

MEDAVIE

HealthEd

ÉduSanté



SENSES

Advanced Care Paramedicine

Module: 05

Section: 03

- Is dependant on sense receptors responding to stimulation
- General senses
 - Pain, touch, temp, pressure and proprioception
 - Widely distributed
- Specialized senses
 - Smell, taste, hearing and sight
 - Localized

- Steps involved in perceived sensation
 1. Must be a stimulus
 2. A receptor must detect stimulus and create an action potential
 3. The impulse is conducted to CNS
 4. Must be translated in CNS into information
 5. Must be interpreted
- Sensory adaptation

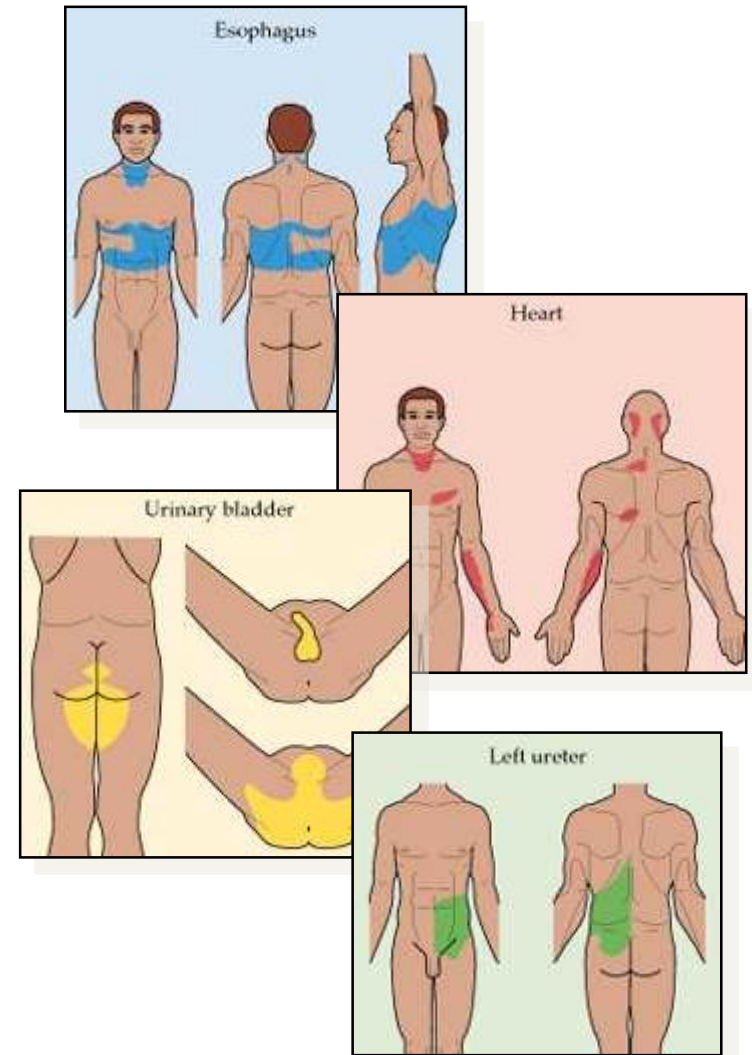
Generalized Senses

- Are classed by
 - Location
 - Stimulus detected
 - Structure

- **Exteroceptors**
 - On or near the surface
 - Pressure, temperature, pain and touch
- **Visceroceptors**
 - Internal (within the organs)
 - Pressure, stretching and chemical changes, pain, hunger and thirst
- **Proprioceptors**
 - Specialized visceroceptors
 - Located in skeletal muscle, joints and tendons
 - Provide information about body movement, orientation and muscle stretch
 - **Tonic** receptors (non-adapting) help locate arms, hands etc without looking
 - **Phasic** receptors (adapting) are stimulated with change in position

- **Mechanoreceptors**
 - Change in position stimulates response (pressure on skin blood vessels or stretch of muscle, tendon or lung)
- **Chemoreceptors**
 - Response to chemical changes
 - Taste and Smell, pH and blood glucose
- **Thermoreceptors (Temp)**
 - Heat and Cold
- **Nociceptors**
 - Result of Tissue damage
 - Pain
- **Photoreceptors**
 - Only in the eye, responds to light
 - Vision

