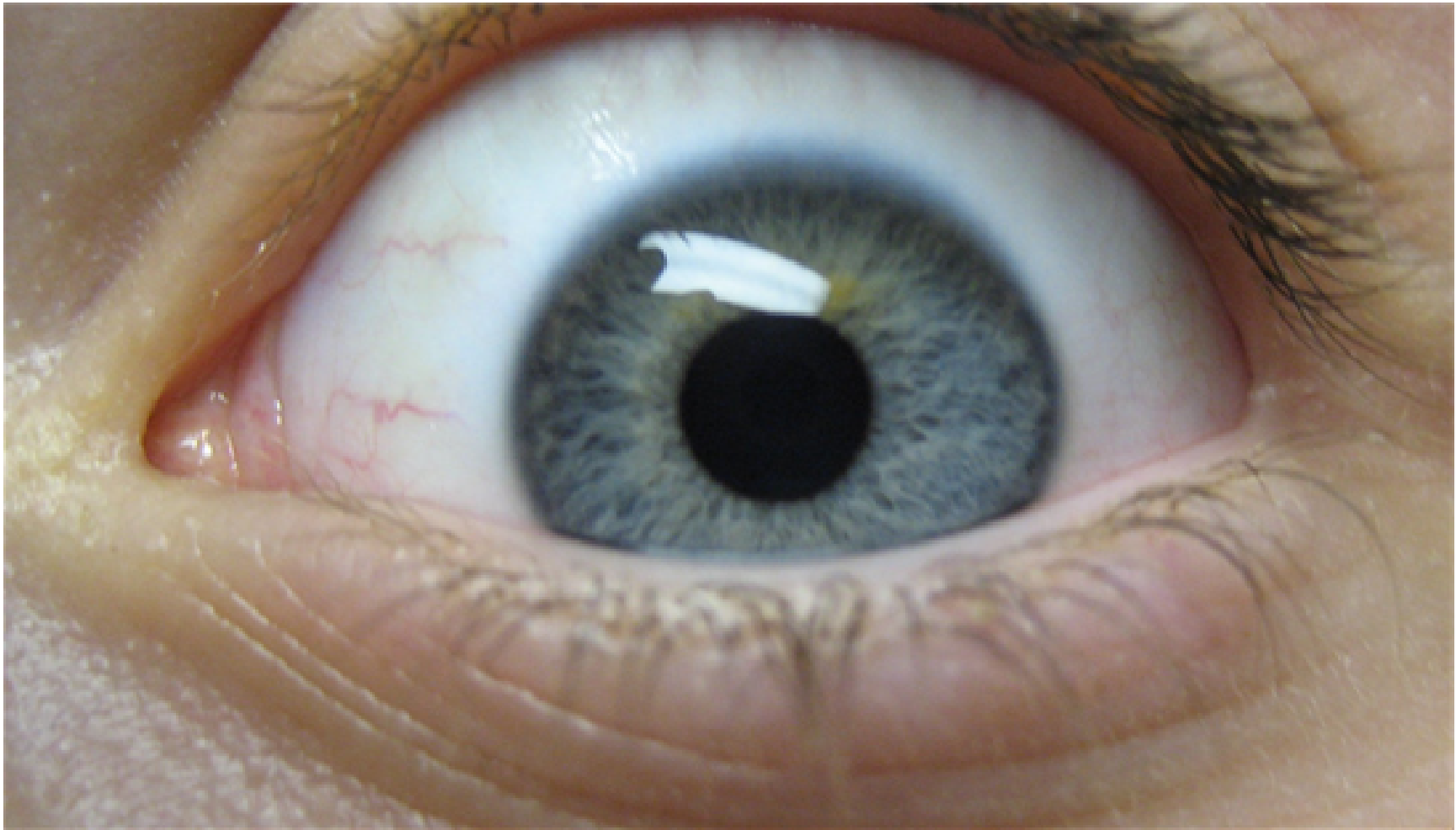
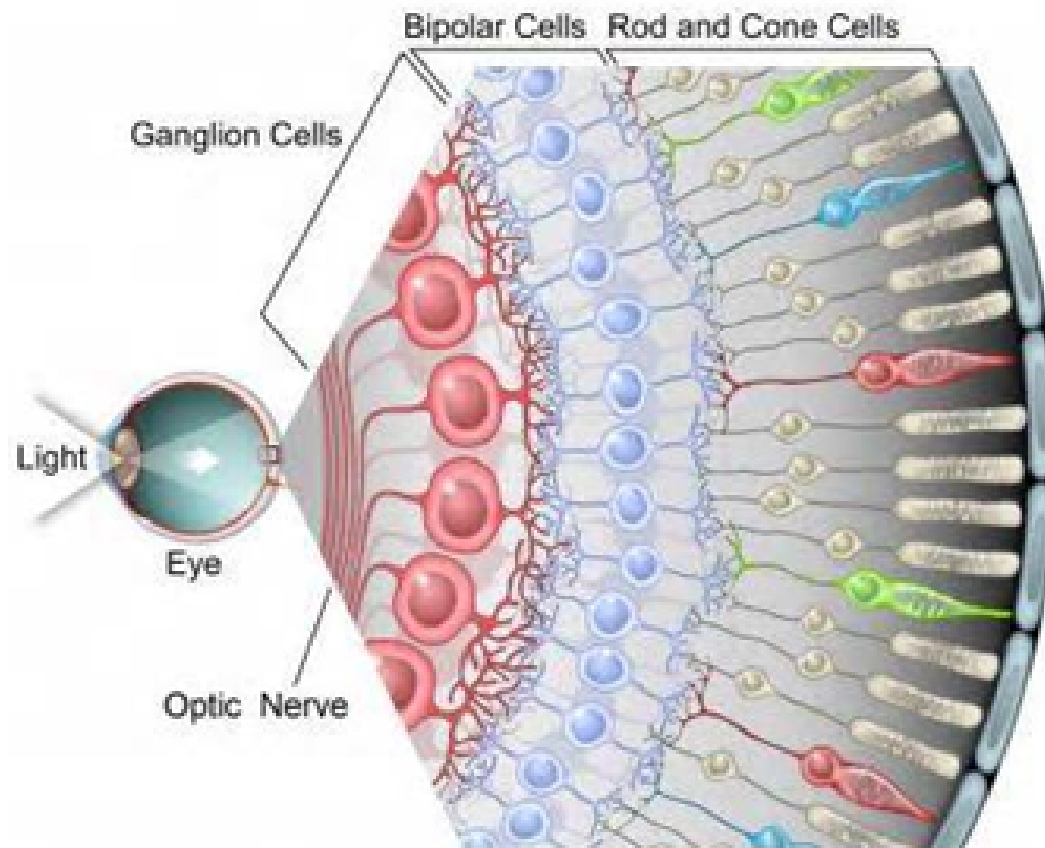


