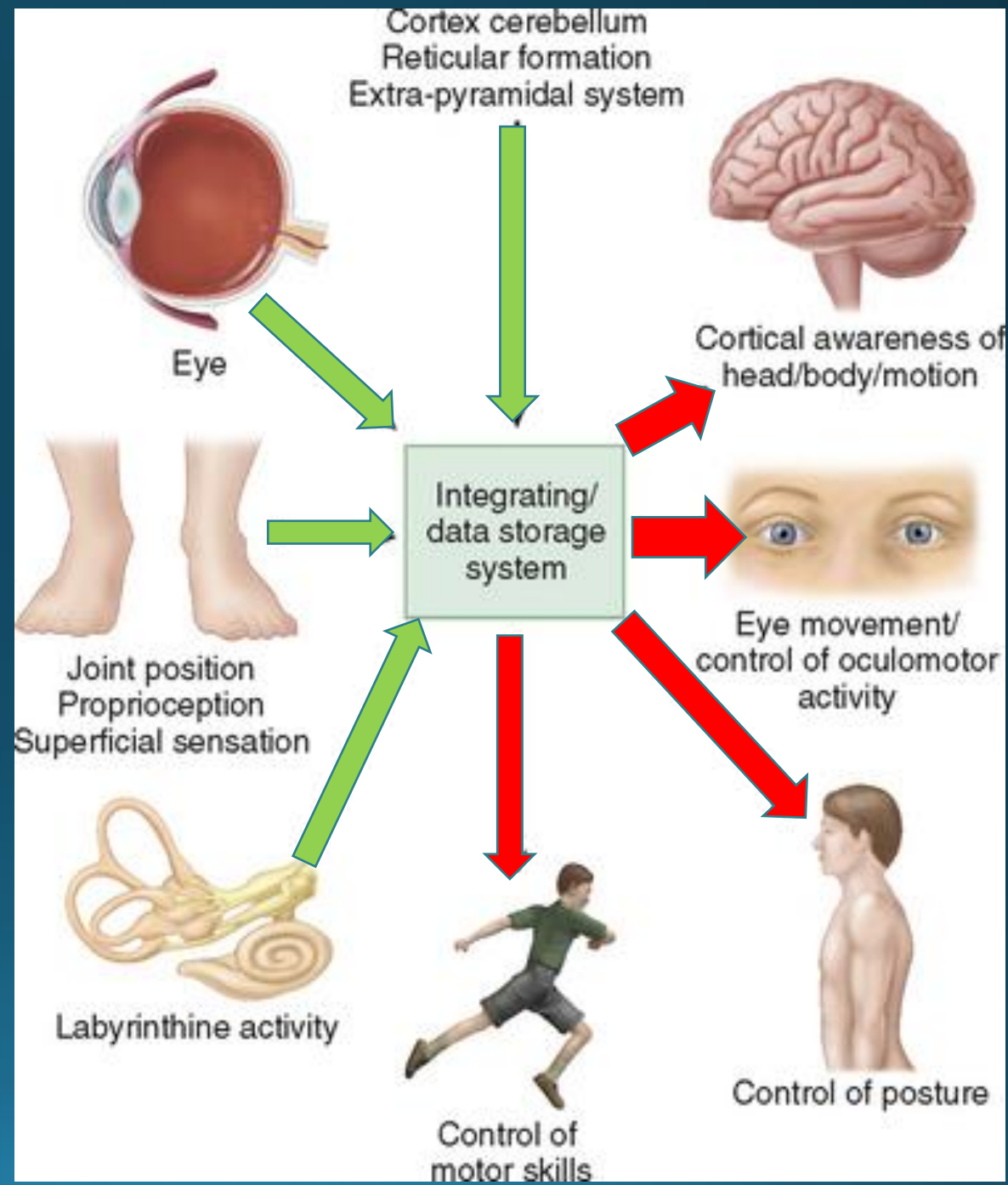
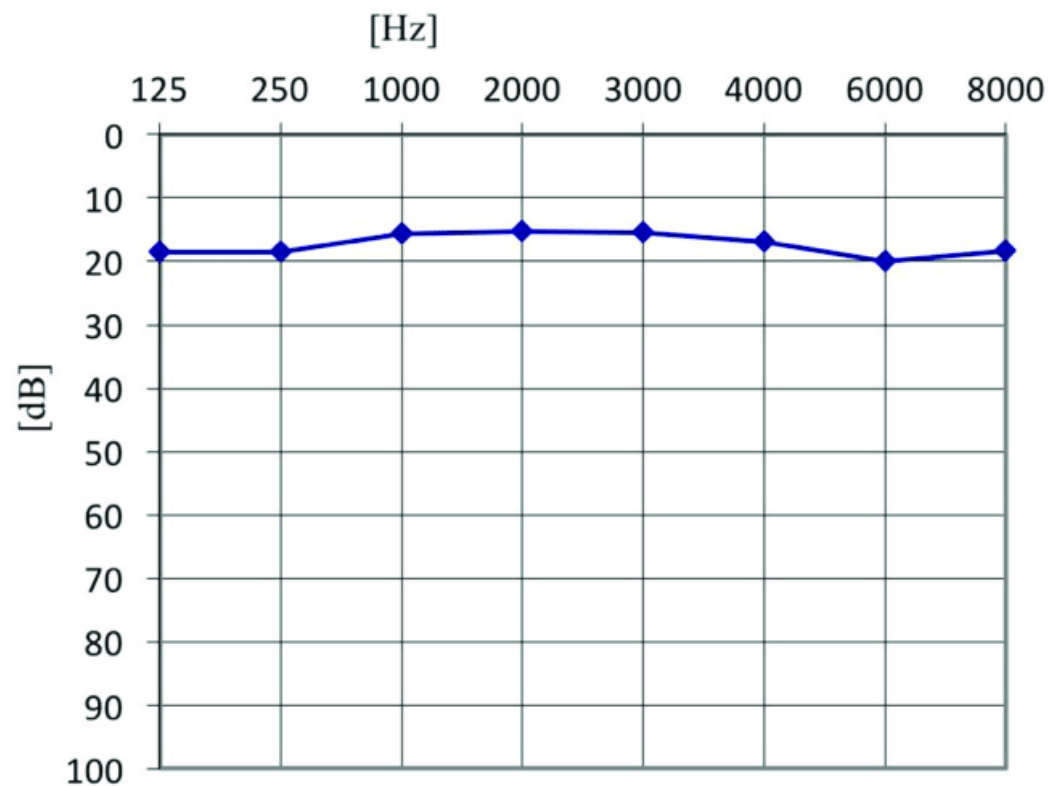


