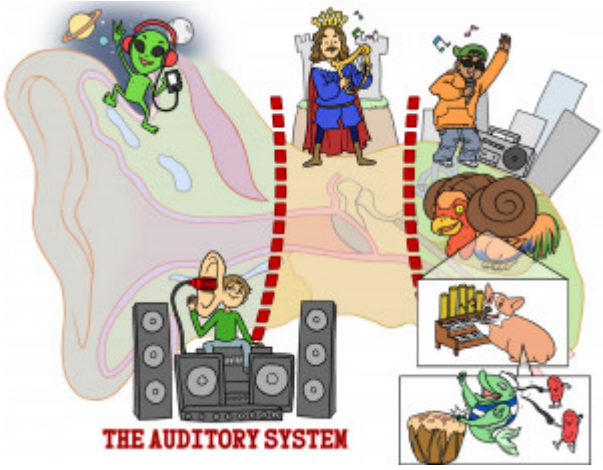
The Auditory System

As sound hits your ear, the sound waves go through a series of complicated processes, eventually resulting in neural impulses being generated. This is done through the outer ear, which composes the ear, auditory canal and eardrum. Next, the middle ear houses the bones that vibrate to sound; the malleus, incus and stapes (collectively called the ossicles). Sound then is processed through the inner ear, which contains the cochlea, organ of Corti, inner hair cells and basilar membrane.



PLAY PICMONIC

Outer Ear
Outer Space-ear
The outer ear is made up of the pinna, auditory canal and eardrum. Its function is to carry sound waves to the eardrum.

Middle Ear
Middle Ages-ear
The middle ear is made up of the malleus, incus and stapes (collectively called the ossicles), which are bones. The middle ear connects the eardrum to the oval window.

Inner Ear
Inner City-ear
The inner ear is a set of fluid-filled canals called the semicircular canals and the cochlea. Within the cochlea, we have the organ of Corti, which contains inner hair cells, which sit upon the basilar membrane.

Cochlea
Cock-leia
The cochlea is a fluid-filled canal that is involved in transforming the physical movements of the stapes (from the middle ear) into messages that are transmitted to the brain. Movements of the oval window cause the fluid in the cochlea to move. This fluid movement, which is processed by the organ of Corti (contained in the cochlea), helps transmit neural impulses to the brain to process sound.

Organ of Corti
Organ Corgi
The organ of Corti is analogous to the retina for vision. It contains receptor cells that are responsible for sensory transduction, as the movement of cochlear fluid is turned into neural impulses. The organ of Corti contains receptor cells for hearing called inner hair cells, and it sits upon the basilar membrane.

Inner Hair Cells
Hair Cells
The receptor cells for hearing within the organ of Corti are called inner hair cells. These cells are responsible for transduction, which sense when fluid is moving in the cochlea. As fluid moves in a wave-like fashion, the hair cell cilia are bent, which releases neurotransmitters to the auditory nerve fibers, which go to the brain.

Basilar Membrane
Bass-sailor with Membrane-drum
This membrane is where the organ of Corti sits on top of, and its wave-like motion is involved in the bending of the hair cells, which release neurotransmitters to the brain.