Vision



Sense of Vision

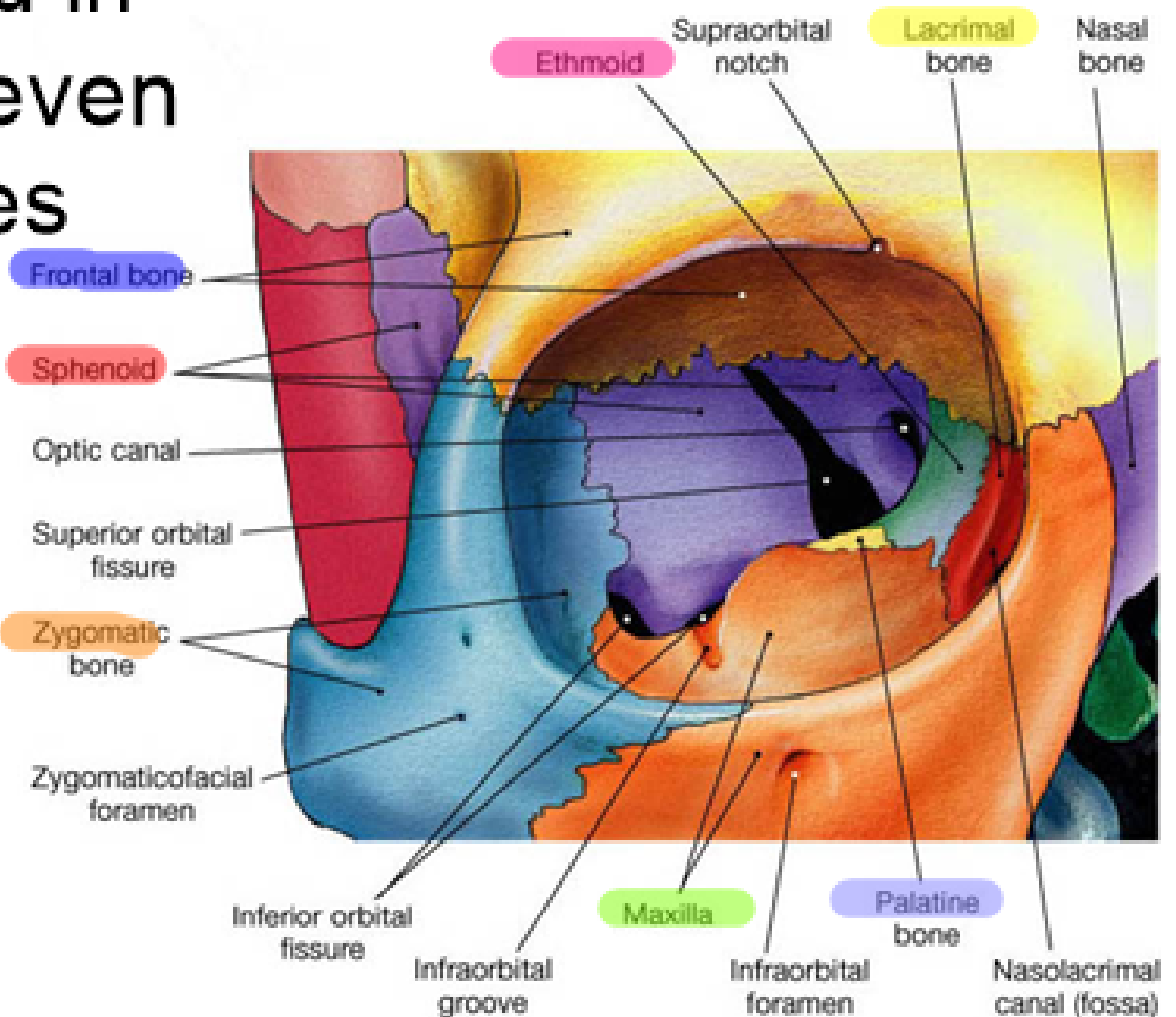
- The photoreceptors for sight are in the eyes



Sense of Vision

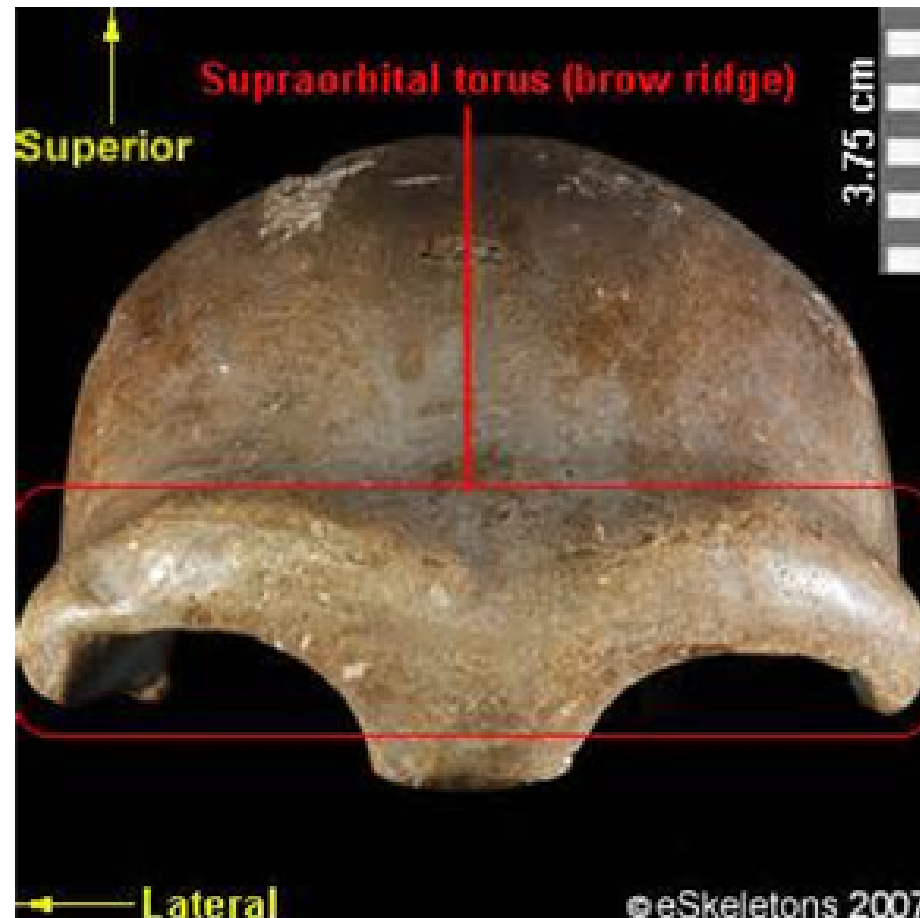
- Eyes are located in orbits formed by seven of the skull bones

1. ● frontal
2. ● lacrimal
3. ● ethmoid
4. ● zygomatic
5. ● maxilla
6. ● sphenoid
7. ● palatine



Sense of Vision

- Bony ridge superior to the orbits protects eye (supraorbital ridge)



Accessory Organs of the Eye

- Eyebrows - short thick hairs positioned transversely above the eye along the supraorbital ridge, shade the eyes from the sun and prevent perspiration or debris falling into the eye



Accessory Organs of the Eye cont.

- Eyelashes trap debris and keep it from entering the eyes
- Sebaceous glands associated with each eyelash produce an oily secretion that lubricates the eye
- Sty = inflammation of the oil glands



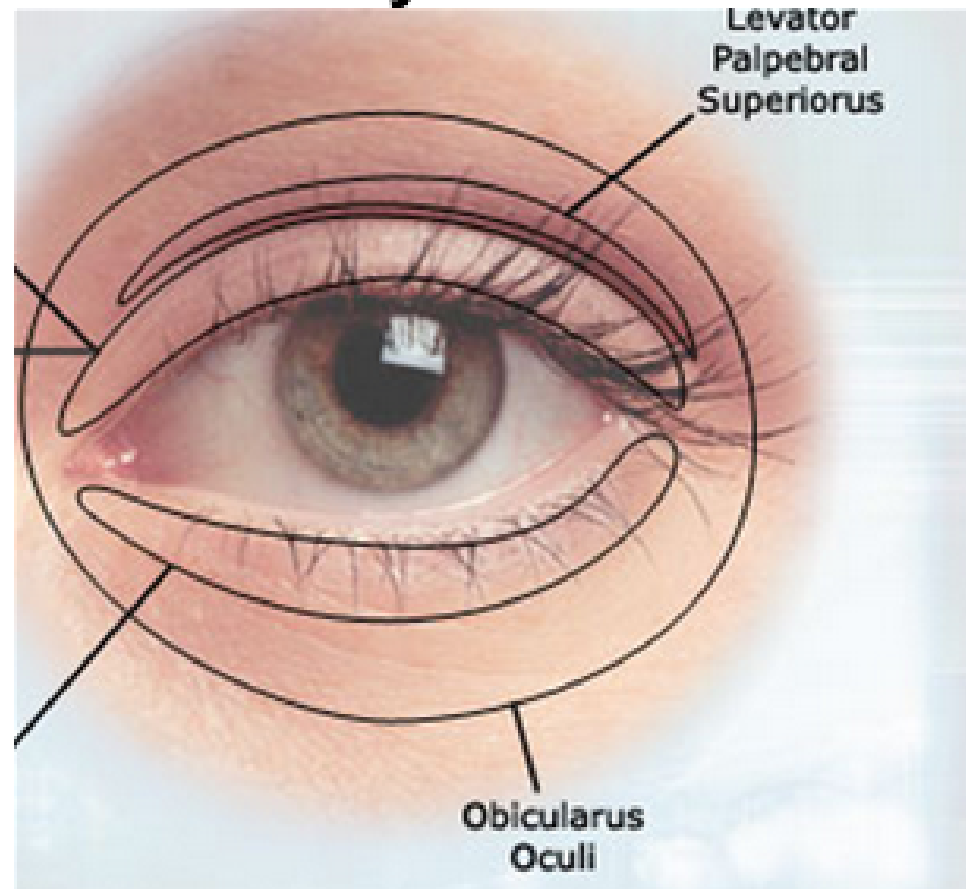
Accessory Organs of the Eye cont.

