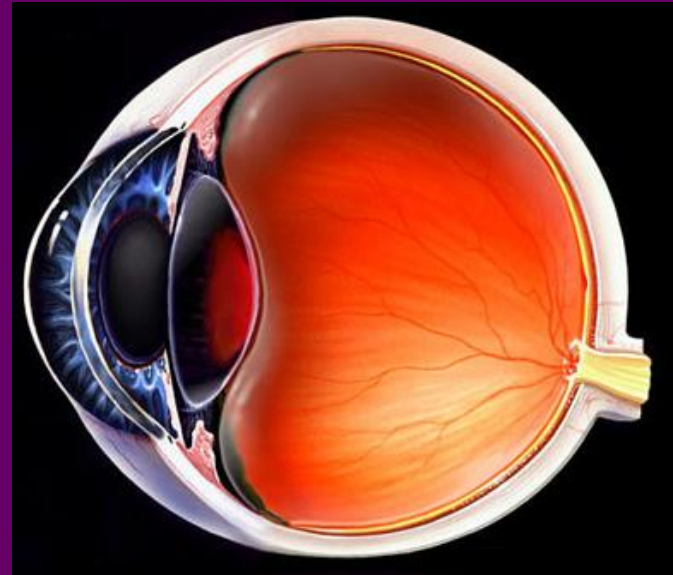
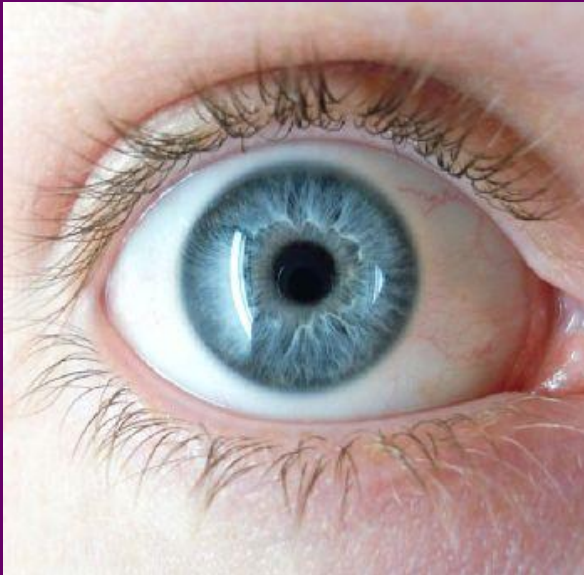


CH. 13: SPECIAL SENSES

I. VISION:

- ❖ takes place in the eyes
- ❖ the primary sense for obtaining information about surroundings



A. Accessory Organs of the Eye:

1. Eyelids:

- ❖ protect the exposed portion of the eye from damage
- ❖ small hairs (**eyelashes**) extend off to prevent particles & organisms from reaching the eye

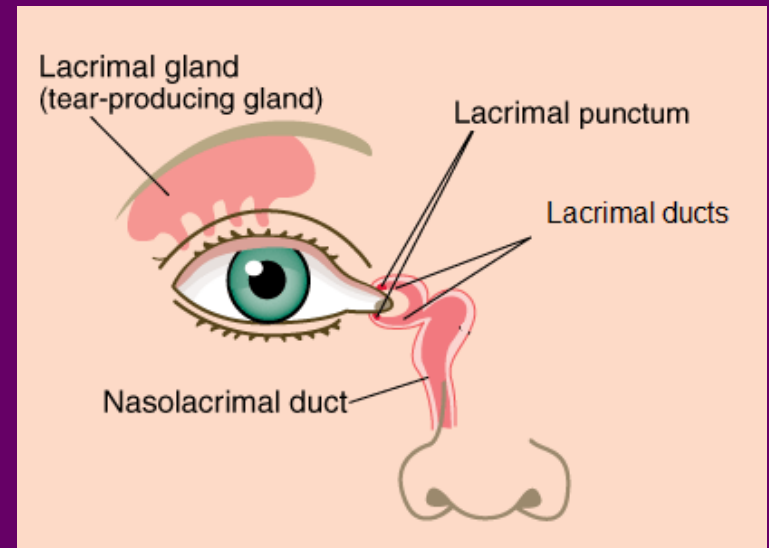


2. **Extrinsic Muscles** – skeletal muscles that control eye movement



3. **Lacrimal Gland:**

- ❖ secretes saline “tears” to lubricate the eye and kill microbes
- ❖ fluid collects in the **lacrimal duct** at the corner of the eye and drains into the **nasolacrimal duct** which empties into the nasal cavity



