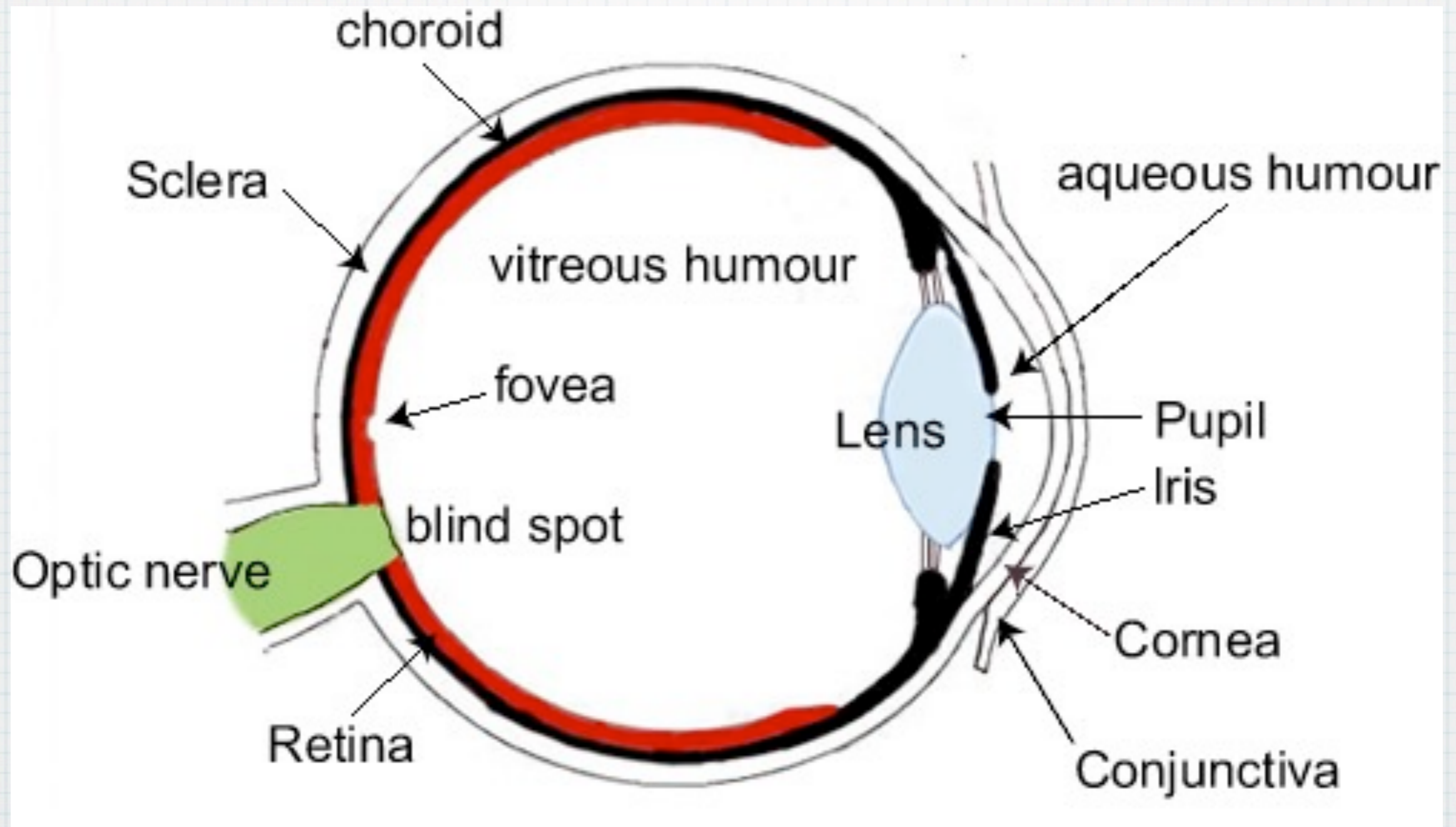


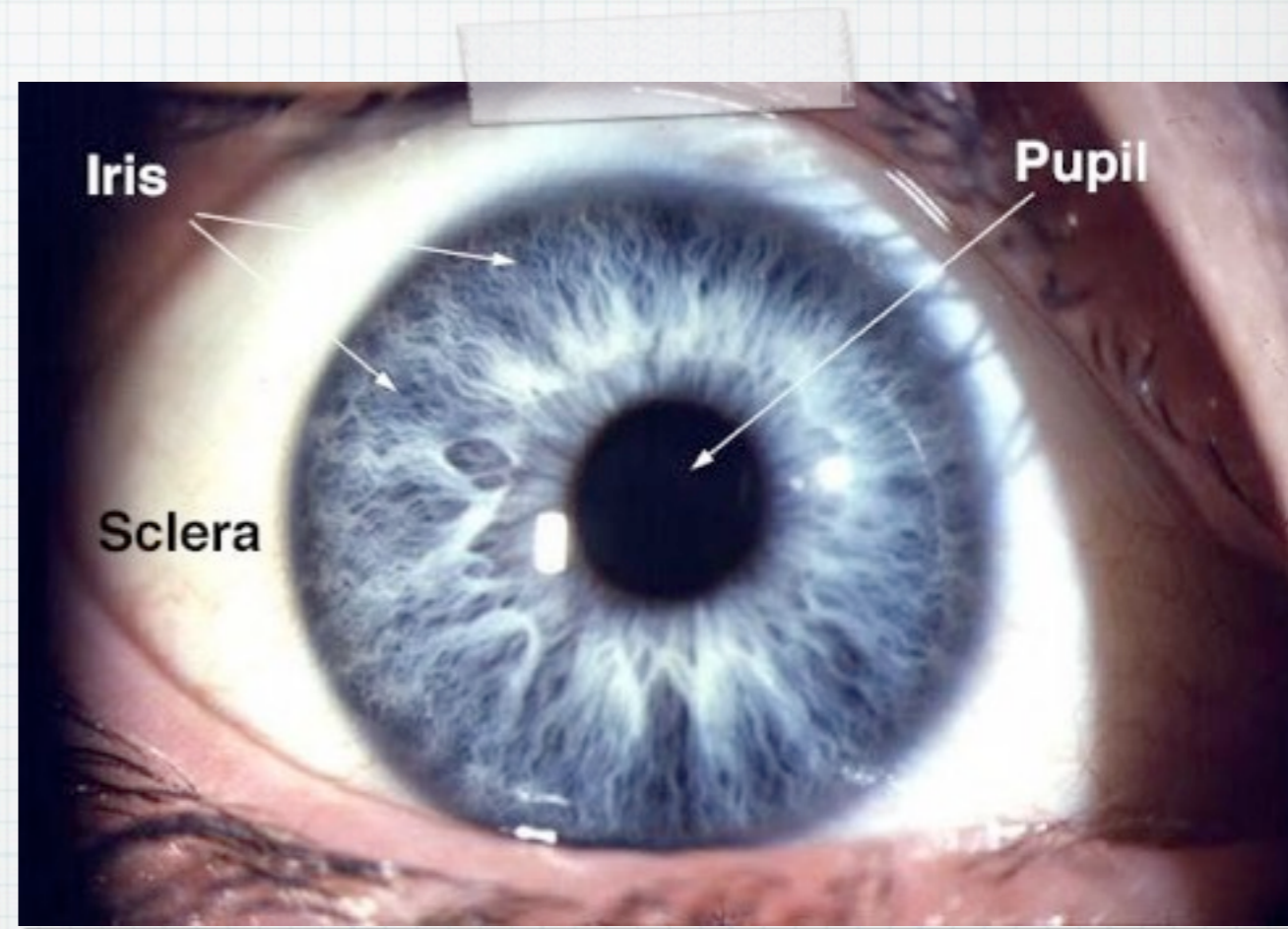
The Human Eye

Parts of the Eye



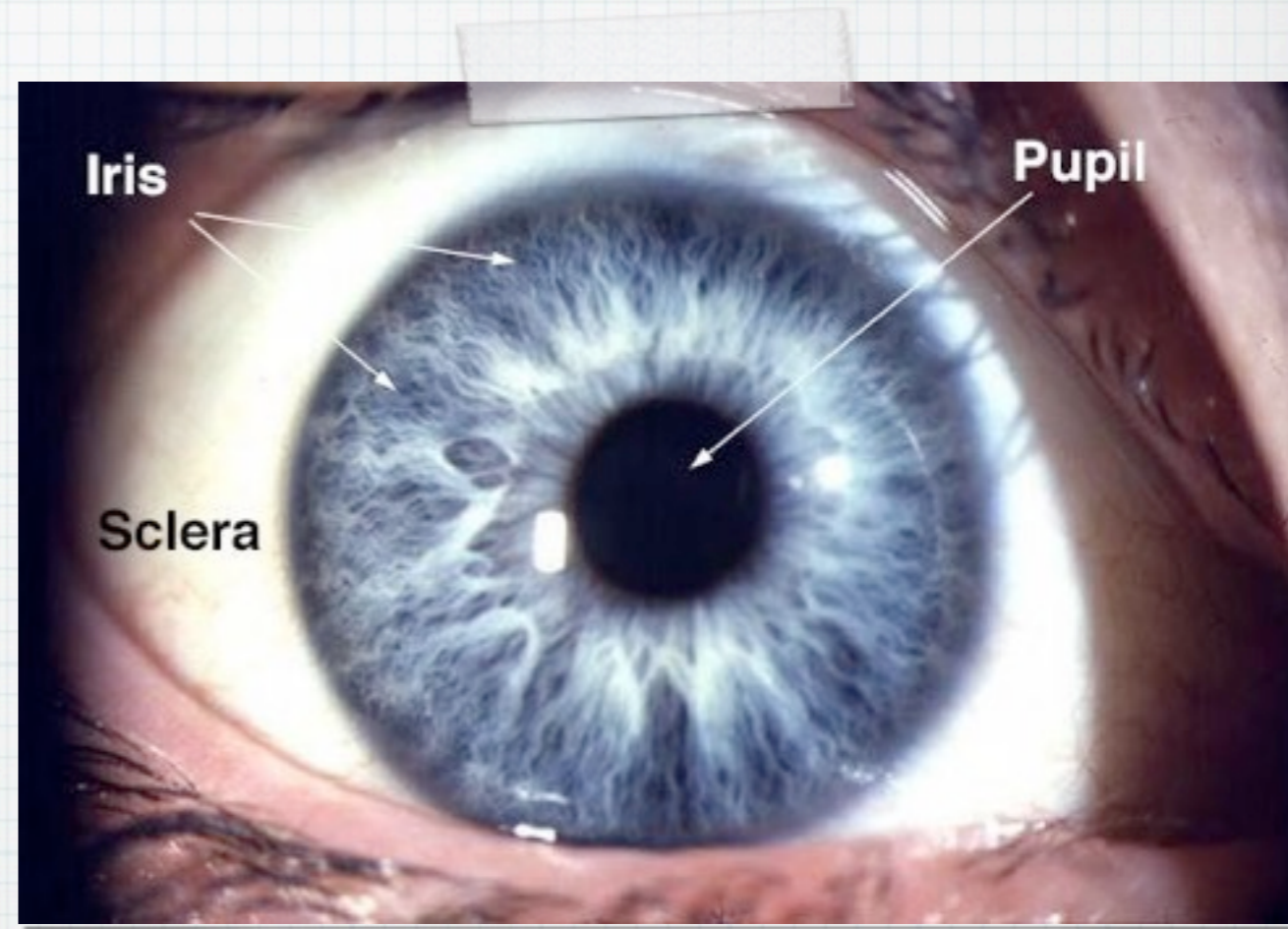
The Iris

- * Coloured part of eye.
- * Opens and closes around a central hole, the pupil, to let more or less light in .