- Eyelids - continuation of the skin
- Close to distribute tears to moisten and lubricate eye
- Protect eye from damage
- Shield light



Eyelid cont.

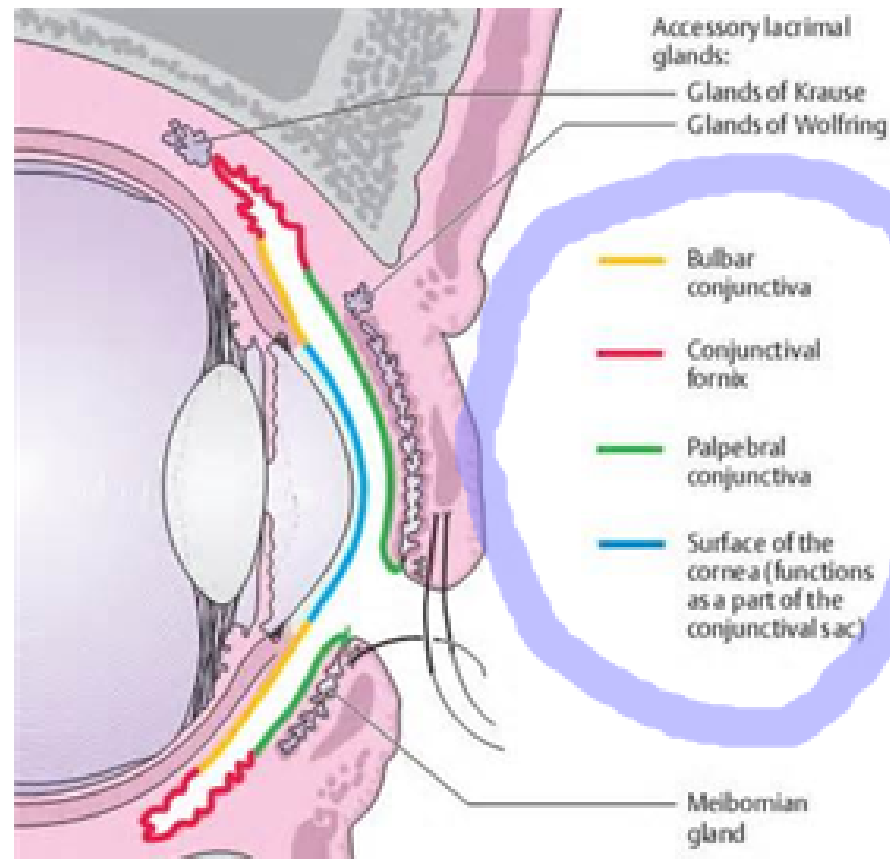
- The orbicularis oculi closes eyelid
- The levator palpebrae superioris raises eyelid



Eyelid cont.

- The inner surface of the eyelid is lined by a transparent mucous membrane called conjunctiva that folds back to cover the anterior of the eye except for the cornea which is covered by a delicate epithelium.

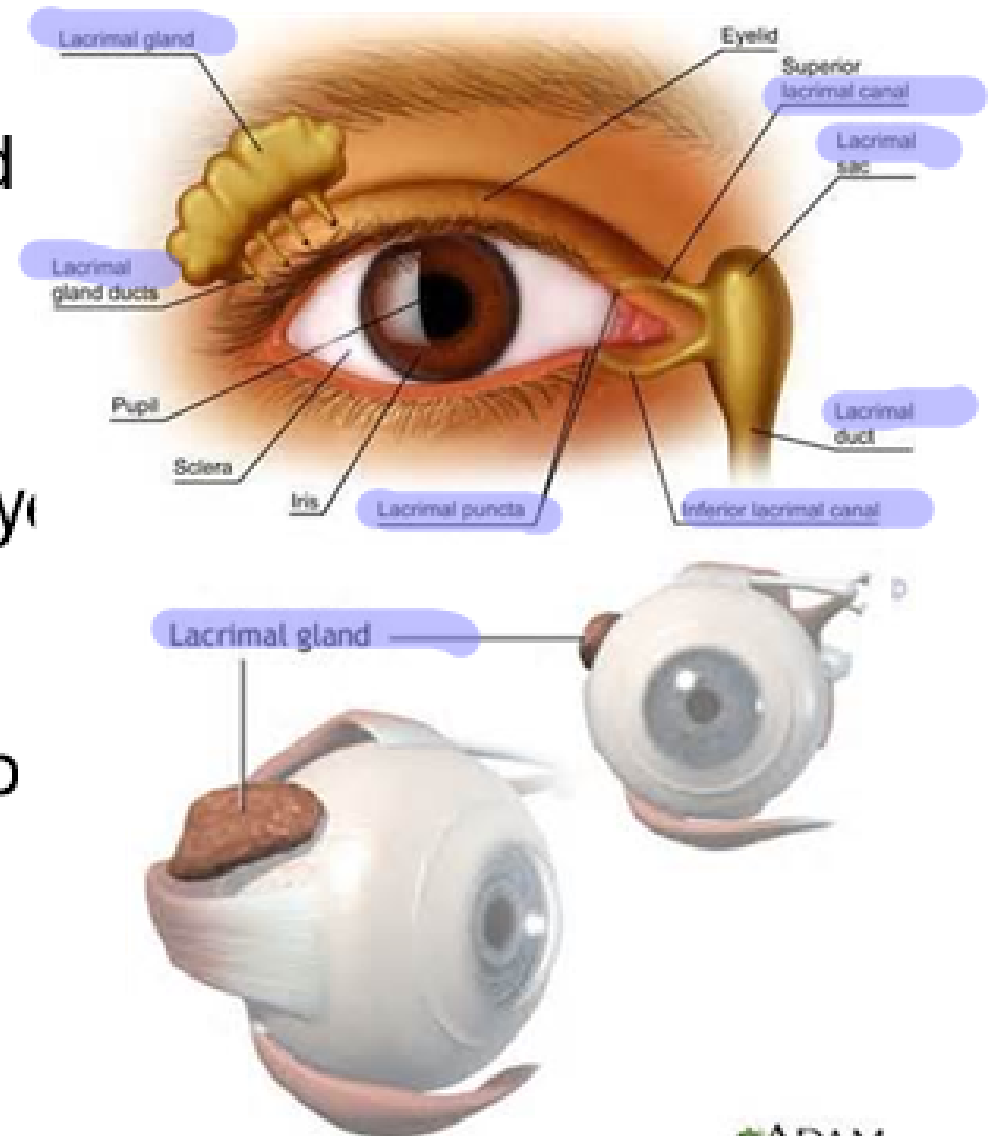
Conjunctivitis; a bacterial or viral infection of the conjunctiva.
AKA - Pink Eye



Note: The blue is actually the cornea, but it functions as part of the conjunctival sac.

Accessory Organs of the Eye cont.

- Lacrimal Apparatus - consists of the lacrimal gland and the lacrimal sac with its ducts
- Lie in the orbit above the eye and produce tears
- The tears, collected by two small ducts pass into the lacrimal sac before draining into the nose by the way of the nasolacrimal ducts



Accessory Organs of the Eye cont.