ALL ABOUT TEARS



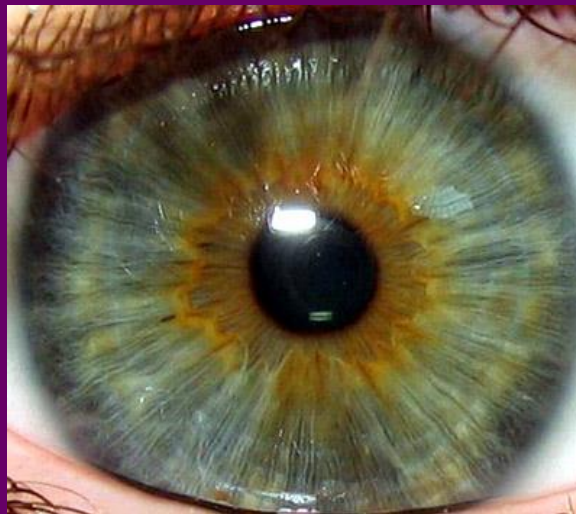
B. Anatomy of the Eyeball:

1. **Sclera** – thick, tough protective layer composed of white, fibrous tissue (white of the eye)



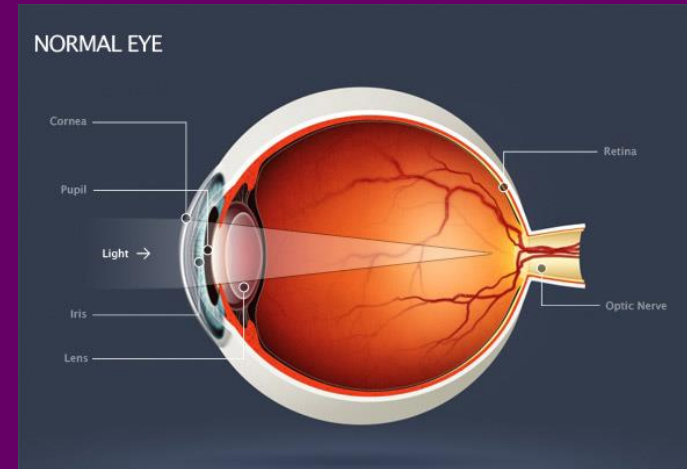
2. **Cornea** – transparent tissue covering the front of the eye; allows light to pass

3. **Choroid** – the middle layer of the eyeball; consists of 4 parts
- a. **Pupil** – the opening in the center of the eye that allows light to pass

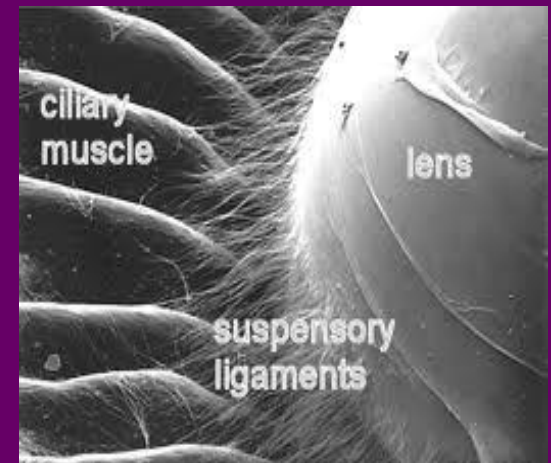
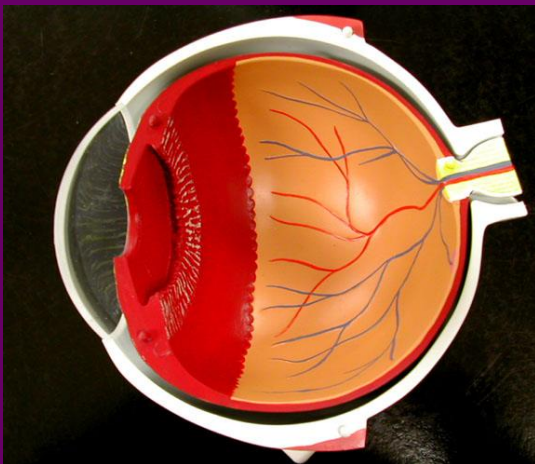