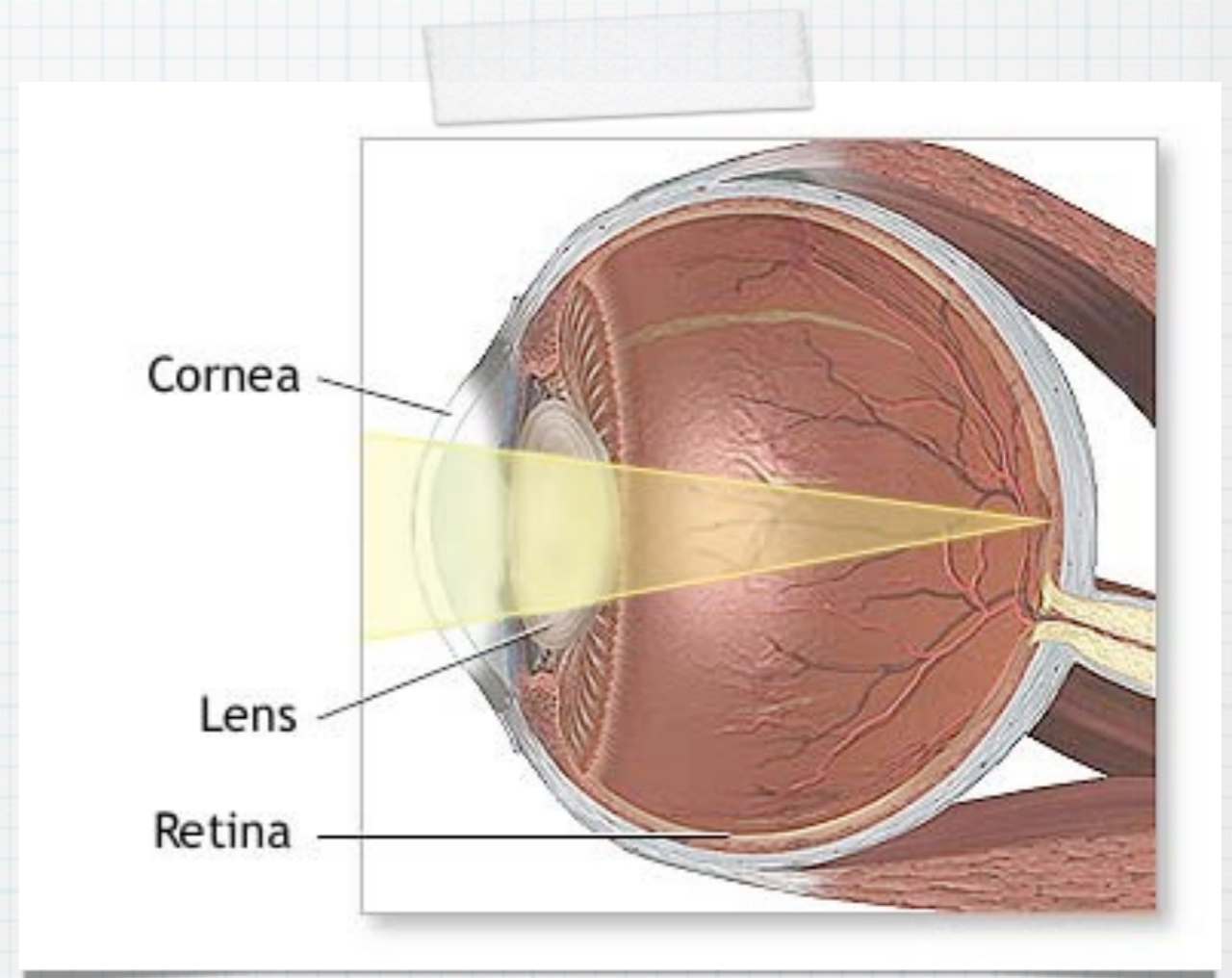
The Pupil

- * The black hole in the iris that lets light pass to the lens.

