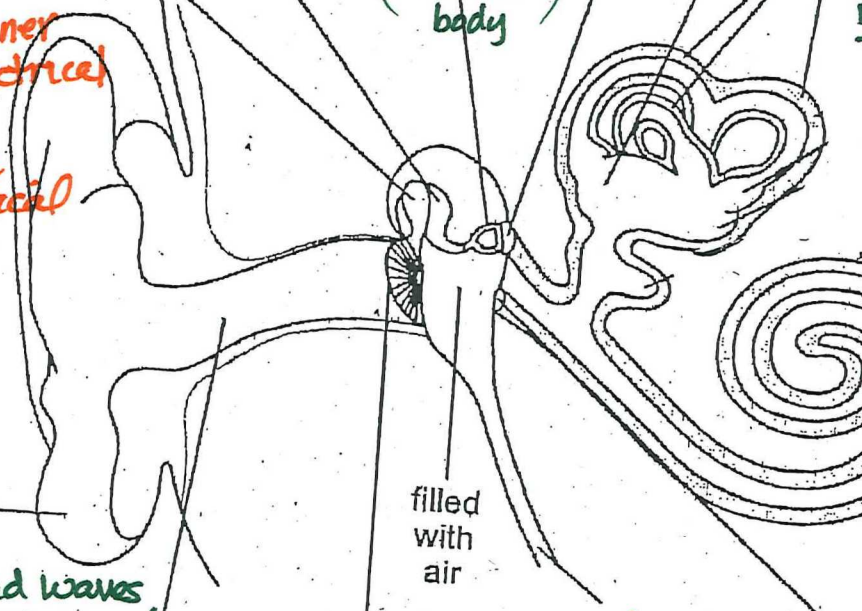
External Ear - Pinna → Tympanic membrane
Middle Ear - Ossicles → Eustachian Tube → oval/round window
Inner Ear - Cochlea → Semicircular canals

Humans hear sound with a vibration frequency between 16 - 20,000 Hz

How Do We Hear?

Sound waves travel down auditory canal → strike the eardrum → ear drum vibrates → vibrations passed to ossicles → ossicles amplify sound + send sound waves to the organ of hearing - cochlea (inner ear)
- once sound waves reach inner ear they are converted into electrical impulses, which the auditory nerve sends to the brain. The brain then translates the electrical impulses to sound

Ossicles - Amplify sound - transmits sound waves to the inner ear



- flexible membrane transmits vibrations from stapes to the fluid in the cochlea

Semicircular canals - 3
interconnected fluid filled canals in the inner ear which contain sensory receptors that send information to the brain that help you maintain your balance - contains receptors for balance (balance + head position)

Auditory Nerve
aka Vestibular cochlear nerve
8th cranial nerve (made up of cochlear nerve + vestibular nerve)

Cochlea (contains nerves for hearing)
- when the fluid in the cochlea moves (due to mechanical disturbances of the stapes on the oval window) the cilia on the hair cells are displaced
- This motion is converted into electrical impulses that get sent to the cochlear nerve which sends messages to brain

Pinna
Auricle
- helps funnel sound waves towards the auditory canal

Ear Canal
Auditory Canal
- pathway that directs sound waves to the middle ear
- Contains small hairs (cilia) that prevent particles from entering ear
- produces ear wax which helps protect + lubricate the canal
- can provide some minimal protection against infection + H2O entry

Tympanic membrane
Ear Drum
Converts sound waves into vibrations which pass to the ossicles. This process also results in amplifying sound wave signals over 20X before the signal reaches the oval window of the cochlea

Eustachean Tube
connects middle ear to nasopharynx - helps drain mucus from middle ear
- can also help in equalizing pressure of the inner ear when external pressure changes
*equalized pressure is needed for the proper transfer of sound

Round Window
- membrane covered opening below the oval window, bulges everytime the oval window is depressed by stapes - causing fluid movement in the cochlea