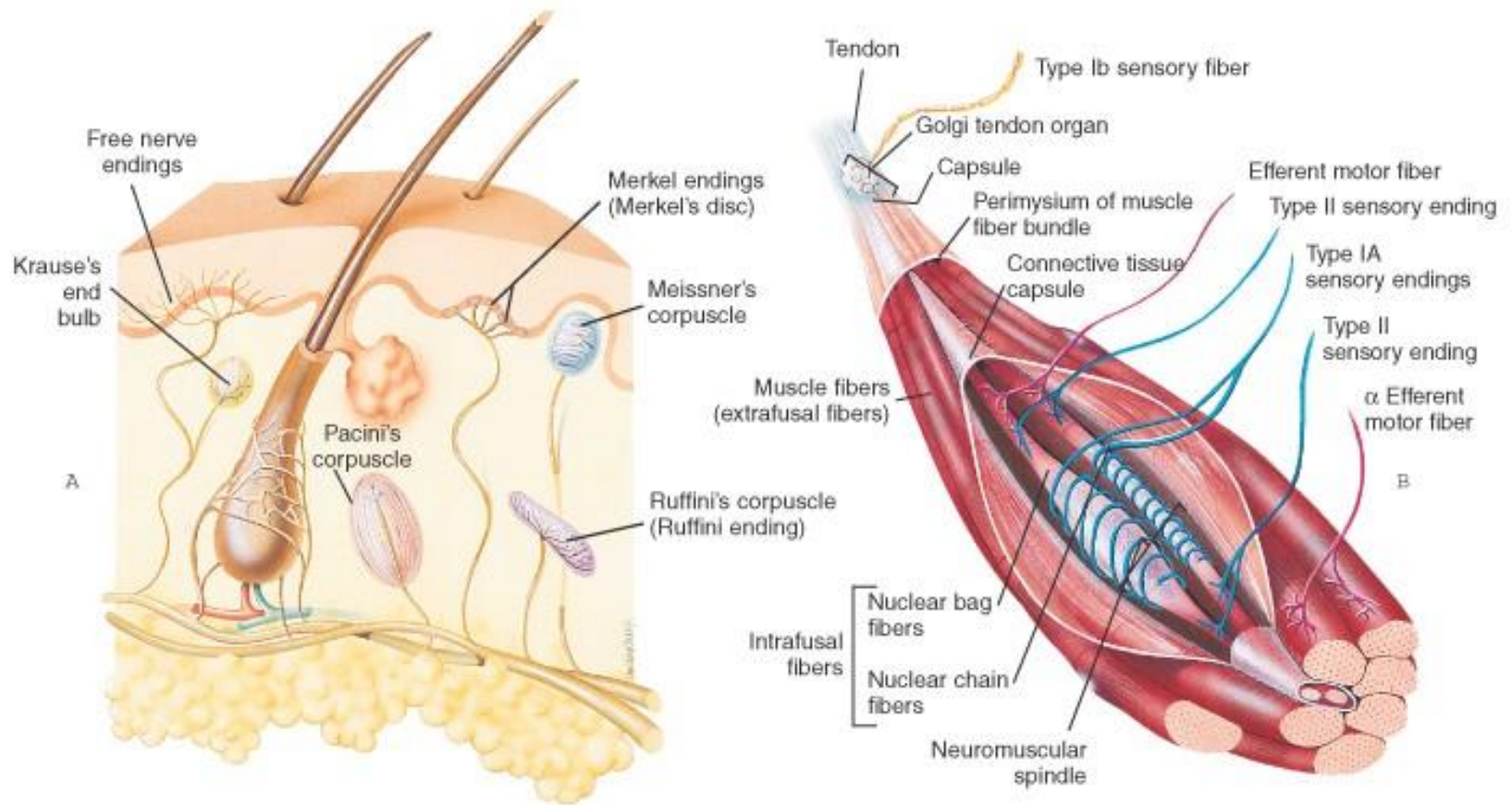
- Somatic
 - Point of pain
- Referred
 - Stimulation of deep nociceptors referred to surface areas
 - Due to sensory interpretation of visceral senses that enter the same segment of the spinal cord as the sensory fibers of the skin



