

**Hong-Bo Zhao, M.D./Ph.D.**  
**Associate Professor (tenured)**  
**University of Kentucky College of Medicine**  
**Department of Surgery**  
**Curriculum Vitae**

**Current Address:**

Dept. of Surgery – Otolaryngology  
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<http://www.mc.uky.edu/surgery/Divisions/ENT/Zhao.html>

**Education:**

1982: M.D., Medicine, Yichang Medical College.  
1989: M.S., Biomedical Engineering, Huazhong University of Science & Technology  
1992: Ph.D., Neuroscience, Shanghai Institute of Physiology, Chinese Academy of Sciences

**Professional Education:**

1993 – 1995 Postdoctoral Fellow, Neuroscience, University of Connecticut Health Center

**Board Certification, Licensure, and Hospital Privileges:**

N/A

**Present Positions:**

2007 – present Associate Professor (tenured)  
Dept. of Surgery/ENT, University of Kentucky Medical School  
Neuroscience Program, University of Kentucky Medical School and Graduate School  
2004 – present Preceptor/Mentor, Outreach Research Program, University of Kentucky  
2005 – present Joint faculty, Dept. of Toxicology, University of Kentucky Graduate School

**Previous Positions:**

1982 – 1986 Doctor, The Fourth People's Hospital of Yichang, CHINA  
1996 – 1999 Associate Research Scientist, Neuroscience, Yale University Medical School  
1999 – 2000 Instructor, Dept. of Otorhinolaryngology, Baylor College of Medicine  
2000 – 2002 Assistant Professor (non-tenure track), Dept. of Otorhinolaryngology, Baylor College of Medicine  
2002 – 2007: Assistant Professor (tenure track), Dept. of Surgery/ENT, University of Kentucky Medical School

**Research Experience:**

1986 – 1989 Biomedical Engineering, Huazhong University of Science & Technology, CHINA  
1989 – 1992 Auditory information encoding and processing, Shanghai Institute of Physiology, Chinese Academy of Sciences. Shanghai, CHINA

- 1993 – 1995 Auditory anatomy and physiology, University of Connecticut Health Center  
1995 – 1999 Auditory neuroscience, Dept. of Surgery/ENT, Yale University Medical School  
1999 – 2002 Auditory neuroscience and biophysics, Dept. of Otorhinolaryngology, Baylor College of Medicine  
2002 – present Auditory neuroscience, biophysics and cell biology, Dept. of Surgery – Otolaryngology University of Kentucky Medical Center

**Awards and Honors:**

- 1978 – 1982 National Doctor Scholarship, Ministry of Public Health, China  
1986 – 1992 National Graduate Student Scholarship, State Education Commission, China  
1990 Technique Advancement Award, Shanghai Institute of Physiology, Chinese Academy of Sciences, Shanghai, China  
2000 Research Award, National Organization for Hearing Research

**Professional Memberships:**

- 1989 – present Member, International Brain Research Organization (IBRO)  
1992 – present Active Member, Association for Research in Otolaryngology  
1994 – present Member, Society for Neuroscience  
2002 – present Member, Biophysical Society

**Committees:**

- 2004 – present NIH study section, ZDC1 SRB-R, Ad Hoc member

**Editorial Consultant/Reviewer of International Journals:**

- 2005 – present Senior Editor, American Hearing Research Foundation  
  
1999 – present Hearing Research  
2000 – present J. of Physiology (British Royal Society of Physiology, London)  
2000 – present ORL, J. for Oto-Rhino-Laryngology and Its Related Specialities  
2001 – present Brain Research  
2002 – present Cellular and Molecular Life Sciences  
2003 – present Neuroscience Letter  
2006 – present Proceedings of the National Academy of Sciences of the United States of America  
2006 – present Journal of the Association for Research in Otolaryngology  
2007 – present Journal of Neuroscience Methods

**Other Scholarly, Research, and Administrative Experience:**

Teaching Activities (in UK):

- 2002 – present Auditory Anatomy and Physiology; Medical school students and residents  
2004 – present Special topic in sensory neurobiology (PGY 630); Graduate students, medical school students, and residents

2006 – present Toxicology (Tox 770-002); Graduate students.