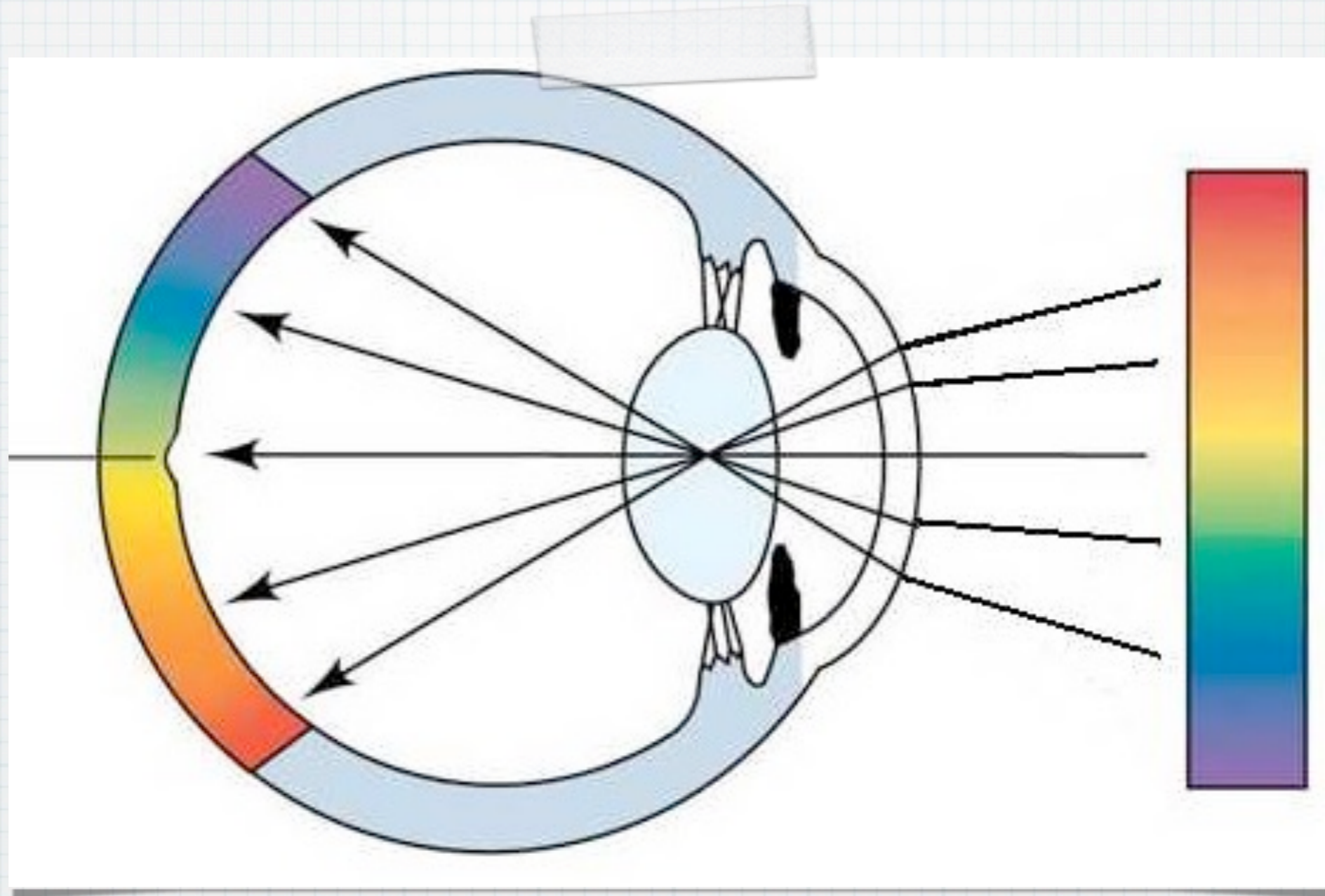


The Cornea and Lens

- * Lens and cornea cause light to converge on one spot to form a sharp image.
- * Cornea - transparent bulge on top of the pupil that focuses light.



- * Light refracts through cornea, then through the lens. The lens refracts light onto the retina.



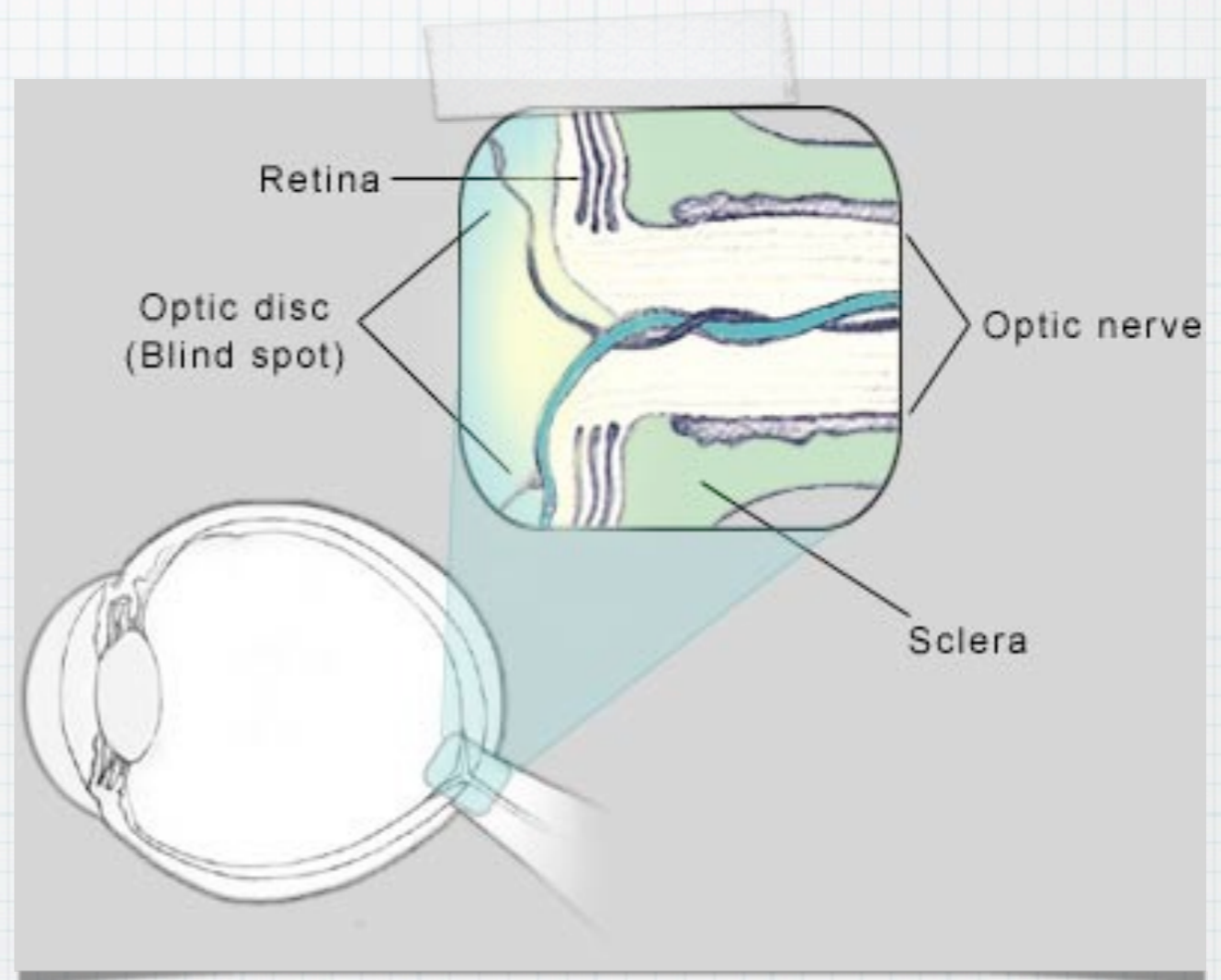
The Retina

- * The light sensitive region at the back of the eye that transmits the images you see to the brain.



