# Sound

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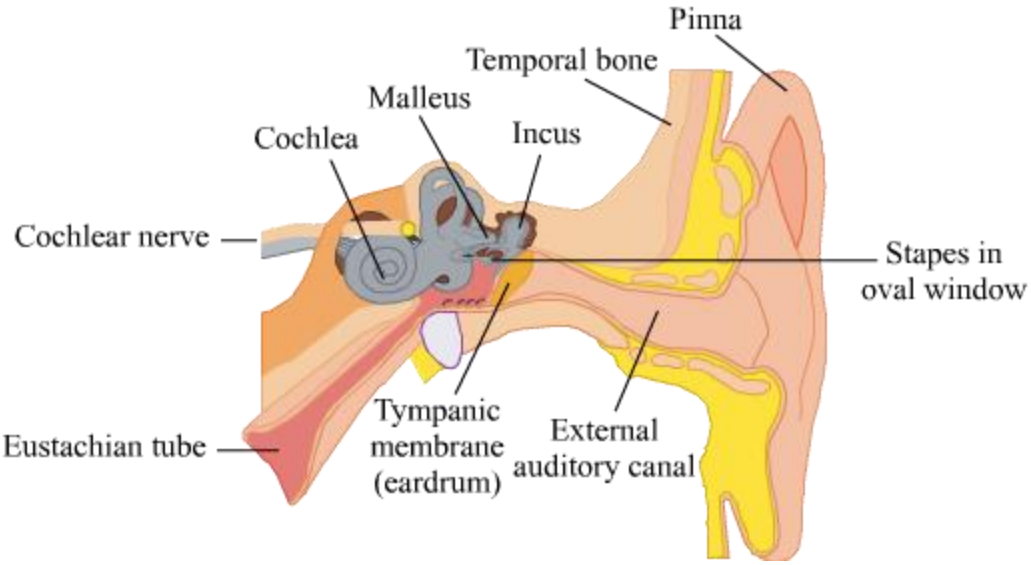
- Vibrating body produces sound.
- Vibration motion– to-and-fro or back-and-forth or up-and-down motion of a body.
- Sound is a form of energy that is produced by producing vibration in an object.
- Sound cannot move through vacuum; sound waves are longitudinal waves.
- Human ear has three parts outer, middle and inner.




- Shape of the outer part of the ear is like a funnel.
- In human ear, the eardrum vibrates and passes vibration to the inner ear.
- The eardrum is like a stretched rubber sheet.
- Sound vibrations make the eardrum vibrate, from there the signal goes to the brain.
- Noise level of 85 dB can damage the human ear.
- In humans, sound is produced by **voice box** or **larynx**.
- When the lungs force air through the slit, the vocal cord vibrates and produce sound.
- The muscles attached to the vocal cords can make the cords tight or loose to produce different types of sounds.

- Different people have different vocal chords. Due to this reason, we all have a different voice quality.

- Sound requires **material medium** for propagation.
- Sound can travel through solid, liquid or gas.

- Sound cannot travel through vacuum.

- No sound can be heard in outer spaces.

- **Frequency –** Number of oscillations per second. It is measured in hertz(Hz).
- **Loudness of sound**

  - It is measured in decibel (dB).

  - It depends on amplitude.

  - Higher **amplitude –** louder sound

  - Pitch or shrillness depends on frequency.

  - Higher **frequency –** higher pitch

- **Audible sound –** Human ear can hear sounds having frequency in the range of 20-20,000 Hz.

- Unpleasant sound is called **noise**.
- **Noise pollution –** Presence of unwanted and excessive sound in the environment

- Noise pollution may cause many health related problems.

- **Measures to control noise pollution:**

  - Moving noise producing industries away from residential area.
  - Minimizing the usage of loud speakers.
  - Avoiding unnecessary usage of horns
  - Planting more and more trees.