Advising Activities (in UK):

2004 – present Ototoxicology; Graduate students and residents  
2002 – present Auditory Neuroscience; Postdoctoral fellows, residents  
2004 – present Neuroscience in sensory systems; Undergraduate students, Outreach Research Program, University of Kentucky  
2004 – 2006 participating in training trainees in NIH T32 “Cellular and Molecular Neuroscience of Sensory Systems”

**Research Support:**

Active:

NIH/NIDCD R01, (Principle Investigator)  
“Functional analysis of inner ear gap junctions”  
07/15/04 – 06/30/09; \$1,313,875

Pending:

American Tinnitus Association, (Principle Investigator)  
“Genetic and molecular mechanisms of tinnitus generation”

Completed:

1. American Tinnitus Association, (Principle Investigator)  
“Effect of salicylate on outer hair cell piezoelectricity for tinnitus”  
07/01/04 – 06/30/06
2. National Organization for Hearing Research Foundation, (Principle Investigator)  
“Regulation of cyclin-dependent kinases on Math1 gene expression in hair cell differentiation”  
01/01/04 – 12/31/04
3. NIH/NIDCD R03, (Principle Investigator)  
“Inner ear gap junctions for hearing”  
08/01/00 – 07/31/04
4. University of Kentucky Research Fund, (Principle Investigator)  
“Identification of Adult Stem Cells in the Mammalian Cochlea”  
7/15/03-6/30/04
5. American Otological Society Research Fund, (Principle Investigator)  
“Gap junctional mechanisms underlying Meniere’s disease”  
07/01/00 – 06/30/00
6. National Organization for Hearing Research Foundation, (Principle Investigator)  
“Selective nano-damage of the outer hair cell lateral wall to identify motor mechanism”  
01/01/00 – 12/31/00

**Trained/training Research Fellows, Graduate Students and Postdoctoral Fellows (after 2000):**

1999 – 2002	Katz Water, M.D.	Resident/Research Fellow in Baylor College of Medicine
2000 – 2001	Allen Lue, M.D.	Resident Fellow in Baylor College of Medicine (His training research project won the 1 <sup>st</sup> place of the resident research award in the American Academy of Otolaryngology – Head & Neck, 2001)
2001	Shellenberger, CD M.D.	Medical School Student in Baylor College of Medicine
2001 – 2002	Gungjing Lu, M.D.	Postdoctoral Fellow; Baylor College of Medicine/UK Medical Center
2003 – 2004	Carrie Fleming	Research Assistant Fellow; UK Medical Center
2004 – 2005	Ning Yu, M.D.	Postdoctoral Fellow; UK Medical Center
2004 – 2005	Ni Ji	Undergraduate Student; Berea College/UK Outreach Research Program Her research project won the 1 <sup>st</sup> place of the undergraduate research award in the 90 <sup>th</sup> Kentucky Academy of Science Annual Meeting, 2004.
2004 – 2005	Patricia Wilson, M.S.	Research Assistant; UK Medical Center
2005 – 2006	Ben Johnson, B.S.	Research Assistant; UK Medical Center
2006	David Gossman, MD	ENT resident; UK Medical Center
2005 – 2007	Meng-Lei Zhu	Ph.D. student, Toxicology, UK Graduate School
2005 – 2007	Ying-Peng Liu, M.D.	Postdoctoral Fellow, UK Medical Center
2007 – present	Xiao-Hui Wang, M.D.	Postdoctoral Fellow, UK Medical Center
2004 – present		participating in training trainees in NIH T32 “Cellular and Molecular Neuroscience of Sensory Systems”

#### Visiting Professorships:

Baylor College of Medicine, Houston, TX, 2003; 2004  
Rice University, Houston, TX, 2004  
Tohoku University, Sendai, Japan, 2005  
Hirosaki University, Hirosaki, Japan, 2005  
The General PLA Hospital, Beijing, China, 2006

#### Invited Lectureships:

**Zhao, H.B.** “Cochlear cell culture and inner ear gap junctions.” In: Conference of Basic Science and Clinical Advances in Otology, Beijing, China. May 2001

**Zhao, H.B.** “Functional Analysis of Inner Ear Gap Junctions and Nonsyndromic Hearing Loss”, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, on April 23, 2003

