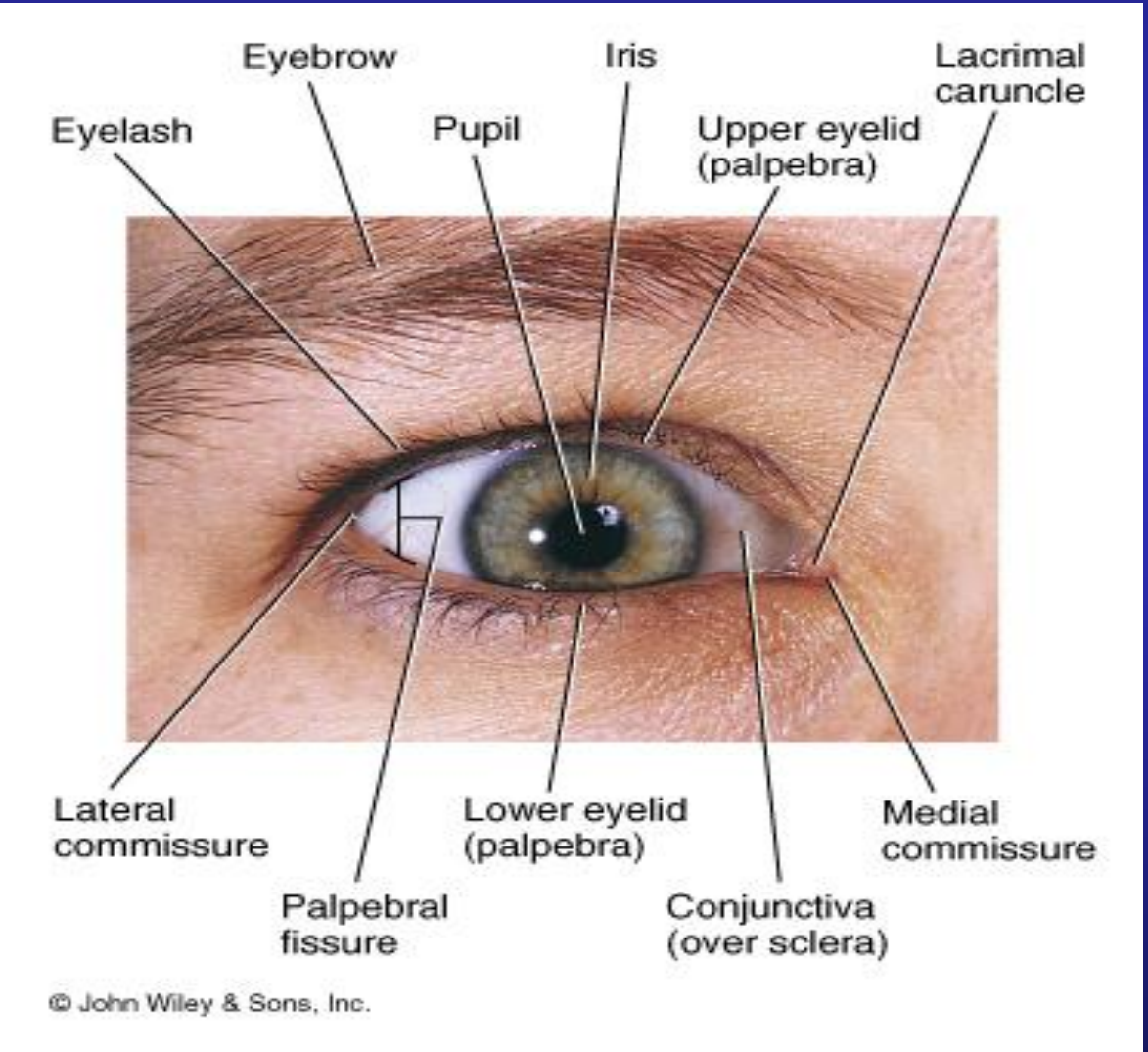
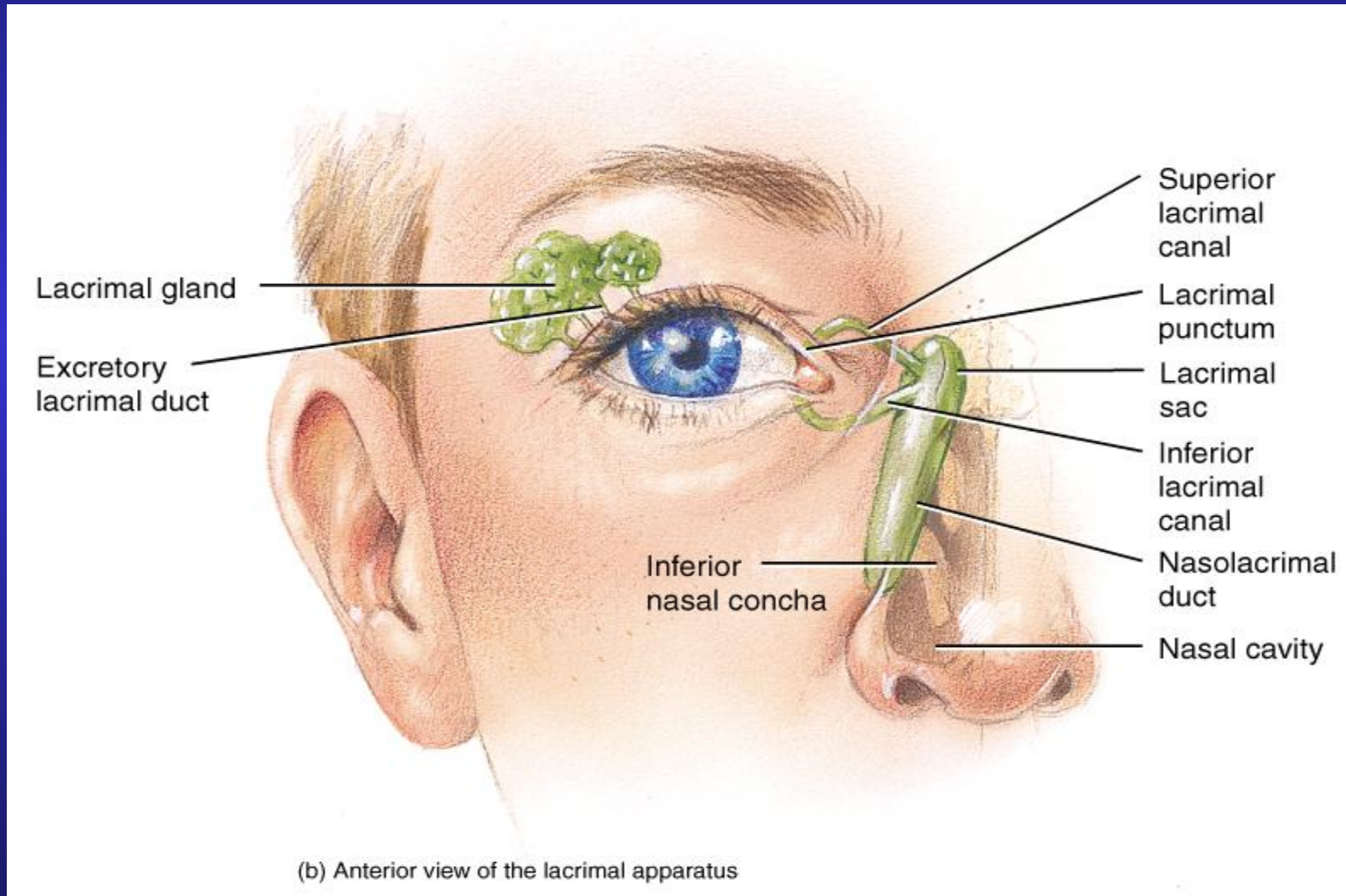
External Anatomy of the Eye



