

Receptors

Mechanoreceptors: Detect mechanical compression or stretching of the receptor or tissues adjacent to the receptor

Thermoreceptors: Detect changes in temperature (cold/warmth)

Nociceptors: Pain receptors

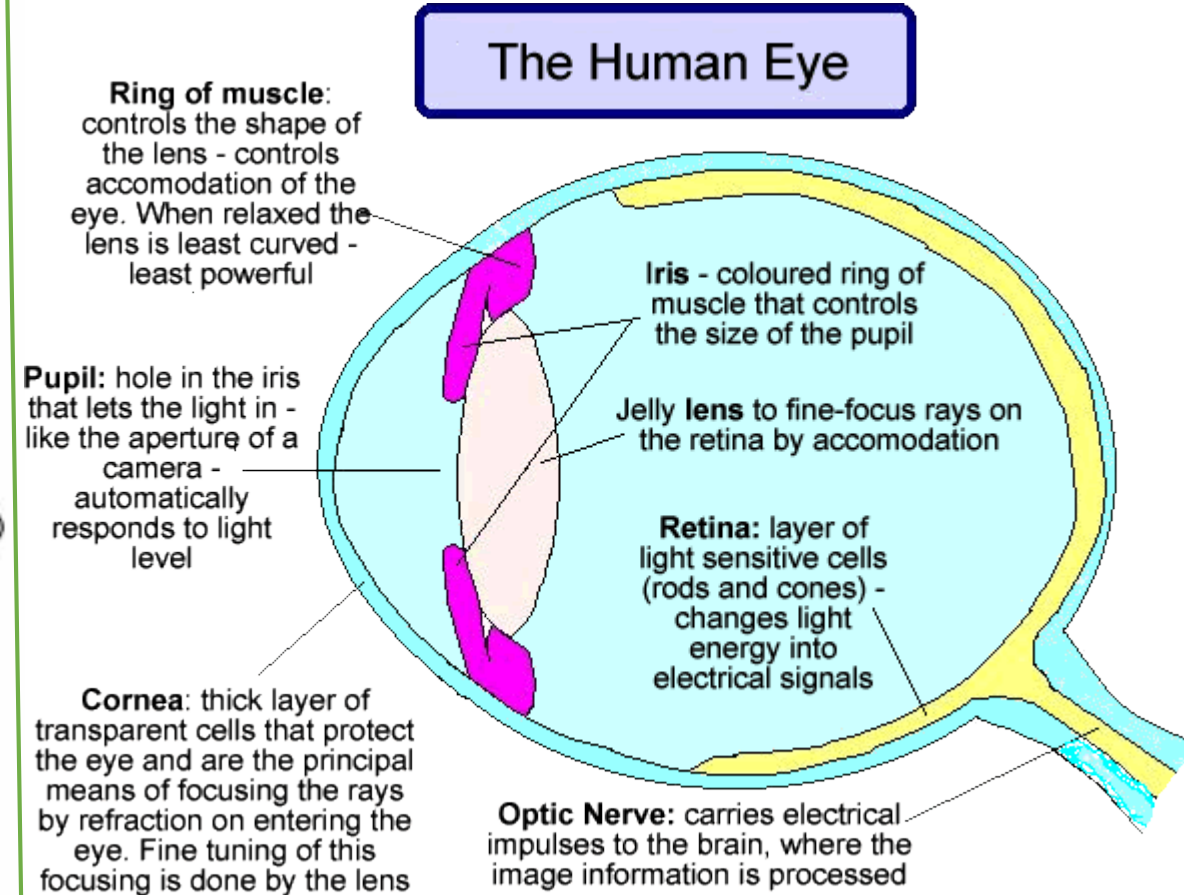
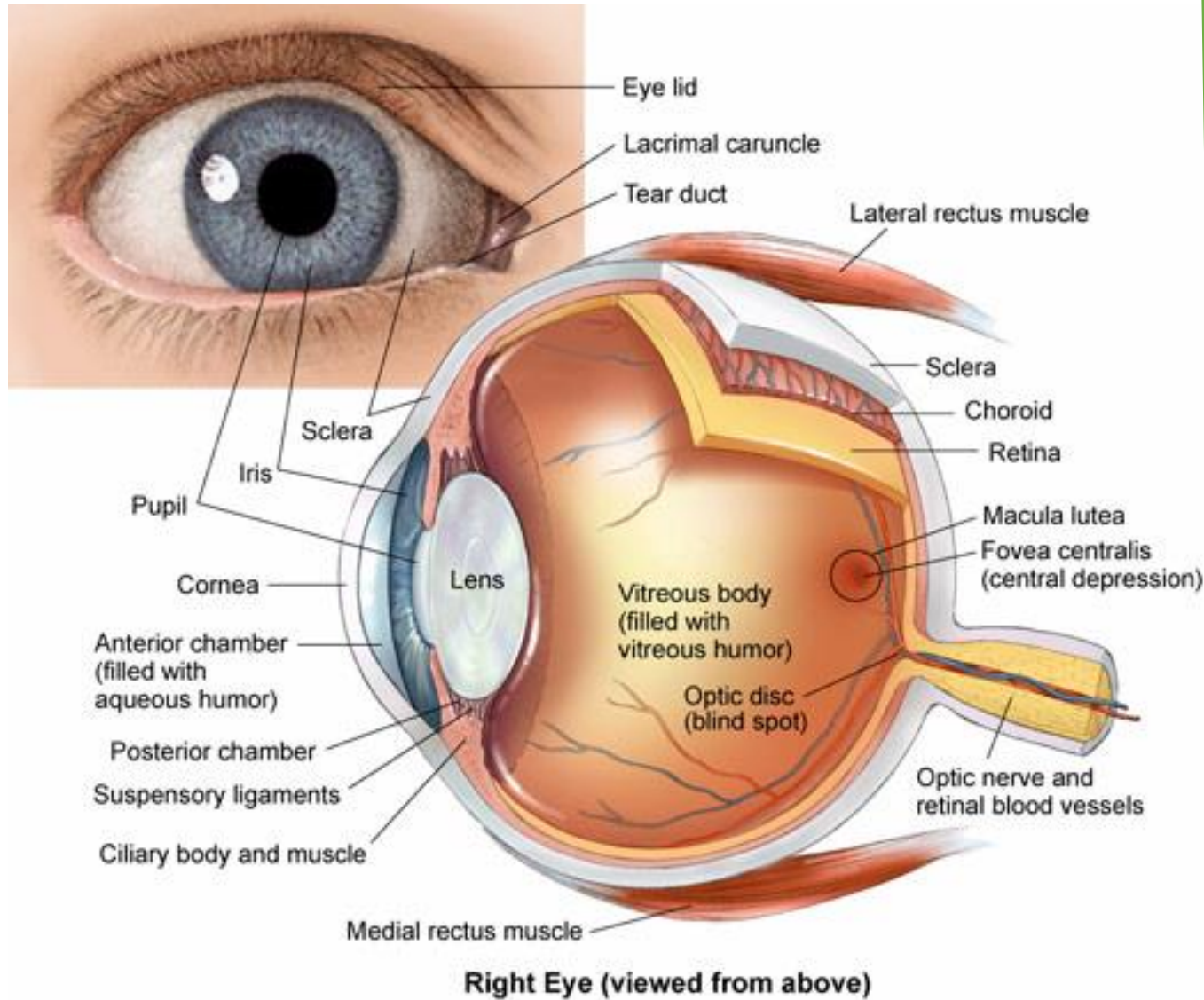
Electromagnetic receptors: Detect light