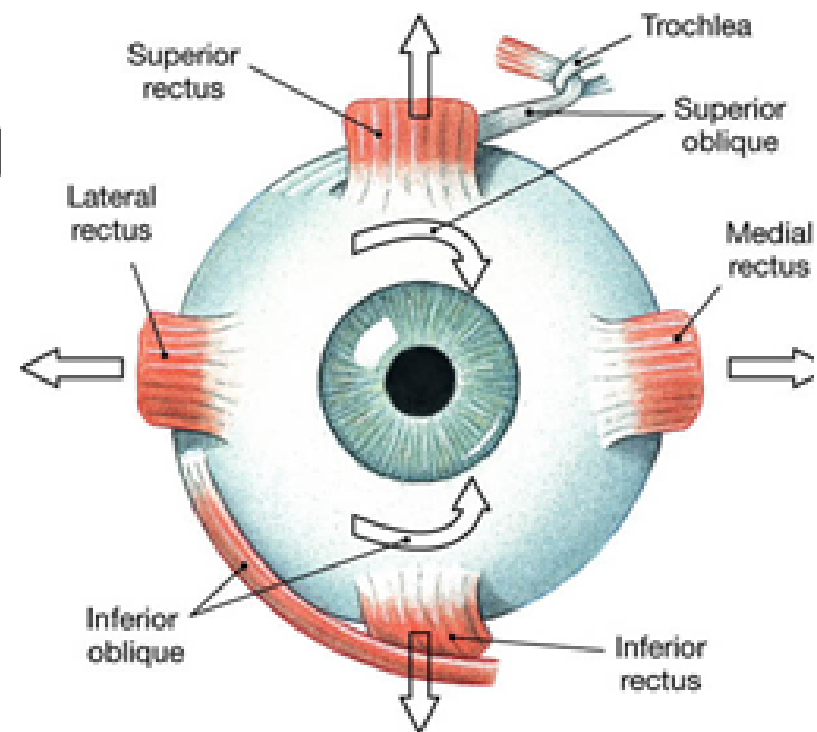
- Extrinsic Muscles - move the eye

Three Pairs -

1. Superior Rectus = Rolls Eye Upward
Inferior Rectus = Rolls Eye Downward

2. Lateral Rectus
= Turns Eye Outward From Midline
Medial Rectus = Turns Eye Inward

3. Superior Oblique = Rotate Eye
Counterclockwise
Inferior Oblique = Rotate Eye Clockwise

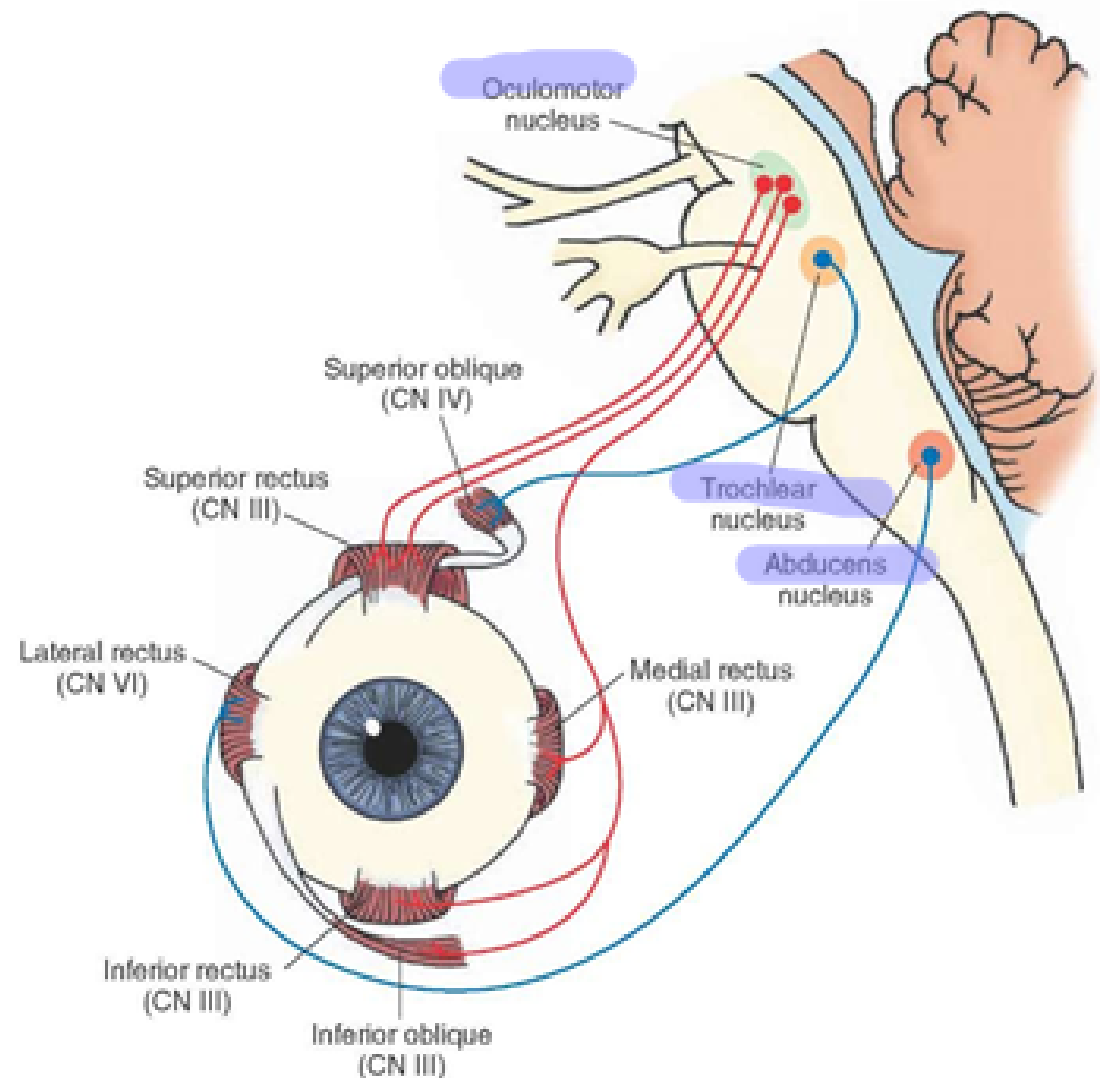


(c) Anterior view, right eye

Accessory Organs of the Eye cont.

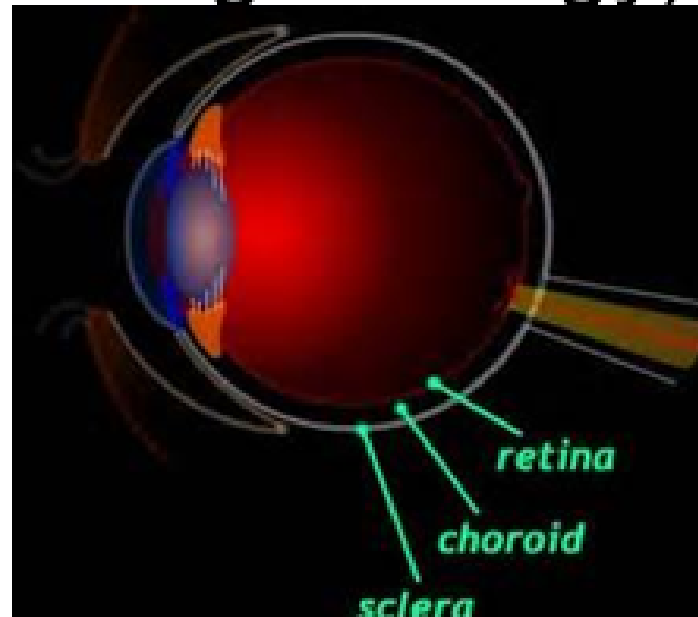
• Three cranial nerves control these muscles;

1. oculomotor
2. abducens
3. trochlear



Anatomy and Physiology of the Eye

- Eyeball - elongated sphere about 2.5 cm in diameter has three layers; sclera, choroid and retina (only the retina contains photoreceptors for light energy)