Lacrimal Apparatus of the Eye

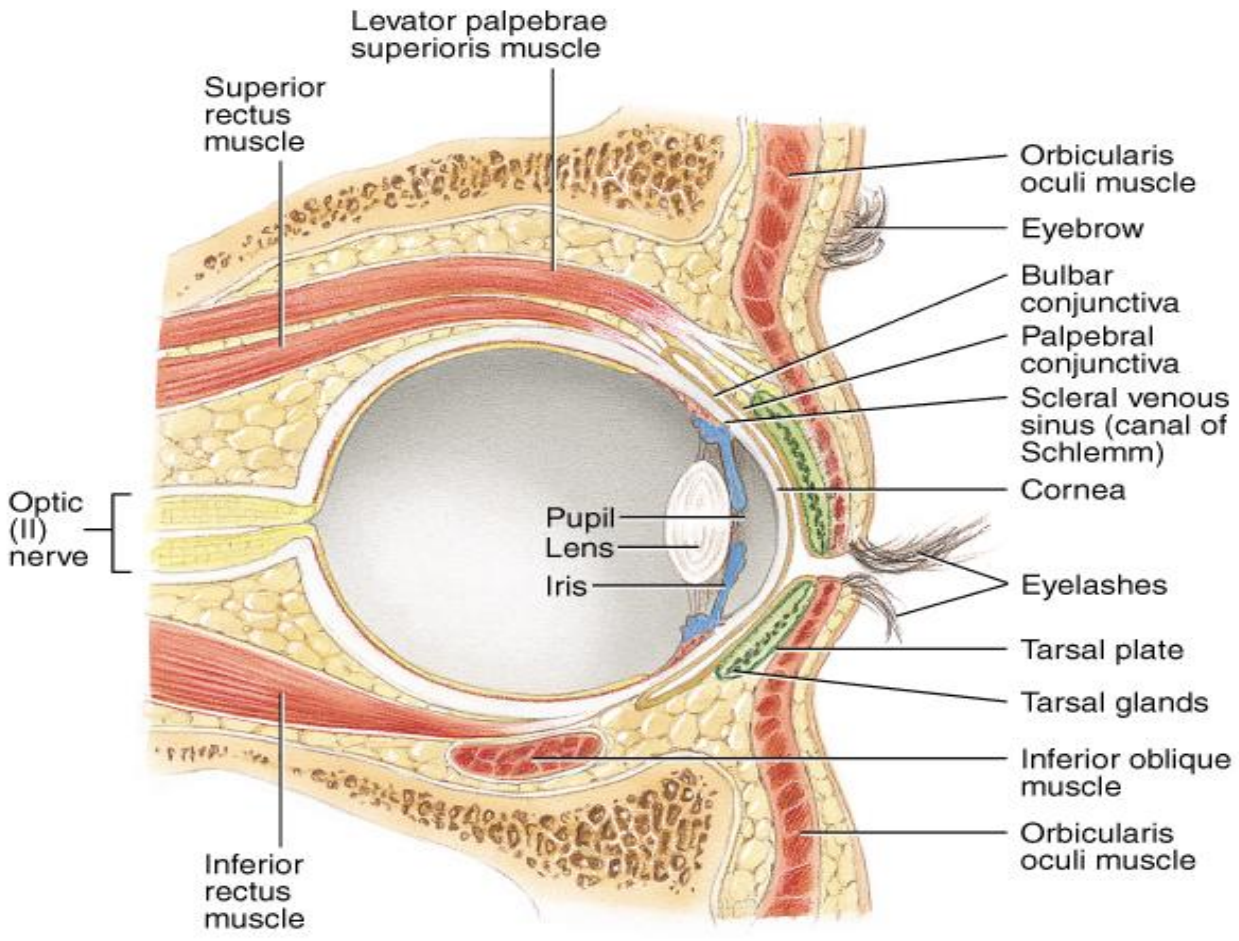


(b) Anterior view of the lacrimal apparatus

Anatomy of the Eyeball

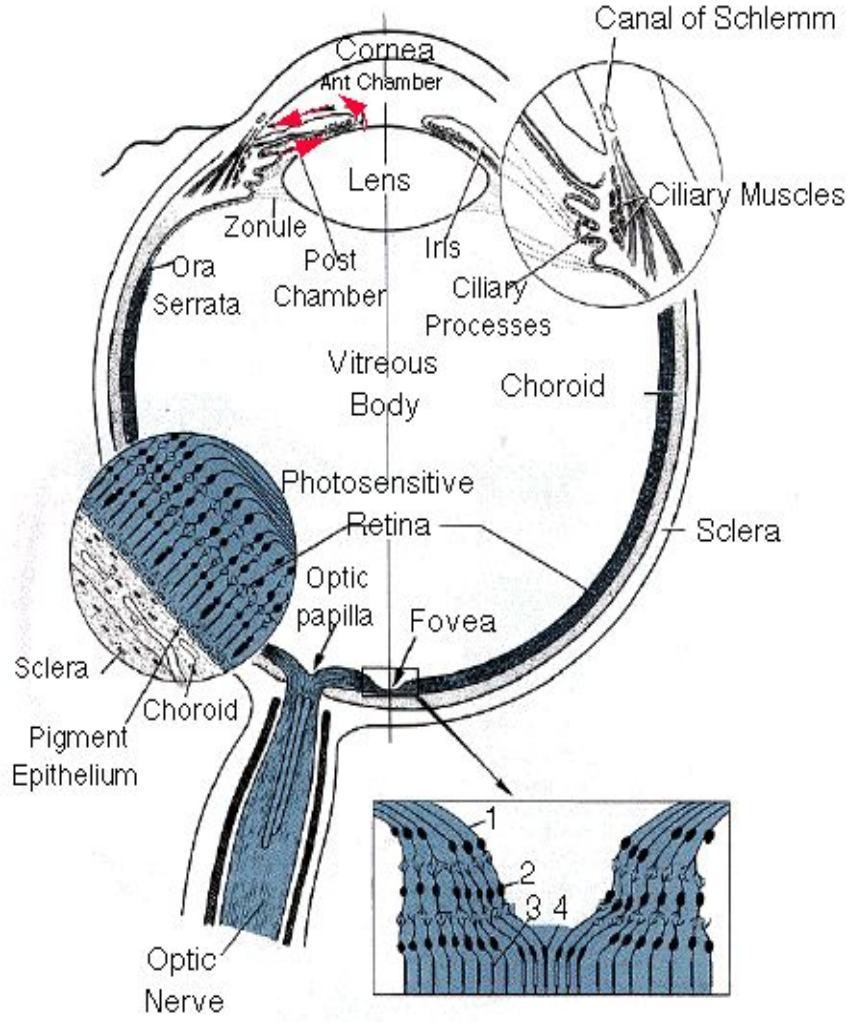
- **Fibrous Tunic:**
  - **Cornea**
  - **Sclera**
- **Vascular Tunic**
  - **Choroid coat**
  - **Ciliary Body (Ciliary muscle, Ciliary process)**
  - **Iris**
- **Nervous Tunic**
  - **Retina**

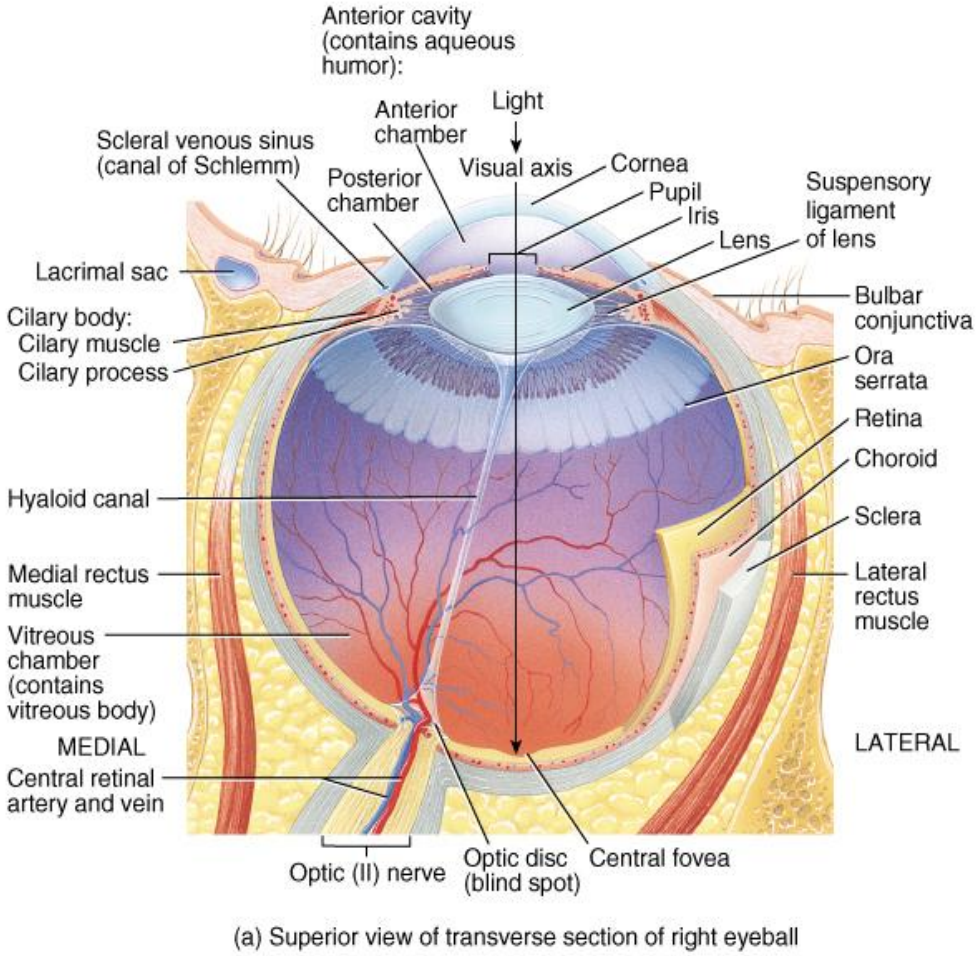
Accessory structures of the Eye from a sagittal view