**Zhao, H.B.** “Bio-piezoelectricity in the mammalian outer hair cells for active cochlear mechanics” Invited Special Meeting Presentation in: Proceedings of the 17<sup>th</sup> Bioengineering Conference in Nagoya, Japan, on January 22, 2005

**Zhao, H.B.** “Connexin26 is mainly responsible for metabolic communication in the cochlea” Tohoku University, Sendai, Japan, January 2005

**Zhao, H.B.** “What is the function of connexin26 in the cochlea? Potassium recycling or intercellular signaling and nutrient/energy supplies?” The 5<sup>th</sup> International Symposium in Meniere’s Disease & Inner Ear Homeostasis Disorders, House Ear Institute & House Clinic, Los Angeles, CA, April 2-5, 2005

**Zhao, H.B.** (Section chairman) “Genomic function of connexin gap junctional coupling and homeostasis in the cochlea” The 2<sup>nd</sup> Shanghai International Conference on Physiological Biophysics – Audition & Vision. Shanghai, China, Nov. 3 – 7, 2006

### **Publications:**

#### Peer-review Journal Articles:

1. **Zhao, H.B.** and Liang, Z.A. Response patterns of single units in guinea pig cochlear nucleus to click and sound bursts. *Chin. J. Physiol. Sci.*, 9: 136-144. 1993.
2. **Zhao, H.B.**, Parham, K., Ghoshal, S., and Kim, D.O. Projections from small neurons in the vestibular nerve root to the granule-cell-layer/small-cell-cap of the anteroventral cochlear nucleus in the cat. *Brain Res.* 700: 295-298, 1995.
3. **Zhao, H.B.** and Liang, Z.A. Processing of modulation frequency in the dorsal cochlear nucleus of the guinea pig: Amplitude modulated tone. *Hear. Res.*, 82: 244-256, 1995.
4. Parham, K., **Zhao, H.B.** and Kim, D.O. Responses of auditory nerve fibers of the unanesthetized decerebrate cat to click pairs as stimulated echoes. *J. Neurophysiol.*, 76: 17-29, 1996.
5. **Zhao, H.B.** and Liang, Z.A. (1996) Processing of modulation frequency in the dorsal cochlear nucleus of the guinea pig: Sinusoidal frequency modulated tones. *Hear. Res.*, 95:120-134, 1996.
6. **Zhao, H.B.** and Liang, Z.A. Temporal encoding and transmitting of amplitude and frequency modulations in dorsal cochlear nucleus. *Hear. Res.*, 106: 83-94, 1997.
7. Parham, K., **Zhao, H.B.**, Ye, Y. and Kim, D.O. Responses of anteroventral cochlear nucleus neurons of the unanesthetized decerebrate cat to click pairs as stimulated echoes. *Hear. Res.*, 125: 131-146, 1998.
8. **Zhao, H.B.** and Santos-Sacchi, J. Effect of membrane tension on gap junctional conductance of supporting cells in Corti’s organ. *J. Gen. Physiol.*, 112: 447-455, 1998.

