. Caspary: Hearing in Laboratory Animals: Strain Differences and Non-Auditory Affects of Noise. Comparative Medicine 55:12-23, 2005. PMID: 15766204
- Ling, L.L., L.F. Hughes, D.M. Caspary: Aged-Related Loss of the GABA Synthetic Enzyme glutamic acid decarboxylase in Rat Primary Auditory Cortex. Neurosci. 132:1103-1113, 2005. PMID: 15857714
- Turner, J.G., L.F. Hughes, D.M. Caspary: Effects of Aging on Receptive Fields in Rat Primary Auditory Cortex Layer V Neurons. J.Neurophysiol. 94:2738-2747, 2005. PMID: 16000522
- Caspary, D.M., T.A. Schatteman, L.F. Hughes: Age-Related Loss of Response Inhibition in Rat Dorsal Cochlear Nucleus. J. Neurosci. 23;25(47):10952-10959, 2005.
- Brozoski, T.J., D.M. Caspary, C.A. Bauer: Marking multi-channel silicon-substrate electrode recording sites using radiofrequency lesions. J. Neurosci. Methods 150:185-191, 2006. PMID: 16095715

Turner, J.G., T.J. Brozoski, C.A. Bauer, J.L. Parrish, K. Myers, L.F. Hughes, D.M. Caspary: Rapid Tinnitus Screening in Rats Behavioral Neurosci. 120:188-195, 2006.

Caspary, D.M., L.F. Hughes, T.A. Schatteman, J.G. Turner: Age-Related Changes in the Response Properties of Cartwheel Cells in Rat Dorsal Cochlear Nucleus. Hearing Res. 217:207-215. 2006. PMID: 16644158

Bauer, C.A., J.G. Turner, D.M. Caspary, K.S. Myers, T.J., Brozoski: Tinnitus and inferior colliculus activity in chinchillas with three distinct patterns of cochlear trauma. J Neurosci Res. 86(11):2564-2578, 2008. PMID: 18438941

Caspary, D.M., L.L. Lynne, J.G. Turner, and L.F. Hughes: Inhibitory Neurotransmission, Plasticity and Aging in the Mammalian Central Auditory System. J Exp Biol. 211(Pt 11):1781-91. 2008. PMID: 18490394

Schatteman T.A., L.F. Hughes, D.M. Caspary: Aged-related loss of temporal processing: altered responses to amplitude modulated tones in rat dorsal cochlear nucleus. Neurosci. 154(1):329-337, 2008. PMID: 18384967

Wang, H.N., L.L. Ling, T.J. Brozoski, J.G. Turner, L.F. Hughes, D.M. Caspary: Age-Related Changes in Glycine Receptor Subunit Composition and Binding in Dorsal Cochlear Nucleus. Neurosci. 160(1):227-39, 2009. PMID: PMC 19217931

Wang, H.N., T.J. Brozoski, J.G. Turner, L.L. Ling, J.L. Parrish, L.F. Hughes, D.M. Caspary: Plasticity at Glycinergic Synapses in the Dorsal Cochlear Nucleus of Rats with Behavioral Evidence of Tinnitus. Neurosci. 2009 Dec 1;164(2):747-59, 2009 PMID: 19699270

Hughes L.F., J.G. Turner J.L. Parrish, D.M. Caspary: Processing of Broadband Stimuli Across A1 Layers in Young and Aged Rats. Hear Res. Jun 1;264 (1-2):79-85, 2010, PMID: 19772906

Brozoski T.J., D.M. Caspary, C.A. Bauer, and B.D. Richardson: The Effects of Supplemental Dietary Taurine on Tinnitus and Auditory Discrimination. epub, Hearing Research 2010, PMID: 20868734

Roberts LE, J.J. Eggermont, D.M. Caspary, S.E. Shore, J.R. Melcher, J.A. Kaltenbach: Ringing ears: the neuroscience of tinnitus. J Neurosci. 2010 Nov 10;30(45):14972-9. Review, PMID: 21068300

Wang H., T.J. Brozoski, L. Ling, L. F. Hughes and D.M. Caspary: Impact of Sound Exposure and Aging on Brain Derived Neurotrophic Factor and TrkB Receptor Levels in Dorsal Cochlear Nucleus 80 Days Following Sound Exposure. Neurosci. Jan 13;172:453-9, 2011 PMID: 21034795

