

CURRICULUM VITAE

NAME: JIAN ZUO

DATE & PLACE OF BIRTH: May 18, 1964; Wuhan, P.R. China

CITIZENSHIP U.S.A.

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ACADEMIC DEGREES:

B.S.	1985	Huazhong University of Science and Technology, Wuhan, P.R. China (Biomedical Engineering)
M.S.		Huazhong University of Science and Technology, Wuhan, P.R. China (Biomed. Engineering, intended)
Ph.D.	1993	University of California, San Francisco, CA (Physiology)

PROFESSIONAL APPOINTMENTS:

1993-1997	Postdoctoral Associate, Howard Hughes Medical Institute, Rockefeller University, New York, NY
1998-2003	Assistant Member, Department of Developmental Neurobiology, St. Jude Children's Research Hospital, Memphis, TN Affiliated Assistant Professor, Department of Anatomy and Neurobiology, University of Tennessee, Memphis, TN
2003 to 2008	Associate Member, Department of Developmental Neurobiology, St. Jude Children's Research Hospital, Memphis, TN
2004 to 2010	Affiliated Associate Professor, Department of Anatomy and Neurobiology, University of Tennessee, Memphis, TN
2008 to 2018	Member, Department of Developmental Neurobiology, St. Jude Children's Research Hospital, Memphis, TN
2010 to 2018	Affiliated Professor, Department of Anatomy and Neurobiology, University of Tennessee, Memphis, TN
2018-present	Chairman and Professor, Department of Biomedical Sciences, Creighton University School of Medicine, Omaha, NE, USA

HONORS AND AWARDS:

1983	Distinguished University Fellowship, Huazhong University of Science and Technology (P.R. China)
1991-1993	The Wills Foundation Predoctoral Fellowship (U.S.A.)
1999-01	March of Dimes Basil O'Connor Starter Scholar Research Award, USA
2004	The Bellucci Prize for Hearing Research (Creighton University, Omaha, NE, USA)
2007-2010	The Hartwell Individual Biomedical Research Award, USA
2009-2012	The Hartwell Foundation Biomedical Research Collaboration Award, USA
2011	The Wennergren Foundation Award, Stockholm, Sweden

RESEARCH INTERESTS:

Neurodegeneration in mutant mice
Function, regeneration and protection of sensory hair cells in the mouse cochlea

PUBLICATIONS:

Original Articles

1. Pritchard C, Zhu N, **Zuo J**, Bull L, Pericak-Vance MA, Vance JM, Roses AD, Milatovich A, Francke U, Cox DR, Myers RM. Recombination of 4p16 DNA markers in an unusual family with Huntington disease. **Am J Hum Genet** 50: 1218-1230, 1992. PMID: PMC1682573
2. **Zuo J**, Robbins C, Taillon-Miller P, Cox D, Myers RM. Cloning of the Huntington disease region in yeast artificial chromosomes. **Human Mol Genet** 1: 149-159, 1992.
3. **Zuo J**, Robbins C, Bahaloo S, Cox DR, Myers RM. Construction of cosmid contigs and high-resolution restriction mapping of the Huntington disease region on human chromosome 4. **Human Mol Genet** 2: 889-899, 1993.
4. **Zuo J**, De Jager PL, Heintz N. Generation of a high-resolution genetic map and a YAC contig of the *lurcher* locus on mouse chromosome 6. **Genome Res** 5: 381-392, 1995.
5. Bell SM, **Zuo J**, Myers RM, Knowles MA. Fluorescence in situ hybridization deletion mapping at 4p16.3 in bladder cell lines refines the localisation of the critical interval to 30 kb. **Genes, Chromosomes & Cancer**. 17(2): 108-117, 1996.
6. de Jager PL, **Zuo J**, Heintz N. An 1.2 megabase BAC contig refines the genetic and physical maps of the *lurcher* locus on mouse chromosome 6. **Genome Res** 7:736-746, 1997. PMID: PMC310680
7. de Jager PL, **Zuo J**, Cook SA, Heintz N. A new allele of the *lurcher* gene, *lurcher^J*. **Mamm Genome** 8:647-650, 1997.
8. **Zuo J**, de Jager PL, Takahashi KA, Weining J, Linden DJ, Heintz N. Neurodegeneration in *lurcher* mice results from a mutation in the $\delta 2$ glutamate receptor gene. **Nature** 388:769-773, 1997.
9. Hu W, **Zuo J**, de Jager PL, Heintz N. The human glutamate receptor $\delta 2$ gene (GRID2) maps to chromosome 4q22. **Genomics** 47:143-145, 1998.
10. de Jager PL, Harvey D, Polydorides A, **Zuo J**, Heintz N. A high-resolution genetic map of the nervous locus on mouse chromosome 8. **Genomics** 48:346-353, 1998.
11. Treadaway J, **Zuo J**. Mapping of the mouse glutamate receptor delta 1 subunit (Grid1) to Chromosome 14. **Genomics** 54: 359-360, 1998.
12. Sullivan LS, Heckenlively JR, Bowne SJ, **Zuo J**, Hide WA, Gal A, Denton M, Inglehearn CF, Blanton SH, Daiger SP. Mutations in a novel retina-specific gene cause the RP1 form of autosomal dominant retinitis pigmentosa. **Nature Genetics** 22: 255-259, 1999. PMID: PMC2582380
13. **Zuo J**, Treadaway J, Buckner, TW, Fritsch B. Visualization of $\alpha 9$ acetylcholine receptor expression in hair cells of transgenic mice containing a modified bacterial artificial chromosome. **PNAS** 96(24): 14100-14105, 1999. PMID: PMC24197
14. Wollmuth L, Kuner T, Jatzke C, Seeburg P, Heintz N, **Zuo J**. *Lurcher* mutation identifies $\delta 2$ as an AMPA/Kainate receptor-like channel that is potentiated by Ca^{2+} . **J. Neurosci.** 20(16): 5973-5980, 2000.
15. Pang Z, **Zuo J**, Morgan JI. *Cbln3*, a novel member of the precerebellin family that binds specifically to *Cbln1*. **J. Neurosci.** 20(17): 6333-6339, 2000.

