動物生理学 III　Handout No. 1

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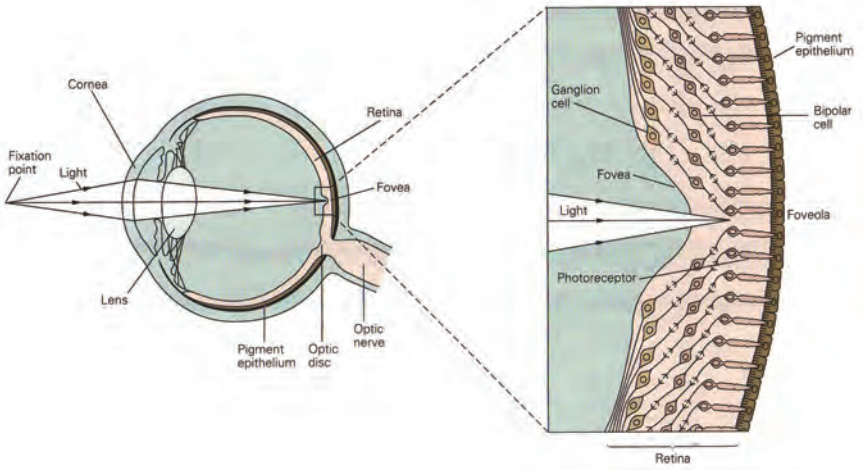

Figure 26-1 Photoreceptors are located in the retina. The location of the retina within the eye is shown at left. Detail of the retina at the fovea is shown on the right (the diagram has been simplified by eliminating lateral connections mediated by interneurons; see Figure 26-61. In most of the retina light must pass through layers of nerve cells and their processes before it reaches the photoreceptors. In the center of the fovea, or fovea ola, these proximal neurons are shifted to the side so that light has a direct pathway to the photoreceptors. As a result, the visualimage received at the foveola is the least distorted.

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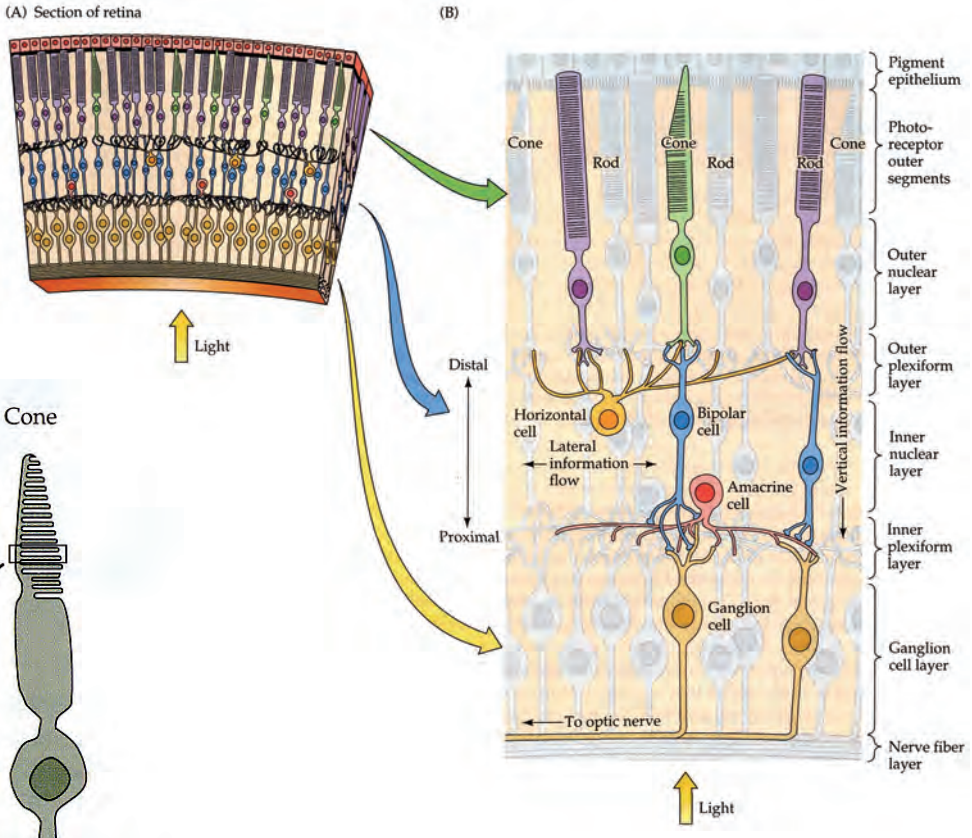
Figure 10.4　Structure of the retina. (A) Section of the retina showing overall arrangement of retinal layers. (B) Diagram of the basic circuitry of the retina. A three-neuron chain photoreceptor, bipolar cell, ganglion cell provides the most direct route for transmitting visual information to the brain. Horizontal cells and amacrine cells mediate lateral interactions in the outer and inner plexiform layers, respectively.