orange = distance sound wave travels in time t

blue = distance sound wave travels in time $(t+x)$

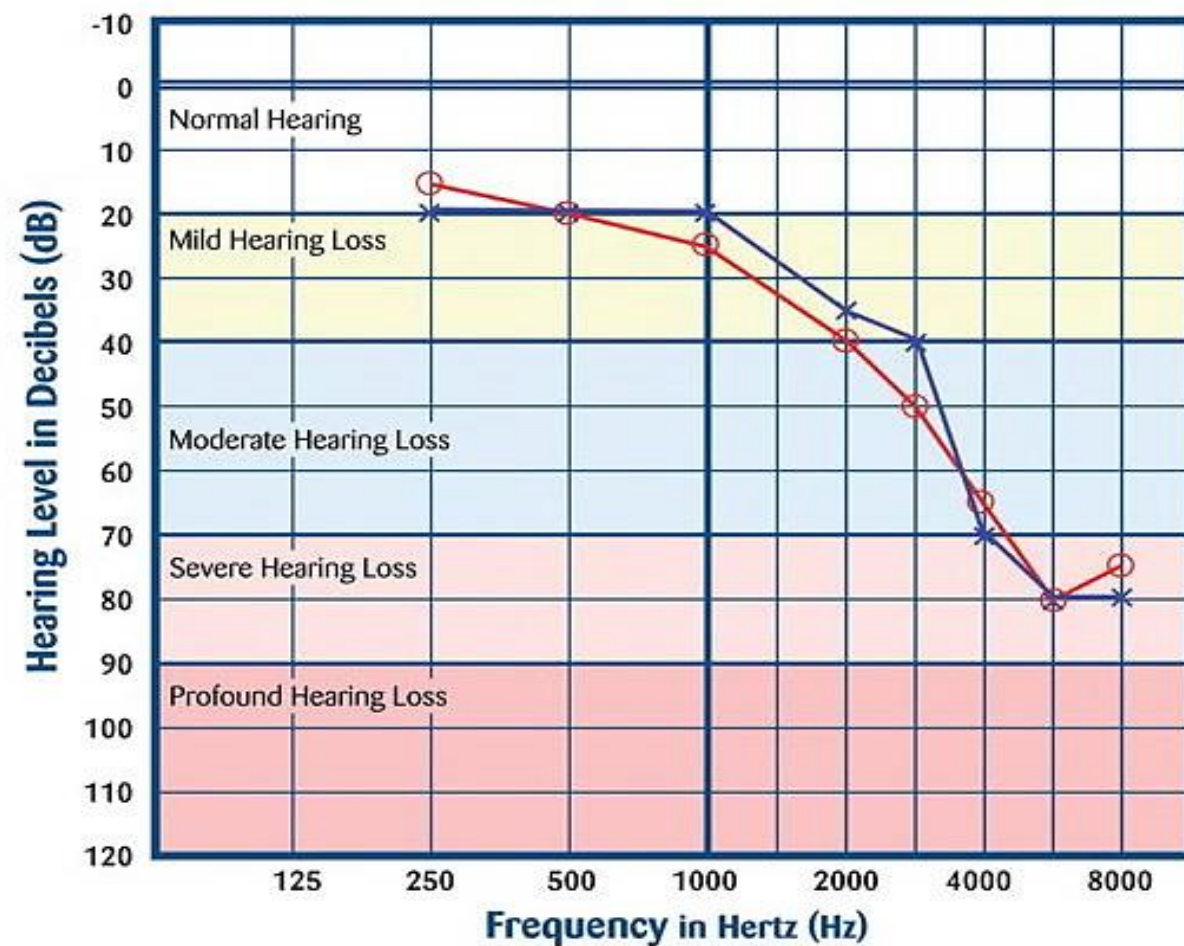