(a) Sagittal section of eye and its accessory structures

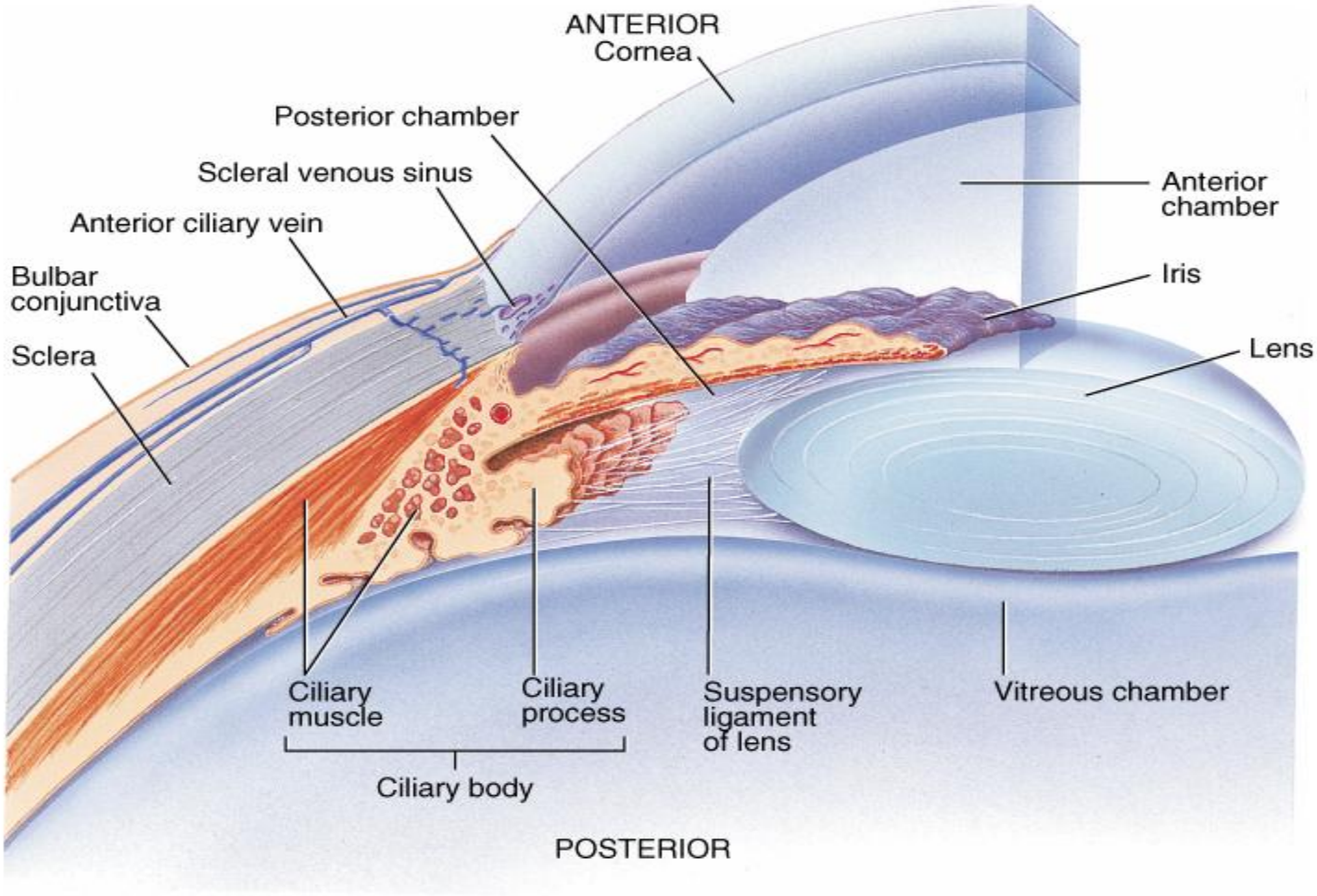
Internal Anatomy of the Eye





(a) Superior view of transverse section of right eyeball

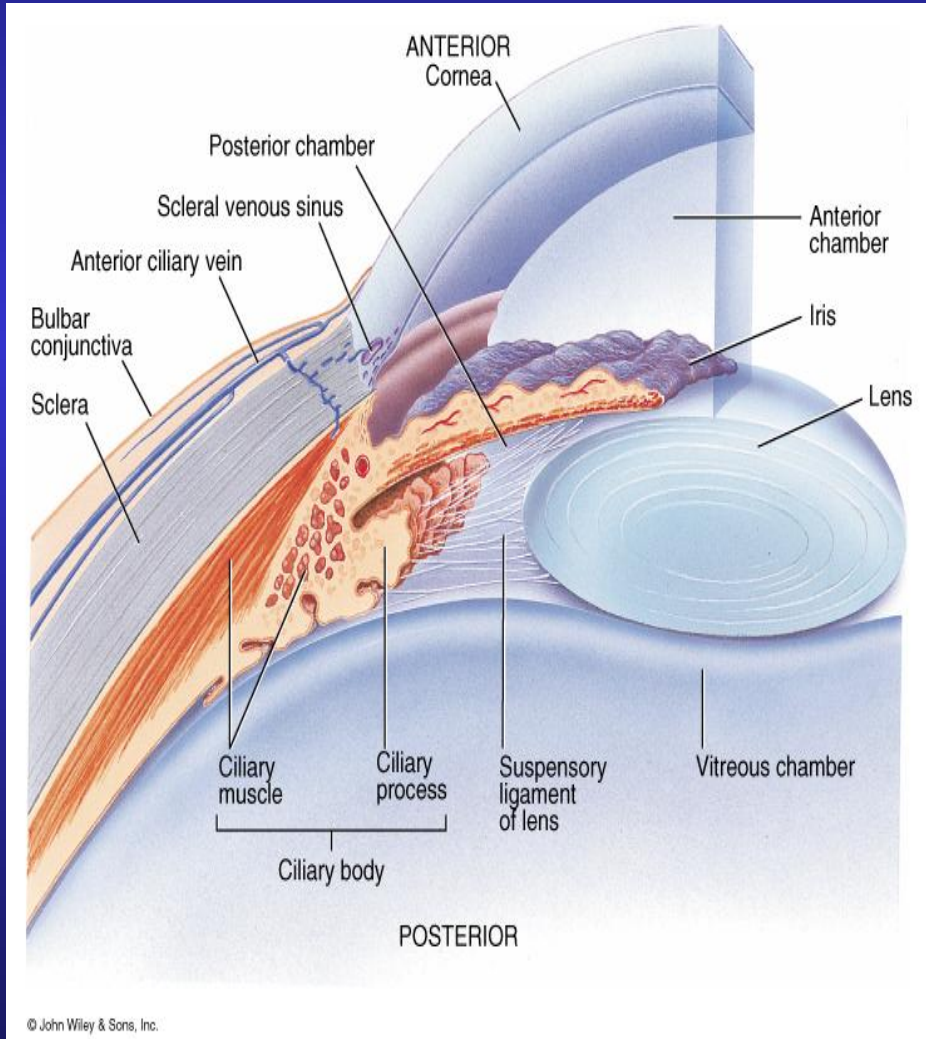
Detail view of the anterior anatomy of the eye