- * It is composed of:
 - * rods: sensitive to dim light
 - * cones: sensitive to bright light and color
- * There are 3 types of cones
 - * sensitive to red
 - * sensitive to blue
 - * sensitive to green

- * The retina converts light signal into electrical signal that is transmitted to brain through the optic nerve

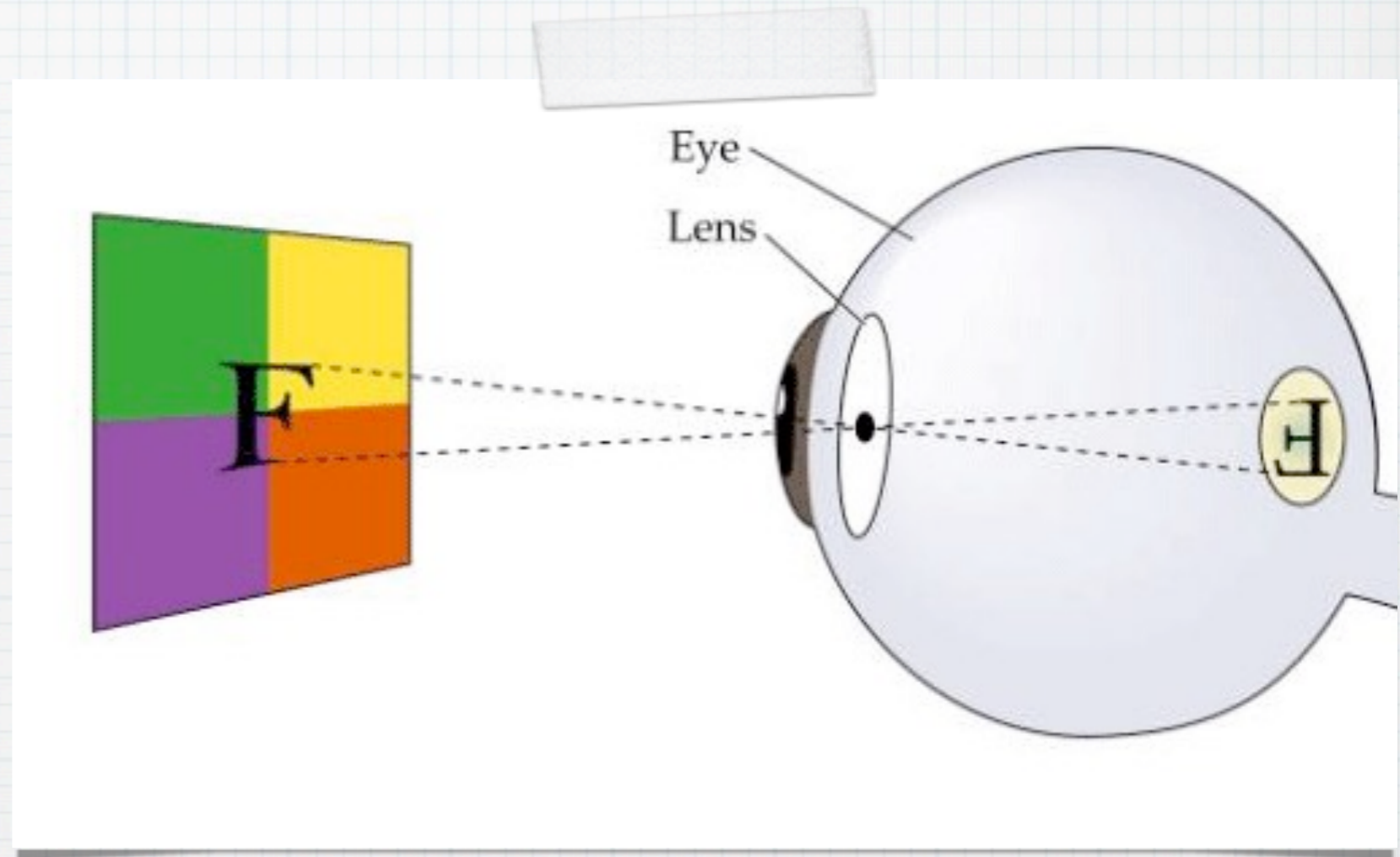


The Blindspot

- * A spot at the back of the eye where the optic nerve is located.
- * There is no retina at this point so an image that forms here will not be seen.
- * You don't notice your blind spot because your left eye can see what is in the blindspot of the right eye and vice versa.

How you see

- * The eye creates a smaller, real, inverted image on the retina. The brain takes the inverted image and flips it.