AUDIOGRAM

Left Ear ×

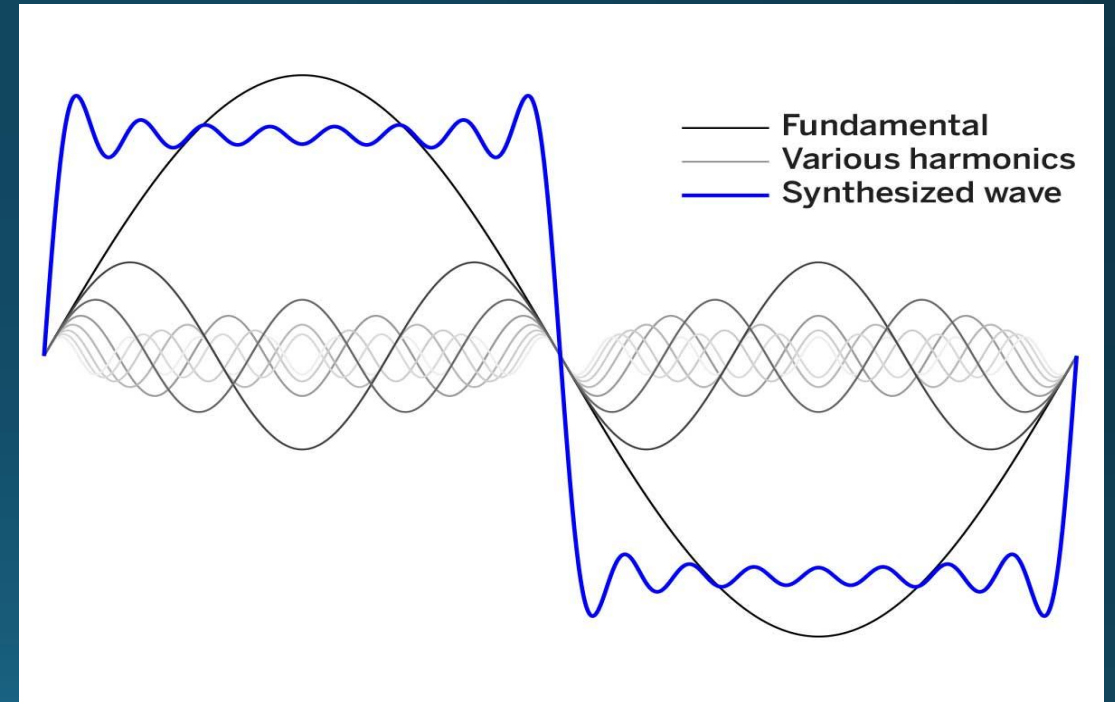
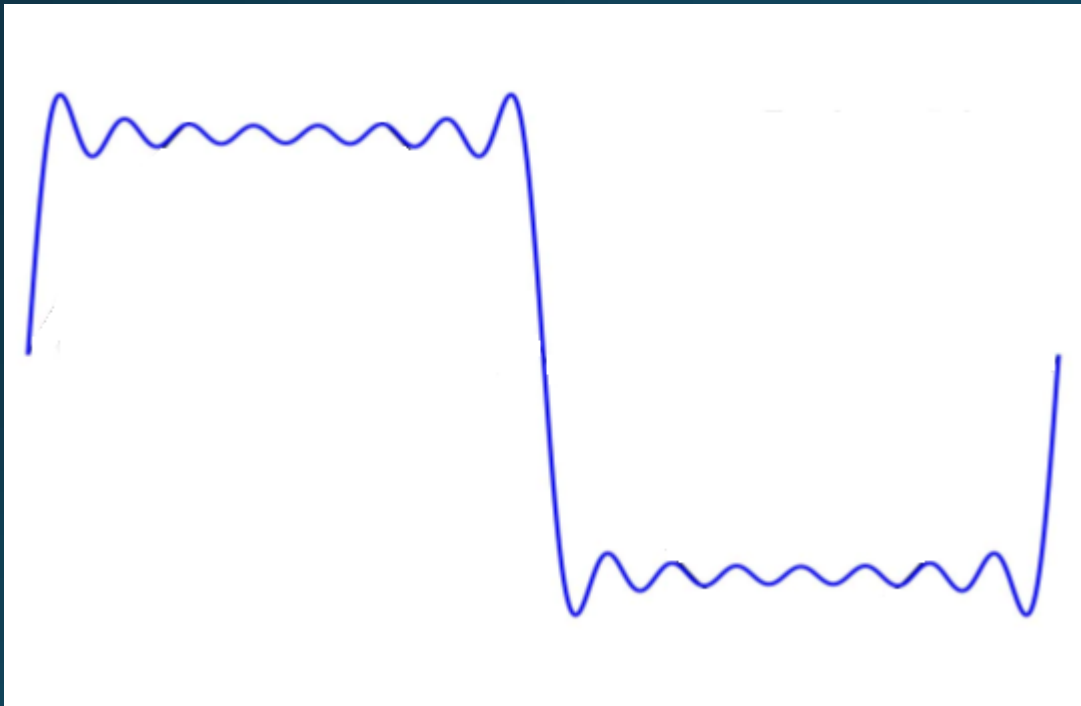
Right Ear ○