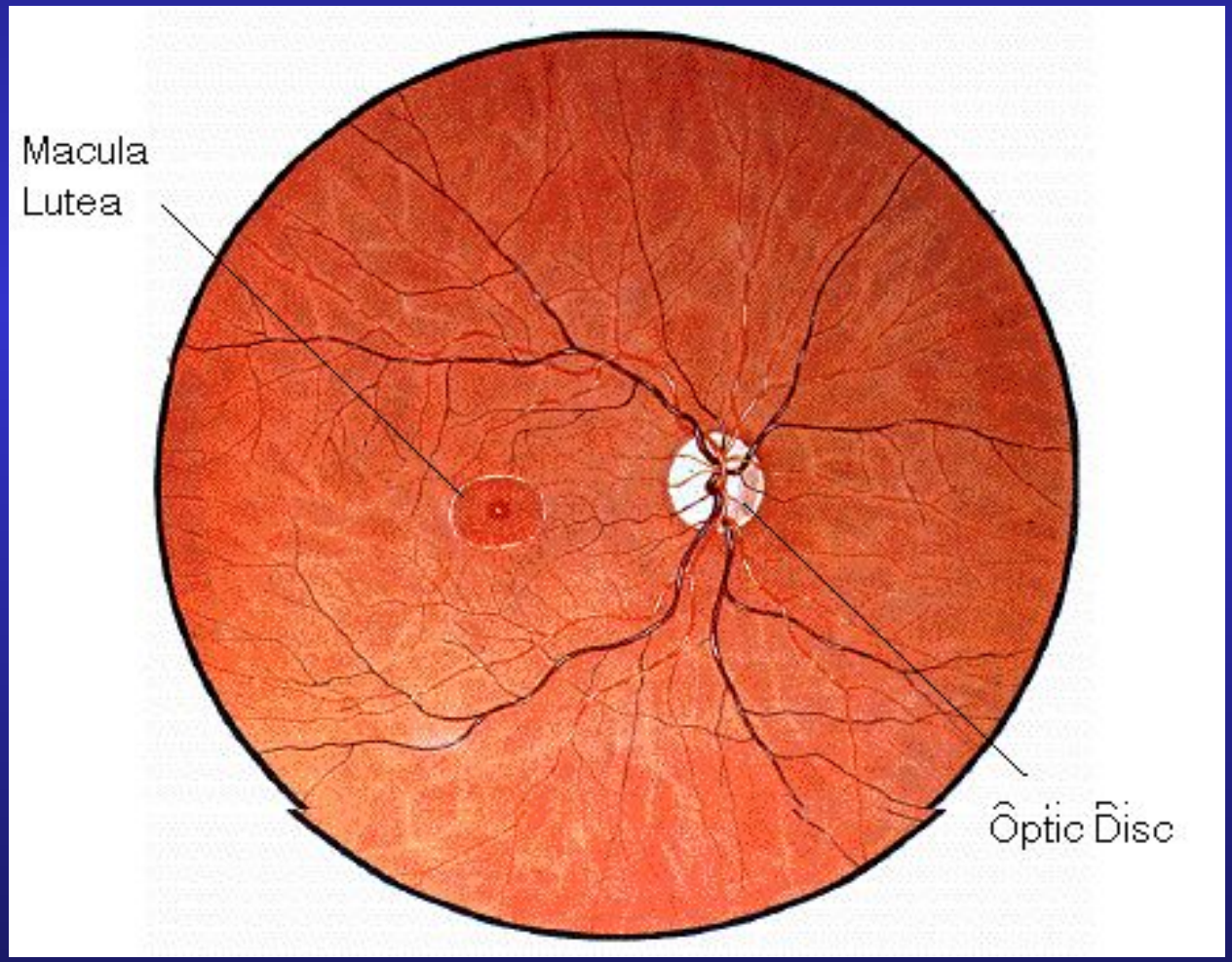
Production of Aqueous Humor and Intraocular pressure

1. Ciliary Process:
   Produces Aqueous Humor
2. Posterior Chamber:
   Aqueous Humor flows from this chamber through the pupil in Anterior Chamber
3. Canal of Schlemm
   Reabsorbs Aqueous Humor

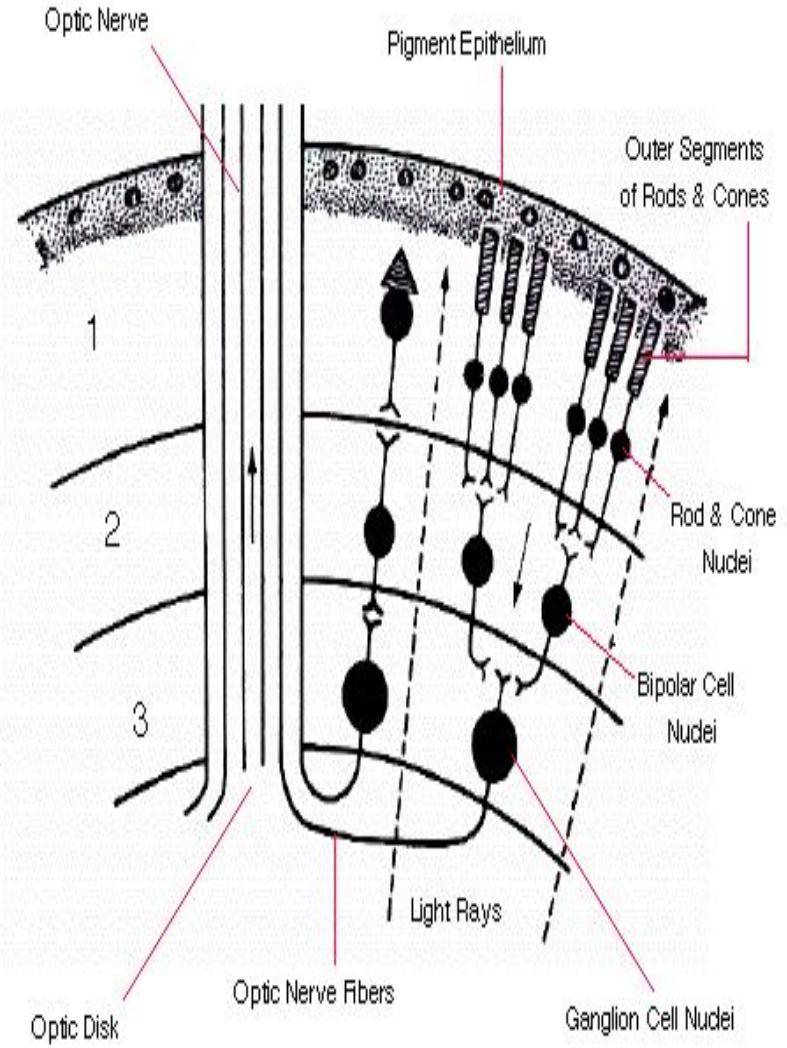
Glaucoma:
Increase in intraocular pressure due to build up of Aqueous Humor

