

Vestibular System

Information= head position and motion

- movement of your head
- why's this important? because if I move my head one way, my body moves that way
 - gives us an idea about our body
- Type: stereocilia
 - bend these by water movement
 - waves are created by splashing of water instead of air (hearing)
- Components:
 - Semicircular canals (3)
 - rotation with direction
 - but need a reference
 - gravity- helps us know where gravity is impacting us and how to move our body in relation to it
 - utricle and saccule (with otoliths)
 - going to tell us relative to gravity
 - need two because:
 - we can move our head sideways
 - we can move our head up and down
 - otoliths=gravity

- gives us our starting point
 - rocks in our head
 - they roll toward gravity (roll toward down)
 - roll over the stereo cilia in utricle and saccule which triggers mechanical receptors and are activated
- acceleration, relative to gravity
 - if we aren't changing speed, utricle and saccule are activated
 - if we are at a steady speed, our semicircular canals are activated
- usefulness?
 - o vestibular system is telling you when your head is going up or down
 - so brain doesn't want vision to be altered, therefore brain adjusts your muscles in your eyes instead
 - like motion picture
 - o visual tracking
 - nice, even picture
 - want picture to be as stable as possible (especially when in fight or flight)
 - o coordination and spatial recognition
 - keeps you balanced
 - we need cerebral geometry
 - alcohol ruins this
 - police ask you to show your vestibular system working properly
 - touch your nose
 - o under your influence, you have bad cerebral geometry

Visual System

- Information= energy waves
 - our receptors can only register the area of within a certain spectra range
- Type: photoreceptors
 - using a specialized cell
- Components of the eye:
 - Cornea and lens: focus image
 - why you're not 20/20:
 - eye may be too short/too long/mismatch of shape of eye and cornea and lens
 - retina: transforms into signal
 - energy waves are transformed into a signal and activates the receptors
 - receptors are at back of your retina
 - in front of them are afferent neurons
 - we lose some energy by hitting these before it gets to the registering cells
 - not optimal/perfect
 - but not a big deal because we are active during the day and there's tons of light
 - octopus has the correct eye — will see better
 - receptors are in front
 - we send our signal to the CNS via afferent neurons at the same place= no receptors=blind spot
 - Encoding