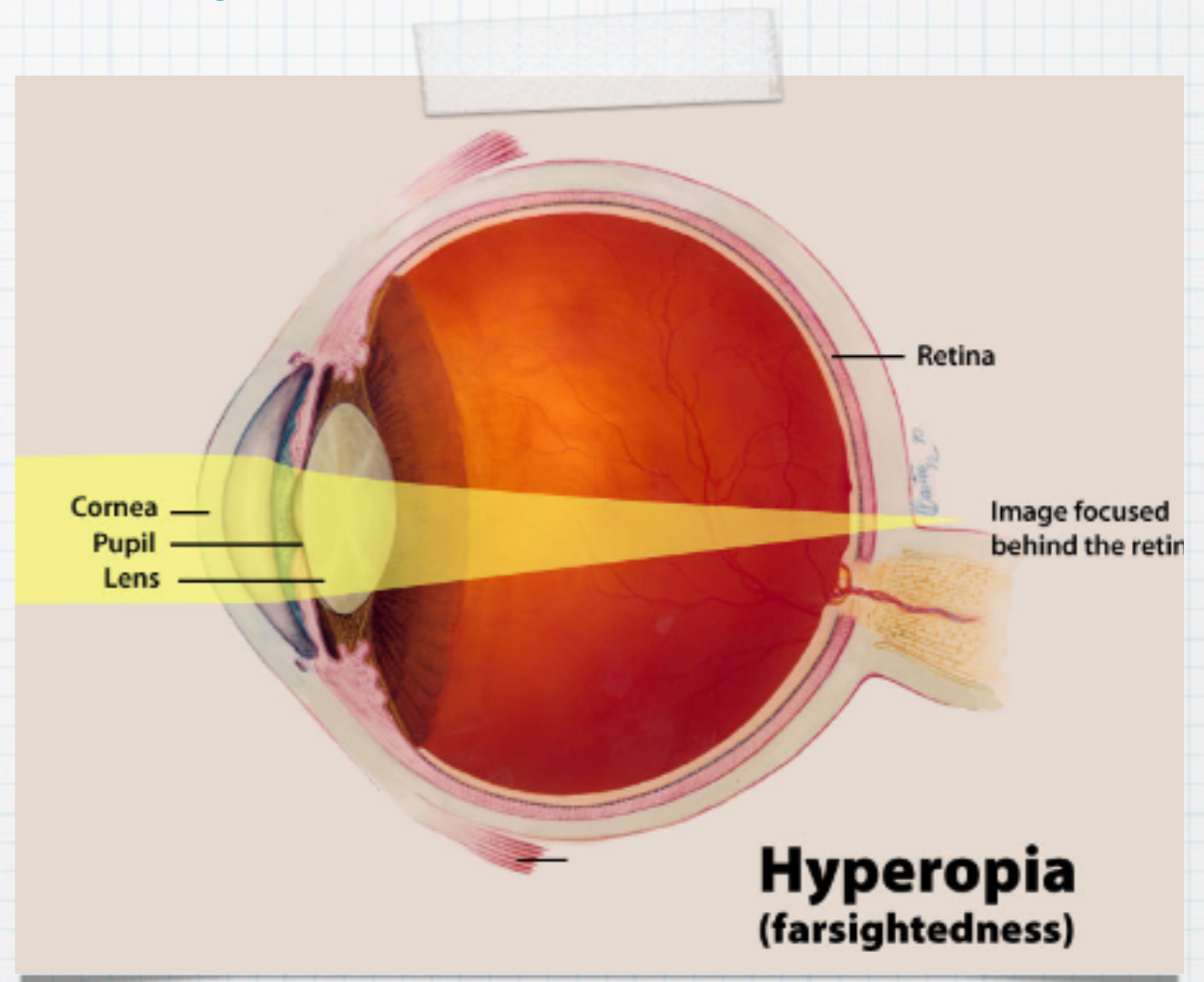


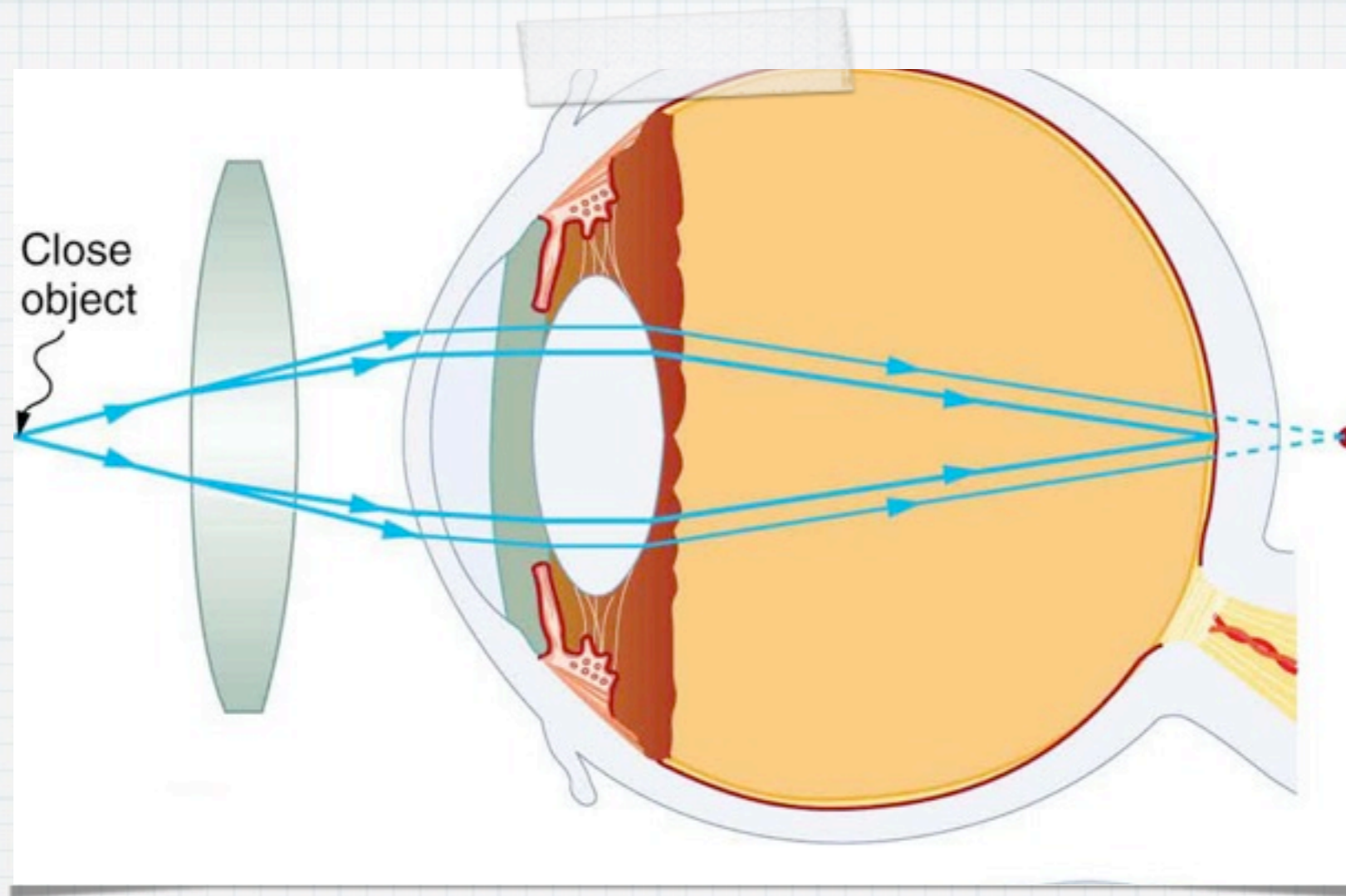
Ciliary Muscles

- * Responsible for accommodation: change the shape of lens
- * changes the focal length to allow focusing of the image on the retina.
- * Healthy eyes can accommodate to view distant and nearby objects.

Hyperopia (far-sightedness)

- * Can see distant objects, not nearby ones
- * Distance between lens and retina is too small or cornea-lens combination is too weak.

