

Biography

John V. Brigande, Ph.D., is a basic science researcher and educator focused on developing novel strategies to treat congenital hearing loss and deafness. His lab uses experimental embryology, a palette of molecular, virological, and surgical techniques to introduce bioactive reagents into the fetal mouse inner ear and then assess regenerative outcomes postnatally. Over the last six years, he has extended his focus to developing nonhuman primate (NHP) models of congenital hearing loss and vestibular dysfunction with interest in applying experimental embryology techniques to restore sensory function.

Dr. Brigande has pioneered strategies to transfer genes and pharmacotherapeutics to the fetal inner ear. His team showed that electroporation-mediated transfer of *atoh1* to the developing mouse inner ear generated supernumerary sensory hair cells whose electrophysiological properties were consummate with those of wild type auditory hair cells. Dr. Brigande earned the Bert Evans Young Investigator Award from the National Organization for Hearing Research and the Festival of Lights Award in Neuroscience from the Oregon Brain Institute in 2009 in recognition of this work. His lab also demonstrated that transuterine microinjection of an antisense oligonucleotide delivered to the fetal inner ear restored harmonin protein expression in stereociliary bundles of the *Ush1c* mutant and rescued auditory and vestibular function well into adulthood.

Dr. Brigande's team characterized auditory function in the first rhesus macaque model of Usher syndrome type 1B (USH1B) that was created by ONPRC colleagues using CRISPR genome editing. He led a collaborative effort with colleagues at the ONPRC and Regeneron Pharmaceuticals, Inc., to identify and characterize the first rhesus macaque model of DFN9 by identification a frameshift mutation in otoferlin that arose naturally in the rhesus macaque breeding colony at the ONPRC. Critically, the MYO7A and OTOF mutant NHPs have auditory and vestibular phenotypes that closely match those of USH1B and DFN9 patients. He hypothesizes that gene and pharmacological strategies that durably restore inner ear sensory function in NHP models of congenital hearing loss will have the highest likelihood of success for restoring inner ear sensory function in patients.

Dr. Brigande is committed to mentorship and teaching. He has provided summer research experiences for twenty-eight high school students; participated in eleven doctoral dissertation advisory committees; and mentored three otolaryngology residents for six-months to two-years. He has mentored two hearing impaired postbaccalaureate scholars for two to three years, one of whom was supported by an NIDCD supplement to support individuals with disability. Dr. Brigande is a member of the Hearing Inclusive ARO (HI-ARO) group that creates community for vertical and horizontal mentoring of scientists, engineers, and clinicians with hearing loss who are studying or have studied the auditory system. He is a Dangerous Decibels Hearing Loss and Tinnitus Prevention Educator and presents the educational program (Turn it down! Walk away! Protect your ears!) to area grade school and high school students. Dr. Brigande believes that the most important honor he has received in his career are his five School of Medicine Teaching Excellence Awards because they are bestowed annually by consensus vote of OHSU graduate students.

Dr. Brigande's first inner ear development poster, podium presentation, auditory neuroscience award, and NIDCD grant award were shared with and celebrated by colleagues at ARO midwinter meetings. He is indebted to the ARO for providing a core scientific community and the inspiration to take a less traveled path experimentally. He wants all ARO members to experience the same career-defining benefits. Dr. Brigande is committed to expanding ARO membership; sustaining innovation in the midwinter meeting scientific program; encouraging science outreach and dissemination of research findings; and celebrating devoted ARO community members that are leading us to a bright scientific future.