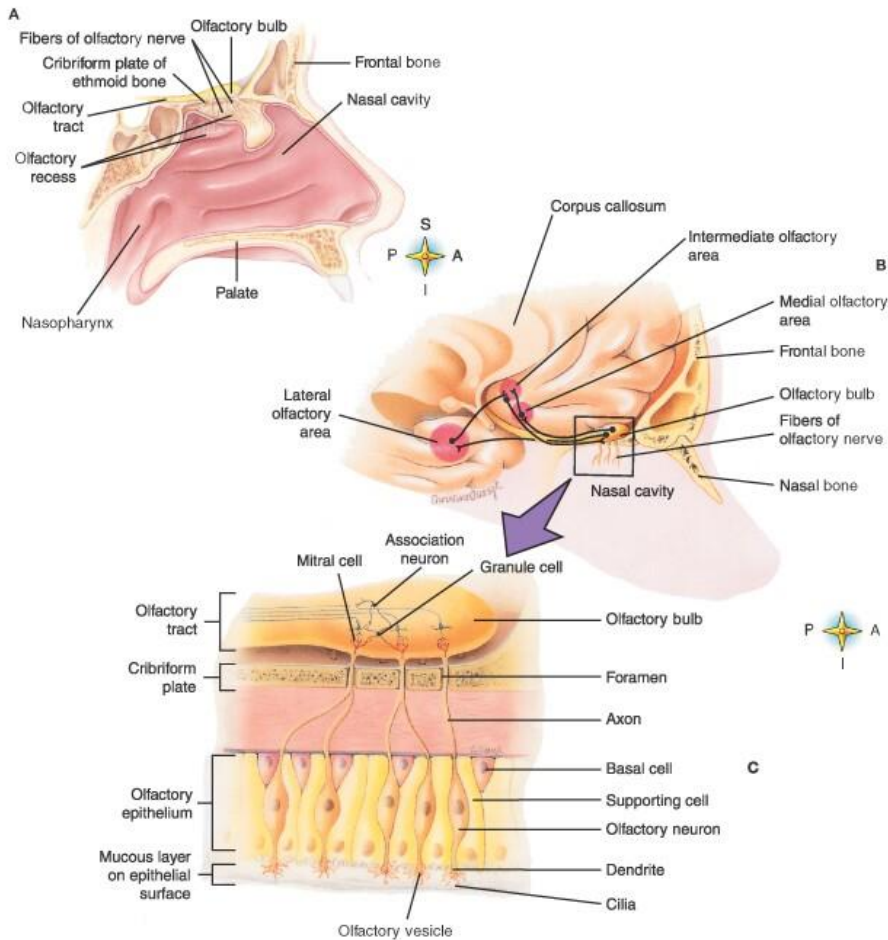
- Free nerve endings
 - Simplest most common form
 - Nociceptors
 - Acute fibers
 - Mediate sharp, intense pain and generally localized
 - Chronic fibers
 - Less intense but persistent (dull or aching)
 - Root hair plexus
 - Web-like fibers around hair follicle detecting movement
 - Merkel endings
 - Flat variations of free endings
 - Sense light or discriminative touch (may be subtle and can be pinpointed on skin)

- Encapsulated nerve endings
 - Touch and Pressure
 - Meissner's corpuscles
 - Mediate sensations of discriminative touch
 - Located in hairless skin (nipples, fingertips, lips)
 - Krause's end bulbs
 - Another form of cold receptors (with free ending)
 - Ruffini's corpuscles
 - Crude sensation (easily recognized but hard to locate)
 - Pacinian corpuscles
 - Found deep in the dermis
 - Deep sensation

- Encapsulated nerve endings
 - Stretch Receptors
 - Muscle spindles
 - Skeletal muscle
 - Stretch and mechanical changes stimulate response (sense of muscle length)
 - Golgi tendon receptors
 - Musculotendinous joints
 - Senses force of contraction and tendon stretch