16. Liu Q, Zhou J, Daiger SP, Farber DB, Heckenlively JR, Sullivan LS, **Zuo J**, Milam AH, Pierce EA. Identification and subcellular localization of the RP1 protein in human and mouse photoreceptors. **Invest. Ophthalmol. Vis. Sci.**, 43(1): 22-32, 2002. PMID: PMC1963488
17. Fernandez-Gonzalez A, La Spada AR, Treadaway J, Higdon JC, Harris BS, Sidman RL, Morgan JI, **Zuo J**. Purkinje cell degeneration (*pcd*) phenotypes caused by mutations in the axotomy-induced gene, *Nnal*. **Science**, 295: 1904-1906, 2002.
18. Gao J, Cheon K, Nusinowitz S, Liu Q, Bei D, Atkins K, Azimi A, Daiger SP, Farber DB, Heckenlively JR, Pierce EA, Sullivan LS, **Zuo J**. Progressive photoreceptor degeneration, outer segment dysplasia and rhodopsin mislocalization in mice with targeted disruption of the retinitis pigmentosa-1 (*Rpl*) gene. **PNAS** 99(8): 5698-5703, 2002. PMID: PMC122834
19. Liberman MC, Gao J, He DZZ, Wu X, Xia S, **Zuo J**. Prestin is required for electromotility of the outer hair cell and for the cochlear amplifier. **Nature** 419: 300-304, 2002.
20. Maison SF, Luebke AE, Liberman MC, **Zuo J**. Efferent protection from acoustic injury is mediated via α 9 nAChR receptors on outer hair cells. **J. Neurosci.** 22(24): 10838-10846, 2002.
21. Bowne SJ, Daiger SP, Malone KA, Heckenlively JR, Kennan A, Humphries P, Hughbanks-Wheaton D, Birch DG, Liu Q, Pierce EA, **Zuo J**, Huang Q, Donovan DD, Sullivan LS. Characterization of RP1L1, a highly polymorphic paralog of the retinitis pigmentosa 1 (RP1) gene. **Mol. Vis.** 9: 129-37, 2003. PMID: PMC2580755
22. Liu X, Zhao Y, Gao J, Pawlyk B, Starcher B, Spencer JA, Yanagisawa H, **Zuo J**, Li T. Elastic fiber homeostasis requires lysyl oxidase-like 1. **Nature Genetics** 36: 178-182, 2004.
23. Li M, Tian Y, Fritsch B, Gao J, Wu X, **Zuo J**. Inner hair cell Cre-expressing transgenic mouse line. **Genesis**, 39(3): 173-177, 2004.
24. Wu X, Gao J, Guo Y, **Zuo J**. Hearing threshold elevation precedes hair cell loss in prestin knockout mice. **Mol. Brain Res.**, 126: 30-37, 2004.
25. Tian Y, Li M, Fritsch B, **Zuo J**. Creation of a transgenic mouse for hair-cell gene targeting by using a modified bacterial artificial chromosome containing prestin. **Devel. Dyn.**, 231:199-203, 2004.
26. Liu Q, **Zuo J**, Pierce EA. The retinitis pigmentosa 1 protein is a photoreceptor microtubule-associated protein. **J. Neurosci.** 24(29): 6427-6436, 2004. PMID: PMC1904502
27. Liberman MC, **Zuo J**, Guinan JJ. Otoacoustic emissions without somatic motility: can stereocilia mechanics drive the mammalian cochlea? **J. Acoust. Soc. Am.** 116:1649, 2004. PMID: PMC1805783
28. Martin AC, Thornton JD, Liu J, Wang X, **Zuo J**, Jablonski MM, Chaum E, Zindy F, Skapek S. Pathogenesis of persistent plastic primary vitreous in mice lacking the Arf tumor suppressor gene. **Invest Ophthalmol Vis Sci.** 45(10): 3387-3396, 2004. PMID: PMC1557705
29. Cheatham MA, Huynh KH, Gao J, **Zuo J**, Dallos P. Cochlear function in prestin knockout mice. **J. Physiol.** 560(3): 821-830, 2004. PMID: PMC1665294
30. Yang J, Gao J, Adamain M, Wen XH, Pawlyk B, Zhang L, Sanderson MJ, **Zuo J**, Makino CL, Li T. The ciliary rootlet maintains long-term stability of the sensory cilia. **Mol. Cell. Biol.** 25:4129-4137, 2005. PMID: PMC1087714
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32. Cheatham MA, Zheng J, Huynh KH, Du GG, Gao J, **Zuo J**, Navarrete E, Dallos P. Cochlear function in mice with only one copy of the prestin gene. **J. Physiol.** 569(1): 229-241, 2005. PMID: PMC1464211
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43. Weber T, Corbett MK, Chow LML, Valentine MB, Baker SJ, **Zuo J**. Rapid cell-cycle reentry and cell death after acute inactivation of the retinoblastoma gene product in postnatal cochlear hair cells. **PNAS**, 105(2): 781-5, 2008. PMID: PMC2206613
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45. Drexl M, Mellado-Lagarde M, **Zuo J**, Lukashkin AN, Russell IJ. The role of prestin in the generation of electrically evoked otoacoustic emissions in mice. **J. Neurophysiology**, 99: 1607-1615, 2008.
46. Singh AK, Amlal H, Haas PJ, Dringenberg U, Fussell S, Barone S, Engelhardt R, Zuo J, Seidler U, Soleimani M. Fructose-induced hypertension: essential role of chloride and fructose absorbing transporters PAT1 and Glut5. **Kidney International**, 74(4):438-47, 2008.
47. Dallos P, Wu X, Cheatham MA, Gao J, Zheng J, Anderson CT, Jia S, Wang X, Cheng WHY, Sengupta S, He DZZ, **Zuo J**. Prestin-based outer hair cell motility is necessary for mammalian cochlear amplification. **Neuron**, 58(3): 333-339, 2008. PMID: PMC2435065
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- mice. **Biochimica et Biophysica Acta - Molecular Basis of Disease**, 1802: 259-268, 2010. PMID: PMC2818351
55. Yu Y, Weber T, Yamashita T, Liu Z, Valentine MB, Cox BC, **Zuo J**. In vivo proliferation of postmitotic cochlear supporting cells in neonatal mice by acute ablation of the Retinoblastoma protein. **J. Neurosci.**, 30(17): 5927-5936, 2010. PMID: PMC2902201
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 57. Caddy J, Wilanowski T, Darido C, Dworkin S, Ting SB, Zhao Q, Rank G, Auden A, Srivastava S, Papenfuss TA, Murdoch JN, Humbert PO, Parekh V, Boulous N, Weber T, **Zuo J**, Cunningham JM, Jane SM. Epidermal wound repair is regulated by the planar cell polarity signaling pathway, **Developmental Cell**, 19(1):138-47, 2010. PMID: PMC2965174
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 59. Weddell T, Mellado-Lagarde MM, Lukashkina V, Lukashkin A*, **Zuo J***, Russell I*. Prestin links extrinsic tuning to neural excitation in the mammalian cochlea. **Current Biol.**, 21(18):R682-R683, 2011. PMID: PMC3228240 (* co-corresponding authors)
 60. Fang J, Zhang WC, Yamashita T, Gao J, Zhu MS, **Zuo J**. Outer hair cell-specific prestin-CreERT2 knockin mouse lines. **Genesis**, 50(2):124-31, 2012. PMID: PMC3261330
 61. Liu Z, Owen T, Fang J, Srinivasan RS, **Zuo J**. In vivo Notch reactivation in differentiating cochlear hair cells induces Sox2 and Prox1 expression but does not disrupt hair cell maturation. **Devel. Dyn.**, 241(4):684-96, 2012. PMID: PMC3302943
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 63. Zhu GJ, Wang F, Chen C, Xu L, Zhang WC, Fan C, Peng YJ, Chen J, He WQ, Guo SY, **Zuo J**, Gao X, Zhu MS. Myosin light-chain kinase is necessary for membrane homeostasis in cochlear inner hair cells. **PLoS One**, 7(4): e34894, 2012. PMID: PMC3317649
 64. Burns J, Cox BC, Thiede B, On D, **Zuo J**, Corwin J. In vivo proliferative regeneration of balance hair cells in newborn mice. **J. Neurosci.**, 32 6570-7, 2012. PMID: PMC3359838
 65. Liu Z, Dearman JA, Cox BC, Walters Brandon J, Zhang L, Ayrault O, Zindy F, Gan L, Roussel MF, **Zuo J**. Age-dependent in vivo conversion of mouse cochlear pillar and Deiters' cells to immature hair cells by Atoh1 ectopic expression. **J. Neurosci.**, 32 6600-10, 2012. PMID: PMC3359704
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- cochlea. **Hearing Res**, 304C:167-178, 2013. PMID:PMC3784354
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 76. Walters Brandon J, Lin W, Diao S, Brimble M, Iconaru L, Dearman J, Goktug A, Chen T, **Zuo J**. High-throughput screening reveals Alsterpaullone, 2-Cyanoethyl as a potent p27^{Kip1} transcriptional inhibitor. **PLoS One**, 9(3): e91173, 2014. PMC3960108
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 92. Zhang J, Liu Z, Tian Y, Men Y, Liu X*, **Zuo J*** and Gao J*, Abnormal mRNA Splicing but normal auditory brainstem response (ABR) in mice with the prestin mutation IVS2-2A/G. **Mutation Research**, May 12, 2016;790:1-7. doi: 10.1016/j.mrfmmm.2016.05.004. [Epub ahead of print] PMID: 27232762 (* co-corresponding authors).
 93. Walters Bradley J, Coak E, Dearman J, Bailey G, Yamashita T, Kuo B, **Zuo J.** In vivo interplay of p27Kip1, GATA3, ATOH1, and POU4F3 converts nonsensory cells to hair cells in adult mice. **Cell Reports**, 2017 Apr 11;19(2):307-320. doi: 10.1016/j.celrep.2017.03.044. NIHMS861746.
 94. Lukashkina VA, Yamashita T, **Zuo J.**, Lukashkin AN, Russell IJ, Amplification mode differs along the length of the mouse cochlea as revealed by connexin 26 deletion from specific gap junctions. **Sci. Reports**, 2017 Jul 12;7(1):5185. doi: 10.1038/s41598-017-04279-3.
 95. Ban D, Iconaru LI, Ramanathan A, **Zuo J.**, Kriwacki RW. A small molecule causes a population shift in the conformational landscape of an intrinsically disordered protein. **Journal of the American Chemical Society**, 2017 Oct. 4; 139(39): 13692-13700. doi: 10.1021/jacs.7b01380. Epub 2017 Sep 21. PMID: 28885015
 96. Teitz T, Fang J, Goktug AN, Bonga JD, Diao S, Hazlitt RA, Iconaru L, Morfouace M, Currier D, Zhou Y, Umans RA, Taylor MR, Cheng C, Min J, Freeman B, Peng J, Roussel MR, Kriwacki R, Guy RK, Chen T, **Zuo J.** CDK2 inhibitors as candidate therapeutics for cisplatin- and noise-induced hearing loss. **J. Experimental Medicine**, 2018 April 2; 215(4): 1187-1203. doi: 10.1084/jem.20172246. Epub 2018 Mar 7. PMID: 29514916
 97. Yamashita T, Zheng F, Finkelstein D, Kellard Z, Robert C, Rosencrance CD, Sugino K, Easton J, Gawad C, **Zuo J.** High-resolution transcriptional dissection of *in vivo* Atoh1-mediated cochlear hair cell conversion identifies Isl1 as a co-reprogramming factor. **Submitted.**
 98. Zhu GJ, Ma DB, Tao T, Wei-Qi He WQ, Wang F, Qian XY, Zhou H, Fan C, Wang P, Chen X, Zhao W, Sun J, Chen HQ, Wang Y, Gao X, **Zuo J.**, Wan G, Gao X, Zhu MS. Aberrant Espin expression mediates the auditory pathology in a mouse model of the human DFNA15 deafness. **Submitted.**