Richardson, B.D., L.L. Ling, V.V. Uteshev, D.M. Caspary: Extrasynaptic GABA<sub>A</sub> receptors and tonic inhibition in rat auditory thalamus. PLoS One. 2011 Jan 26;6(1):e16508. PMID: 21298071

Wang H., T.J. Brozoski, and D.M. Caspary: Inhibitory Neurotransmission in Animal Models of Tinnitus: Maladaptive Plasticity. Hear Res. 2011 Sep;279 (1-2):111-7. Epub 2011 Apr 21. PMID: 21527325

Richardson, B.D., T.J. Brozoski, L.L. Ling, D.M. Caspary: Targeting inhibitory neurotransmission in tinnitus. Brain Res. Nov. 2012, 1485:77–87. Epub 2012 Feb 14. PMID 2012.02.014.

Turner, J.G., J.L. Parrish, L. Zuiderveld, S. Darr, L.F. Hughes, D.M. Caspary, E. Idrezbegovic, B. Canlon: Acoustic Experience Alters the Aged Auditory System.. Ear & Hearing Ear 18 October 2012 PMID: 23086424

Llano, D.A., Turner, J.G., Caspary, D.M.: Diminished Thalamocortical Inhibition in an Aging Mouse model of Chronic Tinnitus., J Neurosci. 2012 Nov 14;32(46):16141-8. PMID:23152598

Caspary, D.M., L.F. Hughes, L.L. Ling: Age-Related GABA<sub>A</sub> Subunit Changes in Rat Primary Auditory Cortex. Neurobiol Aging. 34 (2013), pp. 1486-1496 DOI information: 10.1016/j.neurobiolaging.2012.11.009

Richardson BD, Ling LL, Uteshev VV, Caspary DM. Reduced GABA<sub>A</sub> receptor-mediated tonic inhibition in aged rat auditory thalamus. J Neurosci. 2013 Jan 16;33(3):1218-27a. PMCID: PMC3717293.

Richardson BD, Hancock KE, Caspary DM. Stimulus-specific adaptation in auditory thalamus of young and aged awake rats. *J Neurophysiol.* 2013 Oct;110(8):1892-902. Epub 2013 Jul 31. PMID: PMC3798939.

Duque D, Malmierca MS, Caspary DM. Modulation of stimulus-specific adaptation by GABAA receptor activation or blockade in the medial geniculate body of the anaesthetized rat. *J Physiol.* 2014 Feb 15;592(Pt 4):729-43. Epub 2013 Oct 7. PMID: PMC3934711.

Cai R., B.I. Kalappa, T.J. Brozoski, L.L. Lynne, D.M. Caspary. GABA Neurotransmission Enhanced in Auditory Thalamus Relative to Inferior Colliculus? *J Neurophysiol.* 2014 Jan;111(2):229-38. doi: 10.1152/jn.00556.2013. Epub 2013 Oct 23. PMID: 24155003

Henry, J.A., L.E. Roberts, D.M. Caspary, S.M. Theodoroff, R.J. Salvi. Underlying Mechanisms of Tinnitus: Review and Clinical Implications. *J Am Acad Audiol.* 2014 Jan;25(1):5-22; quiz 126. doi: 10.3766/jaaa.25.1.2. PMID: 24622858

Kalappa B.I., T.J. Brozoski, J.G. Turner, D.M. Caspary. Single-unit hyperactivity and bursting in the auditory thalamus of awake rats directly correlates with behavioral evidence of tinnitus. *J Physiol.* 2014 Nov 15;592 (Pt 22):5065-78. doi: 10.1113/jphysiol.2014.278572. Epub 2014 Sep 12. PMID:25217380

Cai R., B.I. Kalappa, T.J. Brozoski, L.L. Lynne, D.M. Caspary. GABA Neurotransmission Enhanced in Auditory Thalamus Relative to Inferior Colliculus? *J Neurophysiol.* 2014 Jan;111(2):229-38. doi: 10.1152/jn.00556.2013. Epub 2013 Oct 23.