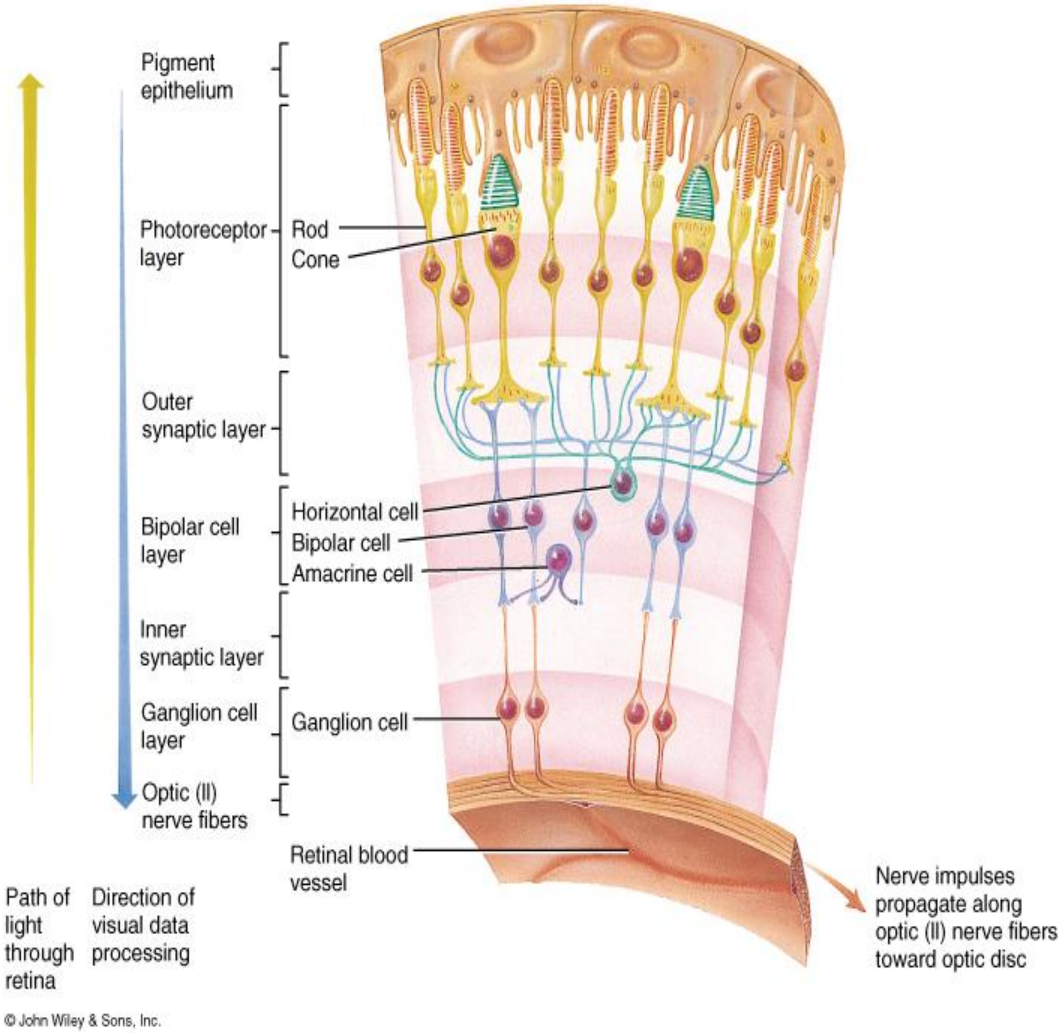


Opthalmoscopic view of the retina showing the location of the Macula to the Optic Disc



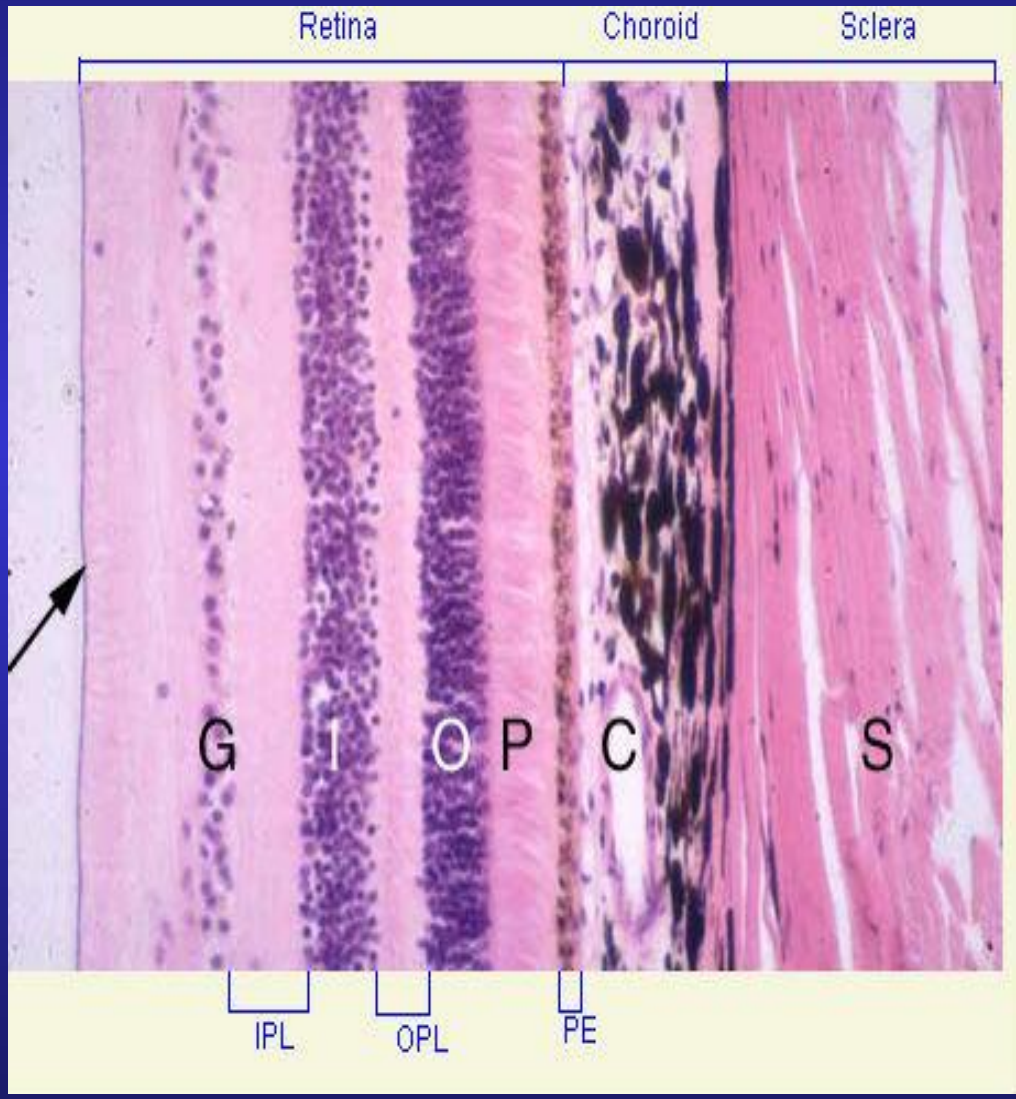
Histology of the retina of the eye





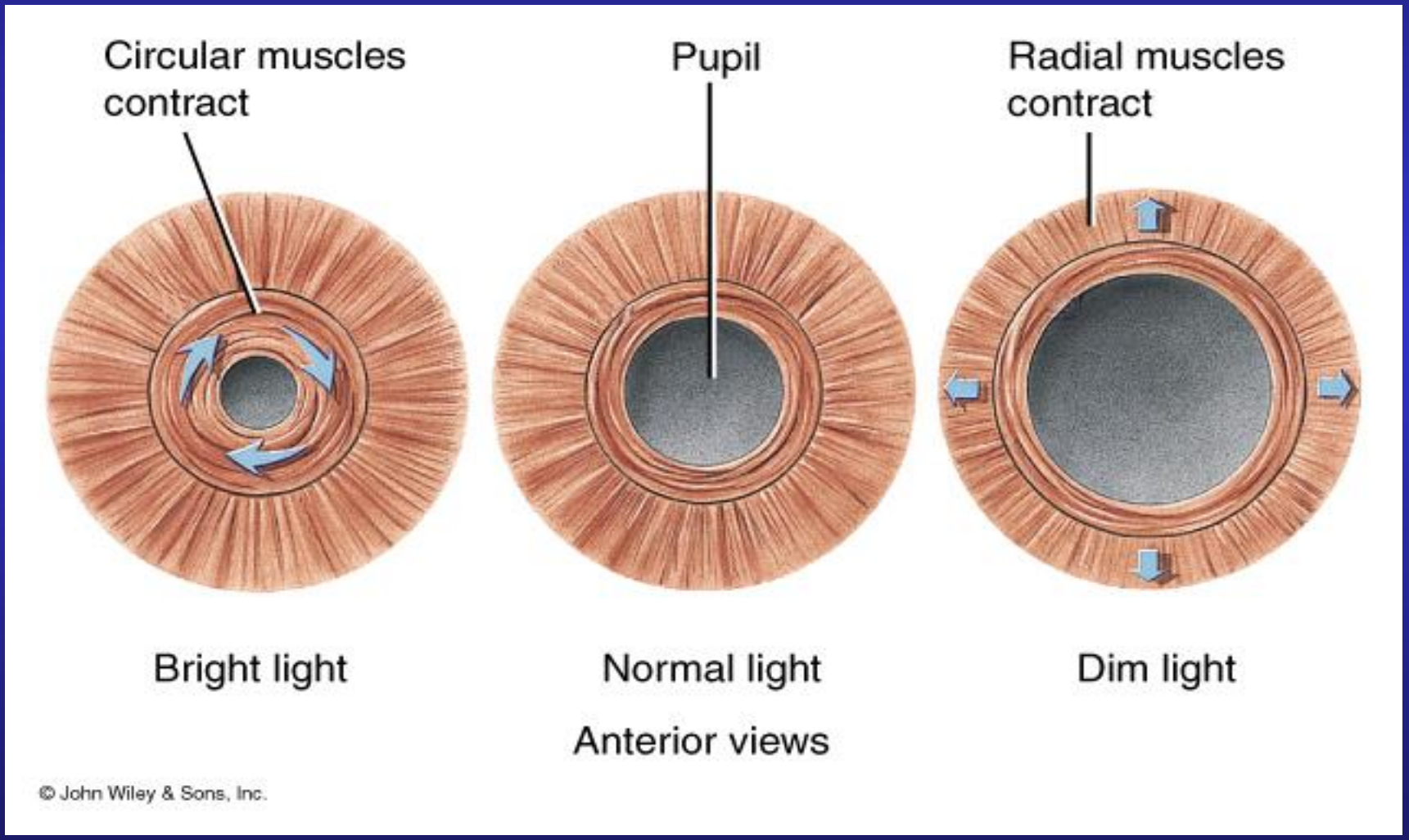
Photomicroscopic view of the Histology of the Eye

