

Dental Conference 4

1. What is the molecular sequence of events in retinal receptor cells from the absorption of light to the changing of ionic permeability?
2. Why does a lesion of the optic chiasm produce a bitemporal hemianopsia?
3. Diagram how the receptive field of a simple cell in the visual cortex could result from convergence of inputs from 4c spiny stellate cells, and how the receptive field of a complex cell could result from convergence of inputs from simple cells.
4. Give two examples of the columnar organization of the visual cortex.
5. Changes in the firing of a retinal ganglion cell are produced by illumination of cones in either the center or the surround of the receptive field. Yet the effects on firing are opposite. Explain.
6. How would color information be processed differently from movement information by the visual system?
7. As with phototransduction, olfactory transduction involves a change in the concentration of cyclic nucleotide within the receptor cell. What are the two major differences between the two processes insofar as the use of the cyclic nucleotide is concerned?
8. How does the olfactory system code for different odors?
9. Are taste channels in the tongue gated by second messengers?
10. What variations in the properties of the basilar membrane and its hair cells contribute to frequency coding in the ear?
11. What electrophysiological changes occur in a hair cell in response to movement of the basilar membrane?
12. What properties of a sound are processed in parallel by the auditory system?
13. What are differences between the semicircular canals and the utricle?
14. How does the vestibular system function in vision?