Henry, J.A., L.E. Roberts, D.M. Caspary, S.M. Theodoroff, R.J. Salvi. Underlying Mechanisms of Tinnitus: Review and Clinical Implications. *J Am Acad Audiol.* 2014 Jan;25(1):5-22. doi: 10.3766/jaaa.25.1.2. PMID: 24622858 Epub 2014

Cai R, D.M. Caspary. GABAergic inhibition shapes SAM responses in rat auditory thalamus. *Neuroscience* 2015 Jul 23;299:146-55. doi: 10.1016/j.neuroscience.2015.04.062. Epub 2015 May 2.

Sametsky EA, Turner JG, Larsen DL, Ling LL, Caspary DM, Enhanced GABAA-Mediated Tonic Inhibition in Auditory Thalamus of Rats with Behavioral Evidence of Tinnitus. *J Neurosci.* 2015 June; 35(25):9369 –9380. DOI:10.1523/JNEUROSCI.5054-14.2015

Stebbins KA, Hyun CW, Ravindra A, Caspary DM, Turner JG, Llano DA, Aging-related Changes in GABAergic Inhibition in the Mouse Auditory Cortex, Measured using In Vitro Flavoprotein Autofluorescence Imaging. *J Physiol.* 2016 Jan 1;594(1):207-21. doi: 10.1113/JP271221. Epub 2015 Dec 14.

Llano DA, D.M.Caspary, Auditory Thalamic Circuits and GABA<sub>A</sub> Receptor Function: Putative Mechanisms in Tinnitus Pathology. *Hear Res.* 2017 Jun;349:197-207. doi: 10.1016/j.heares.2016.08.009. Epub 2016 Aug 21. Review.

Cai R, B.D. Richardson, D.M. Caspary, Responses to Predictable vs. Random Temporally Complex Stimuli from Single Units in Auditory Thalamus: Impact of Aging and Anesthesia, *Journal of Neuroscience* 36 (41), 10696-10706

Sottile SY, Hackett TA, Cai R, Ling L, Llano DA, Caspary DM. Presynaptic Neuronal Nicotinic Receptors Differentially Shape Select Inputs to Auditory Thalamus and Are Negatively Impacted by Aging. *J Neurosci.* 2017 Nov 22;37(47):11377-11389. doi: 10.1523/JNEUROSCI.1795-17.2017. Epub 2017 Oct 23. PubMed PMID: 29061702.

Cai R, Montgomery SC, Graves KA, Caspary DM, Cox BC. The FBN rat model of aging: investigation of ABR waveforms and ribbon synapse changes. *Neurobiol Aging.* 2017 Oct 9;62:53-63. doi: 10.1016/j.neurobiolaging.2017.09.034. [Epub ahead of print] PubMed PMID: 29107847.

Sottile SY, Ling L, Cox BC, Caspary DM. Impact of ageing on postsynaptic neuronal nicotinic neurotransmission in auditory thalamus. *J Physiol.* 2017 Aug 1;595(15):5375-5385. doi: 10.1113/JP274467. Epub 2017 Jul 7. PubMed PMID: 28585699; PubMed Central PMCID: PMC5538226.

## **LETTERS TO THE EDITOR**

Walling A. and D.M. Caspary: Effects of Benzodiazepines after Procedures in Elderly Patients; Am. Fam. Physician. 2002.  
<http://www.aafp.org/afp/20020501/lettersonline.html>

## **BOOK CHAPTERS**

Caspary, D.M., L.P. Rybak and C.L. Faingold: The Effects of Inhibitory and Excitatory Amino Acid Neurotransmitters on the Response Properties of Brain Stem Auditory Neurons. In: Auditory Biochemistry (Dennis Drescher, Ed.), Charles C. Thomas Publisher, Springfield, IL, pp. 198-226, 1985.

Caspary, D.M.: Neurotransmitter Studies of the Cochlear Nucleus: Ionophoretic Methods. Health Sciences Consortium, North Carolina, 1985.

Caspary, D.M.: Cochlear Nuclei: Functional Neuropharmacology of the Principal Cell Types. In: Neurobiology of Hearing. (Rick Altschuler, Richard Bobbin and Douglas Hoffman, Eds.), Raven Press, New York, pp. 303-332, 1986.

Faingold, C.L. and D.M. Caspary: Reticular Formation Recording Studies. In: Convulsions and the Reticular Formation. (G.H. Fromm, W.M. Burnham, C.L. Faingold and R.A. Browning, Eds.), A.R. Liss, New Jersey, pp. 39-80, 1987.

