

## Special Senses

### Required:

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##### A. Olfaction/Smell

- a. Diagram and describe the olfactory epithelium in the nasal cavity naming the types of cells: olfactory hair cells (dendritic endings), basal and supporting cells
- b. Describe the process of stimulation of smell receptors
- c. Describe the pathway the olfactory sensory impulse travels on from the nose to the brain.
- d. Define the term adaptation and give an example

##### B. Gustation/Taste

- a. Define the terms papillae and taste bud on the tongue and sketch and label these two terms as well as taste bud pore, gustatory cells, supporting and basal cells.
- b. Trace the pathway a “taste impulse” takes from the tongue to the cerebral cortex.
- c. Name the four chemical “tastes” the receptor cells detect and give their location on the tongue. Explain how combinations tastes are detected.

##### C. Vision/Eyesight

- a. Draw an internal view of the eye labeling all anatomy terms
- b. Discuss the arrangement of rods and cones in the retina: macula lutea, fovea centralis, peripheral areas. Relate this arrangement to color vision, peripheral vision, and night vision.
- c. Explain how the (3) phenomenon: accommodation of the lens, constriction & dilation of the pupil and convergence, contribute to focusing images on the retina.
- d. Discuss the phenomenon of image reversal and mirror image. Explain the brain’s involvement in this phenomenon.
- e. Briefly discuss the mechanism of rods & cones using the terms rhodopsin, retinal and photopsin, wavelengths of light (red, blue, green).
- f. Describe colorblindness in relationship to the above terms.
- g. Describe the anatomical pathway traversed by visual action potentials from the retina to the brain.

##### D. Auditory Sense/Hearing

- a. Draw and label the anatomical structures of the outer, middle and inner ear and cranial nerve VIII
- b. Define and explain the terms bony and membranous labyrinth and perilymph and endolymph. Relate these terms to the structures in “a”.
- c. Describe the pathway a sound wave takes from the outer to middle to inner ear structures. Be sure to include the sequence of bone vibrations and the movements of the endolymph in the scalas of the cochlea.

- d. Trace the path of the auditory action potentials from organ of corti to the cerebral cortex.
- e. Explain how the organ of corti produces pitch perception in the brain's auditory cortex area and intensity of sound.

E. Equilibrium

- a. Differentiate functionally between static and dynamic equilibrium.
- b. Describe and or sketch the utricle and saccule structures for static equilibrium, macula, otolithic membranes, otoliths, hair & supporting cells.
- c. Trace the static equilibrium action potential from stimulation of receptor cells to the brain.
- d. Describe the structures of semicircular canals which produce dynamic equilibrium sensations:
  - i. Ampulla
  - ii. Cristae galli
  - iii. Capula
  - iv. Hair and supporting cells