**SOUNDS PRODUCED BY MUSICAL INSTRUMENTS OR THE HUMAN VOICE CONSIST OF MANY
TONES**

OUR HEARING SYSTEM PERFORMS A FREQUENCY ANALYSIS

OUR BRAIN PERFORMS A SYNTHESIS

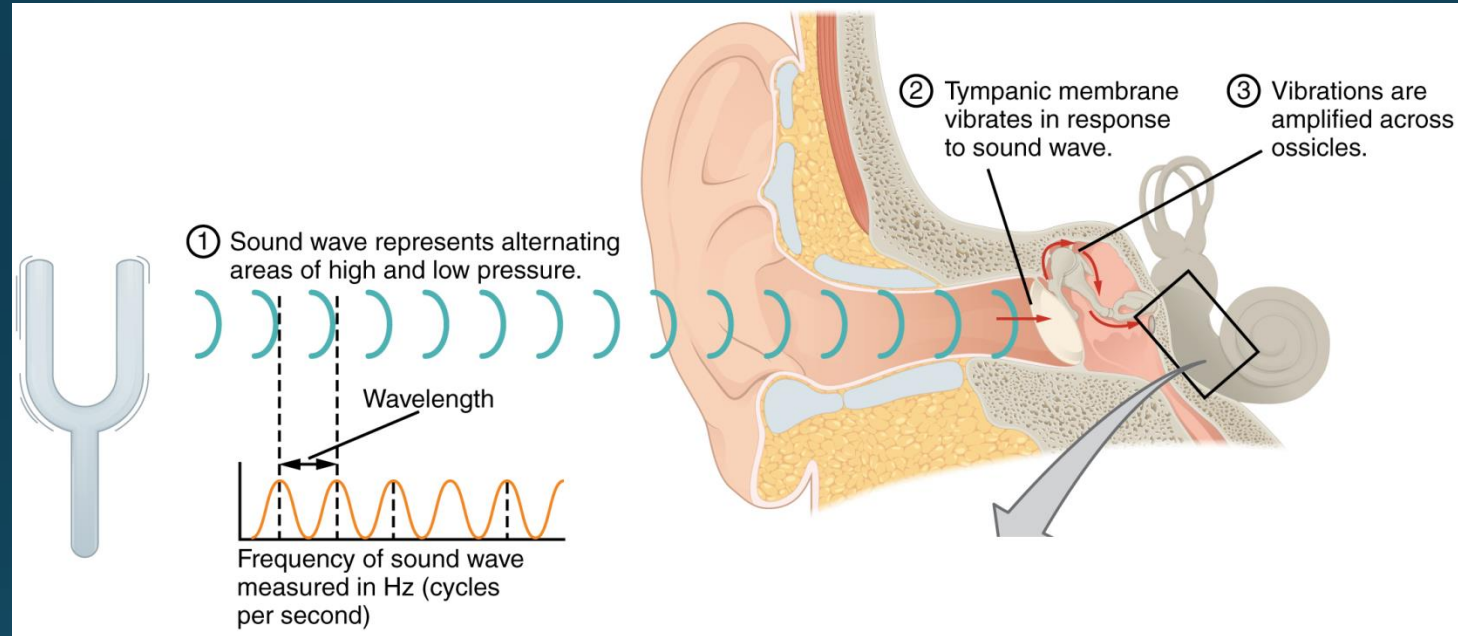


THE FUNDAMENTAL HARMONIC THE LOWEST FREQUENCY OF A PERIODIC WAVEFORM

OUTER EAR