Caspary, D.M.: Electrophysiologic Studies of Glycine Mechanisms in the Auditory Brainstem Structures. In: Glycine Neurotransmission. (O.P. Ottersen and J. Storm-Mathisen, Eds.), Sussex: John Wiley and Sons, pp. 453-483, 1990.

Caspary, D.M. and P.G. Finlayson: Superior Olivary Complex: Functional Neuropharmacology of the Principal Cell Types. In: Neurobiology of Hearing Vol. II: The Central Auditory System. (R.A. Altschuler, D.W. Hoffman, R.P. Bobbin and B. Clopton, Eds.), Raven Press, New York, pp. 141-162, 1991.

Faingold, C.L., G. Gehlbach and D.M. Caspary: Functional Pharmacology of Inferior Colliculus Neurons. In: Neurobiology of Hearing, Vol. II: The Central Auditory System. (R.A. Altschuler, D.W. Hoffman, R.P. Bobbin, B.M. Clopton, and D.W. Hoffman Eds.), Raven Press, New York, pp. 223-251, 1991.

Caspary, D.M., P.S. Palombi, P.M. Backoff, R.H. Helfert and P.G. Finlayson: GABA and Glycine Inputs Control Near-CF Discharge Rate of AVCN Neurons Displaying Primarylike and Phase-locked Response Properties. In: The Mammalian Cochlear Nuclei: Organization and Function. (M. A. Merchan, J. Juiz, D.G. Godfrey, Eds), Plenum Press, New York, pp. 239-252, 1993.

Caspary, D.M.: Fusiform Cell Response Properties are Shaped by Inputs Acting on Glycine I and GABA<sub>B</sub> Receptors. In: Advances in Speech, Hearing and Language Processing: The Cochlear Nucleus: Structure and Function in Relation to Modeling. (W. Ainsworth, T.S. Evans, and C.M. Hackney, Eds.), JAI Press LTD, London, pp. 273-292, 1996.

Caspary, D.M., R.H. Helfert and P.S. Palombi: The Role of GABA in Shaping Frequency Response Properties in the Chinchilla Inferior Colliculus. In: Acoustical Signal Processing in the Central Auditory System. (J. Syka, Ed.), Plenum Press, New York, 1997. pp. 227-238.

Caspary D.M.: GABA and Glycine Neurotransmission in Mouse Auditory Brainstem Structures. In: Mouse Auditory Research: From Behavior to Molecular Biology. (J.F. Willott), CRC Press, LLC, Boca Raton, FL, 2001. pp. 317-320.

Caspary, D.M., R.J. Salvi, R.H. Helfert, T.J. Brozoski, C.A. Bauer: Neuropharmacology of Noise Induced Hearing Loss in Brainstem Auditory Structures. In: Noise Induced Hearing Loss: Mechanisms of Damage and Means of Prevention. (D. Henderson, D. Prasher, R. Kopke, R.J. Salvi and R. Hamernik Ed.), NRN Publications, London. 2002. pp. 169-186.

Kelly, J.B. and D.M. Caspary: Pharmacology of the Inferior Colliculus. In: *The Inferior Colliculus*, J.A. Winer and C.E. Schreiner (Eds.), Springer-Verlag: New York. 2005. pp. 248-281.

Turner J.G. and D.M. Caspary: Comparison of Two Rat Strains of Aging: Peripheral Pathology and GABA Changes in the Inferior Colliculus. In: *Auditory Plasticity, Prague Symposium Proceedings*, J. Syka, and M Merzanich (Eds), 2005. pp 217-225.

Salvi R.J., J. Wang, D.C. Caspary: Functional Changes in the Central Auditory System After Noise Induced Cochlear Damage. In: *Noise and Its Effects*, L. Luxon, and D. Prasher (Eds.), John Wiley & Sons, Ltd. West Sussex. 2007. pp 210-226.

Caspary D.M. and D.A. Llano: Aging Processes in the Subcortical Auditory System; Neuroscience Handbook Series: Chapter 8 in *The Auditory Brainstem: Organization, Function, and Plasticity* Edited by Karl Kandler, Oxford University Press, Oxford OX2 6DP. 2018.