Chemoreceptors: Detect taste, smell, oxygen level in blood, osmolality (electrolyte-water balance) of the fluids, CO₂ concentrations etc.

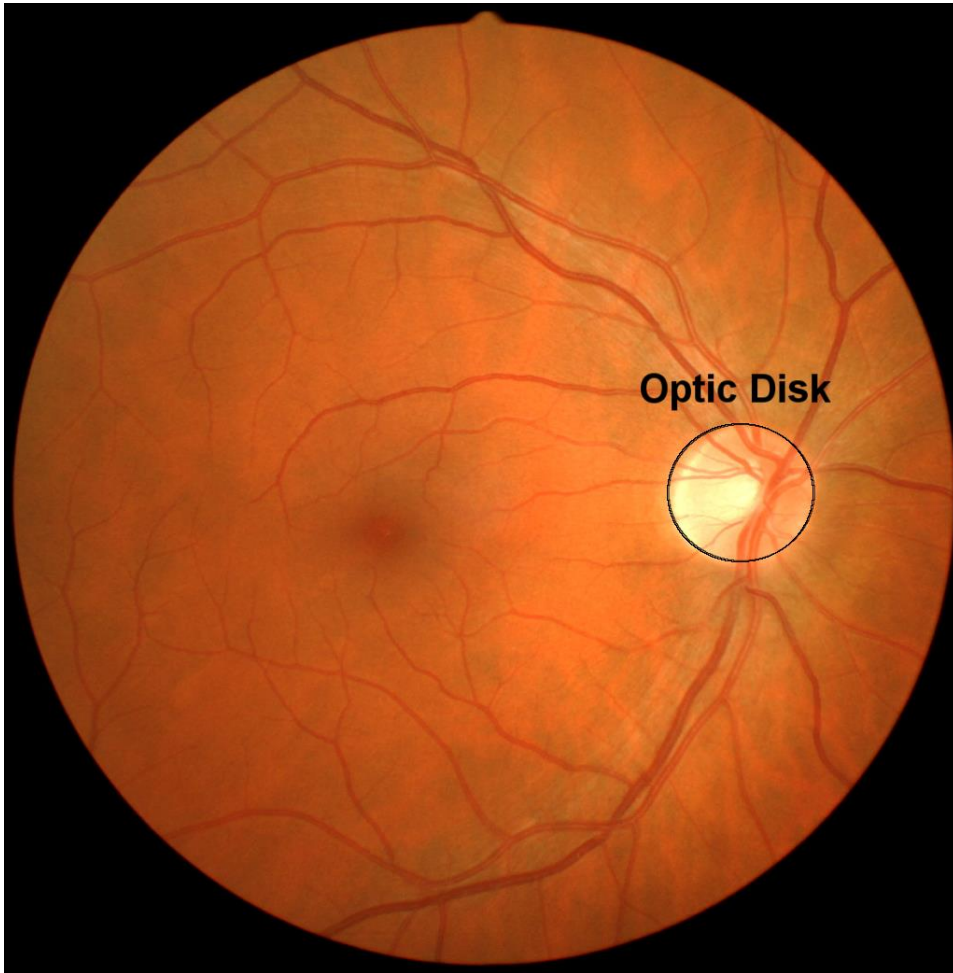
Vision and visual receptors

- ☐ Basic structure of the eye
- ☐ Blind spot
- ☐ Formation of an image on retina
- ☐ Farsightedness (hyperopia/hypermétropia) and Nearsightedness (myopia)
- ☐ Intraocular fluid, tonometer, and glaucoma
- ☐ Photochemistry of vision by rods and cones cells
- ☐ Night blindness
- ☐ Colour vision in reptiles and birds

Human Eye: Structure & Functions:



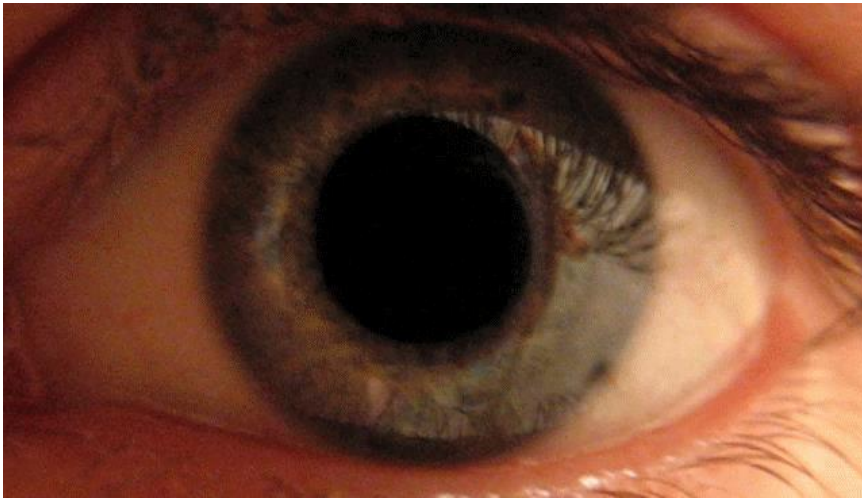
Blind Spot (Optic Disc)