Reviews

1. Heintz N, Feng L, Gubbay J, Cheng S, **Zuo J.**, De Jager PL, Norman DJ. Lurcher, cell death and the cell cycle. In: Research and Perspectives in Alzheimer's Disease. Springer-Verlag, Paris, France, pp. 194-201, 1994.
2. **Zuo J.**, de Jager PL, Heintz N. Molecular basis of neurodegeneration in lurcher mice. Short course on ion channels and brain functions for 27th Annual Meeting Soc Neurosci, New Orleans, LA, October 25-30, 1997.
3. **Zuo J.** Transgenic and gene targeting studies of hair cell functions in mouse inner ear. **J. Neurobiol.** 53: 286-305, 2002.
4. Gao J, Wu X, **Zuo J.** Targeting hearing genes in mice. Invited Review for **Mol. Brain Research**, 132(2): 192-207, 2004.
5. Jia S, **Zuo J.**, Dallos P, He DZZ. The cochlear amplifier: is it hair bundle motion of outer hair cells? In **Auditory Mechanisms: Processes and Models**, Ed. Nuttall AF, pp. 201-208, Portland OR, World Scientific, Singapore, 2006.
6. Wu X, **Zuo J.** Cellular and molecular mechanisms of mechanical amplification in the mammalian cochlea. Invited review for the **Handbook of Neurochemistry and Molecular Neurobiology**, Springer US, 3rd Edition, pp 93-108, 2007; DOI 10.1007/978-0-387-30374-1.
7. Tian Y, James S, **Zuo J.**, Fritzsche B, Beisel KW. Conditional and inducible gene recombineering in the mouse inner ear. **Brain Res**, 1091(1): 243-54, 2006. PMID: PMC3901521
8. Hallworth R, Currall B, Nichols MG, Wu X, **Zuo J.** Studying Inner Ear Protein-Protein Interactions Using FRET and FLIM. **Brain Res**, 1091(1): 122-31, 2006. PMID: PMC1992439

9. Liu Z, **Zuo J**. Cell cycle regulation in hair cell development and regeneration in the mammalian cochlea. Invited Review, **Cell Cycle**, 7:14, 2129-2133, 2008. PMID: PMC2538578.
10. Yu Y, **Zuo J**. The practical use of Cre and loxP technologies in mouse auditory research. In: Molecular Protocols in Auditory/Vestibular Research, section editor: Bernd Sokolowski; Molecular Medicine, series editor: John Walker; Humana Press, Methods Mol Biol. 2009; 493: 87-102. PMID:18839343
11. **Zuo J**. Initiating cell regeneration in the mammalian cochlea. **AG Bell 2010 Research Symposium**, “Re-modeling the deafened cochlea for auditory sensation: advances and obstacles”, page 7-11, Orlando, Florida.
12. Layman W, **Zuo J**. An unheard benefit of phosphodiesterase inhibition. News & Views, **Nature Medicine**, 18(2):206-7, 2012. PMID:22310685
13. Cox BC, Liu Z, Mellado-Lagarde MM, **Zuo J**. Conditional gene expression in the mouse inner ear using Cre-loxP. **Journal of the Association for Research in Otolaryngology (JARO)**, Apr 24, 2012. PMID: PMC3346893.
14. Walters Bradley J, **Zuo J**. Postnatal development, maturation and aging of the mouse cochlea and their effects on hair cell regeneration. Invited Review, **Hearing Res**, Nov 16, 2012. PMID:PMC3594364
15. Layman WS, **Zuo J**. Epigenetic regulation in the inner ear and its potential roles in development, protection, and regeneration. **Frontiers in Cellular Neuroscience**, Jan 7;8:446. doi: 10.3389/fncel.2014.00446. eCollection 2014. Review. PMID:PMC4285911
16. Layman WS, **Zuo J**. Preventing ototoxic hearing loss by inhibiting histone deacetylases. **Cell Death Diseases**, 2015, Sep 10;6:e1882. PMID:PMC4650447
17. Teitz T, Goktug A, Chen T, **Zuo J**. Development of cell-based high-throughput chemical screens for protection against cisplatin-induced ototoxicity, in “**Auditory Vestibular Research Methods**”, Springer Verlag Publishers, 2016, See <http://www.springer.com/us/book/9781493936137>, ISBN 978-1-4939-3615-1, Methods Mol Biol. 1427:419-30. PMID: 27259939
18. Zheng F, **Zuo J**. Cochlear hair cell regeneration after noise-induced hearing loss: does regeneration follow development?, **Hearing Research**, 2016 Dec 26. pii: S0378-5955(16)30260-X. doi: 10.1016/j.heares.2016.12.011. [Epub ahead of print] Review. PMID: 28034617.
19. Wood MB, **Zuo J**. The contribution of immune infiltrates to ototoxicity and cochlear hair cell loss. **Frontiers in Cellular Neurosci.**, 11:106, 2017. doi: 10.3389/fncel.2017.00106.
20. Hazlitt RA, Min J, **Zuo J**. Progress in the development of preventative drugs for cisplatin-induced hearing loss, Invited Mini-perspective, **J. Med Chem.** J Med Chem. 2018 Feb 1. doi: 10.1021/acs.jmedchem.7b01653. [Epub ahead of print] PMID: 29361217
21. Steyger PS, Cunningham LL, Esquivel CR, Watts KL, Zuo J. Editorial: Cellular Mechanisms of Ototoxicity. **Front Cell Neurosci.** 2018 Mar 27;12:75. doi: 10.3389/fncel.2018.00075. eCollection 2018.