THE PART MOST VISIBLE IS THE PINNA

IT FUNNELS SOUND WAVES INTO THE EXTERNAL AUDITORY CANAL



THE OUTER EAR STRUCTURES MUST

FOCUS SOUND WAVES ON THE TYMPANIC MEMBRANE

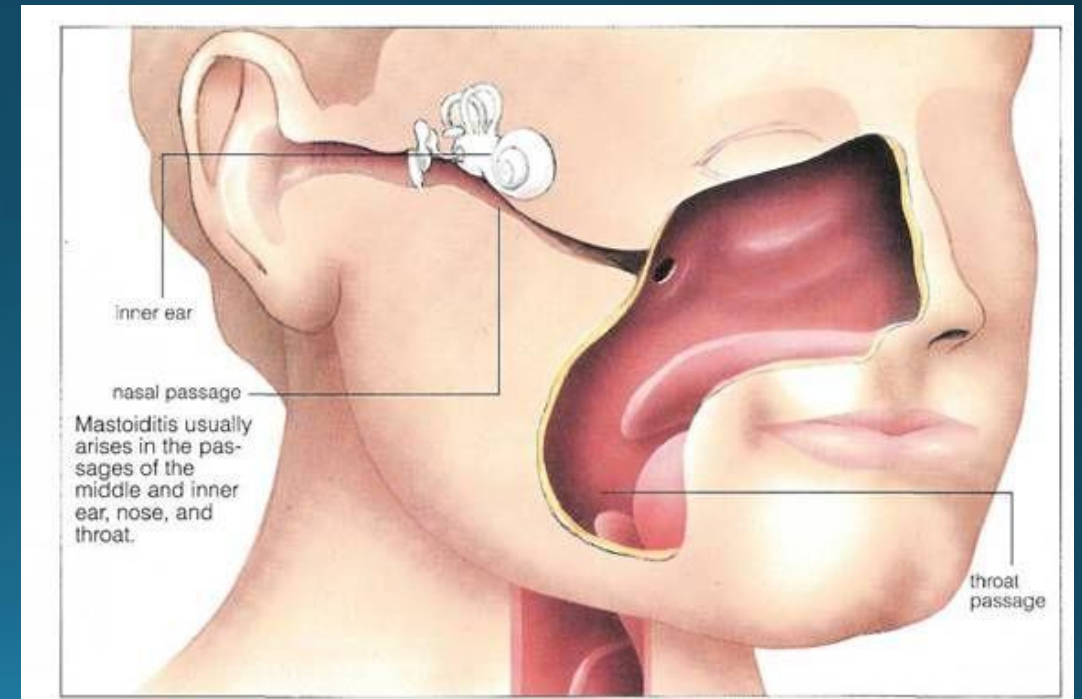
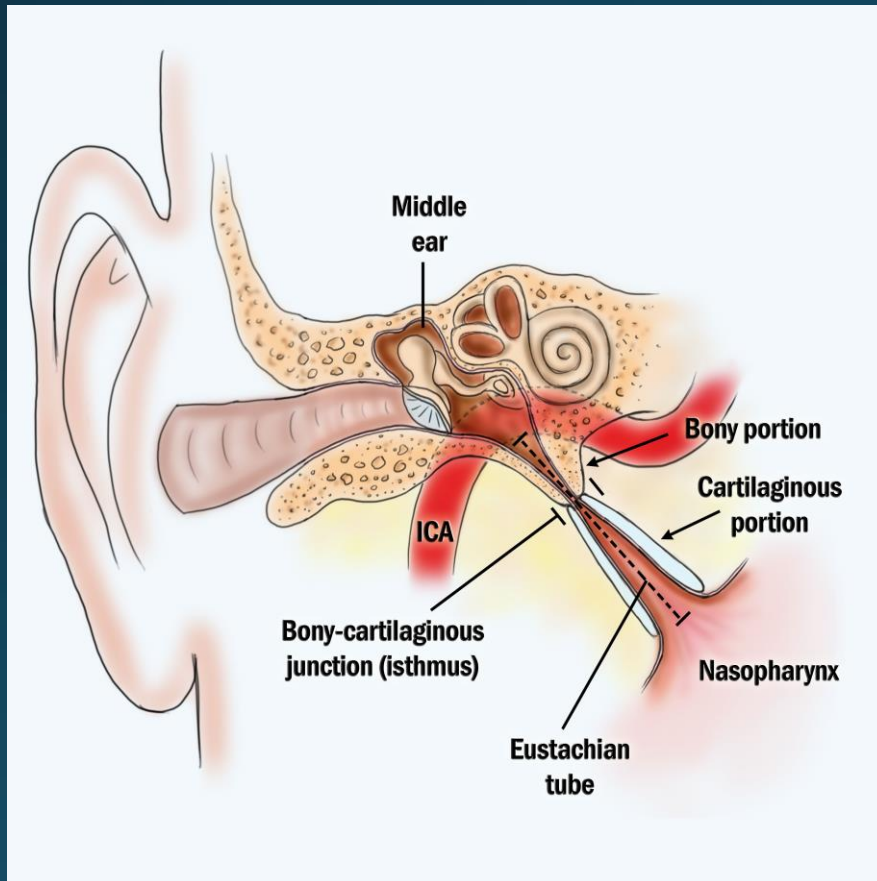
SOUND CAUSES THE TYMPANIC MEMBRANE TO VIBRATE LIKE A DRUM