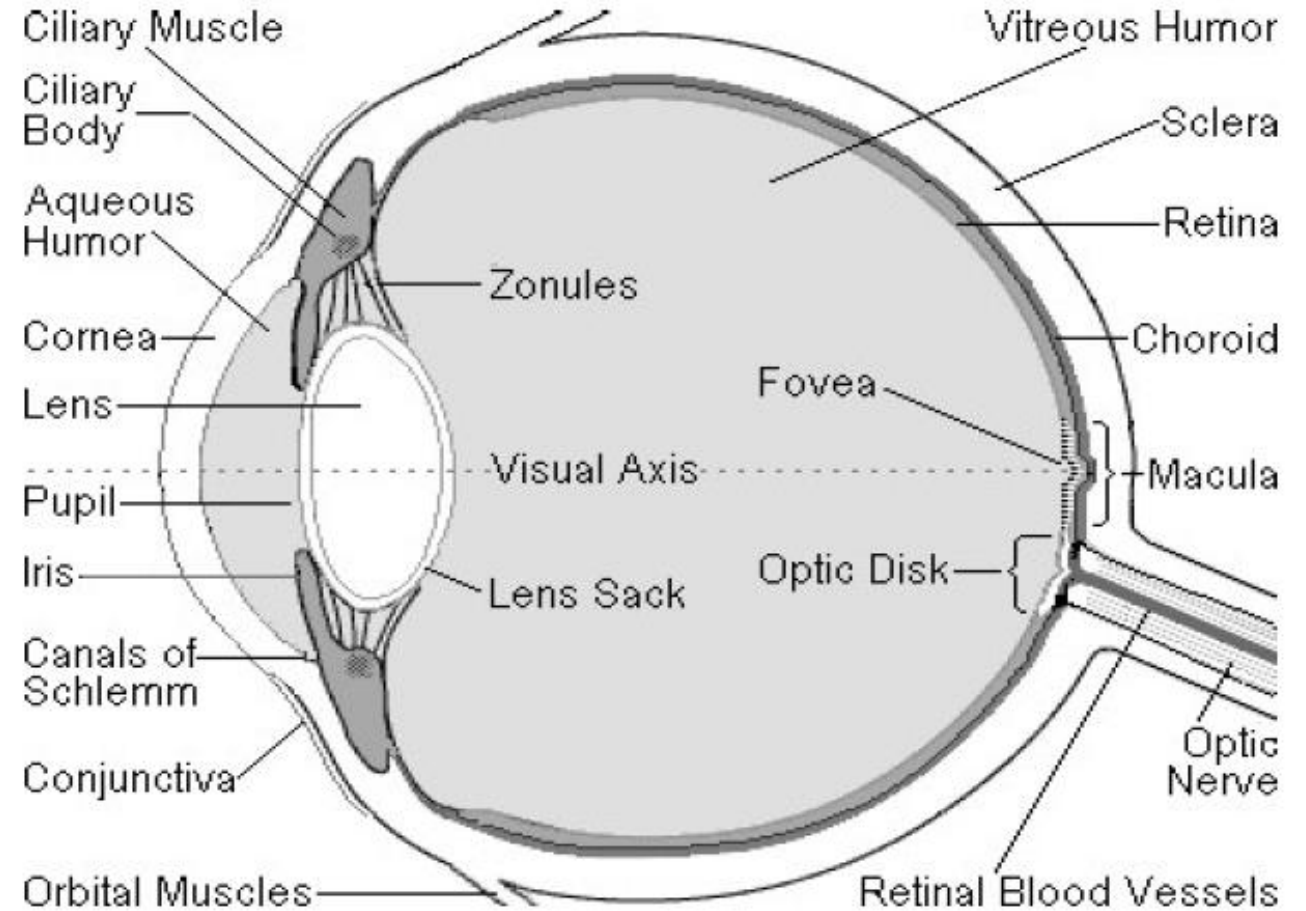
- contains no photoreceptors, i.e. no rods or cones overlying the optic disc.
- entry point for the major blood vessels that supply the retina.
- represents the beginning of the optic nerve.
- carries 1–1.2 million afferent nerve fibres from the eye towards the brain.