9. **Zhao, H.B.** and Santos-Sacchi, J. Auditory collusion and a coupled couple of outer hair cells. *Nature*, 399: 359-362, 1999.
10. Oghalai, J.S., **Zhao, H.B.**, Kutz Jr., J.W. and Brownell, W.E. Voltage and tension-dependent lipid mobility in the outer hair cell plasma membrane. *Science*, 287: 658-661, 2000.
11. **Zhao, H.B.** and Santos-Sacchi, J. Voltage gating of gap junctions in cochlear supporting cells: Evidence for nonhomotypic channels. *J. Memb. Biol.*, 175: 17-24, 2000.
12. **Zhao, H.B.** Directional rectification of gap junctional voltage gating between Deiters cells in the inner ear of guinea pig. *Neurosci. Lett.*, 296: 105-108, 2000.
13. Lue, A.J.C., **Zhao, H.B.** and Brownell, W.E. Chlorpromazine alters outer hair cell electromotility. *Otolaryngology- Head and Neck Surgery*, 125: 71-76, 2001.
14. **Zhao, H.B.** Long-term natural culture of cochlear sensory epithelia of guinea pigs. *Neurosci. Lett.*, 315: 73-76, 2001.
15. Santos-Sacchi, J. and **Zhao, H.B.** Excitation of fluorescent dyes inactivates the outer hair cell integral membrane motor protein prestin and betrays its lateral mobility. *Pflugers Arch: Eur. J. of Physiol.*, 446: 617-622, 2003.
16. Huang, Z.W., Luo, Y.Y., Wu, Z.Y., Tao, Z.Z., Jones, R.O., and **Zhao, H.B.** Paradoxical enhancement of cochlear active mechanics in long-term administration of salicylate. *J. Neurophysiol.* 93: 2053-2061, 2005; E-pub: Dec 8. 2004
17. **Zhao, H.B.** Connexin26 is responsible for anionic molecule permeability in the cochlea for intercellular signaling and metabolic communications. *Eur. J. Neuroscience* 21: 1859-1868, 2005. (selected as a cover story)
18. **Zhao, H.B.**, Yu, N. and Fleming, C.R. Gap junctional hemichannel-mediated ATP release and hearing controls in the inner ear. *Proc. Natl. Acad. Sci. USA*, 102: 18724-18729, 2005.
19. **Zhao, H.B.\***, Kikuchi, T.\*, Ngezahayo, A.\*, White, T.W.\* Gap junctions and cochlear homeostasis. *J. Memb. Biol.* 209: 177-186, 2006. (An invited review; \* all authors contributed equally to this article).
20. Yu, N., Zhu, M.L., and **Zhao, H.B.** Prestin is expressed on the whole outer hair cell basolateral surface. *Brain Res.* 1095: 51-58, 2006. (selected as a cover story)
21. **Zhao, H.B.** and Yu, N. Distinct and gradient distributions of connexin26 and connexin30 in the cochlear sensory epithelium of guinea pigs. *J. Comp. Neurol.* 499: 506-518, 2006.
22. Chen, G.D. and **Zhao, H.B.** Effects of intense noise exposure on the outer hair cell plasma

membrane fluidity. *Hear. Res.* 226: 14-21, 2007

23. Yu, N. and **Zhao, H.B.** ATP modifies outer hair cell electromotility to regulate hearing sensitivity through the activation of P2x7 receptors in the guinea pig cochlea. (In review).
24. **Zhao, H.B.**, Yu, N., Zhu, M.L., Johnson, B., Liu, Y.P. and Jones, R. O. Upregulation of prestin in long-term administration of salicylate. (In review)
25. Gossman, D.G., **Zhao, H.B.** Gap junctional hemichannels mediated IP<sub>3</sub> release and extracellular pathway in the cochlea. (In review).
26. Yu, N. and **Zhao, H.B.** Outer hair cell piezoelectricity increases high frequency hearing. In preparation.
27. **Zhao, H.B.** and Yu, N. Direct mediation on outer hair cell electromotility by cochlear supporting cell gap junctional coupling. In preparation.
28. **Zhao, H.B.** Wilson, P.R. Fleming, C.R., and Lu, G.J. Proliferation and differentiation of progenitor cell lines derived from the adult mouse cochlea. In preparation.

### **Books and Book Chapters:**

Kim, D.O., Parham, K., **Zhao, H.B.** and Ghoshal, S. (1995) The olivocochlear feedback gain control subsystem: Ascending input from the small cell cap of the cochlear nucleus? In "Active Hearing" Wenner-Gren Center International. Symposium., May, 1994, Stockholm, Sweden; spon. A. Flock, D.Ottoson and M.Ulfendahl (Elsevier Science Ltd.), p31-51.

**Zhao, H.B.** (2005) What is the function of connexin 26 in the cochlea? Potassium recycling or intercellular signaling and nutrient/energy supplies? In "Meniere's disease and inner ear homeostasis disorders" Proceedings of the 5<sup>th</sup> International Symposium, April, 2005, Los Angeles, California; DJ Lim (Ed), p254-255

### **National and International Presentations (selected presentations after 2000):**

**Zhao, H.B.** and Gossman, D.G. Hemichannel mediated-inositol (1,4,5)-trisphosphates (IP<sub>3</sub>) release in the cochlea. The 11<sup>th</sup> International Gap Junction conference. Elsinor, Denmark, Aug. 4-9, 2007