Patents

1. Methods and compositions of p27^{Kip1} transcriptional modulators. **Zuo J**, Chen T, Walters Brandon, Kuo B, Walters Bradley. Patent No.: US 9,572,815 B2. Issued date: Feb. 21, 2017. (U.S. National Phase Application No. 14/774,597, Based on International Patent Application No. PCT/US2014/029927. This is the SJ-13-0019 patent family. There is also a pending U.S. continuation application in this family-no. 15/394,375 filed December 29, 2016.)
2. Methods and Compositions for the Prevention and Treatment of Hearing Loss, **Zuo J**, Teitz T, Fang J, Goktug A, Chen T, Min J, Guy K. US Patent Application No. 62/181,755, filed on 6.18.2015. PCT/US16/38384; WO 2016/205806, published Dec. 22, 2016. This is the SJ-14-0028 patent family. The national phase deadline is December 20, 2017.
3. Compositions and Methods for the Prevention and Treatment of Hearing Loss, **Zuo J**, Zheng F, Yamashita T, Zoe K, Teitz T, Chen T, Min J. Provisional patent application filed (5.3.2017). This is the SJ-17-0003 patent family for inhibitors of EGFR signaling.
4. Combination Therapy for Treating Disorders of the Ear. **Zuo J**, Yamashita T, Layman W, Zheng F. An abbreviated provisional application (62/457,487) was filed Feb. 10, 2017 based on the SJ-17-0016 patent family including Isl1 and PRC2/Lsd1 on Atoh1 gene therapy. A second provisional application was filed on 5/2/2017 based on SJ-17-0020 invention disclosure to include other transcription factors. PCT is filed on Feb. 10, 2018.

GRANT SUPPORT:**Active:**

1 R01DC015010-01A1 (Zuo) 4/1/2016 - 3/31/2021 3.00 calendar
 NIDCD \$284,796 /yr (Direct Cost)

Genetic control of cellular conversion in the mature cochlea.

To develop a series of mouse models that can regenerate sensory cells in the mature cochlea by genetically manipulating a set of key genes in specific cells surrounding the sensory cells.

1 R01 DC015444-01 (Zuo) 9/1/2016 - 8/31/2019 3.00 calendar
 NIDCD \$331,983/yr (Direct Cost)

Discovery of in vivo small molecules for hearing protection against cisplatin and noise

To optimize our top hit to generate a lead compound by improving local delivery methods and by performing sequential analyses including medicinal chemistry.

DOD/Office of Naval Research (ONR), N00014-16-1-2315, "Novel transcription factors for regeneration of functional outer hair cells after noise injury", 7/1/2016-6/30/2019, Total Direct Cost: \$451,111 (\$150,371/yr), Total Indirect Cost: \$157,889 (\$52,630/yr). 10% effort, JIAN ZUO, Principal Investigator.

1 Univ. Brighton MRC Sub (Zuo) 9/1/2015 - 8/31/2020 1.80 calendar
 MEDICAL RESEARCH COUNCIL-UK ~\$70,000 /yr (Sub-Direct Cost)

Functional relationships between cellular elements in the organ of Corti of the mammalian cochlea: significance for hearing loss
 The major objective of this research proposal is to understand complex electromechanical functional relationships between cellular elements of the OC, especially with respect to apparent differences in sensory processing between the apical low frequency and basal high frequency regions of the cochlea.

DoD/USAMRMC-RH170030 (Zuo)
 W81XWH-17-HRRP-TRA
 Small molecule therapeutics for hair cell regeneration after noise damage
 Direct Cost: \$323,530 /yr, Indirect Cost: \$147,206, Total Cost: \$1,454,998. 1/1/2019-12/31/2021

Pending:

(DM170591) (Zuo)
 W81XWH-17-DMRDP-CRMRP-HBRA
 Small molecule inhibition of EGFR signaling for hair cell regeneration after noise damage
 Direct Cost: \$343,162 /yr; Indirect Cost: \$272,813 / yr; Total Cost: \$1,847,925. 9/30/2018-9/29/2021

Previous:

March of Dimes Birth Defects Foundation, MOD #5 FY98-0725, "The nervous mutant mouse: a model for inherited retinal degeneration", 02/01/1999 - 01/31/2001, Direct Cost \$45,455.00/yr, Total Years \$90,910.00, JIAN ZUO, Principal Investigator, 30% Effort.

St. Jude Children's Research Hospital Cancer Center Support Grant (5 P30 CA 21765-23), "Gene expression profiles in developing inner ear hair cells," 3/1/2000 – 2/28/2001, Direct Cost \$50,000, JIAN ZUO, Principal Investigator, 20% effort.

Dept. of Energy/Lockheed Martin Energy Research Corp./Oak Ridge National Laboratory, "Screen for hearing mutants for the Tennessee Mouse Genome Consortium," Subcontract, 6/14/1999 – 9/30/1999, 5/15/2000 – 9/30/2000, Direct Cost \$32,000, JIAN ZUO, Principal Investigator, 5% effort.

NIH/NINDS, 1 R01 NS39006, Genetics of MPTP-induced Parkinsonism, 09/30/1999 - 06/30/2002, Direct Cost \$200,725/yr, Total \$602,175, RICHARD SMEYNE, Principal Investigator; JIAN ZUO, Co-Investigator, 15% Effort, 15% Salary.

NIH/NIDCD, 1R03DC04761, "Mouse models of the human hearing disorder DFNA15," 1/1/2001-12/31/2003, Direct Cost: \$50,000/yr, 10% Effort/Salary, JIAN ZUO, Principal Investigator.

NIH/NIDCD 5 R01 DC000188-22, Supplemental subcontract "SK2 gene targeting in hair cells," 9/1/2003-8/31/2004, Direct Cost: \$33,333/yr, 5% salary/effort, CHARLIE M. LIBERMAN, Principal Investigator, JIAN ZUO, Subcontractor.

NIH/NIMH, U01 MH61971, "Targeted mutagenesis of the mouse genome and neural phenotypes," Tennessee Mouse Genome Consortium, 8/1/2000-7/31/2005, DANIEL GOLDOWITZ, Principal Investigator, JIAN ZUO, Co-Investigator and Subcontractor; Direct Cost of Subcontract \$29,105/yr, 10% Effort/Salary.

NIH/NIDCD, 1R21DC05168, "Conditional gene targeting in hair cells," 8/1/2001-7/31/2005, Direct Cost: \$100,000/yr, 15% effort/salary, JIAN ZUO, Principal Investigator.

NIH/NEI, 1 R01 EY12950, Mouse Genetics of Retinitis Pigmentosa 1, 2/01/2001-1/31/2007, Direct Cost: \$175,000/yr, 30% Effort/Salary, JIAN ZUO, Principal Investigator.

Deafness Research Foundation, "A knockin model to study prestin regulation by thyroid hormone," 7/1/05-6/30/08, Principal Investigator, THOMAS WEBER, Mentor, JIAN ZUO, Direct Cost: \$20,000/yr.

Foundation For Sight, "Role of RP1 in vesicle transport in photoreceptors," 7/1/05-6/30/06, Principal Investigator, TETSUJI YAMASHITA, Mentor, JIAN ZUO, Direct Cost: \$20,000/yr.

