Tuning Curves
- Neural Tuning Curve
- Characteristic Frequency
- Psychophysical Tuning Curve
- Hearing Impairment and Tuning Curves

A tuning curve is a plot of a neural response with intensity level as a function of frequency. A tuning curve has a sharp point at the characteristic frequency and at a low intensity level, which is thought to be due to the outer hair cell motility. A neural tuning curve represents a neuron with a characteristic frequency, a frequency at which one neuron mostly respond to. The tuning curve broadens at higher intensities meaning that more neurons are responding to the stimuli regardless of their CF, these broader filters at higher intensities help process fast changes in the amplitude in sound that is important for processing complex sound. The low frequency tail of the tuning curve shows that as intensity increases, more low frequency fibers fire.

A psychophysical tuning curve is obtained by finding the lowest level of narrow band masking noise that can cause a pure-tone signal to no longer be heard. It derives from a group of auditory neurons that help us determine the shape of auditory filters and appear to be of similar shape to an auditory neural tuning curve.

Both types of tuning curves encourage the belief that frequency selectivity of the auditory system is established at the level of the basilar membrane and auditory nerve.

Individuals with a hearing impairment have decreased frequency selectivity due to the loss of the tuning curve sharpness, resulting in a wider tuning curve at high intensities. Meaning there is a wide range of neuron fibers responding to a sound on the basilar membrane.