Yu, N. and **Zhao, H.B.** Piezoelectricity increases outer hair cell high frequency response. The 30<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Denver, CO, Feb. 10-15, 2007, <http://www.aro.org>

**Zhao, H.B.**, Yu, N., Fleming, C.R. Connexin gap junction-mediated hearing controls in the cochlea. The 29<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Baltimore, MD, Feb. 5-9, 2006, <http://www.aro.org>

**Zhao, H.B.**, Fleming C.R. and Yu N. "Hemichannel charge selectivity and ATP release modify active hearing in inner ears". The 10<sup>th</sup> International Gap Junction Conference, Whistler, British Columbia, Canada, August 13-18, 2005

**Zhao, H.B.** (2004) Inner ear gap junctions have significant charge-selective permeabilities suggesting Cx26 is mainly responsible for nutrient and energy supplies in the organ of Corti. The 5<sup>th</sup> Molecular Biology of Hearing & Deafness Research Conference, Washington DC

**Zhao, H.B.**, Fleming, C.R. (2004) Adult mammalian cochlear cell proliferation and differentiation in vitro. The 5<sup>th</sup> Molecular Biology of Hearing & Deafness Research Conference, Washington DC

**Zhao, H.B.** (2003) Biophysical Properties and Functional Analysis of Inner Ear Gap Junctions for Deafness Mechanisms of Nonsyndromic Hearing Loss. Proceedings of the 9<sup>th</sup> International Meeting on Gap Junctions, University of Cambridge, Cambridge, UK, August 23-28, 2003

**Zhao, H.B.** (2002) Single channel analysis of inner ear gap junctions for deafness mechanisms of nonsyndromic hearing loss. The 25<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. <http://www.aro.org>

**Zhao, H.B.**, C.D. Shope, and W.E. Brownell (2002) Effect of cytoskeleton modulators on outer hair cell lateral wall membrane mobility and motility. The 25<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. <http://www.aro.org>

**Zhao, H.B.** (2001) Establishing natural cochlear cell lines to study inner ear gap junctions and cell differentiation. The 24<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. <http://www.aro.org>

**Zhao, H. B.**, J.W. Kutz Jr. and W.E. Brownell (2000) Reversible ballooning of the OHC lateral wall: A photic hop in the dance of hearing. The 23<sup>rd</sup> Assoc. Res. Otolaryngol. Annual Meeting. <http://www.aro.org>

### **Abstracts, Book Reviews and Discussion after Papers (selected after 2000)**

#### National and International Meetings:

Zhao, H.B., Yu, N. (2007) Sole and concerted performances of Cx26 and Cx30 in the cochlear sensory epithelium. The 30<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Denver, CO, Feb. 10-15, <http://www.aro.org>

Liu, Y.P., Zhao, H.B. (2007) Quantitative analysis of connexin26 and connexin30 expressions in the lateral wall of the mammalian cochlea. The 30<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Denver, CO, Feb. 10-15, <http://www.aro.org>

Gossman, D.G., Jones, R.O., Zhao, H.B. Gap junction mediated IP<sub>3</sub> release in the cochlea. The American Academy of Otolaryngology – Head & Neck Surgery Annual Meeting. Toronto, Canada, Sept. 17-20, 2006.

Yu, N., Zhao, H.B., (2006) High frequency response of outer hair cell piezoelectricity in the inner ear. The 50<sup>th</sup> Annual Meeting of the Biophysical Society, Salt Lake City, Utah, Feb. 18-22, <http://www.biophysic.org>

Zhu, M.L., Yu, N., Zhao, H.B. (2006) Upregulation of prestin expression in long-term administration of salicylate. The 29<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Baltimore, MD, Feb. 5-9, <http://www.aro.org>

Yu, N., Zhao, H.B. (2006) The direct electrical interaction between Deiters cells and outer hair cells. The 29<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Baltimore, MD, Feb. 5-9, <http://www.aro.org>

Zhao, H.B. (2005) Non-uniform cellular expression and distribution of Connexin 26 and 30 in the cochlear sensory epithelium. The 49<sup>th</sup> Annual Meeting of the Biophysical Society, Long Beach, CA, Feb. 12-16, <http://www.biophysic.org>