MIDDLE EAR

THE EUSTACHIAN TUBE

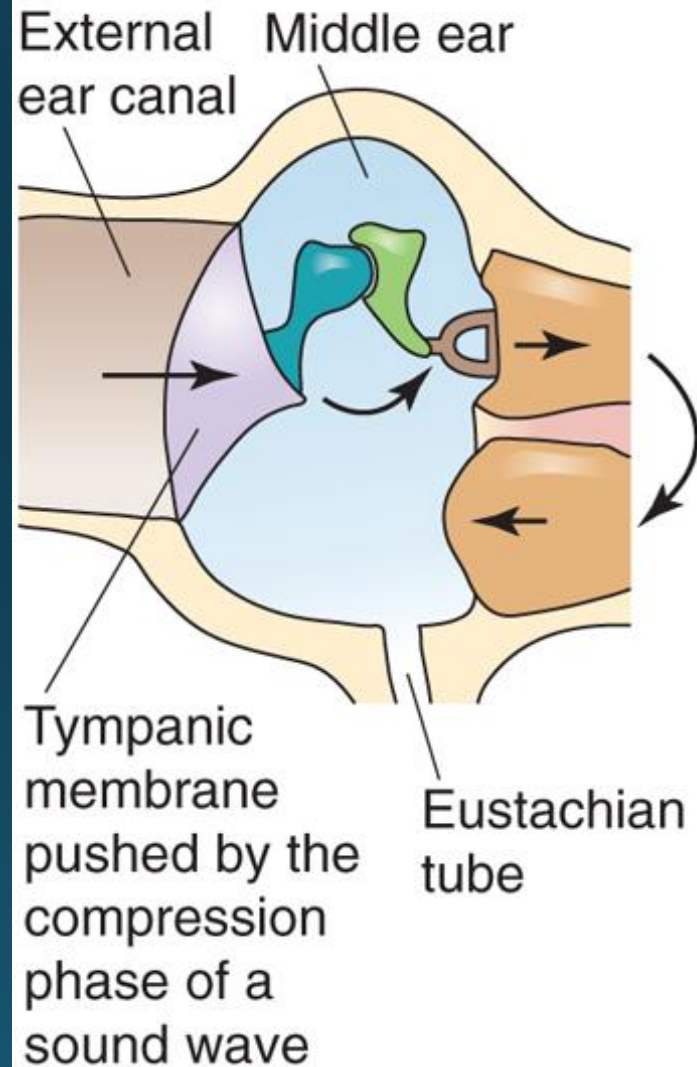
CONNECTS THE MIDDLE EAR TO THE NASOPHARYNX

TO EQUALIZE THE AIR PRESSURE ON OPPOSITE SIDES OF THE TYMPANIC MEMBRANE
(SWALLOWING)