United Negro College Fund (UNCF)/Merck Postdoctoral Science Research Fellowship award, "Prestin interacting proteins," 9/1/05-8/31/07, Principal Investigator, LISAN PARKER, Mentor, JIAN ZUO, Direct Cost: \$51,406/yr.

NIH/NIDCD, 1 R01 DC006471-02S, "Genetic analysis of mammalian hearing sensitivity," 1/1/2005-12/31/2006, Direct Cost: \$46,000/yr, JIAN ZUO, Principal Investigator.

St. Jude Children's Research Hospital Special Postdoctoral Fellowship, 9/26/2005-9/25/2007, Fellow: TETSUJI YAMASHITA, Mentor: JIAN ZUO, Direct Cost: \$40,000/yr.

NIDCD, 1 R21 DC008800, "Generation of Mice with Inducible Cre Expression in Adult Cochlear Hair Cells," 02/10/2007-1/31/2009 (no cost extension to 1/31/2010), Direct Cost: \$125,000/1st yr and \$150,000/2nd yr, 15% salary/effort, JIAN ZUO, Principal Investigator.

Hartwell Individual Biomedical Research Award, "Hair Cell Regeneration by Inactivating Genes in the Rb Pathway in Supporting Cells in Mice," 4/1/2007-3/31/2010, Direct Cost: \$100,000/yr, 15% salary/effort, JIAN ZUO, Principal Investigator.

NIH/NINDS, 2 R01NS039006, "Genetics of MPTP-Induced Parkinsonism," 07/01/2004-06/30/2010, Direct Cost: \$235,000/yr, Principal Investigator, RICHARD SMEYNE, Co-Principal Investigator, JIAN ZUO, 10% Salary/Effort.

NIH/NIDCD, NRSA 1F31DC009393-01A1, "The Role of Pkd1 in Mouse Hair Cell Mechanotransduction Channels", 7/1/2008-6/30/2010, Principal Investigator, KATHERINE A. STEIGELMAN, Mentor, JIAN ZUO.

National Organization For Hearing Research Foundation (NOHR), “Generation of an inducible mouse model for studying prestin’s role in outer hair cells”, 2/1/2010-1/31/2011, Direct Cost: \$20,000/1yr, JIE FANG, Principle Investigator, JIAN ZUO, Mentor.

The Wennergren Foundation Award, “Characterization of prestin-YFP knockin mice”, Direct Cost: \$8,700, 12-weeks in 2011, Principal Investigator, JIAN ZUO.

NIH/NIDCD, NRSA 1F32DC010310-01, “p16Ink4a in Cochlear Hair Cell Regeneration”, 7/1/2009-6/30/2012, Total Cost: ~\$50,000/yr, Principal Investigator, BRANDON C. COX, Mentor, JIAN ZUO.

The Hartwell Foundation 2009 Biomedical Research Collaboration Award, “Identification of Predisposing Factors in Childhood Depression: Using a Conditional Knock-In Mouse to Generate the Implicated Risk and Protective Variants of the Serotonin Transporter Gene,” 11/1/2009–10/31/2012, Direct Cost: \$110,606/3yrs, 5% salary/effort, JIAN ZUO, Co-Principal Investigator.

DOD/Office of Naval Research (ONR), Defense University Research Instrumentation Program (DURIP) Award, Award No.: N00014-12-1-0775, PR No., Mod No.: 12PR10256-00, “Confocal microscope for investigation of hearing restoration in mouse models with noise-induced hearing loss”, Total Cost: **\$350,320 to purchase a LSM710 Confocal Microscope and service contracts**, 6/15/2012-9/30/2012, JIAN ZUO, Principal Investigator.

Garwood Research Fellowship, “A quest for p27^{Kip1} small molecule inhibitors”, 3/1/2011-2/28/2013, Direct Cost: \$50,000/yr, Principal Investigator, LUIGI ICONARU, Mentor, JIAN ZUO.

National Organization For Hearing Research Foundation (NOHR), “Potential auditory hair cell regeneration and restoration of hearing in the opossum, *Monodelphis domestica*”, 1/27/2012-1/27/2013, Direct Cost: \$20,000/1yr, BRADLEY WALTERS, Principle Investigator, JIAN ZUO, Mentor.

DOD/Office of Naval Research (ONR), Award No: N00014-09-1-1014, PR No., Mod No.: 09PR08090-00, "Hearing restoration in mouse models with noise-induced hearing loss", 6/1/2009-9/30/2013, Total Cost: \$5,047,400 [Direct \$3,629,264 (\$2,059,391/1st yr and ~\$350,000/each 2nd-5th yr) and Indirect \$1,418,136], 25% effort, JIAN ZUO, Principal Investigator. Note: **A total of \$1,928,693 was used to purchase equipment and service contracts including the following items: LSM700 Confocal Microscope, Operetta High Content Screening System, Laser Capture Microdissection Microscope, Realtime PCR with Robot, Fluorescent Dissecting Microscope, Molecular Imager ChemiDoc RXS System, Sound Booth, Surgical Microscope, and others.**

Sir Henry Wellcome Postdoctoral Fellowship, “Roles of the supporting cells in the mechanical responses and neural excitation in the mammalian cochlea”, 11/1/2009-10/31/2013, Total Cost: £250,000/4yrs, Principal Investigator, Marcia M Mellado-Lagarde, Mentors, JIAN ZUO and IAN RUSSELL.

Hearing Health Foundation 2012 Emerging Research Grant, “Potential Auditory “Hair” Cell Regeneration and Hearing Recovery in the Opossum”, Total Cost: \$25,000, 7/1/2012-6/30/2013, BRADLEY WALTERS, Principle Investigator, JIAN ZUO, Mentor.

Hearing Health Foundation 2013 Emerging Research Grant, “Conditional Reprogramming of Otic Stem Cells: Development of a Novel In-Vitro Hair Cell Line”, Total Cost: \$25,000, 7/1/2013-6/30/2014, BRANDON WALTERS, Principle Investigator, JIAN ZUO, Mentor.

Quark Pharmaceuticals, Inc., “Testing potential efficacy of Quark siRNA compounds for restoration of auditory function”, 12/1/2013-9/30/2014, Total Cost: \$100,260 (Indirect Cost: \$20,052), Principal Investigator, JIAN ZUO.

NIH/NIDCD, 2R01DC006471, “Genetic analysis of mammalian hearing sensitivity,” 1/1/2004–12/31/2014 (NCE), Direct Cost: \$210,375/yr, Indirect Cost: \$143,055/yr, 25% effort, JIAN ZUO, Principal Investigator.

NIH/NCI, St. Jude CCSG Dev Fund 112096350, "Therapeutics of cisplatin ototoxicity in pediatric cancer patients", 2/1/2014-3/31/2016, Total Direct Cost: \$150,000, Principal Investigator, JIAN ZUO.

DOD/Office of Naval Research (ONR), Award No: N00014-12-1-0191, PR No., 12PR04732-00, "Therapeutics for regeneration of fully functional auditory outer hair cells", 3/1/2012-9/30/2016, Total Cost: \$1,621,881 (Direct \$1,306,428 and Indirect \$315,453), 25% effort, JIAN ZUO, Principal Investigator. Program Officer: Kurt Yankaskas (Phone: 703-696-6999)

NIH/NIDCD, NRSA 1F32DC013832-01A1, "Epigenetic regulation in the postnatal mammalian inner ear", 11/1/2013-10/31/2016, Total Direct Cost: ~\$60,000/yr, Principal Investigator, WANDA LAYMAN, Mentor, JIAN ZUO.

NIH/NIDCD, 1R21DC013879, "Drug discovery for hair cell regeneration in adult mammalian cochleae", 8/01/2014-07/31/2016 (NCE to 07/31/2017), Direct Cost: \$275,000/2yrs, 10% effort, JIAN ZUO, Principal Investigator.