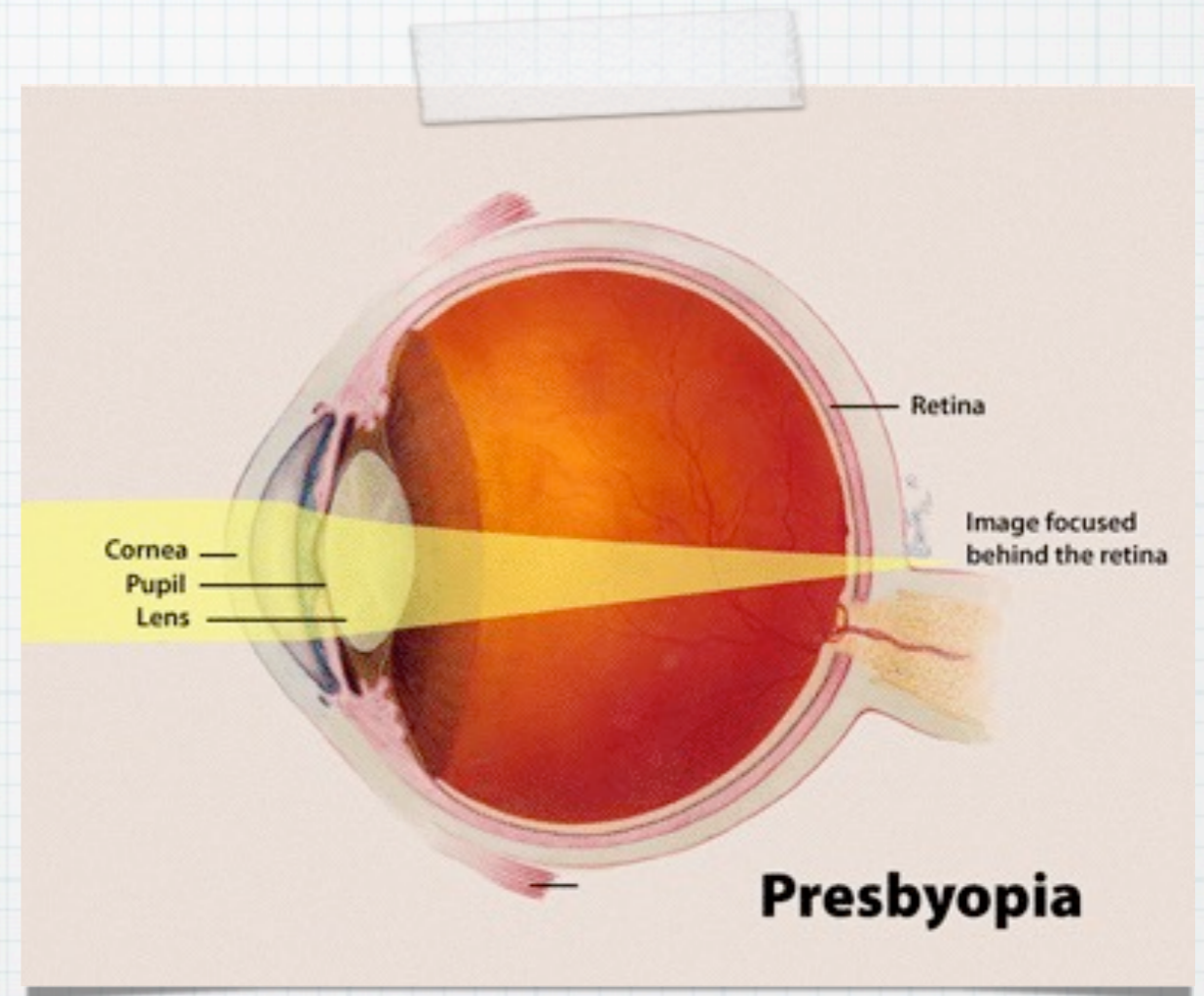




- * light from nearby objects focus behind the retina
- * use converging lens to help refract light onto the retina (called a positive meniscus lens)

Presbyopia

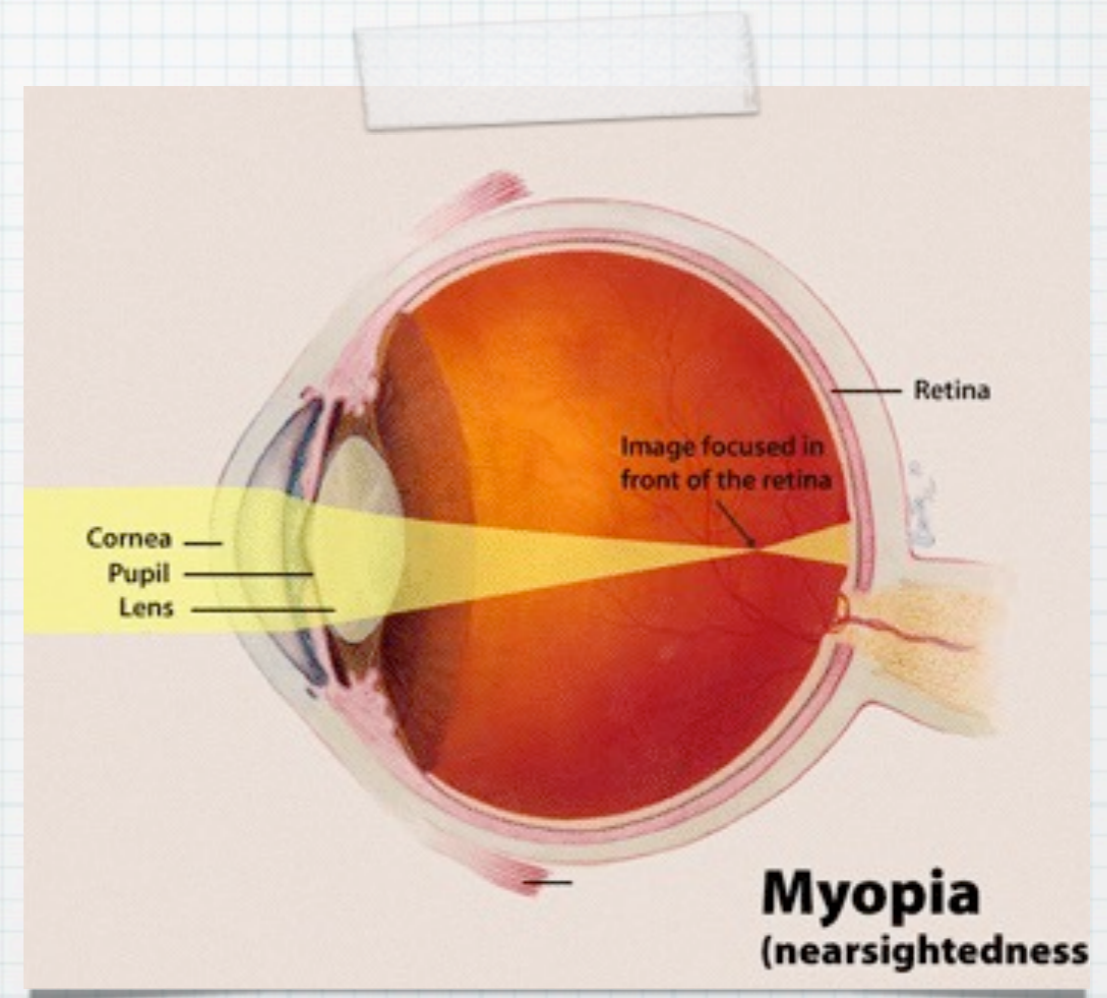
- * Eye lens loses elasticity resulting in loss of accommodation as a person gets older
- * Can't read small print as easily when you are younger.