Anatomy and Physiology of the Eye

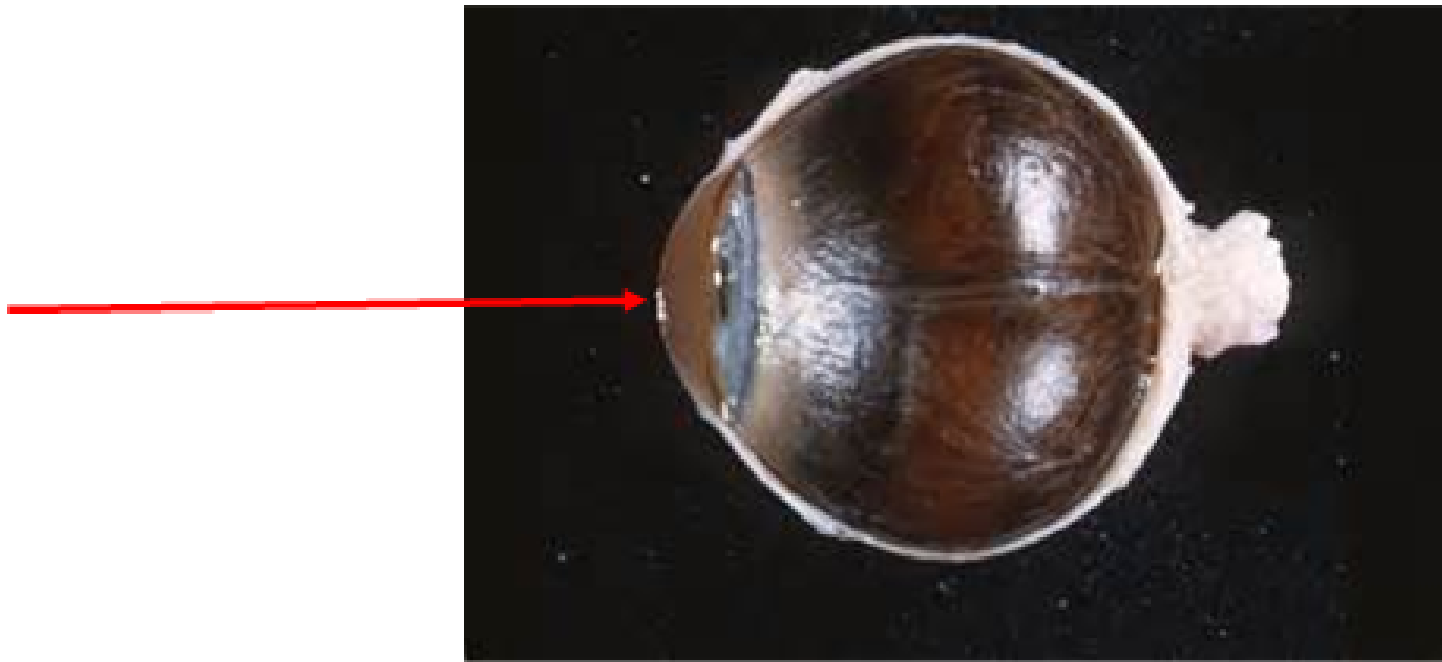
- Sclera - white and fibrous outer layer that protects and supports eyeball



Cow Eye

Anatomy and Physiology of the Eye

- Cornea - transparent collagen fibers that refract light rays



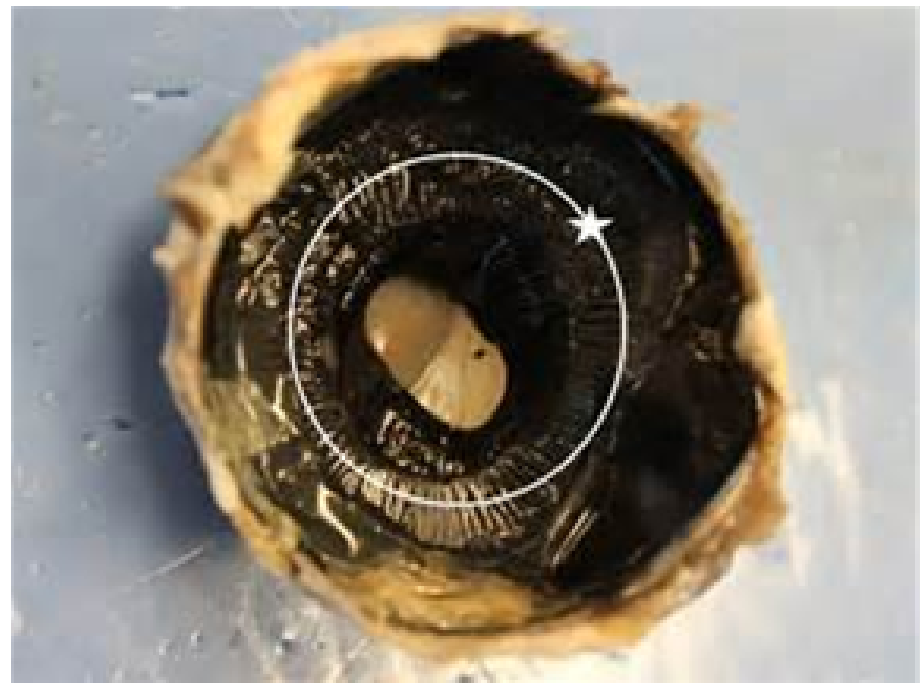
Anatomy and Physiology of the Eye

- Choroid - middle thin darkly pigmented layer that absorbs stray light



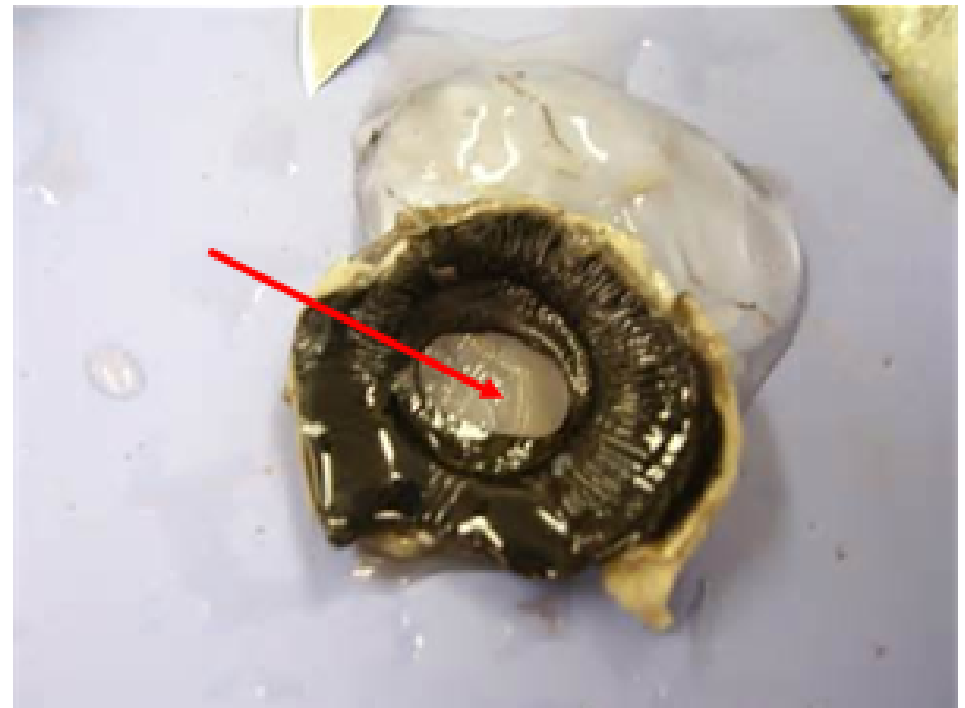
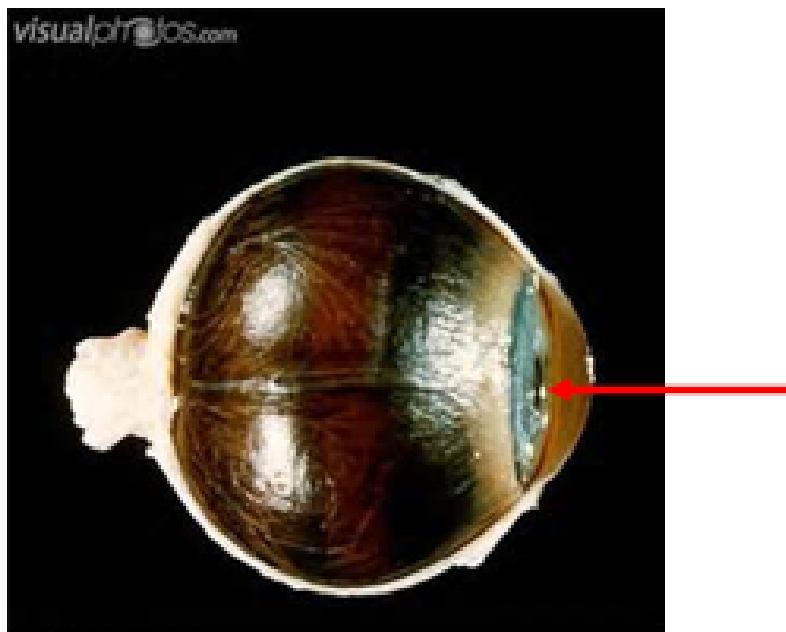
Anatomy and Physiology of the Eye