- b. **Iris** – the colored, circular band of muscles that controls the size of the pupil to regulate the amount of light entering the eye

- c. **Lens** – transparent disc that changes shape to bend light into the eye

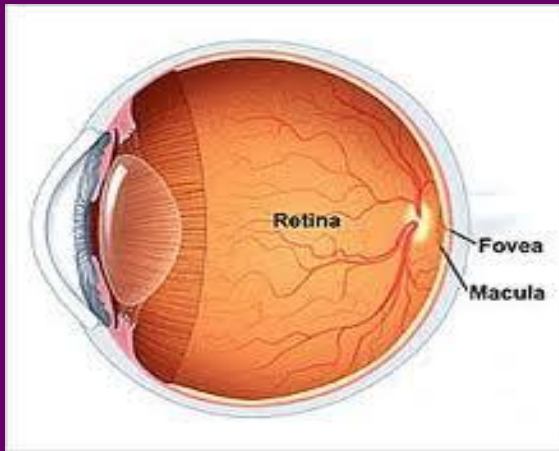


- d. **Ciliary Body** – controls the shape of the lens for focusing

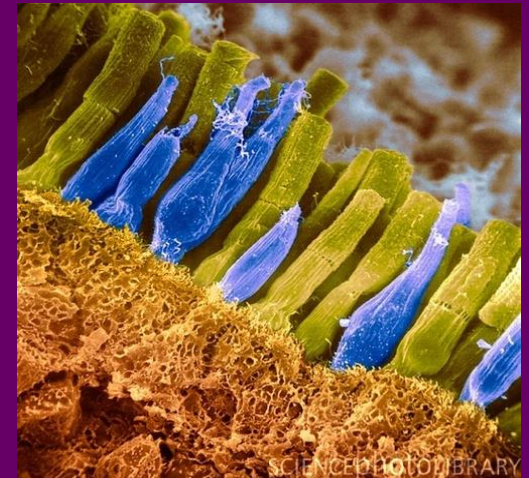


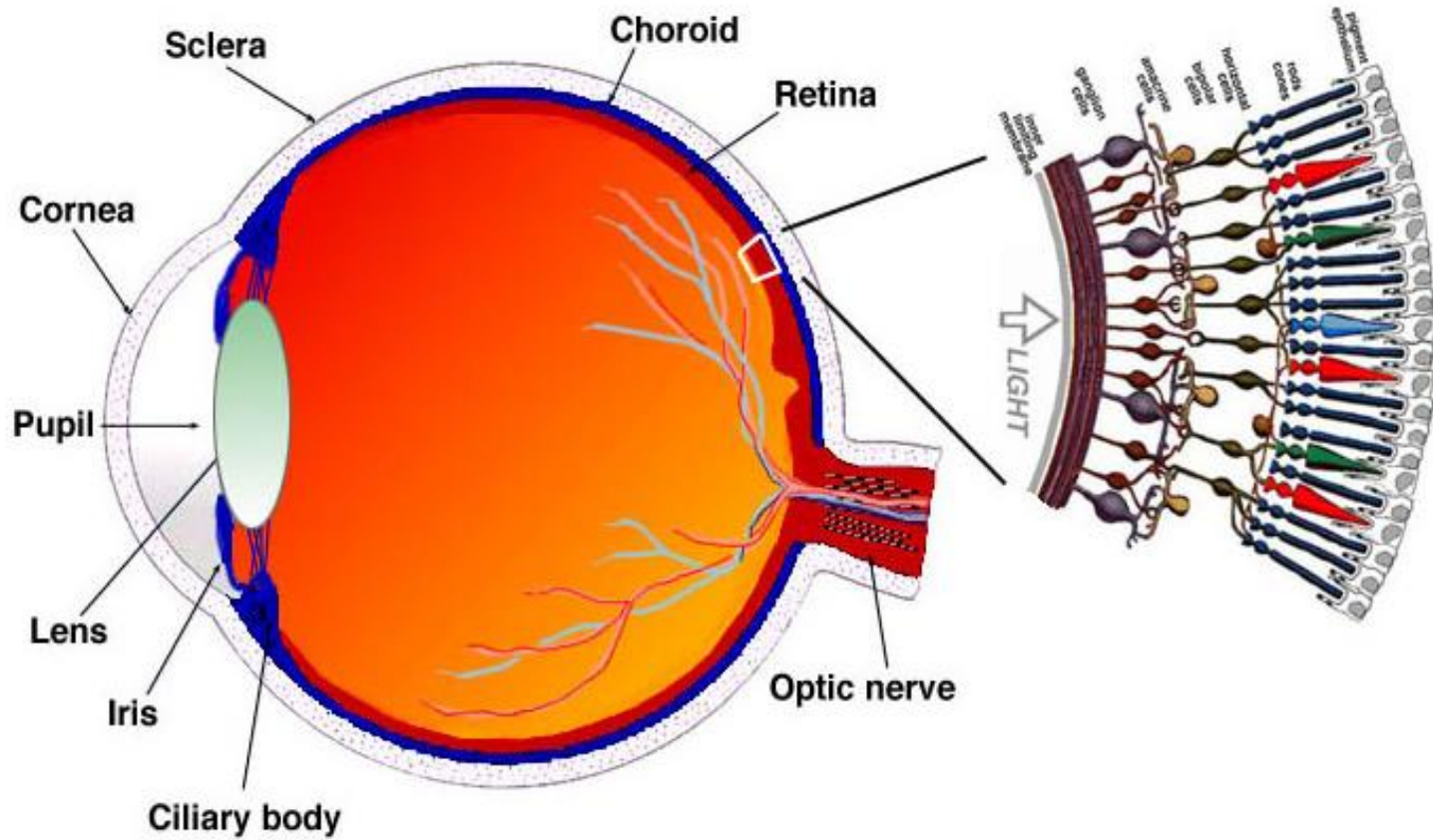


4. **Retina** – layer of tissue lining the inner surface of the eye; contains two types of photoreceptors that respond to light stimulation

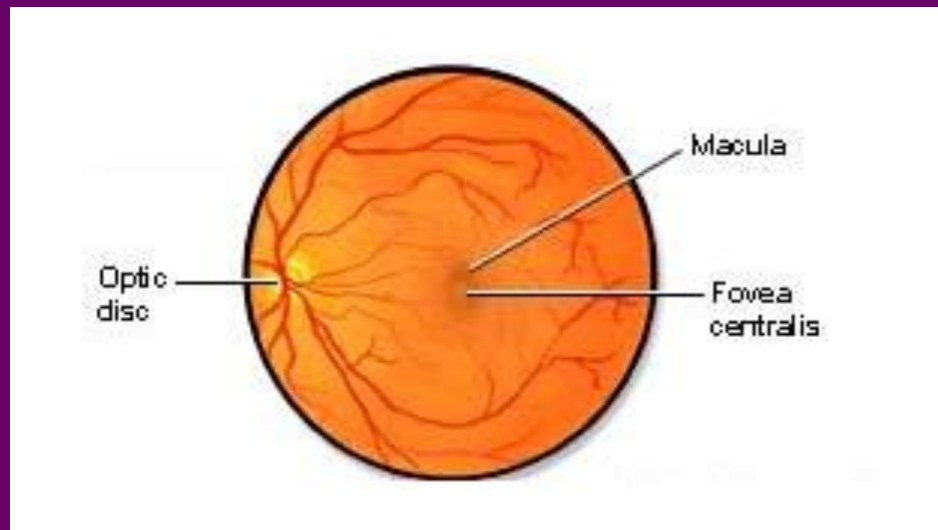


- a. **cones** – detect color in bright conditions
- b. **rods** – active in low light conditions