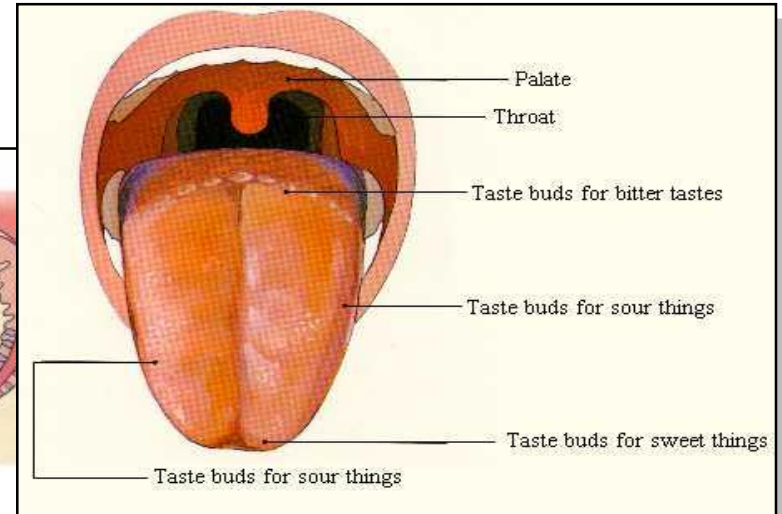
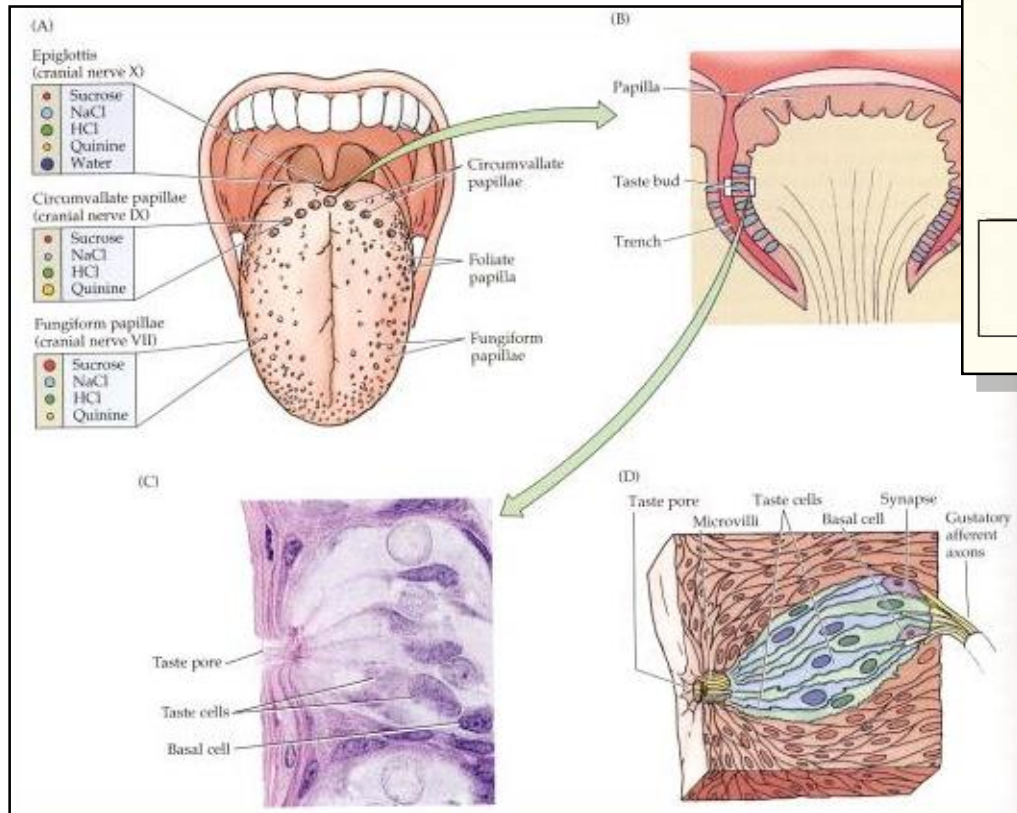