INVITED SEMINARS:

1999

MAY 5 Johns Hopkins University School of Medicine, Center for Hearing Sciences, Baltimore, MD, USA.
July 19 Otogene, Inc. USA, Seattle, WA, USA.

2000

March 17 University of Tennessee, Memphis, Dept. of Anatomy and Neurobiology, Memphis, TN, USA.
April 5 University of Michigan Medical Center, Dept. of Otolaryngology, Kresge Hearing Research Institute, Ann Arbor, MI, USA.
May 5 Eaton-Peabody Laboratory, Massachusetts Eye & Ear Infirmary, Harvard Medical School, Boston, MA, USA.
Aug. 26 Gene Therapy and Molecular Biology International Conferences, Rhodos, Greece.

2001

Feb. 26 Rhodes College, Dept. of Biology, Memphis TN, USA.
May 29 Oakland University, Eye Research Institute, Rochester, Michigan, USA.

2002

April 19 Retinal Lab., Mass. Eye and Ear Infirmary, Harvard Medical School, Boston. MA, USA
April 23 Creighton University, Omaha, NE, USA
June 13 UCSF/Gallo Center, San Francisco, CA, USA
Aug. 20 Fudan University Medical School, Shanghai, China
Oct. 22 Rockefeller University, New York, NY, USA

2003

May 15 Baylor College of Medicine, Houston, TX, USA
June 10 University of Southern California, School of Medicine, Los Angeles, CA, USA
June 27 NIDCD/NIH, Bethesda, MD, USA
Sept. 10 Kresge Hearing Research Institute, Univ. Michigan Medical School, Ann Arbor, MI, USA
Oct. 9 MBI & ACCESS seminar, Univ. California School of Medicine, Los Angeles, CA, USA
Oct. 18 Neuroscience Snowbird Symposium, Univ. of Utah Medical School, Salt Lake City, Utah, USA
Nov. 6 Kresge Hearing Research Laboratory, LSU Health Sciences Center, New Orleans, LA, USA
Dec. 11 Department of Physiology, University of Tennessee Health Science Center, Memphis, TN, USA

2004

May 19 Creighton University, Bellucci Prize for Hearing Research, Omaha, NE, USA

- Sept. 13 University of Washington, Dept. of Otolaryngology-HNS, Virginia Merrill Bloedel Hearing Research Center, Seattle, WA, USA
- Oct. 4 Children's Hospital, Harvard Medical School, Division of Neuroscience, Boston, MA, USA
- Oct. 14 The Laboratory Mouse in Vision Research, The Jackson Laboratory, Bar Harbor, Maine, USA
- 2005**
- Feb. 23 Symposium Speaker, Hereditary Hearing Loss: From Humans to Mice and Back, Association for Research in Otolaryngology (ARO), New Orleans, LA, USA.
- Aug. 24 Northwestern University Medical School, Chicago, IL, USA.
- Oct. 1-4 The Mouse As An Instrument For Ear Research II, The Jackson Laboratory, Bar Harbor, Maine, USA.
- Oct. 9 Emory University, Department of Cell Biology, Atlanta, GA, USA.
- Oct. 26 University of Utah Dept. of Ophthalmology and Visual Sciences, Symposium on Retinal Diseases, Salt Lake City, Utah, USA.
- 2006**
- Jan. 18 University of Iowa, Dept. of Otolaryngology, USA.
- April 27 University of Oklahoma Health Sciences Center, Vision Club, Oklahoma City, OK, USA
- May 18 Washington University, St. Louis, Dept. of Ophthalmology, St. Louis, MI, USA
- May 19 Washington University, St. Louis, Dept. of Otolaryngology, St. Louis, MI, USA
- 2007**
- March 13 Christian Brothers University, Memphis, TN, USA
- July 25 University of Tubingen, Physiology Institute, Tubingen, Germany
- Aug. 19-31 Biology of the Inner Ear: Experimental and Analytical Approaches, Woods Hole, MA, USA
- Aug. 21-24 New Frontiers in Retinal Diseases, Monterey, CA, USA
- 2008**
- June 27 University of California, Berkeley/Lawrence Berkeley National Laboratory
- Sept. 19-21 The Mouse As An Instrument For Ear Research III, The Jackson Laboratory, Bar Harbor, Maine, USA.
- Oct. 21 Univ. Tennessee, Memphis, Dept. of Anatomy and Neurobiology, USA
- Nov. 12 Kresge Hearing Research Institute, Univ. Michigan Medical School, Ann Arbor, MI, USA
- 2009**
- April 23 Stark Neurosciences Research Institute, Indiana University School of Medicine, Indianapolis, IN 46202, USA
- Aug. 27 Biology of the Inner Ear: Experimental and Analytical Approaches, Woods Hole, MA, USA
- 2010**
- Feb. 19 University of Memphis Speech and Hearing Center, Memphis, TN, USA
- June 15 Institute of Biotechnology, University of Helsinki, Finland
- June 23 Inner ear research group, Karolinska Institute, Stockholm, Sweden
- June 27 Alexander Graham Bell Biennial Convention, invited speaker for the Research Symposium "Remodeling the deafened cochlea for auditory sensation: advances and obstacles", Orlando, Florida, USA.
- 2011**
- April 26 Novartis Shanghai, P.R. China
- April 26 ENT Hospital Fudan University Shanghai Medical School, Shanghai, P.R. China
- April 27 X-Med, Jiaotong University, Shanghai, P.R. China
- June 1-July 15 Inner ear research group, Karolinska Institute, Stockholm, Sweden
- Aug. 19-26 Biology of the Inner Ear: Experimental and Analytical Approaches, Woods Hole, MA, USA

2012

June 12 Weill Medical College of Cornell University, Depts of Psychiatry and Pharmacology, New York, USA.

2013

May 6 Northwestern University Feinberg Medical School, Chicago, IL, USA.

Aug. 10-20 Biology of the Inner Ear: Experimental and Analytical Approaches, Woods Hole, MA, USA

2015

Aug. 9-17 Biology of the Inner Ear: Experimental and Analytical Approaches, Woods Hole, MA, USA

Oct. 14 Inner Ear Seminar Series, University of Utah School of Medicine, Salt Lake City, Utah, USA

2016

Oct. 11 Johns Hopkins University School of Medicine, Hearing Center Seminar Series, Baltimore, Maryland, USA

TEACHING ACTIVITIES:

1998 Molecular Neurobiology, to first year graduate students in Program of Anatomy and Neurobiology, University of Tennessee, Memphis, TN, USA

1998-2001 Cellular and Molecular Basis of Disease, to second year graduate students in Program of Pathology, University of Tennessee, Memphis, TN, USA

2000 Molecular and Cell Biology, to ~200 graduate students in Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, P. R. China.

2003-pres. Current Research in Neuroscience, Rhodes College, Memphis, TN, USA

2006-2015 Development of the Nervous System, Cancer Biology–Track Course, St. Jude and University of Tennessee, Memphis, TN, USA

2007-2008 Thesis committee for Danielle Rossino, Graduate Student, Department of Biomedical Sciences, Creighton University School of Medicine, Omaha, NE, USA

2012-2018 Development of Sensory Systems, Core Course of Neuroscience Track, St. Jude and University of Tennessee, Memphis, TN, USA

2017 Development and Function of the Nervous System, Module II, Core Curriculum of St. Jude Children's Research Hospital Graduate Program, Memphis, TN, USA

STUDENTS AND POSTDOCTORAL FELLOWS SUPERVISED:**Graduate students:**

1999-2002 Kyongmi Cheon. MS Thesis: Mouse Genetics of Retinitis Pigmentosa 1.