- Iris - donut shaped, muscle that regulates the amount of light that enters eye / color correlates with its pigmentation (heavy pigmentation = brown / light pigmentation = green or blue)



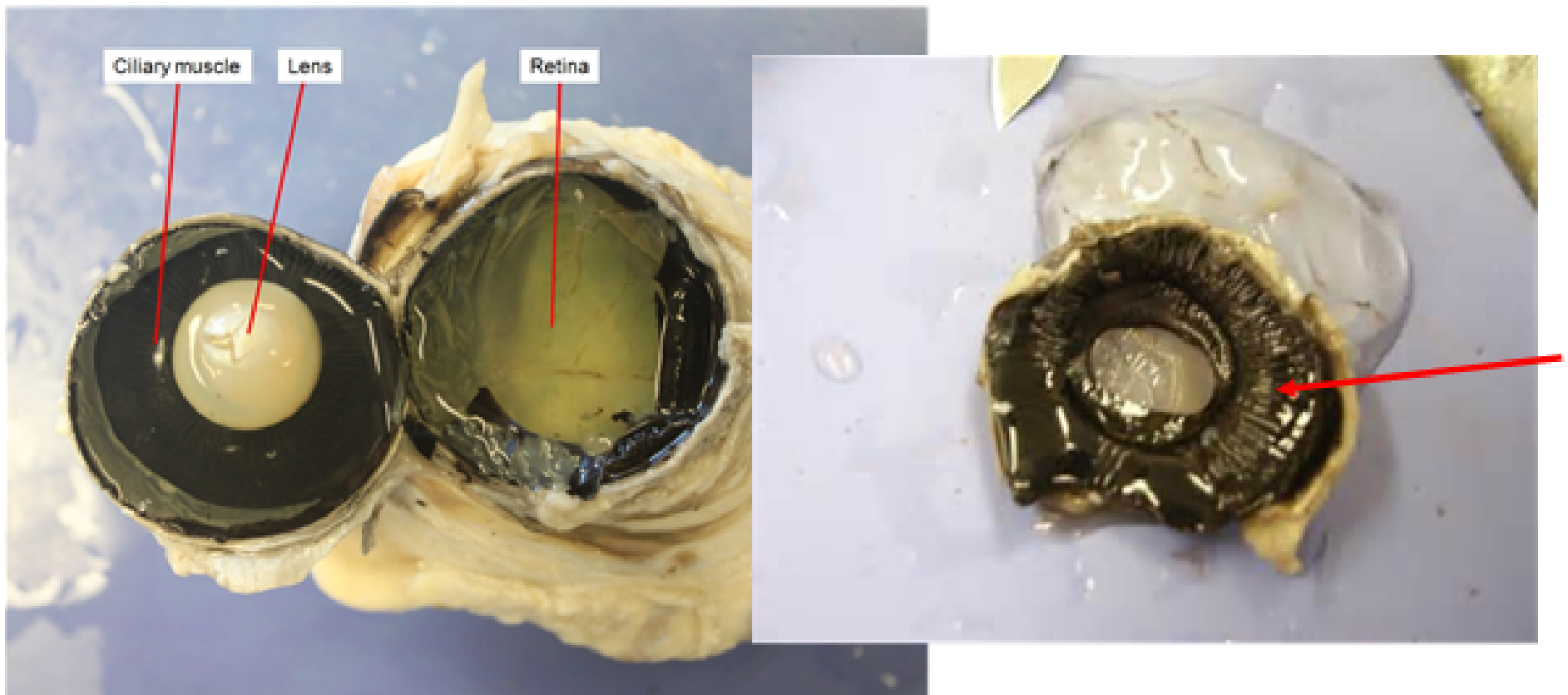
Anatomy and Physiology of the Eye

- Pupil - a hole in the center of the iris through which light enters the eyeball



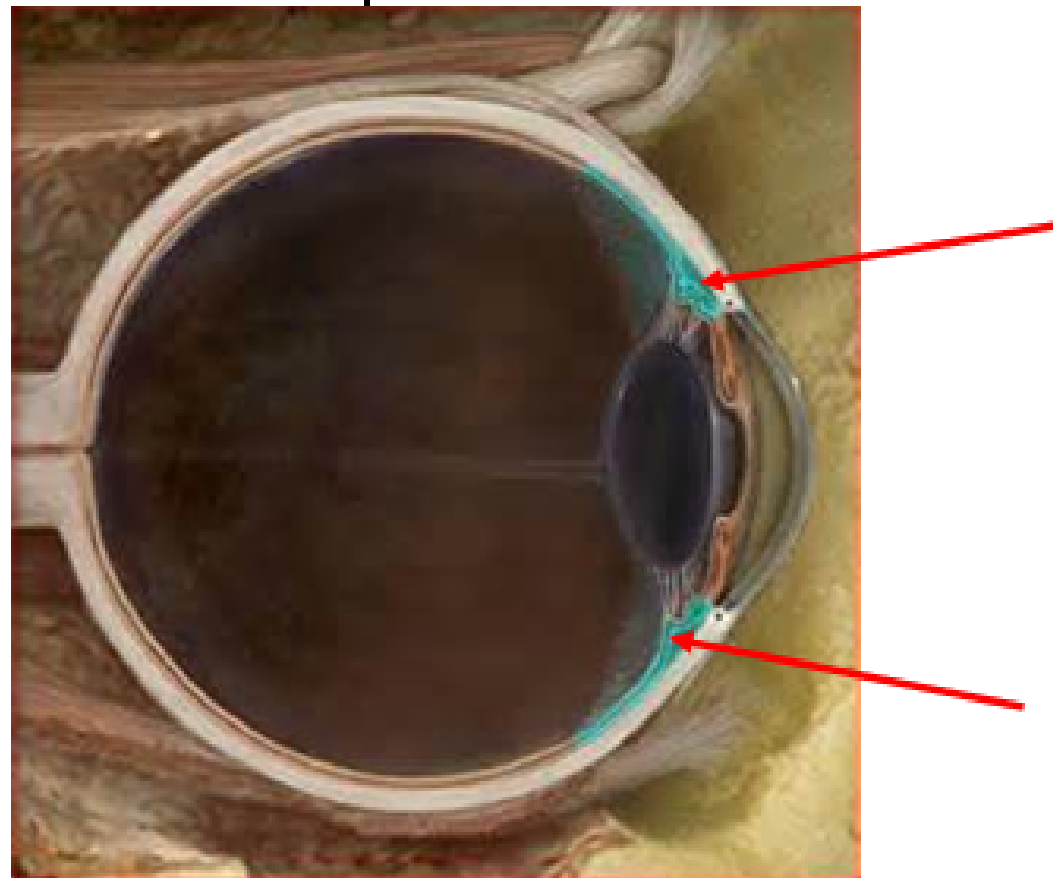
Anatomy and Physiology of the Eye

- Ciliary Muscle - controls the shape of the lens for near and far vision (process is called accommodation)



