T35 Research Traineeships at Vanderbilt University – 2027

The NIH-NIDCD funded T35 Research Traineeship Program is designed specifically for AuD students. Vanderbilt University is currently in its 20th 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 of 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 the hearing 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 T35 preceptors, participate in a T35-specific journal club, attend colloquia and campus-wide activities of interest as part of their training experience, and will have opportunities to present their research.

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

Eligibility: This program is open to 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 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 range of resources and technical 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, participant fees) are supported by sources available to the preceptors. In addition, a travel stipend* provides support for T35 trainees to present their research at the annual meeting of the American Auditory Society.

Application Process: Interested AuD students should contact Linda J. Hood, PhD, for information at linda.j.hood@vanderbilt.edu. For additional information and application materials, please contact:

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Schedule: Completed applications should be received by January 10, 2027, and offers will be made on February 1, 2027. A typical traineeship period will be from approximately May 15, 2027 to August 14, 2027. Some flexibility in specific start and completion dates is possible on an individual basis.

T35 traineeships are open to **Vanderbilt AuD students** who are completing their second year in the program. The Vanderbilt AuD curriculum has been adjusted to accommodate full time research traineeships during that summer following the second year of the program. Students on the Vanderbilt Pediatric Track or Vestibular Track may have additional considerations in scheduling and can work with their academic advisor and Dr. Hood to make adjustments.

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

**Note that while funding for 2027 is anticipated, traineeships and travel awards cannot be finally confirmed until official notification is received from the NIH.*

Vanderbilt University T35 Program
Research Opportunities and Preceptors

Angela Bonino, Ph.D. – Children's Auditory Perception

The Children's Auditory Perception Laboratory (ChAPL) focuses on advancing pediatric health care for children who have complex and diverse developmental profiles. The first line of research harnesses the power of big data analytics to identify disparities in assessment practices for children who have developmental disabilities based on electronic health records. The second line of research uses developmental psychoacoustic methodologies to examine factors that affect hearing sensitivity estimates for children. The third line of research focuses on implementing strategies into clinical practice to either facilitate the evaluation of hearing or to promote timely referral for a developmental assessment.

Potential trainee projects include study of disparities in clinical care with study of electronic health record data to evaluate patterns of diagnostic assessment for children based on their age and disability status and variability in threshold estimates for both pure-tone and speech stimuli based on developmental disability status. Laboratory work focuses on factors affecting hearing threshold estimates in young children who have Down syndrome, autism, or typical development using psychoacoustic approaches to inform development of clinical protocols.

Linda Hood, Ph.D. – Peripheral and Central Auditory Physiology

The Human Auditory Physiology Laboratory focuses on physiology of the auditory system at middle-ear, cochlear, peripheral neural, subcortical, and cortical areas. Studies include perspectives on normal and disordered auditory systems. Current primary research focuses on development of new assays for assessment of infant hearing, auditory neuropathy/auditory synaptopathy, and effects of prenatal virus exposure on auditory and language development. Other projects have involved studies of efferent function using medial olivocochlear and middle-ear muscle reflex assays and characterizing auditory function in carriers of gene mutations associated with auditory disorders to understand the phenotypic characteristics of certain genotypes.

Trainee opportunities include involvement in the studies of infant hearing assessment and aspects of auditory neuropathy/auditory synaptopathy, along with companion studies for other ongoing research projects. Trainees would utilize cochlear, subcortical and cortical auditory neural responses including auditory brainstem, frequency-following, and late latency responses using innovative technology and methods in infants, children, and adults.

Aaron Moberly, M.D. – Outcomes in Adults with Hearing Loss and Cochlear Implants

Dr. Moberly's primary research focus is on determining factors that contribute to and predict variability in speech recognition and patient-reported outcomes in adults with hearing loss and cochlear implants (CIs). This work involves inter-disciplinary research using of a battery of sensory, electrophysiological, CT-imaging, and cognitive-linguistic measures to explain adult CI outcomes cross-sectionally, as well as to predict both early and long-term CI outcomes using measures prior to CI surgery. Examining the roles of these factors in explaining and predicting poor CI outcomes also aims to support application and development of aural rehabilitation approaches to improve CI performance in these individuals. In addition, a secondary focus of his research is to work with a team of image analysis experts to develop artificial-intelligence computer-assisted image analysis approaches to improve ear diagnosis using digital otoscopes.

Trainees could be involved in studies incorporating a broad range of assessment tools involving speech perception, spectro-temporal processing, visual cognitive assessments of working memory, processing speed, inhibitory control, and fluid intelligence, as well as linguistic tasks of

lexical and phonological processing and may involve investigating the impacts of advancing age and hearing loss on relationships among these measures.

Erin Picou, Ph.D. and Ben Hornsby, Ph.D. – Listening-Related Fatigue and Traumatic Brain Injury

Broadly, the focus of research during this traineeship would be on listening-related fatigue in adults with a history of moderate to severe traumatic brain injury (TBI). This work is a collaborative effort between two primary investigators (Drs. Picou and Hornsby), with expertise in hearing science and listening-related fatigue, and other faculty in the department with expertise in the communication challenges of adults with a history of moderate to severe TBI. Our long-term goals are to identify mechanistic explanations, and potential interventions, for listening-related fatigue experienced by adults with a history of TBI (without or without audiometric hearing loss).