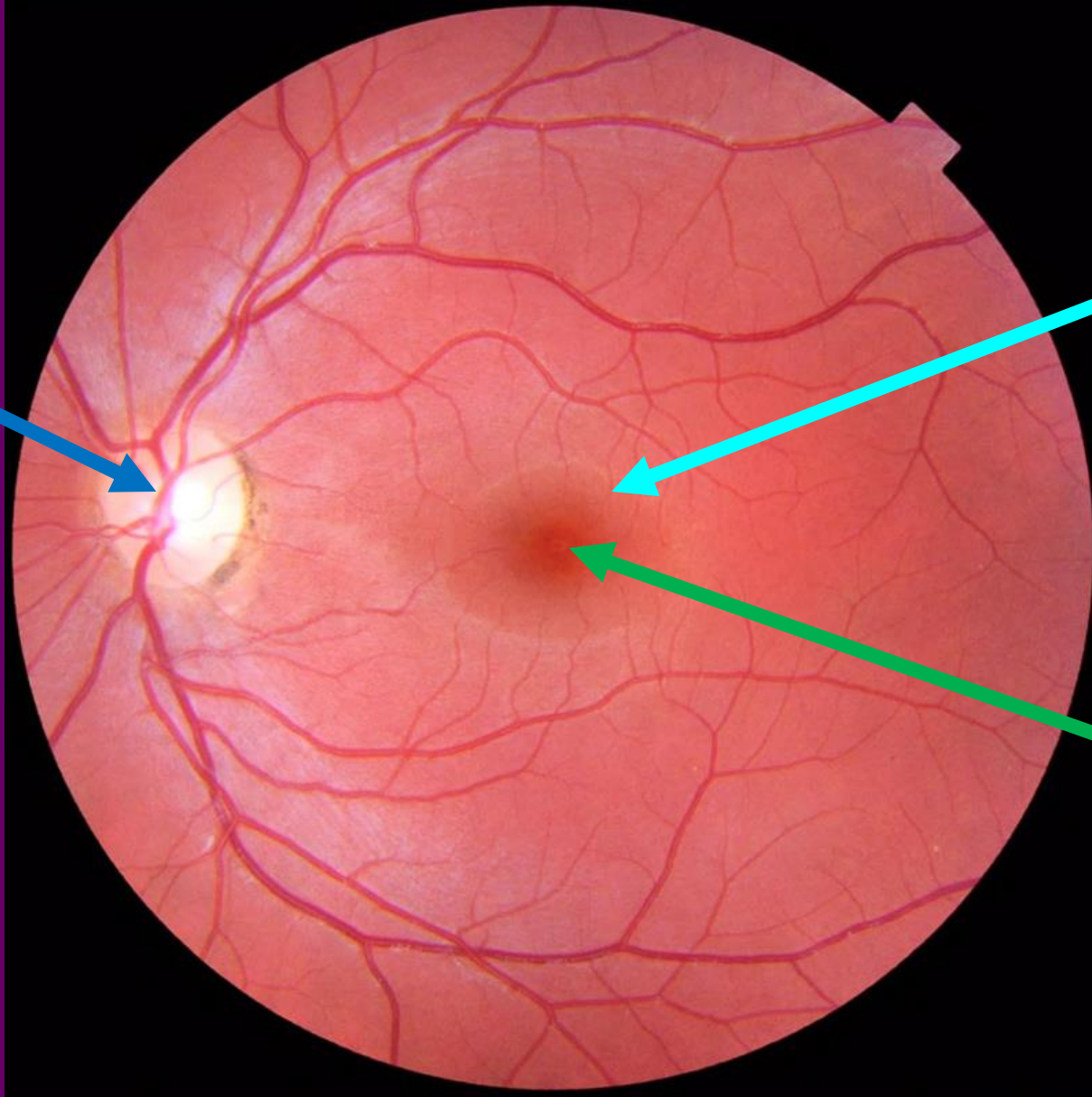




- c. **macula lutea** – area on the retina where images are projected from the lens
- d. **fovea centralis** – depression at the center of the macula lutea that provides sharpest vision
- e. **optic disk** – location where the optic nerve and blood vessels enter/exit the eyeball