Anatomy and Physiology of the Eye

- Ciliary Body - located behind the iris and holds lens in place



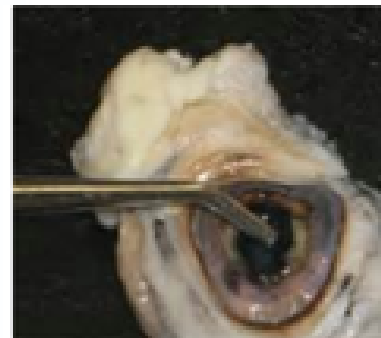
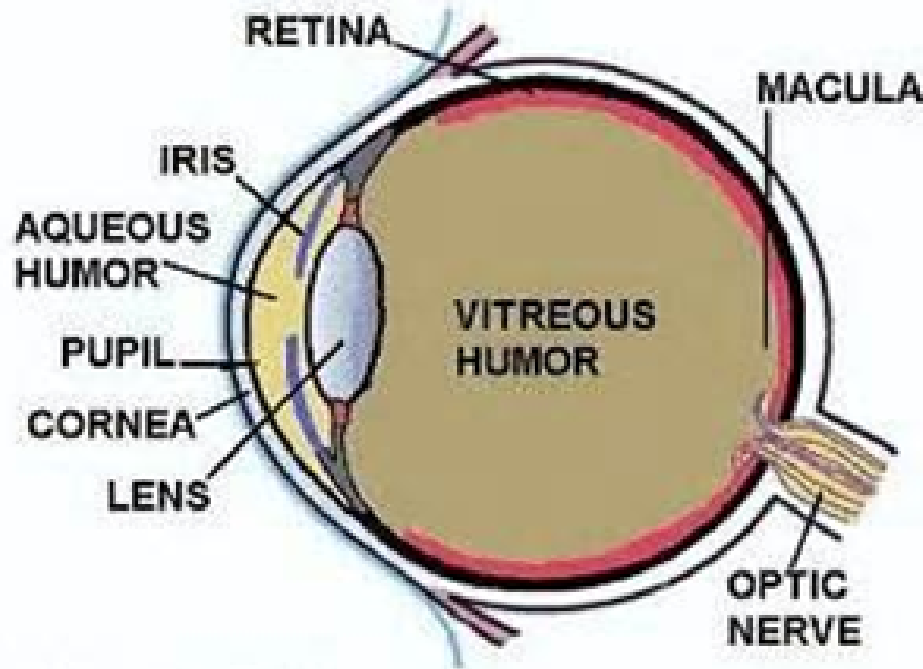
Anatomy and Physiology of the Eye

- Lens - divides eye into anterior and posterior compartments, and refracts (bends) and focuses light rays



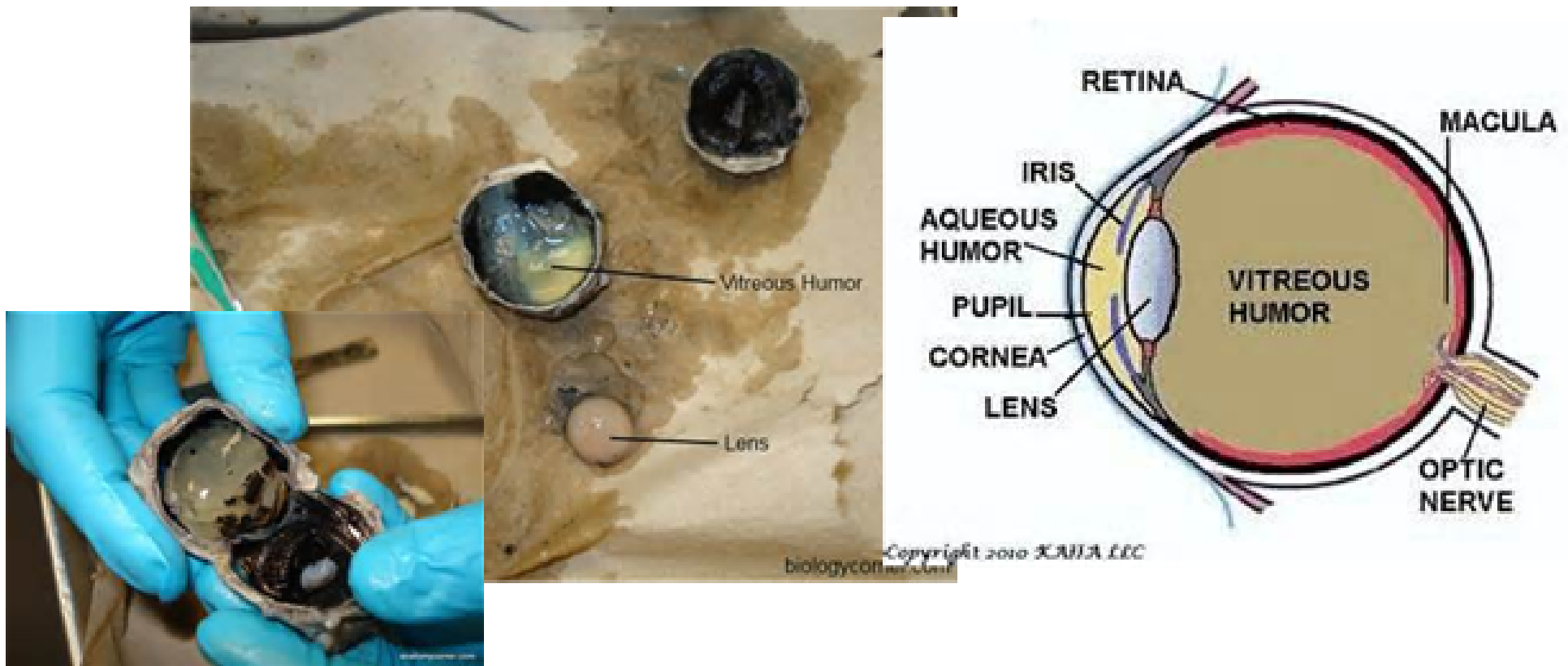
Anatomy and Physiology of the Eye

- Aqueous Humor - fills the anterior compartment, clear and watery, produced each day, leaves anterior compartment by tiny ducts, transmits light rays



Anatomy and Physiology of the Eye

- Vitreous Humor - clear gelatinous material, that supports the posterior chamber and transmits light rays



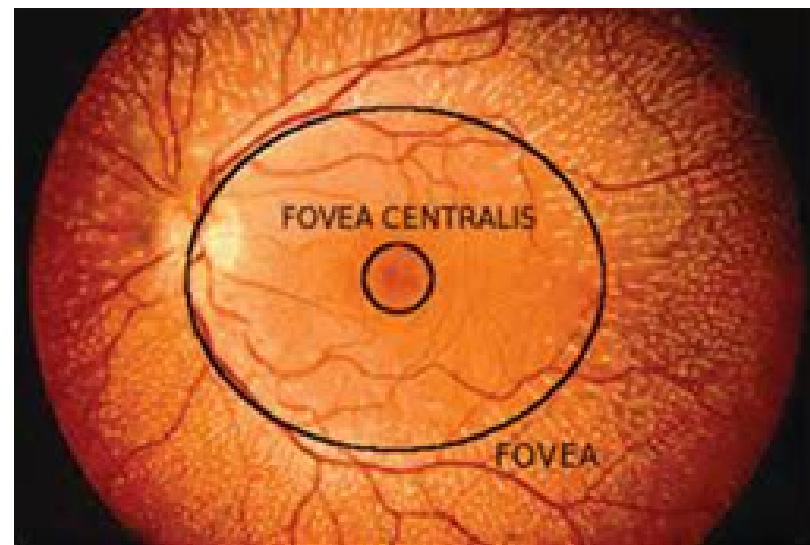
Anatomy and Physiology of the Eye

- Retina - located in the back of the eye, the third layer of the eye, contains photoreceptors (rods - black and white sensitive, cones - color sensitive)



