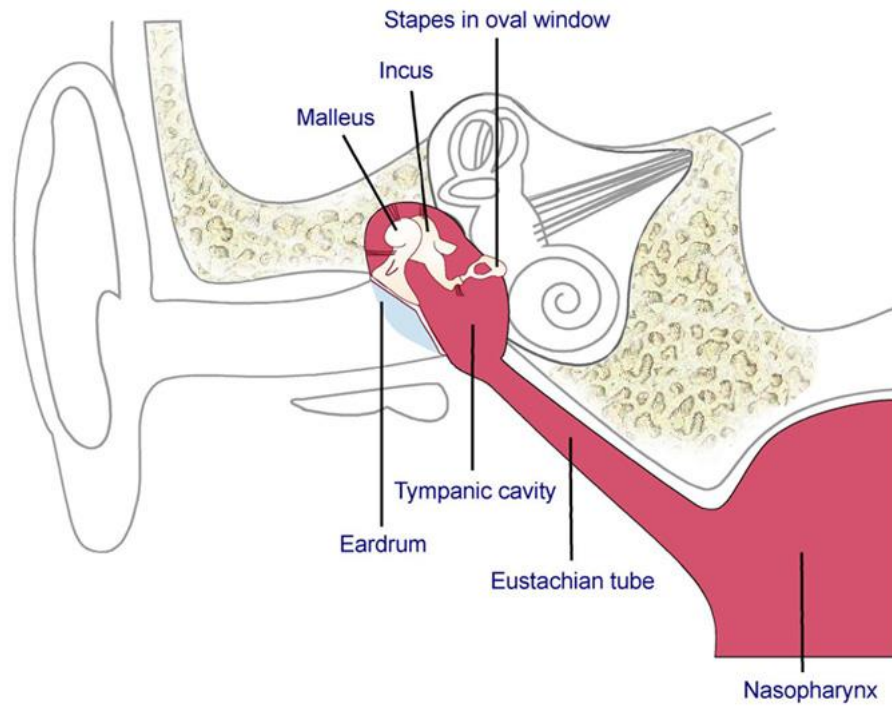


Structure and function of the middle ear

Labeling



Function of the middle ear

When sound waves coming from the outer ear hit the eardrum, it starts to vibrate. This makes the first of the ossicles, the malleus, vibrate as well.

The malleus, consisting of two processes, is attached to the eardrum on the auditory canal side. The other process is attached to the inner layer of the tympanic membrane. The process conducts the movement, using the process on the inner ear side, to the ossicles in the tympanic cavity. The inner part of the malleus, together with the incus and the stapes, bridges the air-filled space in the tympanic cavity.

The malleus is also attached to the incus, which, in turn, is attached to the stapes. The stapes itself is connected via its footplate to the cochlea in the inner ear. The stapes and its footplate lie up against the oval window, an opening in the inner ear. This is how vibrations of the eardrum are conveyed to the inner ear.

Because of the different lengths of the ossicles (lever advantage) and the different areas eardrum and oval window (increase in pressure / hydraulic advantage), there is a twentyfold amplification of the sound in the middle ear!