

# T35 Research Traineeships at Vanderbilt University – 2022

*The NIH-NIDCD funded T35 Research Traineeship Program is designed specifically for AuD students. Vanderbilt University is currently in its 14<sup>th</sup> year of providing T35 Research Traineeships. As you prepare for a career in Audiology, you can learn about research and work alongside well-known established researchers in a full-time, hands-on setting.*



Vanderbilt University Medical Center  
Vanderbilt Bill Wilkerson Center  
Department of Hearing and Speech Sciences  
Nashville, Tennessee

*“I can write without hesitation or reservation that the T35 traineeship served as the single most influential experience in determining my future career path as a translational hearing scientist. The T35 traineeship served as my first exposure to full-time translational research, immersing me in the research process from study design to final presentation. The impact of this experience secured my interest in a research career and my belief in the importance of science. I will always be grateful to the NIDCD for providing me the opportunity to complete the T35 traineeship that so positively influenced my career.”*

--- Former T35 Trainee

**Overview of the Program:** Vanderbilt University Department of Hearing and Speech Sciences, with funding from a grant from the National Institutes of Health (NIH) National Institute on Deafness and Other Communication Disorders (NIDCD), is requesting applications from AuD students for 3-month, full-time (40 hours per week), basic or translational research traineeships that focus on various topics in audiology and hearing/vestibular sciences. Each AuD student trainee will be involved in a specific research project, actively participating in a hands-on manner in a research laboratory currently conducting research related to audiology/hearing science. Investigators, laboratories, and brief descriptions of areas of research are provided below.

Students will be matched with a mentor according to the students' interests and mentor availability. In addition, each AuD trainee will participate in discussions on responsible conduct in research, participate in a specifically designed T35 seminar series presented by many of the T35 preceptors, attend colloquia and journal groups, attend campus-wide activities of interest as part of their training experience, and will have opportunities to present their work.

This is an excellent opportunity for AuD students to obtain significant exposure to research in an active laboratory conducting research related to clinical and experimental audiology.

**Eligibility:** This program is for students enrolled in AuD programs. Students participate full time for 3 consecutive months. The preferred time period is from mid-May through mid-August. The trainee must also be a U.S. citizen or must have permanent residency status. Students on J or F training Visas are not eligible for NIH training support. NIH

also restricts traineeships to students in AuD programs, who are not enrolled in PhD or AuD/PhD programs.

**Resources:** In addition to the specific mentor with whom each AuD student will work, trainees will have access to other faculty and researchers for formal and informal discussions. A full range of technical and computer support will be provided during the 3-month training period.

**Stipend:** Each student will receive a stipend (based on the NIH published pre-doctoral stipend levels) for each of the three months that they participate in the program. Costs associated with research (for example, subject fees) are supported by the T35 grant, grants held by faculty, or other sources. In addition, a travel stipend provides support for T35 trainees to present their research at the annual meeting of the American Auditory Society.

**About Nashville:** Vanderbilt's hometown of Nashville is a vibrant, engaging city known proudly as "Music City, USA." Located near downtown, the University's students, faculty, staff, and visitors frequently cite Nashville as one of the perks of Vanderbilt. Nashville is a metropolitan place that proudly exudes all of the charm and hospitality one expects from a Southern capital and was named America's friendliest city for three years in a row. Nashville typically enjoys a mild and pleasant climate. Major industries include tourism, music production, entertainment, printing and publishing, technology manufacturing, higher education, finance, insurance, automobile production and health care management.

<https://www.vanderbilt.edu/nashville/activities.php>

<https://www.vanderbilt.edu/nashville/essentials.php>

**Application Process:** Interested AuD students should contact Linda J. Hood, PhD, for information and application materials at [linda.j.hood@vanderbilt.edu](mailto:linda.j.hood@vanderbilt.edu).

**Schedule:** Completed applications should be received by January 15, 2022 and selections will be made by February 1, 2022. We anticipate that the typical traineeship period will be from approximately May 15, 2022 to August 15, 2022. Traineeships are open to students in all AuD programs.

**Additional Information:** Vanderbilt former T35 trainees, students and others will be available to assist selected trainees who are not in the Nashville area in locating housing.

*Traineeships are awarded each year on a competitive basis.*

# Vanderbilt University

## Research Opportunities and Preceptors

### **Rene Gifford, Ph.D. – Cochlear Implant Research**

Research studies are designed to describe basic underlying mechanisms driving benefit from combined electric and acoustic hearing to better deliver and integrate information from two very distinctive modalities. Current projects involve basic auditory perception, static and dynamic spatial hearing abilities, and functional near infrared spectroscopy (fNIRS) to describe the effects of combined electric and acoustic stimulation on speech understanding and sound quality. *Trainees could be involved in research projects including speech perception, localization, and psychophysical evaluation of spectral and/or temporal processing with cochlear implant recipients.*

### **Troy Hackett Ph.D. – Central Auditory System Structure and Function**

Research focuses on the neurochemical organization of central auditory structures and how these areas are interconnected. Studies involve identifying circuits using neuroanatomical tracers, mapping the locations of labeled cells and terminals, and determining the chemical architecture of these circuits using methods to identify proteins, enzymes, and genes in neurons. Mice, nonhuman primates, and humans are the model systems in which this research is conducted. *Trainees who participate would learn histological and immunohistochemical procedures required to stain brain tissue, plot the locations of cells labeled by the tracer injections using a microscope, and document cell labeling using computerized software and digital photomicroscopy.*