2001-2006 Xudong Wu. PhD Thesis: Unraveling the motor complex of outer hair cells. Postdoc in Dr. David Corey's lab at Harvard Medical School/HHMI since 2006. ARO travel award 2005.

2003-2005 Tetsuji Yamashita (Research scholar and PhD student from Japan). Project: Functional analysis of RP1 protein.

2004-2009 Michael Podgorski. PhD Thesis: Structure and function of prestin.

2006-2010 Katherine Steigelman. PhD Thesis: The role of Pkd1 in mouse hair cell mechanotransduction channels. ARO travel award 2008, NIH F31 predoctoral fellowship award 2008-2010.

2007-2010 Yiling Yu (Research scholar and PhD student from Fudan University Medical School). PhD Thesis: Roles of Rb in hair cell regeneration in mice.

2007-2011 Zhiyong Liu. PhD Thesis: Roles of p27 in hair cell regeneration in mice. ARO Travel Award 2009. Dev Biol Travel Award 2010. Postdoc in HHMI Janelia Farm since 2012; Assistant Professor at Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, China, since 2016.

Postdoctoral associates:

1999-2003 Jiangang Gao. Projects: Knockout and knockin mice of the retinitis pigmentosa 1 gene, *Prestin* and *GluRδ1*. Current position: Professor, Vice Dean, and Director, Institute of Developmental Biology, Shandong University, P. R. China, since 2008.

2002-2005 Jiewu Liu. Project: Molecular genetics of RP1.

- 2002-2005 Yong Tian. Project: Conditional gene targeting in hair cells. Current position: Professor, Institute of Biophysics, CAS, Beijing, P. R. China, since 2009.
- 2002-2003. Yunkai Guo. Project: Auditory screen of ENU-mutagenized mice.
- 2003-2006 Mohammad Habiby Kermany. Project: Auditory screen of ENU mutagenized mice.
- 2003-2007 Thomas Weber. Project: Regulation of prestin and roles of Rb in hair cell regeneration in mice.
- 2004-2006 Lisan Parker. Project: Identification of prestin interacting proteins and analysis of SK2 mouse models. Current position: Group leader, Merck Co.
- 2006-2007 Enrique Navarrete. Project: Cholinergic modulation of outer hair cell electromotility in mouse models.
- 2005-2010 Tetsuji Yamashita. Project: Analysis of RP1 and prestin. Currently Lab Specialist in Zuo lab at St. Jude.
- 2008-2013 Brandon Cox. Project: Hair cell regeneration in mice. NIH F32 postdoc fellowship award 2009-2012; ONR grant award 2012-2014; Army grant award 2014-2017; R01 grant award 2016-2021. Currently, Assistant Professor (tenure track) at Dept. of Pharmacology, Southern Illinois University School of Medicine (since 2013).
- 2008-2012 Jie Fang. Project: Function of prestin in outer hair cell motility in mice. NOHR Award 2010-2011. Currently Lab Specialist in Zuo lab at St. Jude.
- 2008-2014 Marcia Mellado-Lagarde, Project: Roles of supporting cells in cochlear amplification. Sir Henry Wellcome Postdoctoral Fellowship 2009-2013. Currently Lab Specialist at St. Jude.
- 2010-2016 Bradley Walters, Project: Hair cell regeneration in mouse cochleae. NOHR Award 2012-2013 and HHF Emerging Grant Award 2012-2013; Assistant Professor at University of Mississippi Medical School, Jackson, MS (since 2016).
- 2010-2014 Brandon Walters, Project: Hair cell regeneration in mouse cochleae; currently postdoc in Sick Children's Hospital, Toronto, Canada.
- 2010-pres Luigi Iconaru, Project: Screen of small molecule inhibitors for hair cell regeneration in mouse cochleae. Garwood Fellowship award 2011-2013; since 2015, Lab Specialist in Zuo lab at St. Jude.
- 2010-2015 Bryan Kuo, Project: Hair cell regeneration and cochlear amplification in mouse cochleae; Research Assistant Professor at Univ. of Tennessee Health Science Center, Memphis, TN; Lab Specialist in Han lab at St. Jude since 2017.
- 2011 Katherine Steigelman, Project: Pkd1 in hair bundles and screen of Sox2-p27Kip1 small molecule inhibitors for hair cell regeneration in mouse cochleae.
- 2011-2017 Wanda Layman, Project: Hair cell regeneration in mouse cochleae, NIH 1F32DC013832-01A1 postdoc fellowship award 2014-2016.
- 2014-2018 Fei Zheng, Project: Factors that promote outer hair cell maturation.
- 2016-2017 Laura Hamel, Project: Hair cell regeneration.
- 2016-2018 Megan Wood, Project: Cochlear inflammation during regeneration.
- 2016-2018 Robert Hazlitt, Project: Drug discovery for hearing protection.

Other trainees:

- 1998-pres. Student Trainees in Pediatric Oncology Education (POE) program at St. Jude: Tyler Buckner, Content Ninetingale, Jill Waters, Kandra Williams, Gale Jackson, Chris Shen, Jason Higdon, Dominique Butawan, Jennifer Erdrich, Mani Patel, Mary Corbett, Sean LeNoue, Jill McCall, Susan Lin, Manasa Reddy, Tongtian Gao, Kristin Ates, Aaron Oom, Aurora Klaus, Katie Han, Aman Mangalmurti. All of these students (except the last four) have gone on to medical schools, including Harvard Med. School.
- 1999-pres. Placement students of Univ. of Bath, England: Ross Rounsevell, Bethan Davies, Karen Atkins (currently PhD graduate student at Univ. of Bath, UK), Sally James (currently PhD graduate student at University of Birmingham, UK), Lindsey Masters, Clare Cook, Wendy Cheng (currently a graduate student in UK), Lucy Young, Ruth Weir, Chris Philpott, Luke Haslett, Thomas Owen, Mark Crabtree, Mark Brimble, Emily Baldwin, Emily Coak, Grace Bailey, Dan Williams, Zoe Kellard, Shane Wu.
- 2016-pres. Summer-Plus Rhodes college students: Malerie McDowell.
- 2008-pres. Genetic Master students at the University of Paris 7: Samantha Papal, Anne LeNoir, Ana Perez.

- 2001-pres. Lab rotation graduate students of the St. Jude /UT joint Interdisciplinary program in Biological Sciences (IBS) programs: Justin Boyd, Linda Widjaja, Jie Shen, Haoping Wang, Haeman Jang, Satish, Jinjun Cheng, Robyn Umans, Yunqian Zhao, Yu He, Bo Wang, Jason Workman.
- 1999-2000 Cody Nash (work-study undergraduate student from Rhodes College). Project: Genome scan for Bst modifiers. He became a graduate student at Caltech.
- 2003-2005 Andrew Romeo (undergraduate student in the Summer-Plus-Program of Rhodes College). Project: Antibody production of RP1L1 and analysis of mutant mice.
- 2005 Rebekkah Griffith (work-study student from Christian Brothers University).
- 2005-2006 Sana Mujahid (work-study student from Christian Brothers University).
- 2006-2009 Jason Porter and Kimberly Koerber (work-study students from Christian Brothers University).
- 2006 Tianhe Zhang (summer student from Duke University).
- 2007 Clare Patterson (summer student from Grinnell College)
- 2007-2008 Frank Hartge IV (summer student from Ohio University and Ohio Medical College).
- 2009 Tongtian Gao and Irvine Hu (summer students from Memphis high schools)
- 2009-2010 Terence Netzel (work-study student from Christian Brothers University)
- 2011-2012 Mario Saucedo (work-study student from Christian Brothers University)
- 2012 Jason Porter (work-study medical student from Univ. of Tennessee School of Medicine)
- 2013-2014 Russell Higgins (work-study student from Christian Brothers University)
- 2013-2014 Justine Bonga (work-study student from Victor University)
- 2014 Cullin Guy (work-study student from Victor University)
- 2015 Katie Han (summer work-study student from USC)
- 2016 Leeraz Zuo (summer work-study student from UVA)
- 2017 Rachel Tanenbaum (summer work-study student from U. Michigan)
- 2017-2018 Maleelo Shamambo: Summer-Plus Rhodes college student.