The eye as a camera:

- ☐ A lens system,
- ☐ A variable aperture system (the pupil)
- ☐ A film (the retina)

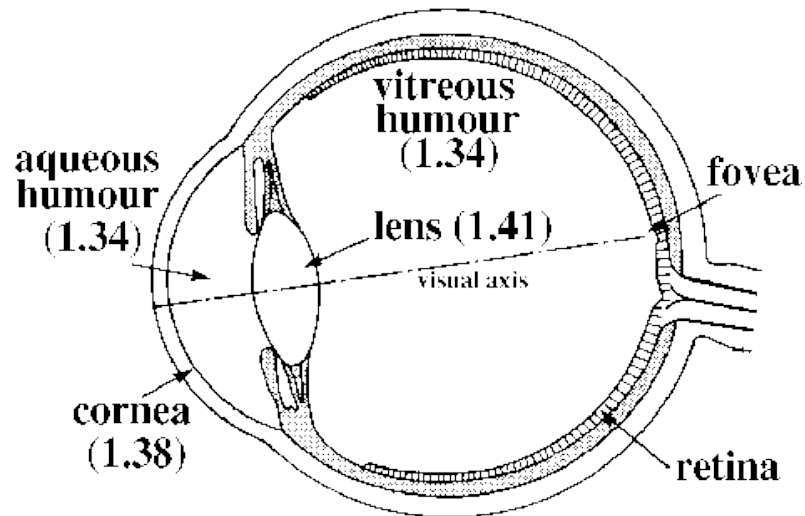


Pupil works like aperture



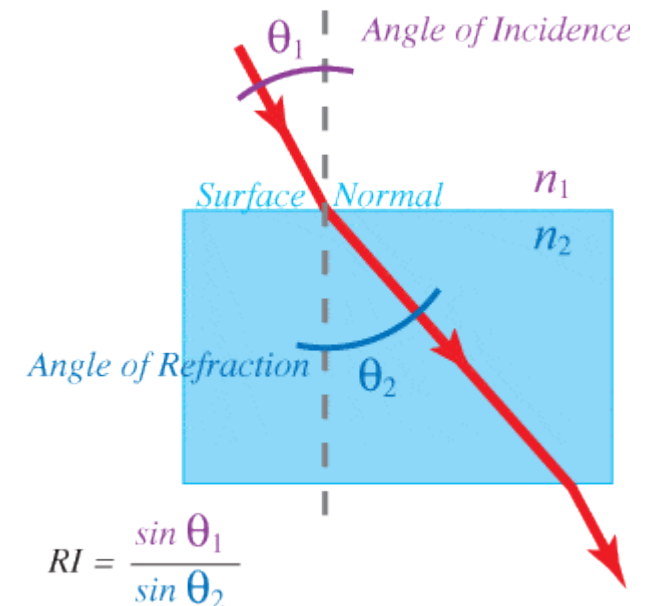
The lens system of eye is composed of four refractive interfaces:

1. The interface between air and the anterior surface of the cornea,
2. The interface between the posterior surface of the cornea and the aqueous humor,
3. The interface between the aqueous humor and the anterior surface of the crystalline lens of the eye, and
4. The interface between the posterior surface of the lens and the vitreous humor.



