**Hearing**

The following concepts and terms are important to your understanding of the hearing process.

**Frequency**or **Pitch** is the number of waves traveling through a point in one second and relates to how fast a wave travels.

**Audition**is another word for hearing. Audition requires sounds waves to be converted into neural impulses, and this is done inside the ear.

Sound travels through the three sections of the ear to the brain :

1. **OUTER EAR** or the *Auditory Canal*
2. **MIDDLE EAR**: *Ear drum*(tight membrane- **tympanic membrane**): It contains the*Hammer, Anvil and Stirrup*(three small bones connected to the ear drum that vibrate when sound waves hit ear drum).
3. **INNER EAR**: **Cochlea**(coiled, fluid-filled tube) that contains the *Basilar Membrane* and lined with hair cells that vibrate to excite nerve fibers. The fibers form the **Auditory Nerve**connecting to the brain.

**Place theory**: states that we hear different pitches because specific *places*in the cochlea are stimulated.

**Frequency theory:**states that we hear different pitches because the speed of neural impulses traveling to the brain matches the *frequency* of a tone and allows us to discriminate pitch.

We can tell which **direction** a sound is coming from because if it is closer to our right ear, the right ear will receive the sound slightly faster than left ear and the brain calculates this difference. Consequently, if the sound is directly behind or in front, where the distance between two ears is the same, then it is difficult to judge direction.

Two types of **deafness:**

1. **Conduction Deafness** loss of hearing due to damage of the eardrum (tympanic membrane), and/or the tiny bones in middle ear. This type of deafness is often corrected with the use of a hearing aid.

2. **Nerve Deafness**loss of hearing due to damage to the cochlea, basilar membrane, and/or hair cells in the inner ear due to age, disease, or prolonged exposure to loud noise. This type of deafness may be corrected with a*cochlear implant*.