



## Exploring Auditory Neuroscience at the Biennial Woods Hole Summer School: A Deep Dive into the Biology of the Inner Ear

Every two years, some of the brightest minds in auditory neuroscience gather at the Marine Biological Laboratory (MBL) in Woods Hole for an immersive, three-week course titled Biology of the Inner Ear (BIE). Since its inception in 2007, the course has offered graduate students and postdoctoral researchers from diverse scientific backgrounds—ranging from audiology to molecular biology and in vitro physiology—the opportunity to deepen their knowledge of auditory neuroscience through a combination of lectures, hands-on labs, and close interaction with world-renowned faculty. Dr. Peter Bremen led the course's participants through an engaging and practical demonstration of in-vivo extracellular neurophysiology using the Mongolian gerbil. This portion of the course allowed students to conduct recordings from the inferior colliculus and auditory cortex while exposing the gerbils to auditory stimuli. "They obtained frequency tuning, level tuning, and amplitude-modulation tuning curves," Dr. Bremen explained. "It was an excellent opportunity for them to learn about hardware components like pre-amps and AD converters, as well as stimulus generation, spike sorting, and data analysis." For many students, this was their first introduction to in-vivo neurophysiology. According to Dr. Bremen, the experience generated enthusiasm and many insightful questions from the students. "The students were very engaged, not only with the scientific aspects but also with the technical components of the rig setup, including the electrodes, hardware, and software," he shared. The Role of NeuroNexus in Supporting Advanced Research NeuroNexus, a company known for its advanced neurophysiology tools, was instrumental in making this demonstration possible. Dr. Bremen, a long-time user of NeuroNexus products, emphasized their impact on his teaching and research. "I've used NeuroNexus electrodes for more than 10 years," he shared. "Their recording quality is excellent, and the price is unbeatable. One of the things I particularly appreciate is the reusability of the electrodes without any loss in



quality.” For the 2024 course, NeuroNexus generously provided equipment, which allowed participants to gain hands-on experience with high-quality neurophysiology tools. “Without their support, the in-vivo demonstration wouldn’t have been possible,” Dr. Bremen noted. The use of NeuroNexus products not only enhanced the students’ technical skills but also provided them with insights into setting up and maintaining a fully functional electrophysiology rig. A Collaborative Success The Biology of the Inner Ear course is known for fostering close relationships between students and faculty, allowing for a collaborative learning environment. Reflecting on the success of the in-vivo demonstrations, Dr. Bremen was enthusiastic: “All in all, I think our demos were a great success and very informative for the students, many of whom had no prior experience with in-vivo neurophysiology.” When asked if he would continue using NeuroNexus products in the future, Dr. Bremen’s response was emphatic: “Yes, definitely!” The biennial Biology of the Inner Ear course continues to play a crucial role in training the next generation of auditory neuroscientists. Thanks to the collaboration between educators, researchers, and supporters like NeuroNexus, participants are gaining the skills and knowledge needed to make significant advancements in auditory science.