Refractive Index (RI)

Air: 1
Cornea: 1.38
Aqueous humor: 1.34
Crystalline lens (on average): 1.41
Vitreous humor: 1.34



The Electromagnetic Spectrum:

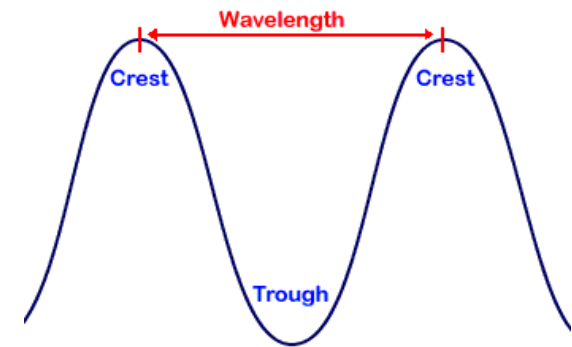
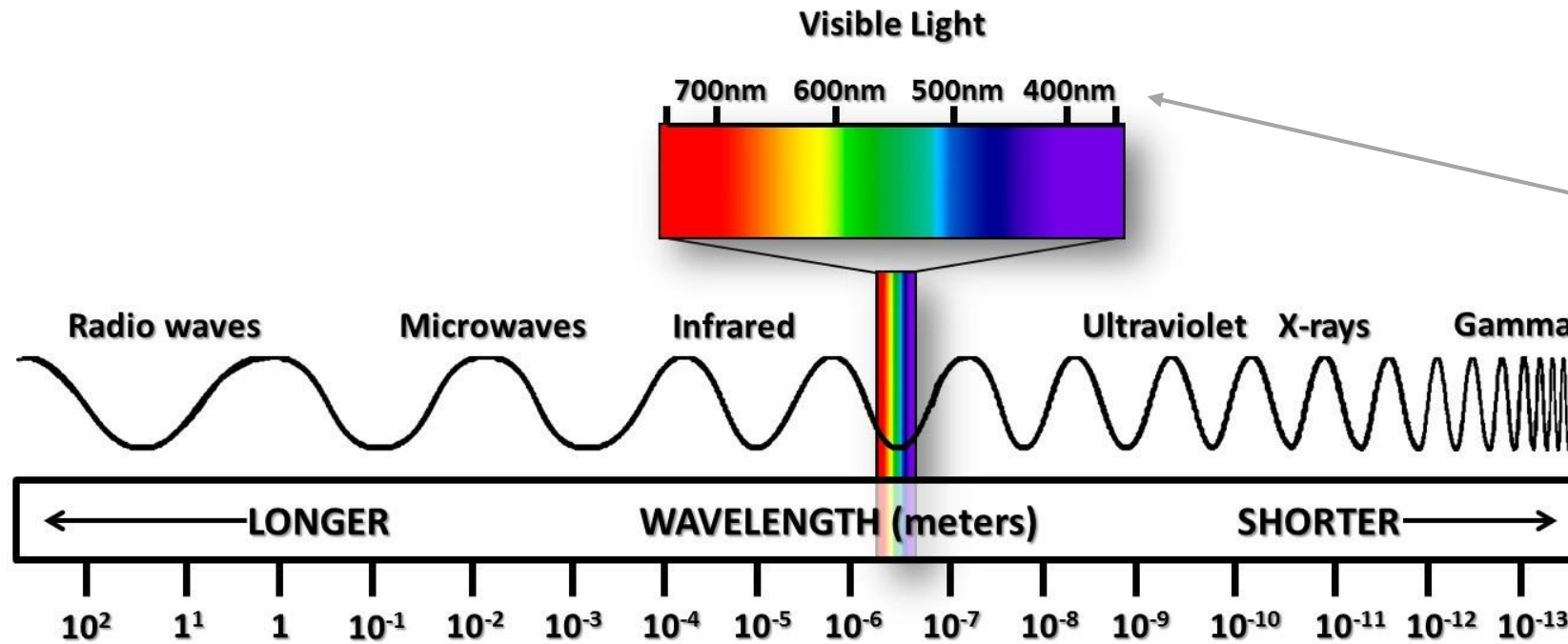
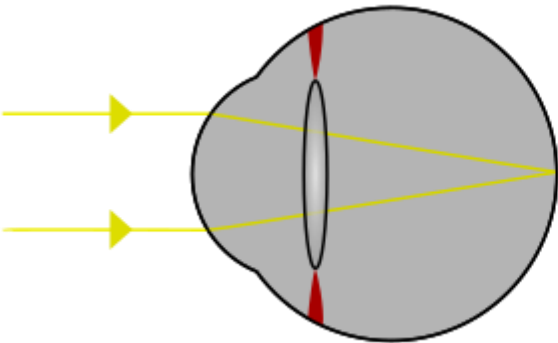
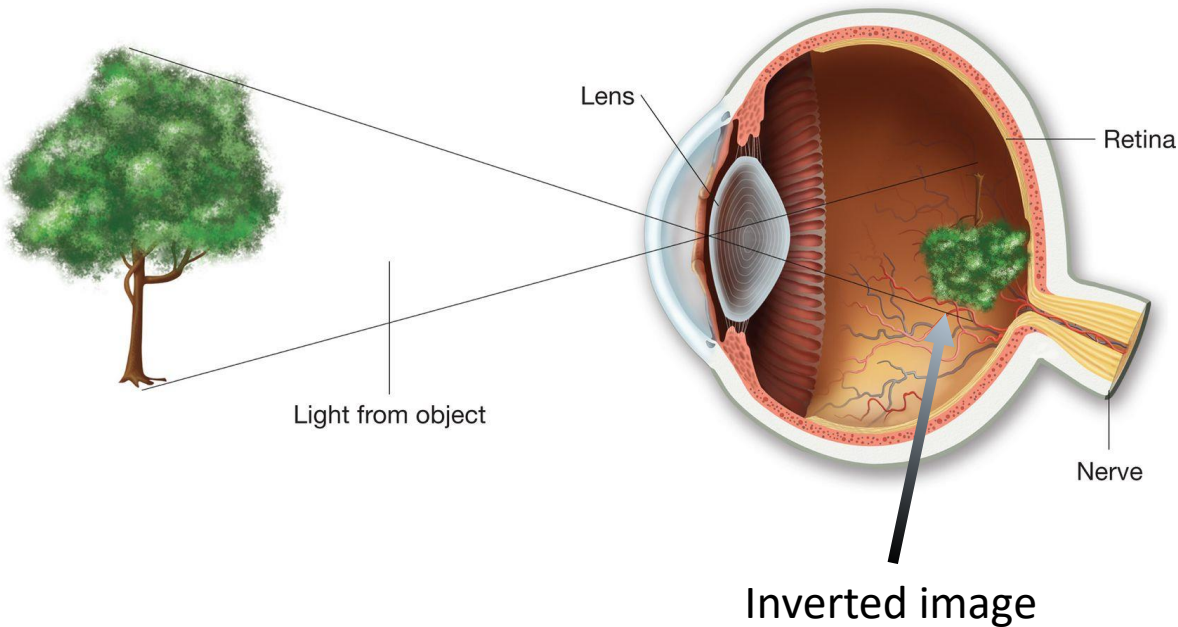
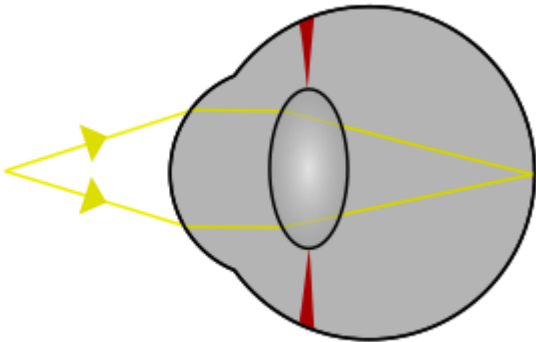


Image formation:



Far object



Near object