### **Linda Hood, Ph.D. – Physiology of Peripheral and Central Auditory Systems**

Research focuses on physiology of the auditory system at middle ear, cochlear, peripheral neural, subcortical, and cortical levels. Studies include normal and disordered auditory systems including assays of afferent and efferent system function in participants from pre-term infancy through older adults. Studies also focus on patients with auditory neuropathy/dys-synchrony and genetic mutations related to hearing loss. *Trainees could be involved in evaluating aspects of auditory neuropathy/dys-synchrony, efferent system function, and objective methods of evaluating infants and children and adults at cochlear, brainstem, and cortical levels.*

### **Ben Hornsby, Ph.D. – Impact of Hearing Loss on Communication, Effort, and Fatigue**

Research focuses on identifying and understanding mechanisms responsible for deficits in speech understanding associated with hearing loss and how they relate to individual variability in the psychosocial impact of hearing loss and benefit from rehabilitation. Studies also focus on relationships between hearing loss-related communication difficulties, mental effort, and fatigue. *Trainees could be involved in studies of external factors affecting effort and fatigue, contributions of internal factors in children and adults with hearing loss, and effects of reverberation and SNR on amplified speech information.*

### **Gary Jacobson, Ph.D. – Vestibular Function Across the Lifespan**

Research focuses on topics in auditory and vestibular clinical neurophysiology with most in translational research focusing on measuring changes in vestibular function and balance at both ends of the age continuum. Projects measure the vestibuloocular reflex in young children,

changes in somomotor responses (i.e., VEMP) in young and elder adults, and studies to determine congruency of perceptions of dizziness-related disability and handicap. *Trainees could be involved in research studies of characteristics in normal subjects or in various patient populations using a full range of assessment and management approaches.*

### **Alexandra Key, Ph.D. – Psychophysiology of Sensory and Cognitive Function**

Dr. Key's research focuses on psychophysiological indices (EEG/ERP) of sensory and cognitive processes, their use for understanding mechanisms of deficits in intellectual and developmental disabilities, and for documenting treatment effects. A related line of research aims to identify psychophysiological markers of risk for adverse developmental outcomes and concentrates on the development of novel brain-based assessments for evaluating sensory and/or cognitive functions without the need for overt behavioral responses. *Trainees could be involved in studies of the characteristics of speech processing and discrimination in various pediatric populations. Dr. Key's lab currently collaborates with several of the preceptors and trainees can participate in these studies with Dr. Key and other preceptors.*

### **Erin Picou, Ph.D. – Listening Effort and Emotion Perception**

Research focuses on hearing aid use for adults and school-aged children, with specific focuses on listening effort and emotion perception in realistic environments. *Trainees could be involved with studies using subjective and behavioral approaches to measuring effort and affect in laboratory or field settings with a range of assistive hearing technologies. Participants could include adults or children with normal hearing or with hearing loss.*

### **Ram Ramachandran, Ph.D. – Auditory Perception in Complex Environments in Primates**

Research focuses on auditory perception in normal and hearing-impaired subjects, the neuronal encoding of the sounds driving the percept in these subjects during behavioral performance, and the relationship between the encoding of sounds by the neurons and the perception of the subjects. Our studies use the nonhuman primate animal model with interest in perception in complex, realistic environments, and the perception of complex stimuli. *Trainees could be involved in behavioral or neurophysiological measurements aimed at understanding the spectral, temporal, spatial or attentional/cognitive mechanisms underlying perception.*

### **Todd Ricketts, Ph.D. – Optimization of Amplification**

Research projects focus on candidacy and benefits for bilateral beamformers in listeners with hearing aids, development of clinical optimization of microphone-based technologies in children and adults, development of television and movie listening tests, and the effects of hearing loss and hearing aid processing on emotional response to sounds and on listening effort. *Trainee projects could include studies of microphone technologies and emotional response to sound in persons with hearing loss.*

### **Richard Roberts, Ph.D. – Vestibular Assessment and Management**

Research projects focus on improving assessment and management of vestibular disorders. Long-term goals are to reduce the impact of dizziness and imbalance on health-related quality of life, as well as reduce associated costs. Short term goals are to refine ways to identify vestibular migraine, improve treatment of benign paroxysmal positional vertigo (BPPV), and incorporate lifestyle changes to improve vestibular migraine. *Trainee projects could include efficacy of a repositioning chair in treatment of BPPV, use of*

*vestibular evoked myogenic potentials as a biomarker for vestibular migraine in patients with different types of primary headache, studies of seasonality of various vestibular disorders, and effects of lifestyle modifications on symptoms of vestibular migraine.*

### **Anne Marie Tharpe, Ph.D. – Auditory Development**

Studies include sleep studies in adults and preschool children who have hearing loss, and the impact of hearing technology on communication within the home environment as measured using LENA technology. *Trainees could be involved in sleep studies, home use of FM technology in children with hearing loss, and assessment of visual attention tasks in early intervention.*

### **Mark Wallace, Ph.D. – Brain Bases of Multisensory Processing**

Research focuses on integration of auditory, visual, and somatosensory information. Two areas of study are the development and plasticity of multisensory brain circuits, and how deficits contribute to learning and reading disabilities. *Trainee projects could involve learning about functional neuroimaging approaches, how visual cues impact speech understanding, and visual and somatosensory influences on auditory cortical processing.*

#### **For more information and application materials, please contact:**

Linda J. Hood, Ph.D.

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