**OPTIC
DISK**

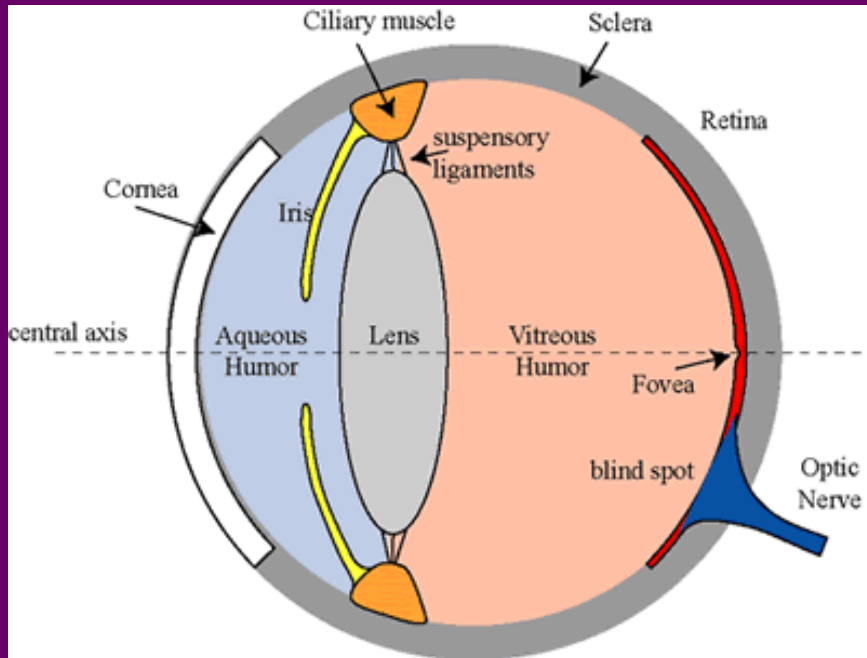


**MACULA
LUTEA**

**FOVEA
CENTRALIS**

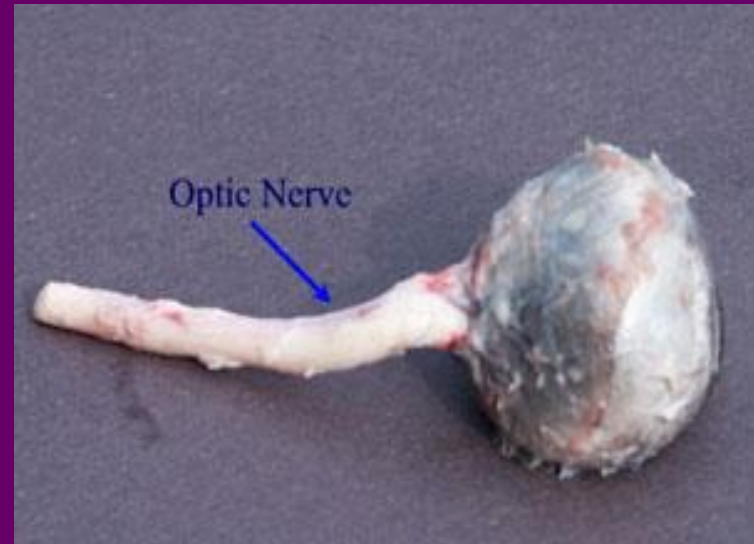
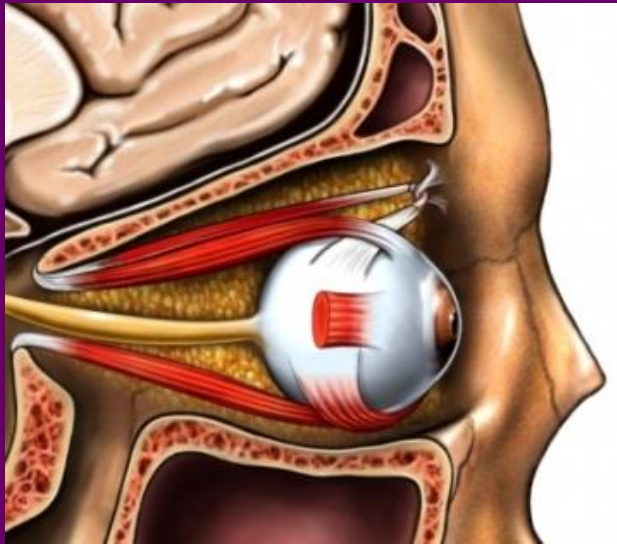
5. **Aqueous Humor** – watery fluid between the cornea & the lens