S = Sclera
C = Choroid coat
PE = Pigmented epithelium
P = Outer segments of rods and cones
O = Nuclei of rods and cones
OPL = Outer synaptic layer
I = Nuclei of bipolar neurons
PL = Inner synaptic layer
G = Ganglion cell layer

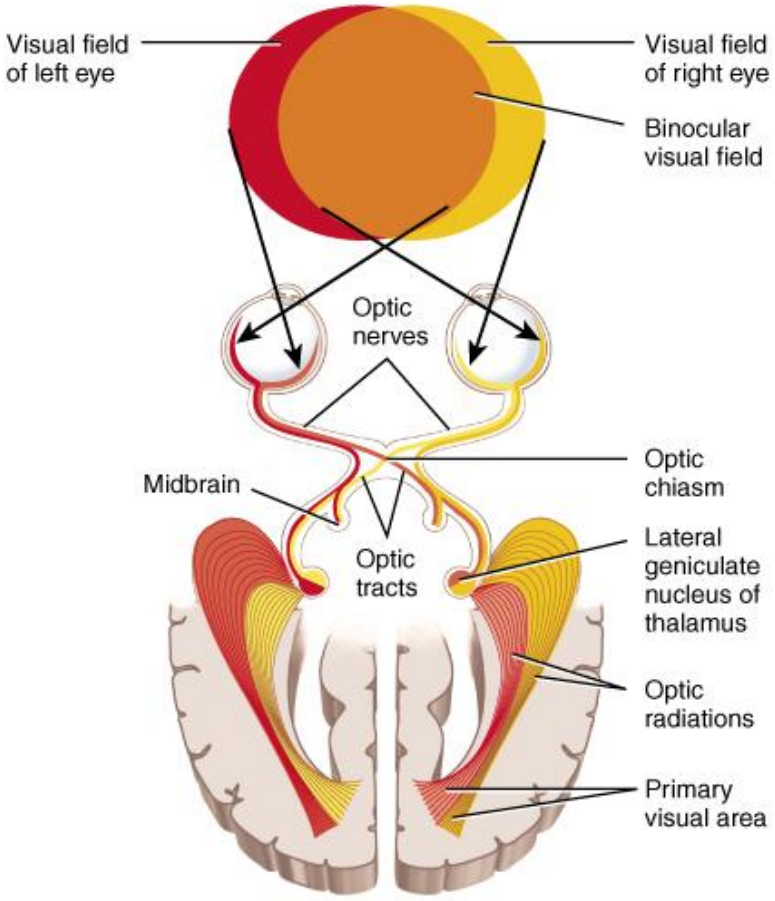


Photomicroscopic view of the Histology of the Eye showing the location of the central fovea

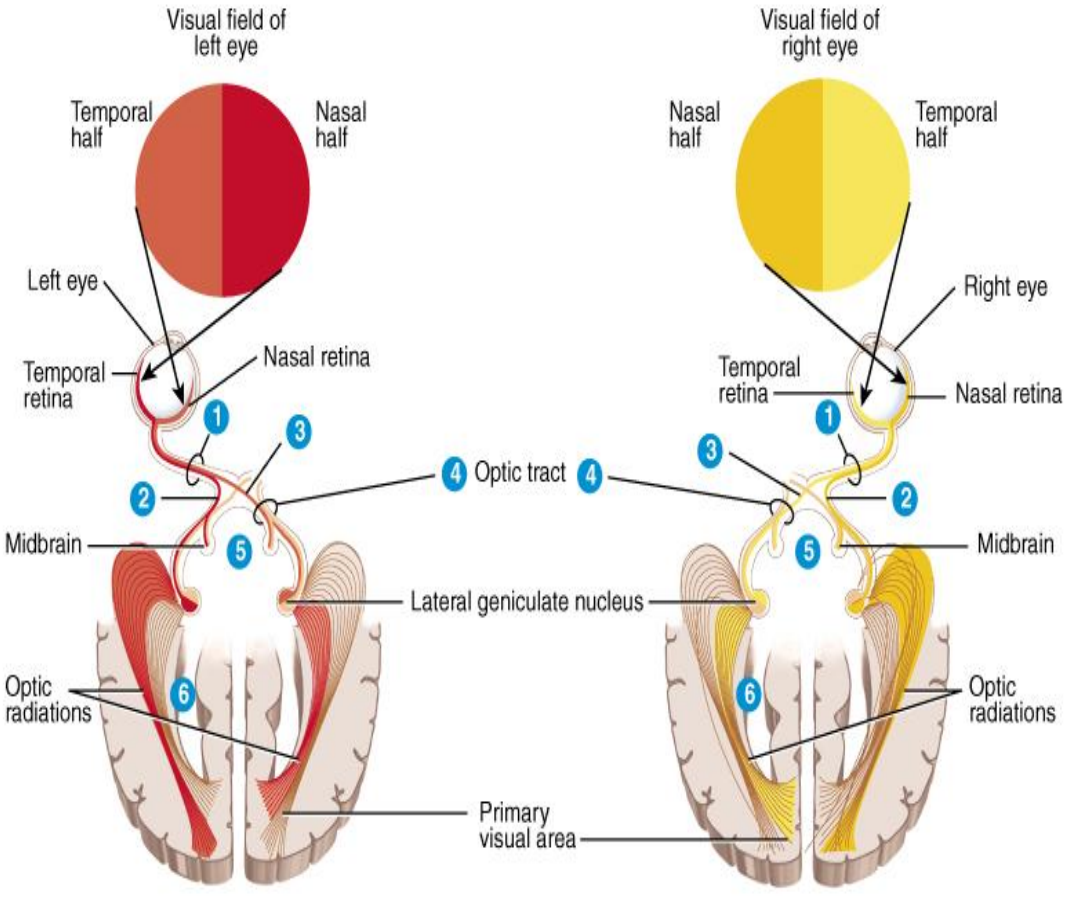
Intrinsic Eye Muscles and their response to light



The Visual Pathway



(b) Superior view of transverse section through eyeballs and brain



(c) Left eye and its pathways

(d) Right eye and its pathways

Adapted from Seeley et al., *Anatomy and Physiology*, Fourth Edition, Figure 15.22, p. 480 (New York: WCB McGraw-Hill, 1998). ©The McGraw-Hills Companies.

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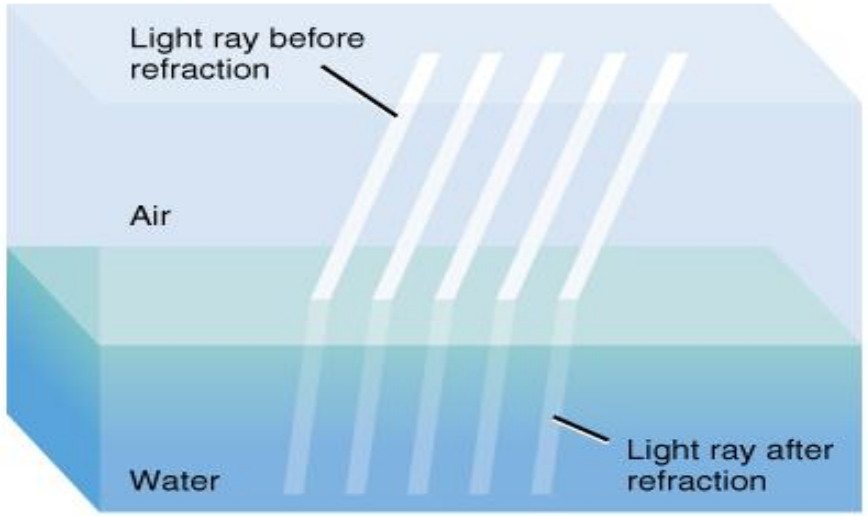
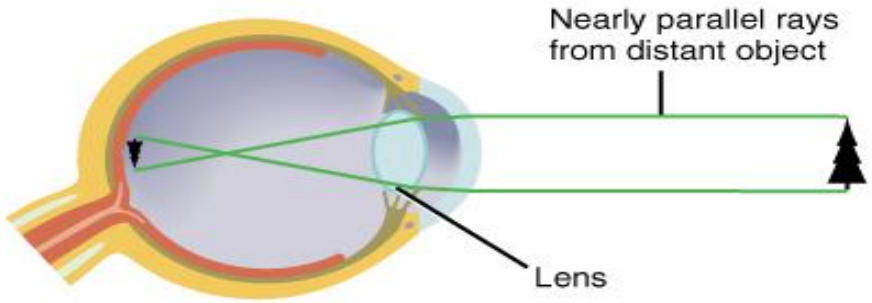
Light Refractory Pathway:

