

# Ear

## Eustachian tube

- connects the middle ear with the nasopharynx and allows passage of air
- tube is normally closed, but it opens with swallowing or yawning
- allows equalization of air pressure on each side of the tympanic membrane so that the membrane doesn't rupture

## Functions of middle ear

- (1) conducts sound vibrations from the outer ear to the central hearing apparatus in the inner ear
- (2) protects the inner ear by reducing the amplitude of loud sounds
- (3) eustachian tube allows equalization of air pressure on each side of the tympanic membrane so that the membrane doesn't rupture

**Amplitude**: how loud a sound is

**Frequency**: pitch/cycles per second

**Air conduction**: sound travels through air

**Bone conduction**: bones of the skull vibrate

## External Ear

- has a characteristic shape & serves to funnel sound waves into its opening, the external auditory canal
- external auditory canal = 2.5 to 3 cm long, lined with glands that secrete cerumen, S-curve in adult
- tympanic membrane = separates external & middle ear, translucent membrane with a pearly gray color, oval, slightly concave

## Middle ear

- tiny air-filled cavity inside the temporal bone
- auditory ossicles: malleus, incus, stapes
- Round window & Oval window