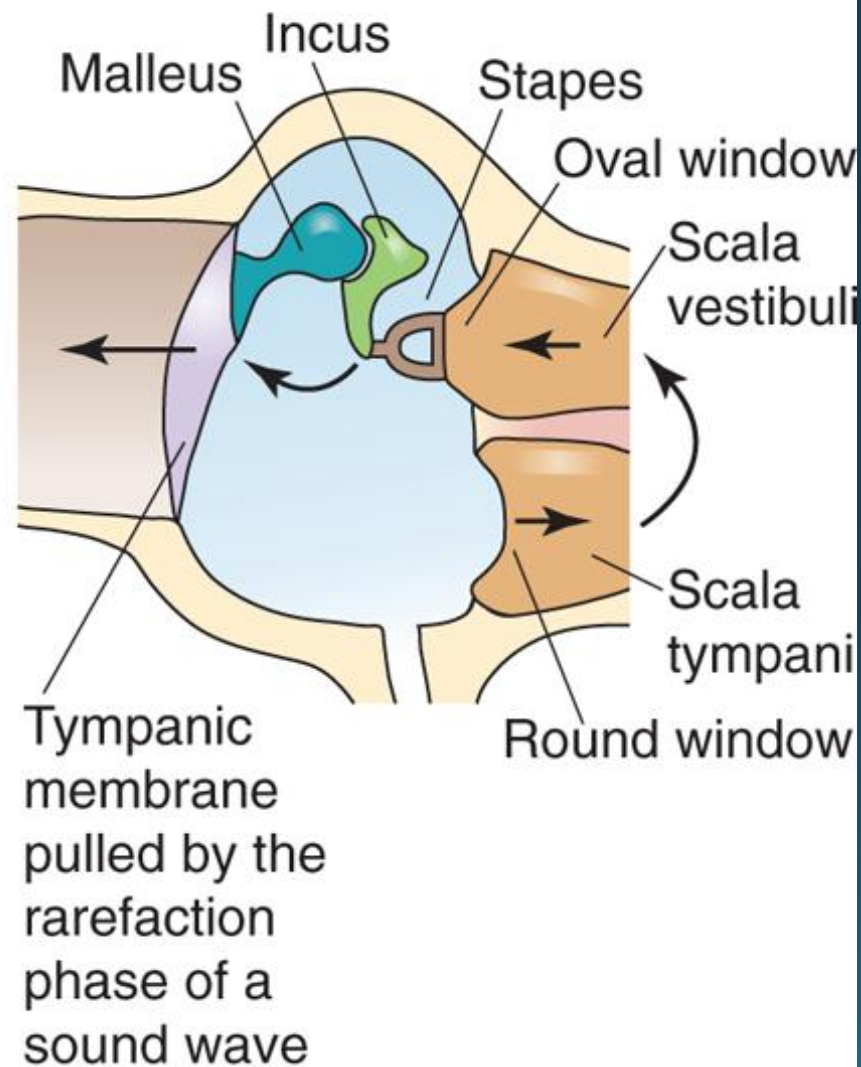


PUSH

**A INWARD MOVEMENT OF
TYMPANIC MEMBRANE**



**B OUTWARD MOVEMENT OF
TYMPANIC MEMBRANE**



PULL

➤ THE SCALA VESTIBULI

❖ **REISSNER'S MEMBRANE**

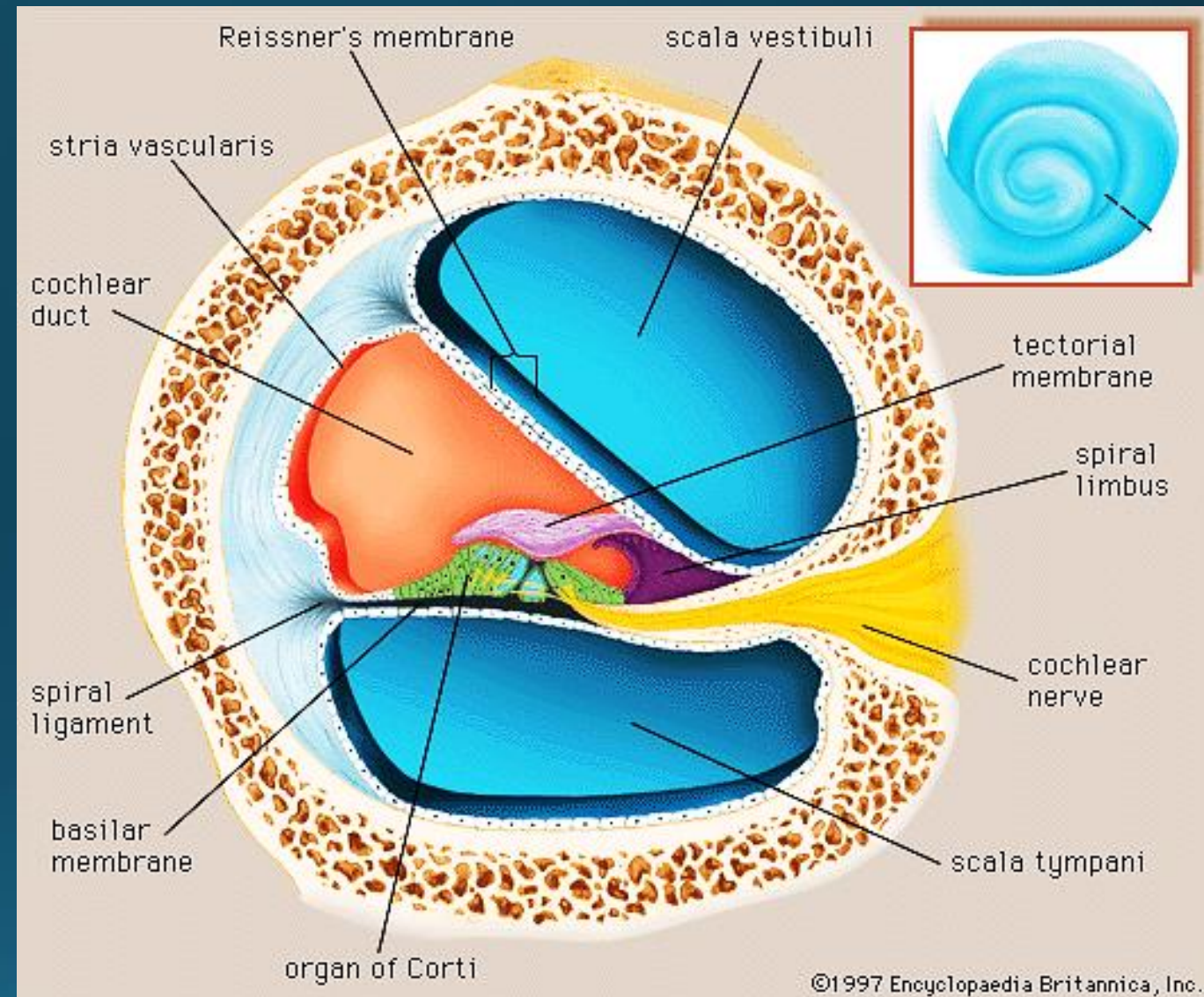
SEPARATES THE SCALA VESTIBULI