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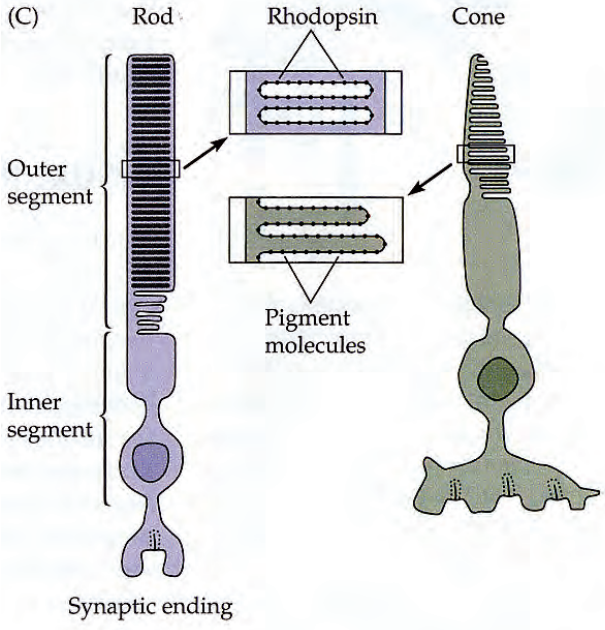

FIGURE 19.4 Photoreceptors in Retina. (C) Diagram of a rod and a cone. In the rod, the pigment rhodopsin (black dots) is embedded in membranes arranged in the form of disks, not continuous with the outer membrane of the cell. In the cone, the pigment molecules are on infolded membranes that are continuous with the surface membrane. The outer segment is connected to the inner segment by a narrow stalk. The synaptic endings continually release transmitter in the dark. (A and B kindly provided by the late B. Nunn, unpublished; C after Baylor 1987.)

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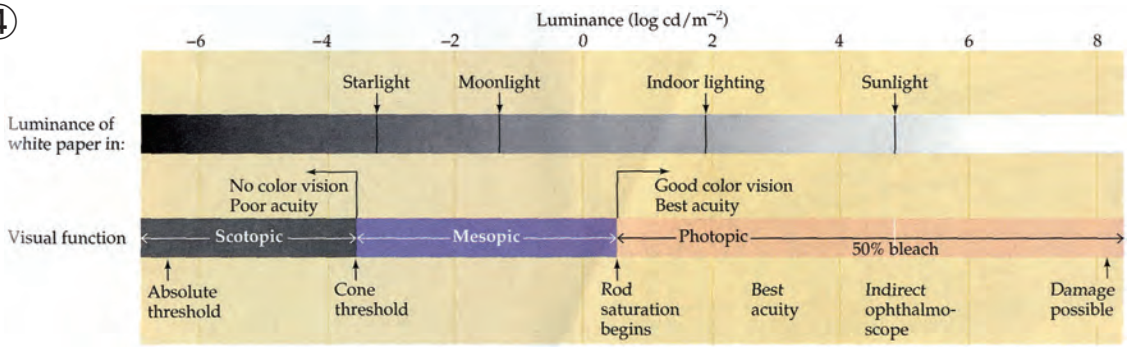

figure 10-9　The range of luminance values over which the visual system operates. At the lowest levels of illumination, only the rods are activated. Cones begin to contribute to perception at about the level of starlight, and they are the only receptors that function under relatively bright conditions.