

GENERAL SENSES / RECEPTORS:

1. Pain receptors:

- a. fast pain: CNS, involves reflexes, sensory cortex
- b. slow pain: vague, generalized, often ignore-able
- c. referred pain: sensation \neq source of pain

2. Thermoreceptors: temperature

3. Mechanoreceptors: distortion

- a. Tactile receptors (skin): touch, pressure, vibration
 - Merkel cells – general touch (general distribution)
 - Meissner's corpuscles - fine touch (specific)
 - Pacinian corpuscles - heavy pressure, vibration
- b. Baroreceptors (BV's, GI, UG): pressure within tubes
- c. Proprioceptors (muscle/joint): stretch
 - Golgi tendon organs - measure tension in tendons

4. Chemoreceptors: chemical

- carotid & aortic bodies: CO₂, O₂ concentrations

Special senses:

CN I	Olfaction	(chemical)
CN II	Vision	(electromagnetic)
CN VII, IX, X	Taste	(chemical)
CN VIII	Equilibrium	(vestibular = inertia)
CN VIII	Hearing	(cochlear = vibration of air)

Inter-relationship among sensory modalities...

Limbic system redux

Inter-connected nuclei w/in both Tel-/Diencephalon
[f(x) rather than anatomical grouping of nuclei]

Links conscious thought w/ ANS f(x)'s of brainstem
[behavior & emotional states: thirst, hunger, sex]

Learning and the storage/recall of long-term memory

Nose and Nasal Cavity

External nose

1. fleshy appendage with 2 nostrils
 - a. bridge of nose supported by nasal bones/septum
 - b. alar cartilages support nostrils

2. skin innervated by trigeminal nerve (V_1)

Nasal cavity

1. floor of nasal passages
 - a. anterior: hard palate = maxilla, palatine bones
 - b. posterior: soft palate = muscular flap

2. walls
 - a. maxilla & palatine bones (maxillary sinus)
 - b. 3 nasal conchae - sheets of bone (turbinate bones)
 - superior conchae = olfactory epithelium
 - middle conchae = some olfactory epithelium
 - inferior conchae = largest, easily broken

3. roof - ethmoid bone - covered w/ olfactory epithelium

4. nasal septum
 - a. anterior: septal cartilage
 - b. posterior: perpendicular plate of ethmoid + vomer

Chemoreceptors: chemical stimuli

- Olfactory nerve (CN I) relays "smell" through the
- cribriform plate of the ethmoid bone
 - to the olfactory bulbs (cerebrum)
 - directly to the olfactory cortex
 - **then**, to the hypothalamus AND limbic system!

!!! i.e., emotional/behavioral response to smells!

Tongue

1. Muscular hydrostat:
 - a. "constant volume"
 - b. shape controlled by contractions of intrinsic muscles
 - c. muscles run in several directions (= fine control)

2. Attached firmly at base to Hyoid apparatus

3. Lingual frenulum: tongue is tied to floor of mouth
- *ankyloglossia* = "tongue-tied"

4. Papillae cover tongue's surface
- each papillae has several taste buds

5. ~10,000 Papillae cover the tongue - 3 types:
 - a. filiform - "filament-shaped"
 - b. fungiform - "mushroom-shaped"
 - c. circumvallate - @ back "wall" of tongue.

6. Chemoreceptors: "taste-buds" - chemical stimuli
 - a. CN's VII, IX, X: relay "taste" to the brain

7. Other CN's in the vicinity
 - a. CN V: chemical burns, temperature, pain
 - b. CN XII: motor control of intrinsic tongue muscles