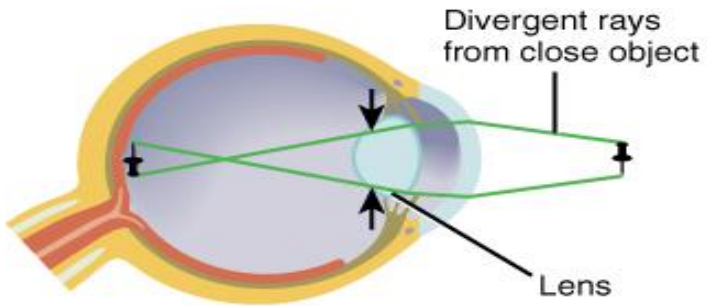
1. Bulbar Conjunctiva
2. Cornea
3. Aqueous Humor
4. Lens
5. Vitreous Humor
6. Ganglion Cell Layer
7. Inner Synaptic Layer
8. Bipolar Layer
9. Outer Synaptic Layer
10. Photoreceptor Layer



(a) Refraction of light rays



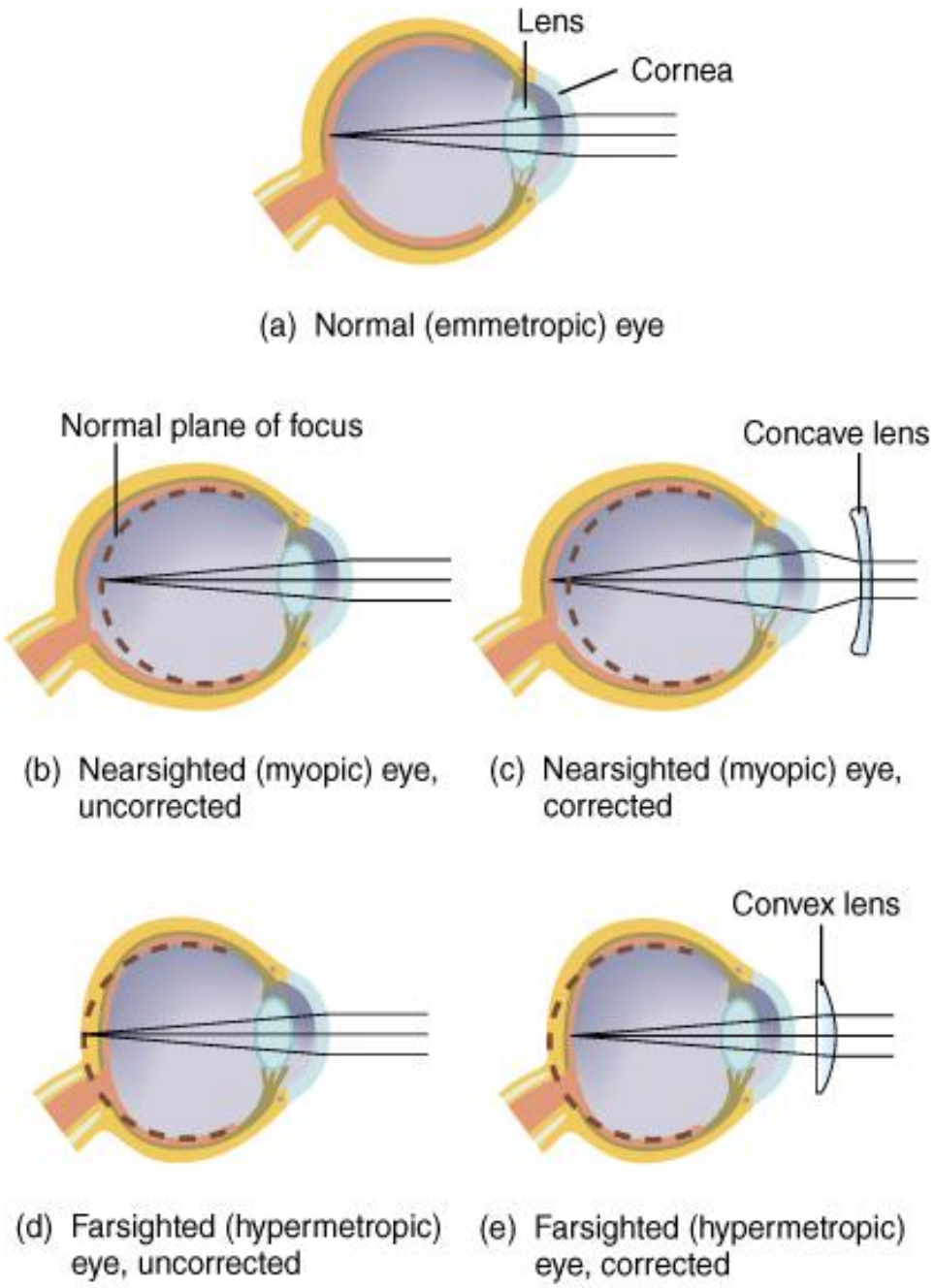
(b) Viewing distant object



(c) Accommodation

Abnormalities of The Eye:

1. Myopic - nearsighted
2. Hypermetropic - Farsighted
3. Presbyopia - age-related failure of lens to accommodate
4. Astigmatism - Distorted vision due to irregular-shaped lens or cornea
5. Color Blindness - genetic defect that causes dysfunction of cones



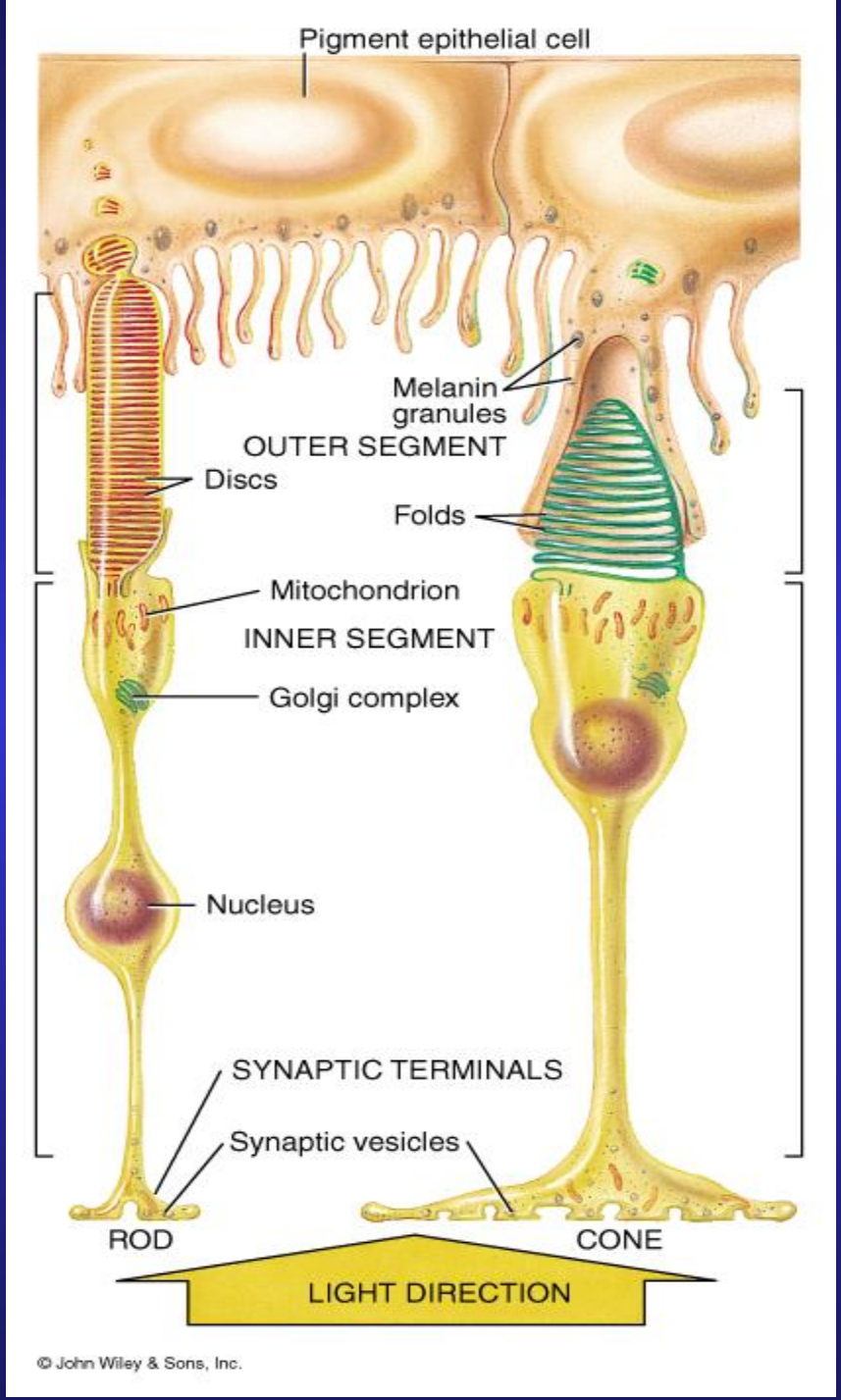
Accommodation of the Lens for near vision