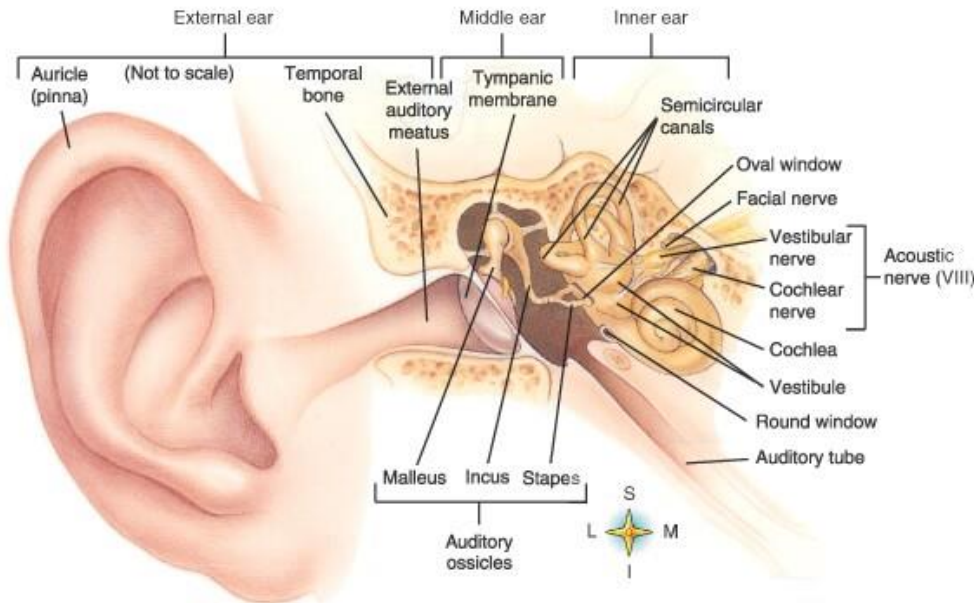
Specialized Senses



- Cranial nerve I

- Most taste buds found on the tongue in elevated projections called papillae
 - Some found in the lining of the mouth and soft palate
 - Fungiform, circumvallate and foliate papillae contain taste buds
 - Filiform do not have taste buds but sense texture and feel
 - No clear distinct or accurate map showing locations of specific receptors (though generally discussed – see picture next slide)
 - Sour, sweet, bitter (most sensitive) or salty