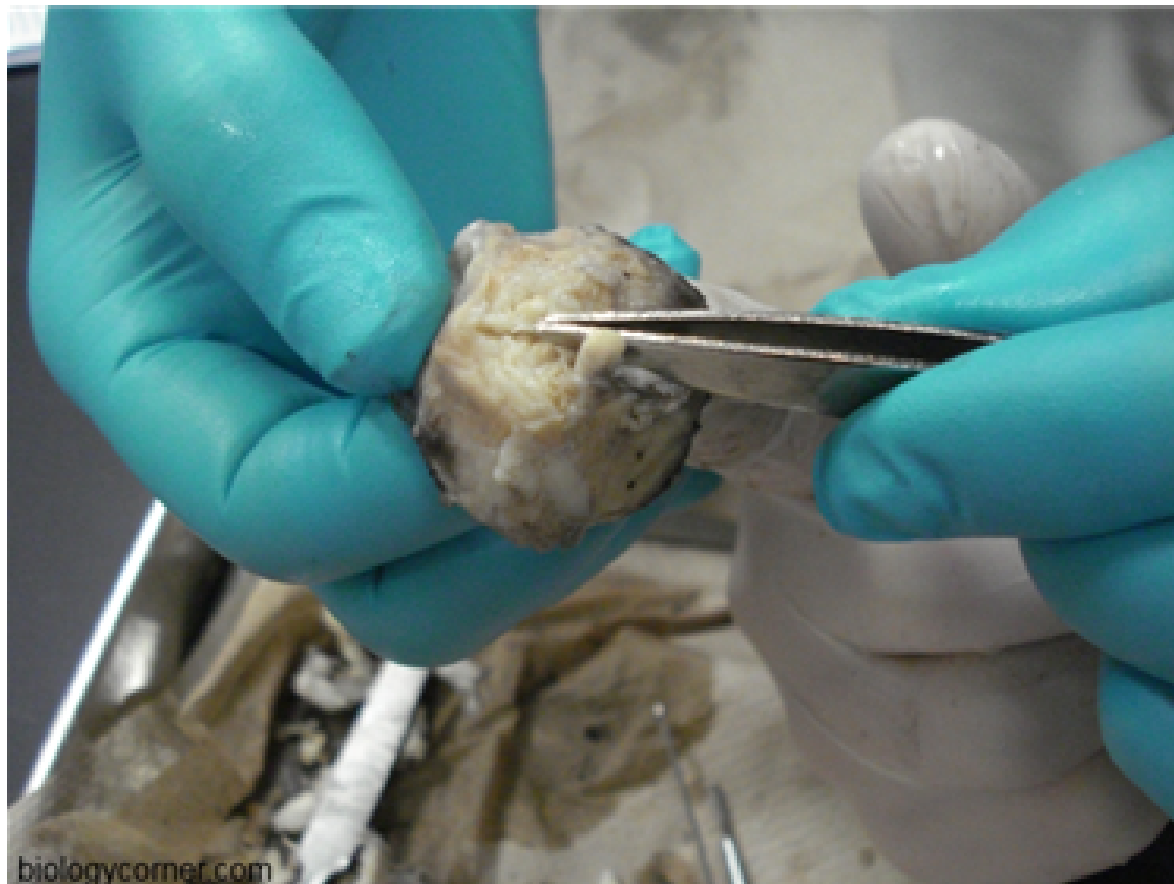
Anatomy and Physiology of the Eye

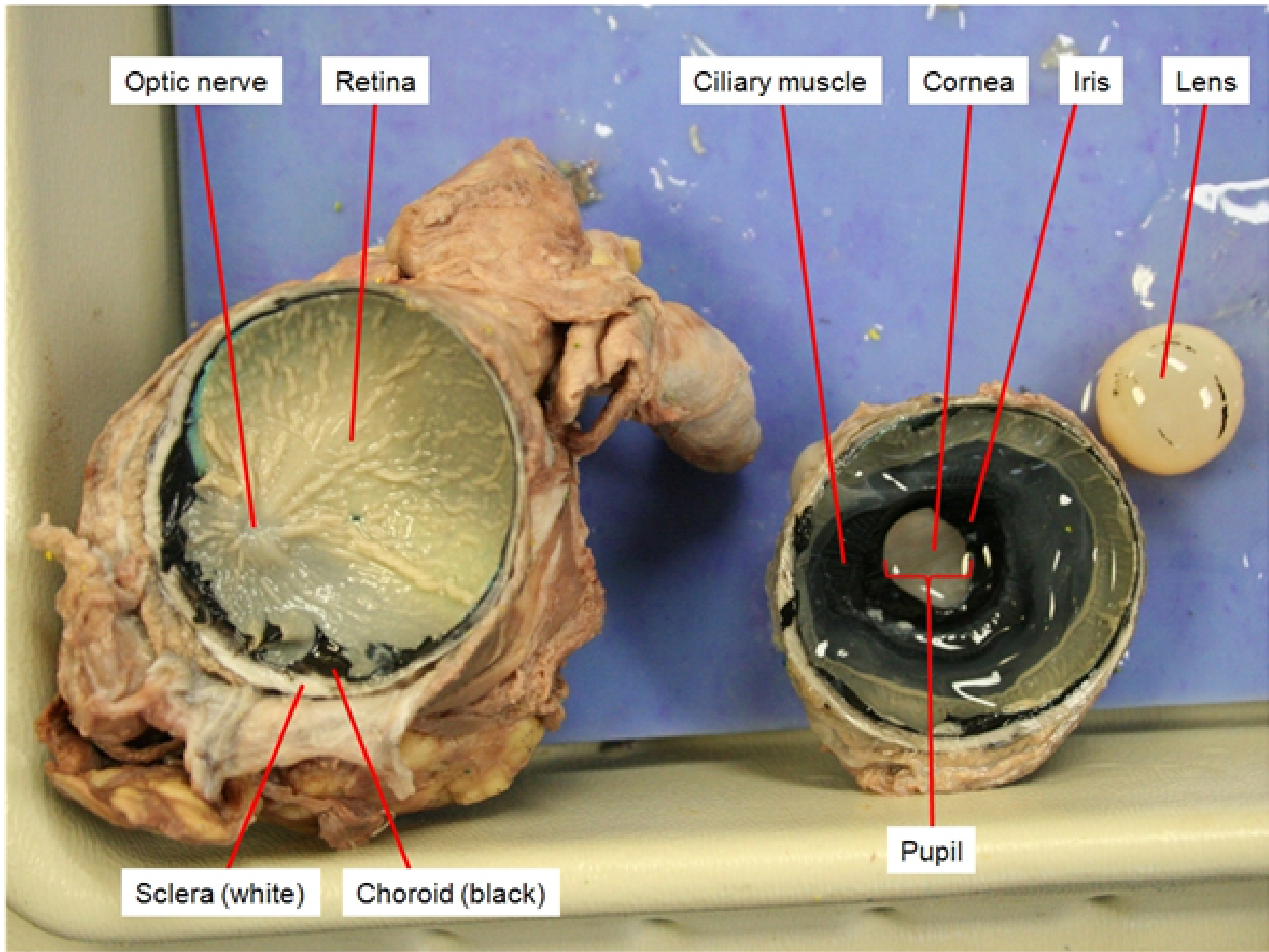
- Fovea Centralis - located on the retina, densely compact with cones, light is normally focused on this spot so vision is the most acute here



Anatomy and Physiology of the Eye

- Optic Nerve - Formed by sensory fibers from the retina, takes nerve impulses to the brain







<http://www.youtube.com/watch?v=cFVbLnXWn6A>

Anatomy and Physiology of the Eye

.Function of the Lens - focuses images on to the retina, focusing starts with the cornea and continues as the rays pass through the lens and the humor, the image produced is much smaller than the object because of the bending of light, the image is also inverted and reversed (upside down and mirrored)

How Sight Works

1. Light enters the eye through the pupil
2. Light hits the lens
3. The lens focuses light on the retina like a movie projector - based on distance from the object, the lens changes shape to focus light properly - near (round) and far (flat)
4. The rods (grays) and cones (color) in the retina takes the light that the eye receives and changes it into nerve signals through the optic nerve to the brain
5. The message sent to the brain is upside down so the brain needs to flip it over and interpret what is seen