Yu, N., Zhu, M.L., Zhao, H.B. (2005) Long-term usage of salicylate upregulates *prestin* expression in the guinea pig cochlea. The 35<sup>th</sup> Society for Neuroscience Annual Meeting. Washington D.C. <http://www.sfn.org>

Yu, N., Zhao, H.B. (2005) Extracellular ATP mediates outer hair cell electromotility. The 28<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. New Orleans, LA, Feb. 19-24, <http://www.aro.org>

Ji, N., Zhao, H.B. (2005) Expressions of ATP-gated purinergic (P2) receptors in the cochlear outer hair cells. The 28<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. New Orleans, LA, Feb. 19-24, <http://www.aro.org>

Wilson, P., Zhao, H.B. (2005) Expression of p27<sup>Kip1</sup> and hair cell differentiation in adult mouse cochlear progenitor cell culture. The 28<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. New Orleans, LA, Feb. 19-24, <http://www.aro.org>

Zhao, H.B. (2005) ATP connexin hemichannel release in the cochlea. The 28<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. New Orleans, LA, Feb. 19-24, <http://www.aro.org>

Ji, N., Zhao, H.B. (2004) Cellular expressions of adenosine triphosphate (ATP)-gated purinergic (P2) receptors in the inner ear for active hearing. The 90<sup>th</sup> Kentucky Academy of Science

Annual Meeting, Murray, Kentucky (the 1<sup>st</sup> class of the undergraduate research award).

Zhao, H.B. (2004) Connexin Hemichannel Function in Cochlear Supporting Cells. The 27<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Daytona Beach, FL, Feb. 21-26, <http://www.aro.org>

Fleming, C.R. Zhao, H.B. (2004) Adult Stem Progenitor Cells in the Mouse and Guinea Pig Cochlea. The 27<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Daytona Beach, FL, Feb. 21-26, <http://www.aro.org>

Zhao H.B. (2003) Adult multipotent stem progenitor cells in the mouse cochlear cell culture. The 33<sup>rd</sup> Society for Neuroscience Annual Meeting. New Orleans, LA. <http://www.sfn.org>

Zhao H.B. (2003) Hemichannel activities in native cochlear supporting cells. The 47<sup>th</sup> Biophysical Society Annual Meeting, San Antonio, Texas, March 1-5. <http://www.biophysic.org>

Zhao, H.B. (2003) Asymmetric Gap Junctional Permeability and Charge Selectivity in the Cochlear Supporting Cells. The 26<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Daytona Beach, FL, Feb. 22-27, <http://www.aro.org>

Zhao, H.B. (2003) Multipotent Differentiability of Adult Mammalian Cochlear Progenitor Cells. The 26<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. Daytona Beach, FL, Feb. 22-27, <http://www.aro.org>

Zhao, H.B. and Lu, G.J. (2002) Cochspere as a stem cell morphotype occurs in mammalian cochlear cell culture. The 33<sup>rd</sup> Society for Neuroscience Annual Meeting. Orlando, FL. <http://www.sfn.org>

Zhao, H.B. (2002) Stem-like cell phenotypes in cell culture of cochlear sensory epithelia of mammals. The 25<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. <http://www.aro.org>

Zhao, H.B. (2001) Directional rectification of voltage gating for inner ear gap junctional pathways and deafness mechanism of connexin mutations. The 24<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. <http://www.aro.org>

Zhao, H.B., D.L. Shellenberger, C.D. Shope, and W.E. Brownell (2001) Cytoskeletal repair mechanisms in the outer hair cell lateral wall. The 24<sup>th</sup> Assoc. Res. Otolaryngol. Annual Meeting. <http://www.aro.org>

Zhao, H.B., C.D. Shope, and W.E. Brownell (2000) Chlorpromazine increases distortion product generation in otoacoustic emissions and in isolated outer hair cells. The 31<sup>st</sup> Society for Neuroscience Annual Meeting. New Orleans, LA. p1205.

Zhao, H. B., J.W. Kutz Jr. and W.E. Brownell (2000) Tension dependent membrane fluidity in the outer hair cell plasma membrane. The 23<sup>rd</sup> Assoc. Res. Otolaryngol. Annual Meeting.

<http://www.aro.org>