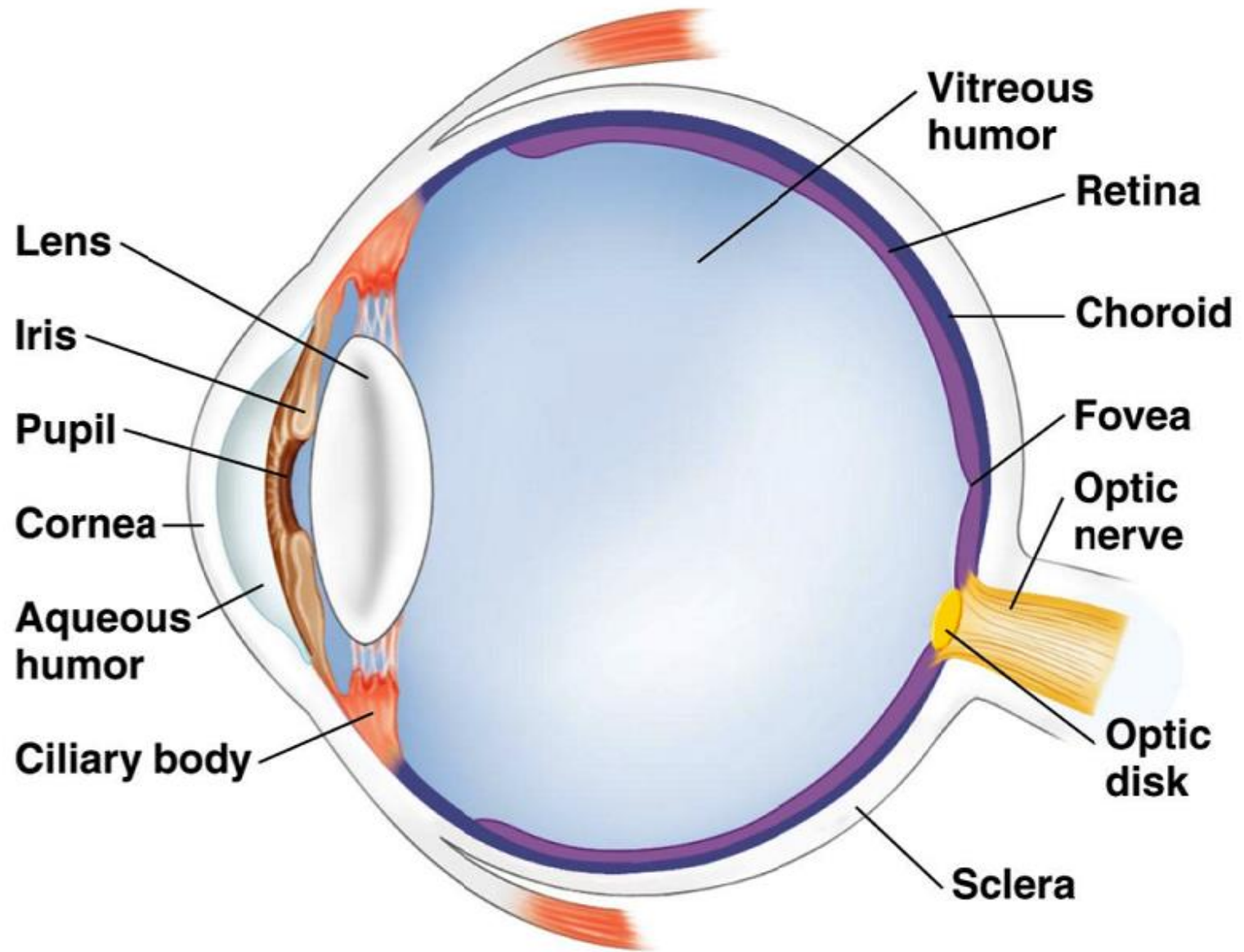
6. **Vitreous Humor** – clear, jelly-like fluid found between the lens and retina that provides pressure to maintain eye shape



