

9.01 Study Questions

Lecture 29

1. What are the five neuronal cell types of the vertebrate retina? (Try to name them all without looking at the notes.)
2. Which cells form synapses in the outer plexiform layer? Which cells form synapses in the inner plexiform layer?
3. Why can a person see a very dim star more easily if the gaze is not directed directly at it?
4. Which cells in the retina fire action potentials? How do the others communicate with other neurons?
5. Define a "receptive field". Describe examples for visual system cells in the retina.
6. Give a brief explanation for why the retinal ganglion cell receptive fields are much simpler in the monkey than in the rabbit.
7. The receptive fields of retinal ganglion cells are much larger in the periphery of the retina than in the region of the fovea. Give a simple explanation for this fact. (Explain in terms of anatomy. If you can, explain also in terms of adaptive functions.)
8. There is evidence that the monkey has separate channels of information flow from the retina, called the magnocellular and the parvocellular systems. How can the idea be tested that these channels are kept separate all the way to the neocortex?