FROM THE MIDDLE COMPARTMENT

➤ THE SCALA MEDIA

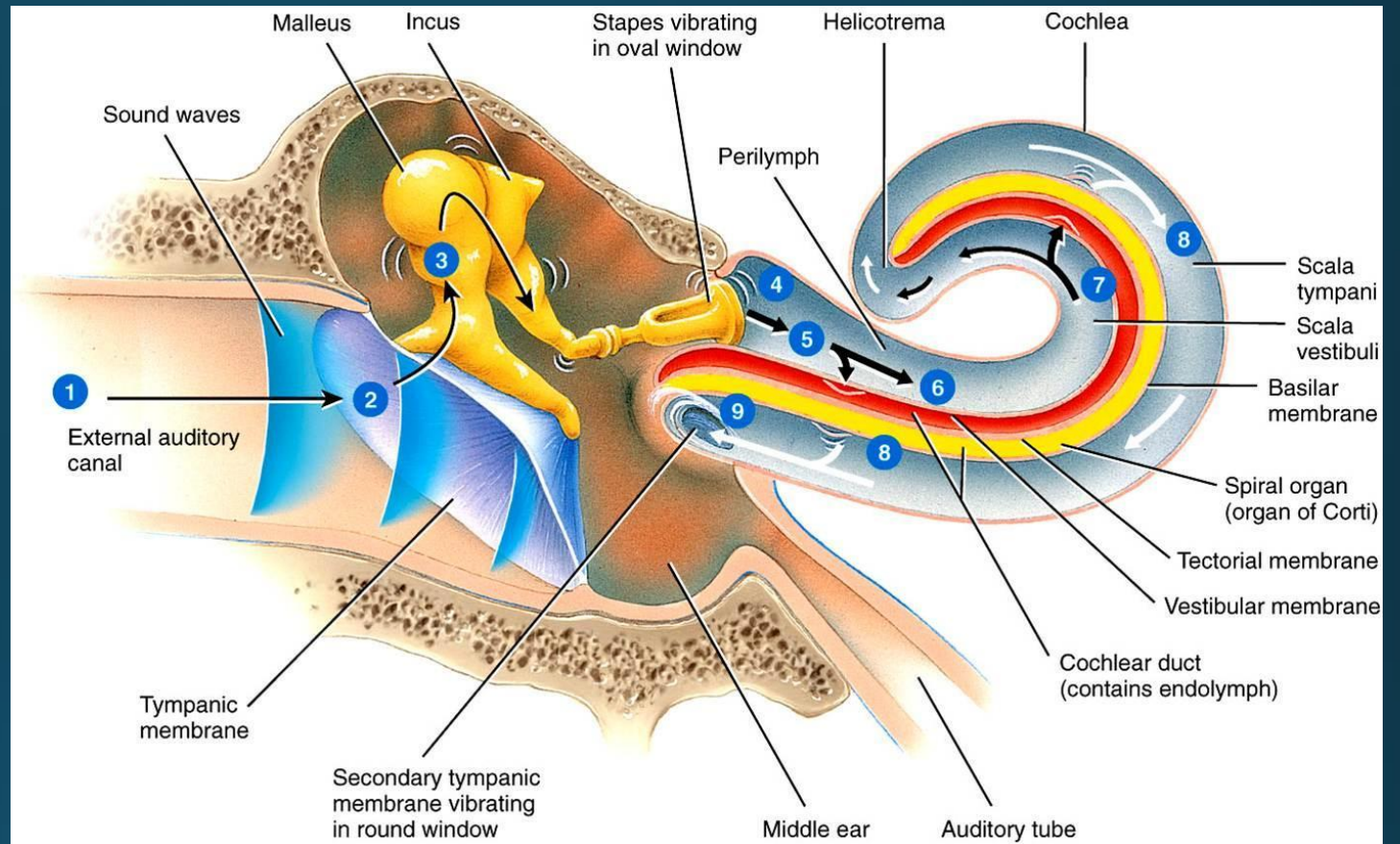
❖ **THE BASILAR MEMBRANE**

SEPARATES THE SCALA MEDIA FROM

➤ THE SCALA TYMPANI



TRAVELING PRESSURE WAVES



SCALA VESTIBULI PRESSURE INCREASE

PRESSURE WAVES DISPLACE THE REISSNER'S AND THE BASILAR MEMBRANE