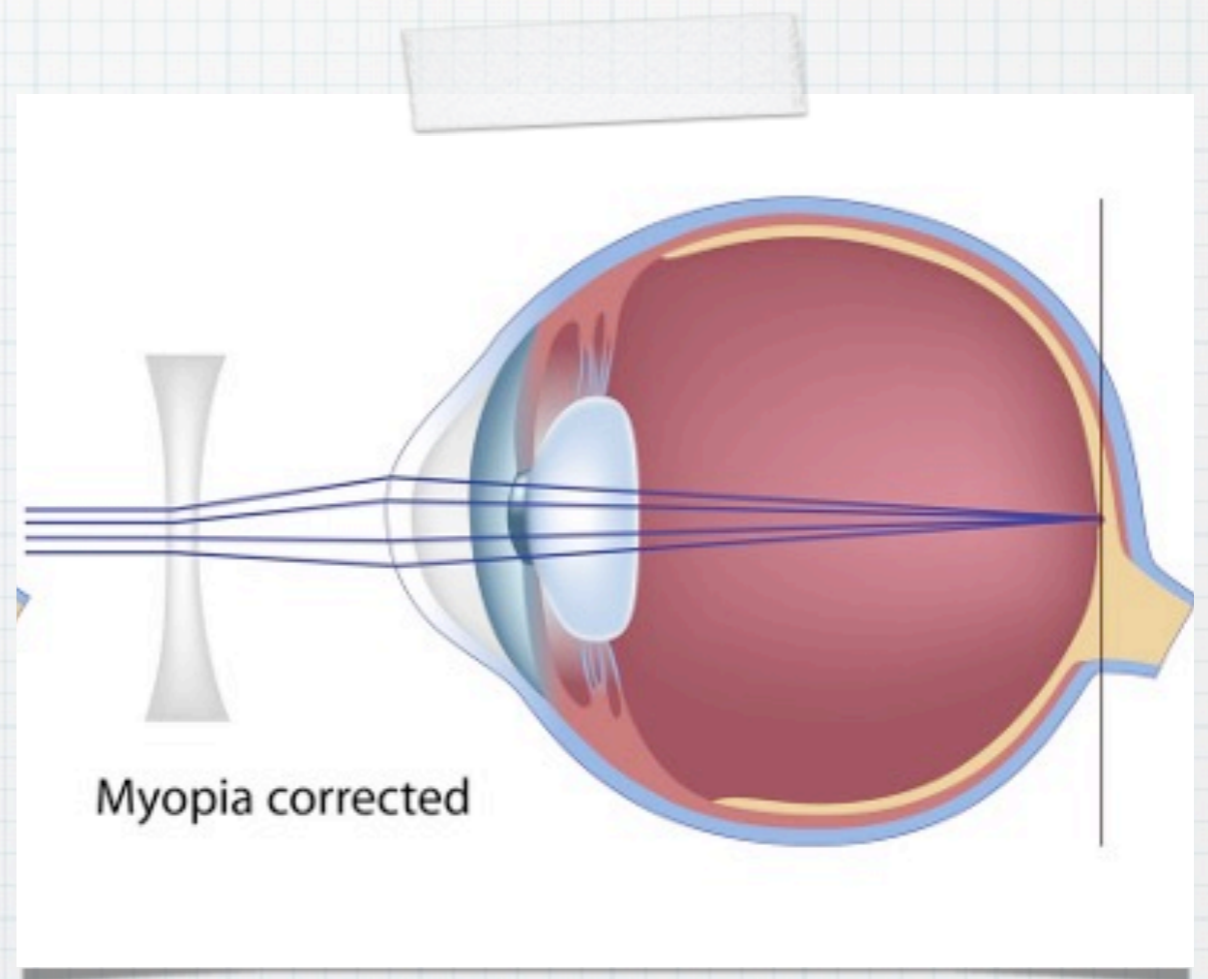
- * not due to eyeball being too short for focusing
- * also corrected with converging lens

Myopia (near-sightedness)

- * Can see nearby objects, not ones far away
- * Distance between lens and retina is too large or cornea-lens combination converges light too strongly



- * light from distant object is brought into focus in front of the retina
- * a diverging lens is used to correct vision
- * called a negative meniscus lens



Laser Surgery

- * Corrects vision by reshaping the cornea to correct refractive defects in the eye
- * Procedure is effective in most cases
- * Does pose risks
- * Some instances leads to poor night vision