Visiting professors:

- 1999-2001 Minyuan Li, visiting professor, Sichuan University Medical School, Project: Cre expression in mouse hair cells.
- 2001-2002 Qian Huang, visiting professor, Shanghai 1st Hospital, Project: Gene expression profiles and genetic interactions of mouse models for RP1 disease.
- 2005 Kirk Beisel, visiting professor, Creighton University, Omaha, Nebraska, USA.
- 2011 Qun Chen, visiting scientist, Ohio State University, Ohio, USA.
- 2016 Bradley Walters, Assistant Professor at University of Mississippi Medical School, Jackson, MS.
- 2016 Omar Akil, Assistant Professor at University of California San Francisco, CA.

REVIEWER FOR PEER-REVIEWED JOURNALS AND GRANT AGENCIES**Journals:**

BioTechniques
 The Journal of Neuroscience
 Molecular Pharmacology
 Brain Research (Editorial Board Member)
 Molecular and Cellular Biology
 Trends in Molecular Medicine
 Nature Medicine
 Hearing Research (Editor for Special Issue in 2016)
 Acta Oto-Laryngologica
 Investigative Ophthalmology & Visual Science (IOVS)
 Neurobiology of Aging
 Molecular Vision
 PNAS
 Molecular and Cellular Neuroscience
 Journal of the Association for Research in Otolaryngology (JARO)
 Journal of Clinical Investigation
 Developmental Dynamics (Editorial Board Member)

Journal of Cell Sciences
 PLoS One
 Experimental Animals
 BMC Developmental Biology
 Nature Protocol
 Biophysics Journal
 PLoS Genetics (Invited Editor)
 Development
 Neuron
 PLoS Pathogen
 Scientific Reports (Editorial Board Member)
 Frontiers in Cellular Neuroscience

Grant agencies:

United States-Israel Binational Science Foundation (BSF) (2004)
 Member of study section, CDRC, NIH (2/16/2005)
 Member of study section, CDRC, NIH (6/24/2005)
 Member of study section, IFCN G10, SBIR, NIH (7/14/2005)
 Ad hoc member of study section, AUD, NIH (10/11-12/2005)
 Member of study section ZDC1 SRB-R, NIH (10/27/2005)
 Member of study section, CDRC, NIH (6/21-22/2006)
 Ad hoc member of study section, NTRC, NIH (10/4-5/2006)
 Member of study section, CDRC, NIH (10/21-22/2006)
 Member of study section, CDRC, NIH (2/15-16/2007)
 Member of study section, CDRC, NIH (6/20-21/2007)
 Ad hoc member of study section, AUD, NIH (10/3-4/2007)
 Ad hoc reviewer for the Royal National Institute for Deaf People (RNID) (2007, 2010, 2011)
 Member of study section, CDRC, NIH (10/17-18/2007)
 Member of study section, CDRC, NIH (2/13-14/2008)
 Member of study section, CDRC, NIH (6/13-14/2008)
 Member of study section, CDRC, NIH (10/15-16/2008)
 Member of study section, CDRC, NIH (2/15-16/2009)
 Ad hoc reviewer for National Science Foundation (2008-2009)
 Member of study section, 2011/01 ZDC1 SRB-Q (64) on P30 grants
 Member of study section, 2012/05, ZRG1 IFCN Q-02
 Ad hoc reviewer for MRC, UK (2010)
 Ad hoc member of study section, AUD, NIH (10/8/2012)
 Wayne State University Grant Review Panel (3/2013)
 Ad hoc reviewer for MRC, UK (2014)
 Ad hoc reviewer for DoD (2014, 2016)
 Ad hoc reviewer for MRC Unit Programmes UK (2014)
 Ad hoc reviewer for AUD study section (10/23-24/2014)
 Ad hoc reviewer for USAMRMC (10/2015)
 Ad hoc reviewer for NIH IFCN-Q (3) study section (11/2015)
 Member of study section, CDRC, NIH (2/19/2016)
 Ad hoc reviewer for the Wellcome Trust Foundation (2006, 2010, 2016)
 Ad hoc reviewer for VA, RRD0 (8/2016; 3/2017)
 Ad hoc reviewer for NIH, ZRG1-IFCN-B-02M, (6/2017)

PROFESSIONAL SOCIETY MEMBERSHIPS:

International Mammalian Genome Society
 Association for Research in Otolaryngology
 International Society of Gene Therapy and Molecular Biology
 Association for Research in Vision and Ophthalmology

Society for Neuroscience
 Advisory Board Member of National Academy for Child Development
 Organizing Committee Member, “The Mouse As An Instrument For Ear Research II,” The Jackson Laboratory, Bar Harbor, Maine, USA, 10/1/2005-10/4/2005.
 Co-organizer for the Symposium in ARO 2006 Mid-winter meeting on “Imaging protein-protein interactions,” Baltimore, MD, USA, 2/7/2006.
 Editorial Board Member, Brain Research, 10/2006 – pres.
 Editor, Special Issue on Mouse Models for Hearing Research, Brain Research, Vol. 1091, 2006
 Organizing Committee Member, “The Mouse As An Instrument For Ear Research III,” The Jackson Laboratory, Bar Harbor, Maine, USA, 9/19/2008-9/23/2008.
 Editor, Special Issue on Mouse Models for Hearing Research II, Brain Research, 2009.
 Honorary Editorial Board, “Clinical Medicine: Ear, Nose and Throat.”
 Editorial Board Member, Developmental Dynamics (2014-pres)
 Editorial Board Member, Scientific Reports (2015-pres)
 Guest Editor for Hearing Research Special Issue: Noise in the Military (2016)
 Co-host, Office of Naval Research (ONR) Annual Meeting on Noise Induced Hearing loss, 9/13-15/2016, at St. Jude Children’s Research Hospital.
 Co-Guest Editor, Mechanisms of Ototoxicity, Special Issue for Frontiers on Cellular Neurosciences.

CONSULTING:

Fate Therapeutics (2012-2013)
 Third Rock Ventures (2013-2015)
 Fidelity Biosciences (2016)
 Frequency Therapeutics (1.2017-pres)

ADMINISTRATIVE EXPERIENCE:

Moderator, Neurobiology Curriculum for the St. Jude Graduate Program (2016-pres)
 Member of graduate committee (2008-pres), Co-Director (2010-pres), the Neuroscience track of the IBS graduate program, Univ. of Tennessee/St. Jude
 Member (2005-2011), Vice Chair (2007-2008), and Chair (2008-2011.) of IACUC, St. Jude Children’s Research Hospital
 St. Jude Liaison in TN Mouse Genome Consortium (1999-2005)
 Hartwell Center Liaison Group
 Department Faculty Recruitment Committees (1998-pres.)
 St. Jude International Outreach Program for China
 St. Jude Grant and Contract Management Advisory Committee (2009)
 St. Jude Cytogenetics Core Advisory Committee (2011-2012)
 St. Jude Faculty Promotion Subcommittee (2013)
 St. Jude Graduate Program Core Course Neurobiology and Development Director (2015-pres)
 St. Jude Transgenic Core Advisory Committee (2017-pres)
 St. Jude Animal Resource Center Advisory Committee (ARCAC) (2017-pres)
 St. Jude Therapeutics discovery Resource Allocation Committee (TRAC) (2017-pres)