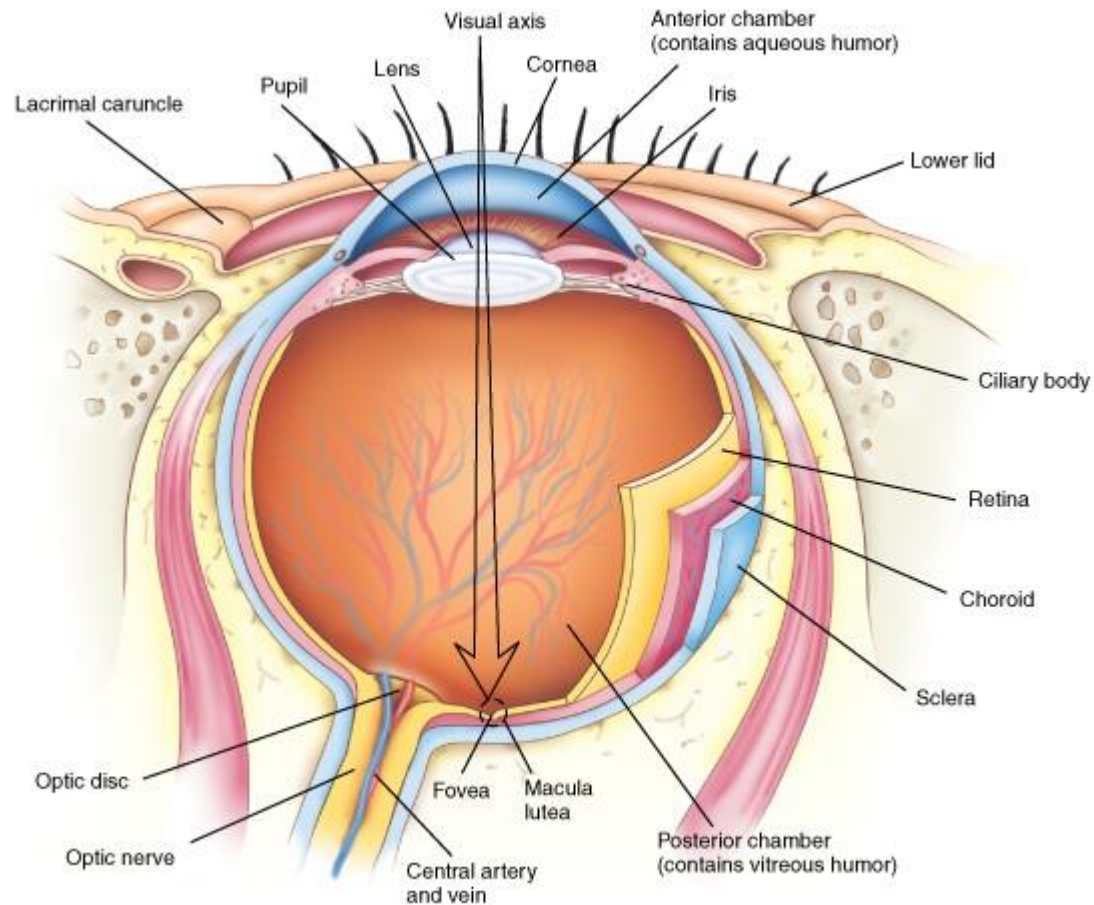




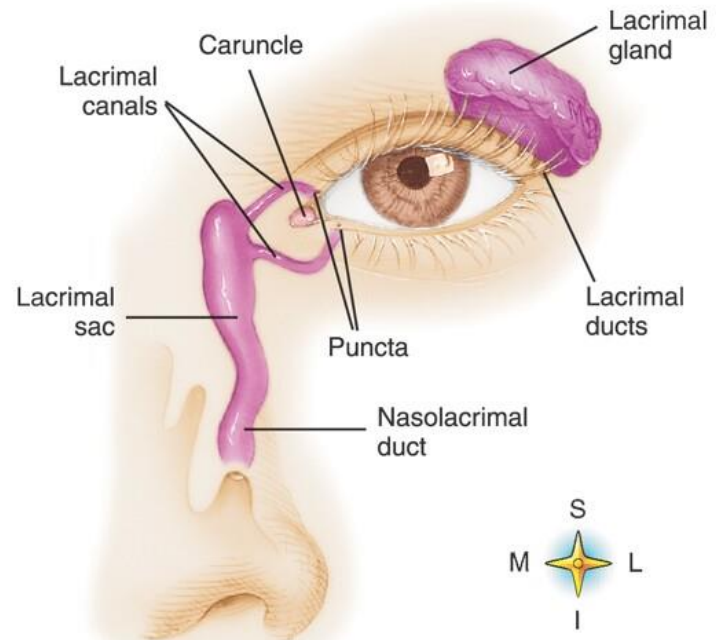
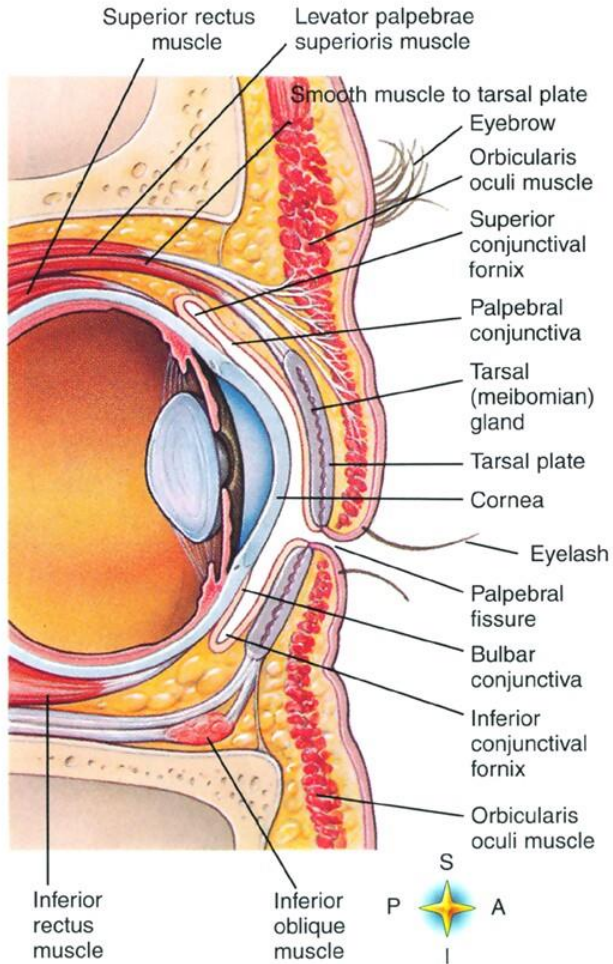
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- Dual function
 - Hearing
 - Sense of Balance or equilibrium
 - Static equilibrium
 - Position of head relative to gravity
 - Dynamic equilibrium
 - During rotation or movement

- Includes:
 - Eyes
 - Accessory structures (lids, lashes and brows, lacrimal glands)
 - Optic nerve, tract, and pathways
- Second cranial nerve (optic nerve)
- Third cranial nerve (oculomotor nerve)



Accessory Structures



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