

General Sense Organs

- Microscopic receptors widely distributed throughout the body
- Responsible for sensations such as pain, temperature, pressure, vibrations, & proprioception (body position)
- EX: Skin, muscles, tendons, joints and other internal organs (islets of Langerhans in pancreas sense blood sugar levels and release insulin if needed)

Classification

- Photoreceptors
 - Light
- Chemoreceptors
 - Chemical changes
- Pain receptors
 - Injury detection
- Thermoreceptors
 - Temp. change
- Mechanoreceptors
 - Movement
- Proprioceptors
 - Position of body
 - Changes in muscle tension

General Senses

Pain Receptors - Nociceptors

- Superficially in skin; joint capsules; periosteum; and around blood vessel walls
- Deep tissue/organs have few nociceptors
- Sensitive to extreme temperatures, mechanical damage, and chemicals

General Senses

Thermoreceptors

- Cold 3x more numerous as warm receptors
- Found in dermis, skeletal muscles, liver, and hypothalamus

General Senses

- **Baroreceptors:** change in pressure; found in “elastic” organs (BV, resp, urinary, etc.)
- **Proprioceptors:** monitor position of joints; tension in tendons/ligaments
- **Chemoreceptors:** soluble substances in smell; pH & CO₂/O₂ found in carotid/aorta

Touch

- Skin's receptors can sense touch, pressure, pain, and hot/cold temperatures.
 - Light touch is felt in epidermis
 - More pressure = feeling in dermis and beyond

Special Sense Organs

- Responsible for smell, taste, vision, hearing, equilibrium...
- EX: nose, tongue, eye, ear...

Smell - Olfaction

- Olfactory receptors located at top of nasal cavity (*Cranial Nerve 1*)

Smell - Olfaction

- Normal inhalation carries about 2% of air through the ethmoid bone into the olfactory organs

Taste - Gustation

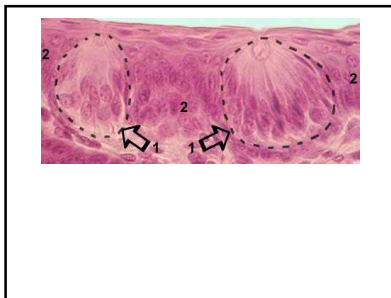
- Taste buds - located in structures called papillae; sense chemicals in "food"
- On tongue, epiglottis, roof of mouth, and pharynx

Taste - Gustation

- Monitored by CN: (V) Trigeminal, (VII) Facial, (IX)Glossopharyngeal, & (X) Vagus

Taste - Gustation

- Begin life w/ 10,000 taste buds; by age 50, declines to about 2,500
- Replaced every 10 days
- Saliva dissolves chemicals
- Sweet, salty, sour, bitter, water, umami



Taste strength scale

Sweet	High
Salty	Medium
Sour	Low
Bitter	Very Low

Contrary to popular belief, receptors for all four traditional tastes are found anywhere there are taste buds.

All tastes can be perceived equally well everywhere on the tongue. People used to think that there were specific zones for sweet, sour, salty and bitter - but this has been proven to be wrong.