- Ciliary muscles contract
- Ciliary body pulls forward and inward
- Tension on suspensory ligaments of lens is decreased
- Lens becomes thicker (rounder) due to its elasticity
- Pupils constricts

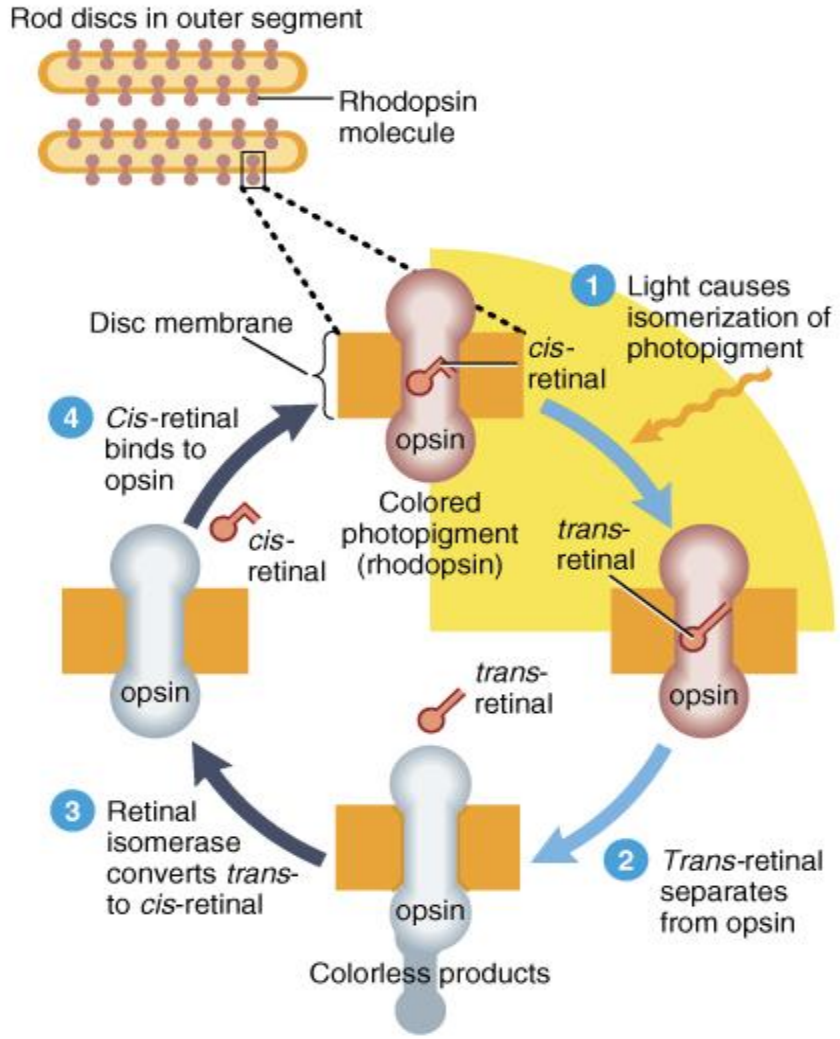
Accommodation of the Lens for far vision

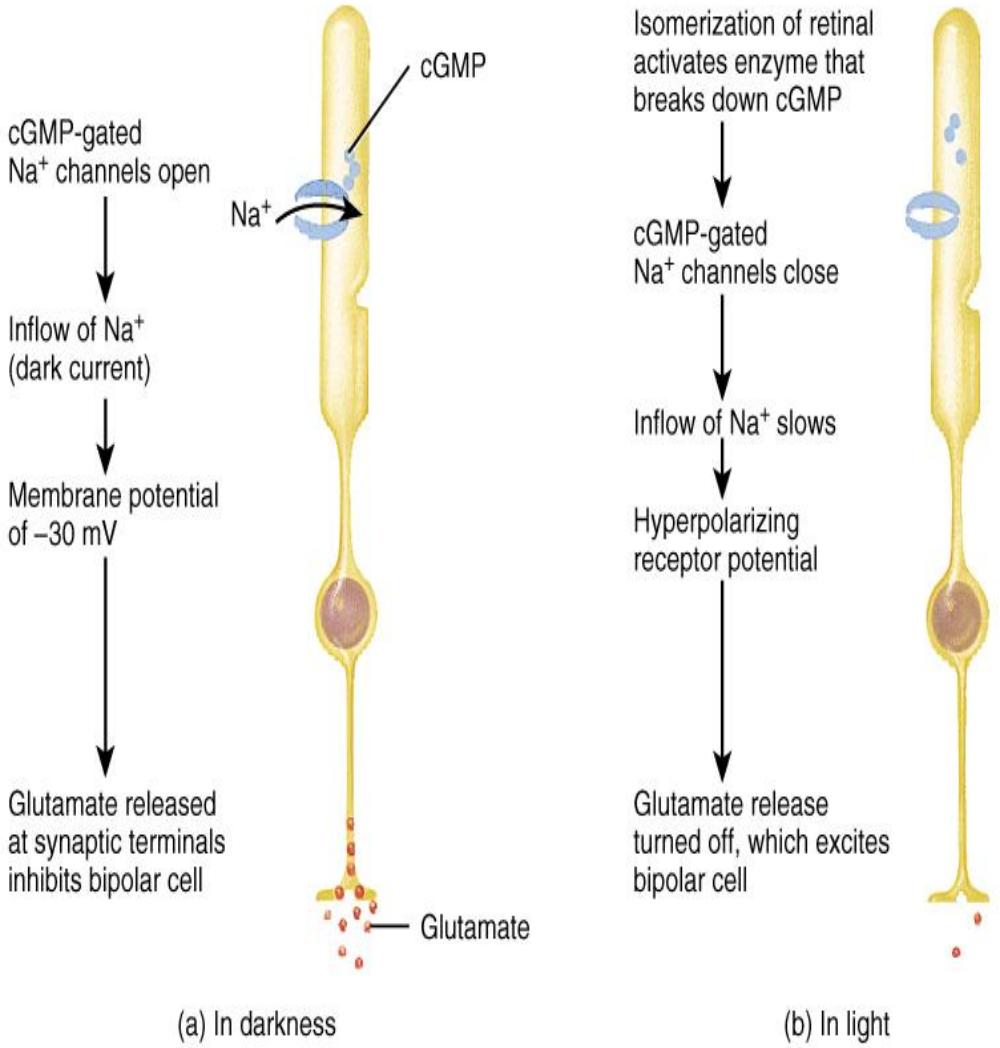
- Ciliary muscles relaxes
- Ciliary body returns to its resting state, backward and outward
- Tension on suspensory ligaments of lens is increased
- Lens becomes thinner (flatter) due to its elasticity
- Pupils dilate

Anatomy of Rods and Cones



Physiology of Rods and Photopigments





Visual Pathway

1. Cones
2. Bipolar neurons
3. Ganglion cell's axon forms the optic nerve
4. Optic nerve to the Optic Chiasm
5. Optic tract
6. Lateral geniculate nuclei of the thalamus
7. Optic Radiations
8. Primary visual areas of the occipital lobes