7. **Optic Nerve** – transmits information from the eye to the brain

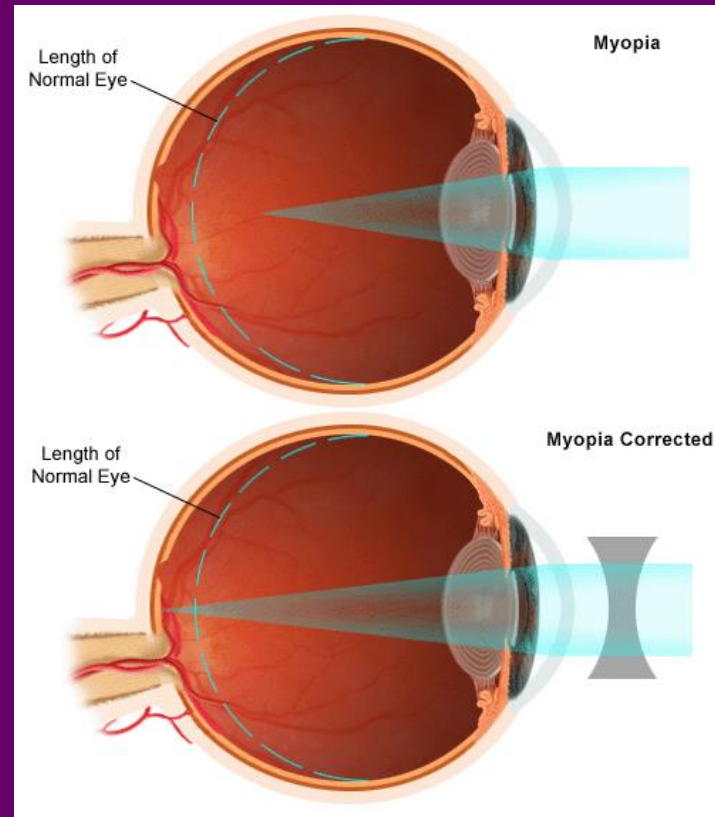
- the area where the optic nerve connects to the eye does not contain any photoreceptors (**optic disk**)



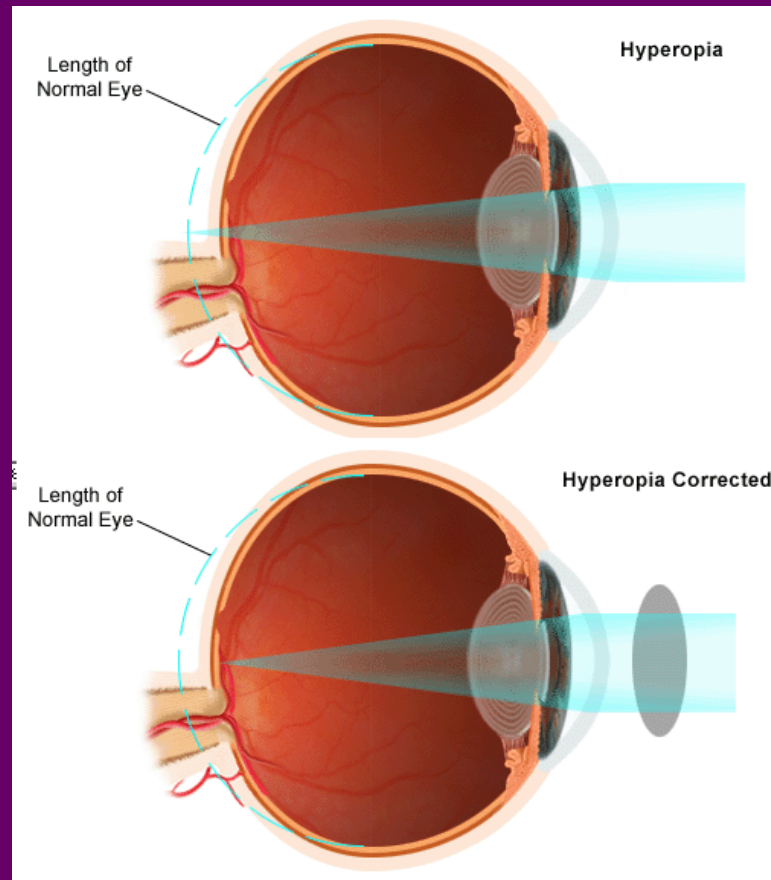


C. Conditions of the Eye:

1. **Myopia** (nearsightedness) – an object focuses in front of the retina causing distant objects to appear blurred



2. **Hyperopia** (farsightedness) – an object is focused behind the retina causing close objects to appear blurred



3. **Astigmatism** – an unequal curvature of the cornea or lens causes blurring of objects near and far