Trainees could be involved in studies investigating associations and interactions between moderate to severe TBI, TBI-related communication difficulties, and listening-related fatigue. Such studies could include retrospective chart reviews, behavioral testing in a laboratory setting using a fatiguing task, using ecological momentary assessment to examine listening-related fatigue in adults with TBI in real-world settings, and using focus groups and/or questionnaires to obtain a better understanding of the qualitative impact of listening-related fatigue on adults with a history of TBI.

Ram Ramachandran, Ph.D. and Troy Hackett Ph.D. – Neural Basis of Normal Hearing and Hearing Dysfunction

Research focuses brain and behavior relationships in complex environments using a nonhuman primate animal model. Based on examining how detection in noisy environments in typically hearing macaques is related to activity in the brain, Dr. Ramachandran, Dr. Hackett, and other colleagues developed the nonhuman primate model of noise induced-hearing loss. Studies have described the impact of single noise exposures causing permanent threshold shifts as well as hidden hearing loss with no audiometric changes on hearing in noisy environments. Planned studies will examine the consequences of chronic noise exposures, as typically experienced by humans, the effects of aging in nonhuman primates on hearing in complex environments, changes in neural encoding in complex environments after noise exposures or in aging animals, and how auditory perception is altered by non-auditory events in the environment.

Potential trainee projects could include study of the effect of chronic noise exposure on physiological indices of hearing function using assays of cochlear (OAE) and auditory brainstem responses (ABR) in anesthetized unexposed and noise-exposed animals periodically; effect of chronic noise exposure on behavioral performance in noisy environments using behavioral metrics in complex environments in detection and discrimination tasks; effect of aging on physiological and behavioral indices of hearing, including analyzing responses from specific nerve fiber populations; temporal and spatial processing after chronic noise exposure or in aging animals; and the influence of non-auditory signals on auditory perception by comparing auditory only performance and "multisensory" performance.

Todd Ricketts, Ph.D. – Optimization of Amplification

The mission of the Dan Maddox Hearing Aid Research Laboratory is to improve the quality of life of persons with hearing impairment through individualized optimization of amplification technologies and development and refinement of fitting and counseling techniques. Research projects focus on candidacy, potential benefits, and limitations for microphone and other hearing aid processing technologies; development of a television and movie listening test for evaluation of hearing aid and assistive technologies; the effect of hearing aids and hearing aid processing

on listening effort; individualizing cost-effective hearing aid service delivery for adults including those experiencing cognitive decline; and refinement and development of 3D scanning and manufacturing processes related to amplification and hearing protection.

Trainee projects could include topics of optimizing hearing aid service delivery for adults including barriers related the cost, time and complexity of current hearing aid service delivery models. Another area involves effects of SNR improvement processing in hearing aids, including disruptions to natural cues, such as those important for spatialization and how these factors interact with communication in complex listening environments.

Daniel Romero, Au.D., Ph.D. – Vestibular Research

Dr. Romero's research program investigates the interplay between vestibular function and cognitive processes, particularly in individuals with neurologic conditions such as traumatic brain injury (TBI). Our lab integrates standard vestibular assessments with cortical EEG analysis and aims to uncover the neural dynamics underlying vestibular-cognitive interactions. This translational approach bridges clinical practice and basic science, with the ultimate goal of developing innovative, non-invasive diagnostic tools and interventions to improve patient outcomes in dizziness and imbalance.

Trainees would have opportunities to work in areas involving vestibular function and cognitive processes.

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

The Wallace lab studies the integration of information across the different sensory systems. Several themes and research directions in the lab include: 1) how visual information contributes to speech intelligibility under normal hearing circumstances, and how this changes with hearing loss and restoration via hearing aids or cochlear implants, 2) neuroplasticity associated with hearing loss and restoration, and 3) alteration in audiovisual integration in autism and its impact on communication.

T35 trainee projects would be suitable within each of the threads described above. Trainees would learn how auditory cues can alter the perception of the timing of visual events, how visual cues can facilitate auditory comprehension and have implications for predictions about CI outcomes and optimization, and opportunity to apply multisensory paradigms in various populations.

Megan Beers Wood, Ph.D. – Hearing Response Mechanisms

Dr. Wood's Lab, The Hearing Response Mechanisms through Observations of Neuro-Immunity in the Cochlea (HARMONIC) Laboratory, uses a combination of techniques including fluorescent imaging, flow cytometry, and deep neural network analysis of facial grimace and movement to understand how the immune system and neurons of the cochlea interact after exposure to loud noise. Dr. Beers Wood combines her training in immunology with her postdocs in auditory neuroscience to study basic mechanisms of hearing. The long-term goal of Dr. Beers Wood's research is to develop interventions to prevent or treat noise induced hearing loss (NIHL) or NIHL associated conditions such as pain hyperacusis.

Students will have opportunities to learn how to perform noise exposure on animals, follow the noise exposure with auditory brainstem response testing, behavioral analysis, fluorescent quantification of OHC ribbon synapses through confocal microscopy. Studies may also include experience in using immunofluorescent confocal microscopy to quantify the change in number and expression of immune responses, and experience in utilizing machine learning guided behavioral analysis and statistical correlation between wave 1 amplitudes of the ABR and BIOMAP scores.