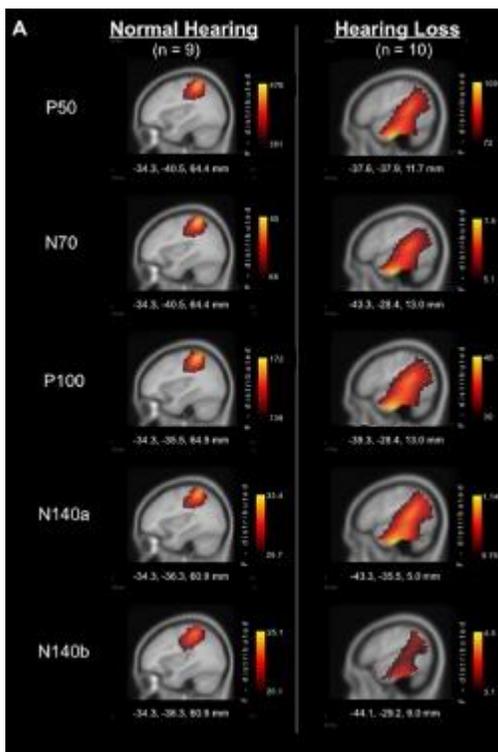
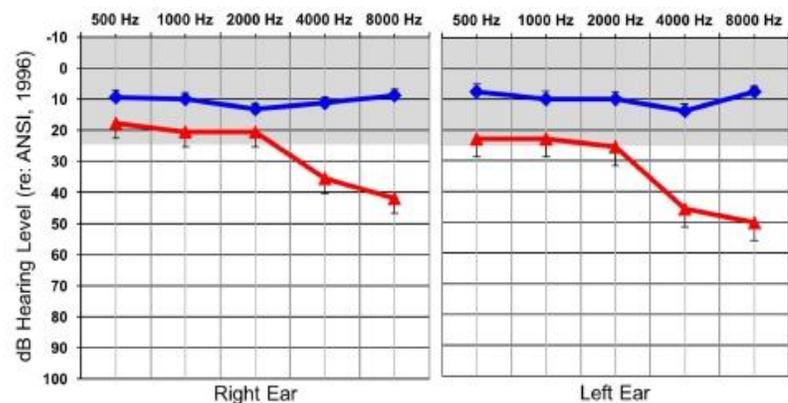


## Scientific Dispatch #1 Brain Changes Due to Mild Hearing Loss

Continuing research out of the University of Colorado at Boulder is shedding light on changes in the brain that occur due to hearing loss. This research began several years ago looking at brain differences in children who were born with profound hearing loss, but the focus has now shifted to adults with mild hearing loss. The results of these studies are astonishing – and what was surprising to us is that these changes were happening with hearing losses so mild we wouldn't always recommend treatment.

Researchers compared the brain's response to sound in normal hearing adults compared to adults with mild to moderate age-related hearing loss (a *very* common configuration of hearing loss that we see at BHC every day). The figure on the right shows the average hearing loss they included in their study. The blue lines represent the normal hearing participants, and the red lines represent the average audiogram of those with hearing loss who were included in the study. It is important to note that for these subjects, much of their hearing was still considered "normal."



Using fMRI imaging to map the brain, they found that with normal hearing, only the auditory centers lit up in response to sound. However, the test subjects with hearing loss showed much more activation in areas outside the auditory centers of the brain. The figure at left shows the difference between the brain scans of normal hearing subjects and those with hearing loss.

The practical results of this is that people with mild to moderate hearing loss are likely to have much more difficulty understanding conversation in noisy, complex environments because the brain areas that would be pulled in to help in those situations are already busy just with the process of hearing.

Continuing study is looking at hearing aids and assessing whether appropriate amplification of hearing can help. The researchers feel it is likely these effects can be reversed if treated appropriately.