

# Cheers to Dr. Arnold Starr

By Nina Kraus, PhD

In 2020, Dr. Arnold (Arne) Starr celebrated his 88th birthday. Arne, originally trained as a neurologist, is a pioneer in hearing science whose contributions are manifest in daily hearing health care practice. The core of his work has always been the connection between hearing and the brain, grounded in the view that neither the auditory nor nervous systems should be siloed off from each other. Modern ideas in hearing health care, such as the notion that older adults with hearing loss are at heightened risk for dementia, are rooted in Arne's seminal work, which is distinguished by experiments that both inform clinical practice and unveil insights into hearing and nervous system function.

Much of Arne's earliest work was on understanding the auditory brainstem response (ABR) and developing the standard protocols still used today. One of his papers—published in *Science* no less—tested whether alcohol consumption affects ABRs (*Science*. 1978;201:174-176). Indeed it does. Ingesting a dose of alcohol prolonged ABR latencies without affecting amplitudes, suggesting alcohol can acutely slow down neural transmission. Reading the methods section shows the science of a bygone era. The authors themselves measured their own ABRs, toasted each other with a round of screwdrivers, and tested their ABRs once again. True to Arne's scientific form, however, this charming first experiment was the precursor to a line of research on using the ABR to evaluate the effects of chronic alcoholism and withdrawal on nervous system function. It taught us something fundamental about the first connections between the ear and brain, and advanced clinical practice.

Today Arne is probably best known for his work on auditory neuropathy, a vexing hearing disorder characterized by an absent ABR despite relatively normal cochlear function. Although such cases had been described previously in the literature, it was Arne who coined the term and undertook a systematic study of neuropathy patients to develop rigorous diagnostic criteria (*Brain*. 1996;3:741-753). The name itself

was a big step forward, meaningful to both neurologists and audiologists (I had proposed the cumbersome “BAPS”—brainstem auditory processing disorder). Ever the neurologist, much of this information was based on Arne's own interactions with the patients and their families. And true to form, in addition to shaping clinical practice, work on neuropathy has been critical to understanding the molecular machinery underlying normal hearing.

In the later stages of his career, Arne turned to studying hearing and Alzheimer's disease. Much of his work focused on the use of auditory evoked potentials to evaluate nervous system function in these patients. Once again ahead of its time, this work forged the idea that hearing ties into broader nervous system health—and, by extension, that hearing tests could be useful in screening and diagnosing neurological disorders.

Arne has a deep connection to the lived world. His personal care of his patients was profound, and something I witnessed when we collaborated. He was always connected to nature and beauty; we often found ourselves walking and talking in beautiful places—mountains and seashores preferred. Arne has a lifelong passion for watercolor painting, both landscapes and “neuralscapes.” His art conveys the stunning beauty of the biology of hearing. His work, which can be found online (<https://www.arnoldstarrart.com>), includes beautiful renditions of the inner ear and brainstem. I am confident that Arne's scientific, clinical, and artistic contributions will continue to resonate in hearing science and health care for years to come. He is the Renaissance man I aspire to be. Cheers to Arne! 🍷



**Dr. Kraus** is a professor of auditory neuroscience at Northwestern University, investigating the neurobiology underlying speech and music perception and learning-associated brain plasticity. Learn more at [www.brainvolts.northwestern.edu](http://www.brainvolts.northwestern.edu).