

Somatic Nervous System

I. Nervous Sys. Organization

A. Anatomical

B. Functional

1. Autonomic Nervous System
2. Somatic Nervous System

II. Sensory Perception

A. Bkg.

B. Structural receptor types

1. structural
 - a. free nerve ending
 - b. encapsulated ending
 - c. specialized receptor cells
2. locational
 - a. exteroceptor
 - b. interoceptor
 - c. proprioceptor
3. functional
4. type of stimuli
 - a. chemoreceptors
 - b. osmoreceptors
 - c. nociceptor
 - d. mechanoreceptors
 - e. thermoreceptor

C. Sensory modalities

1. general sense
 - a. proprioception
 - b. kinesthesia
 - c. visceral
2. special sense

Special Senses

III. Background

A. Special senses

B. Job

1. Identical input

IV. Gustation = Taste

A. taste buds

- a. epithelial cells
 - 1) supporting cells
 - 2) gustatory epithelial cells
 - 3) basal epithelial cells

B. taste sensations

1. Sweet, Sour, Salt, Bitter, Umami
2. ? long-chain fatty acids

V. Olfaction = smell

A. olfactory epithelium

B. cells

1. olfactory sensory neurons
2. supporting cells
3. olfactory stem cells

C. receptors

D. signal transduction

1. olfactory bulb
2. mitral cell dendrites

VI. The Ear: Hearing & Balance

A. Structure of the ear for hearing

1. Outer (external) Ear

- a. auricle (pinna)
- b. external auditory canal (acoustic meatus)
- c. tympanic membrane = eardrum

2. Middle Ear

a. ossicles

- 1) malleus
- 2) incus
- 3) stapes

b. Eustachian tube

- 1) otitis media

c. oval window

3. Inner ear = labyrinth

a. cochlea

1) scala vestibuli

a) apex

2) scala tympani

a) round window

3) cochlear duct (scala media)

a) tectorial membrane

b) basilar membrane

c) organ of Corti - composed of hair cells

- stereocilia

- cochlear nerve

B. Physiology of Hearing

a. waves

b. shortcut

1. vibrate

a. "hairs" (microvilli)

b. mechanical deformation

c.

2. Notes on physiology of hearing

a. modified form of touch

b. Pitch

c. Volume

C. Structure of the ear for balance - Equilibrium

1. vestibule

2. utricle & saccule

a. head position

3. semicircular canals

a. head movement

b. ampulla

D. Physiology of equilibrium

1. static equilibrium
 - a. macula tissue
 - b. otoliths
2. dynamic equilibrium

VII. Vision

A. Accessory structures

1. eyebrows
2. eyelids
3. eyelashes
4. conjunctiva
5. lacrimal gland
6. extraocular muscles

B. Eye structure

1. fibrous tunic (layer)
 - a. sclera
 - b. cornea
2. vascular tunic (layer)
 - 1) uvea
 - a. choroid
 - b. ciliary body
 - c. iris
 - 1) pupil
3. neural tunic = retina
4. lens
5. internal chambers
 - a. posterior segment
 - 1) vitreous humor
 - b. anterior segment
 - 1) aqueous humor
 - a) glaucoma

C. Physiology of Vision

1. Light processing before reach retina
 - a. refraction
 - a) accommodation
2. photoreceptors
 - a. phototransduction
 - 1) retinal
 - 2) opsins . . . rhodopsin
 - b. rod cells
 - c. cone cells
3. signal transduction
 - 1) bipolar cells
 - 2) ganglion cells
 - 3) blind spot

D. Photoreceptor distribution

1. wiring
2. macula lutea
 - a. fovea centralis

E. Depth perception