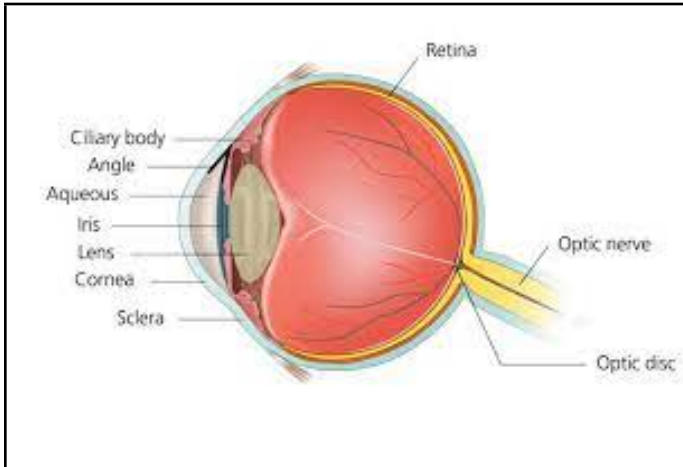


Level 4 Reading on the Eye

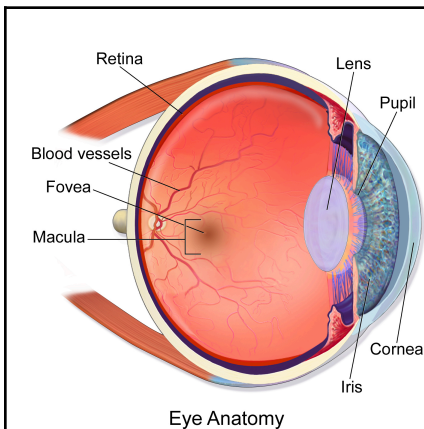
Optic Disk



Optic disk: The circular area in the back of the inside of the eye where the **optic nerve** connects to the retina. Also called the **optic nerve head**.

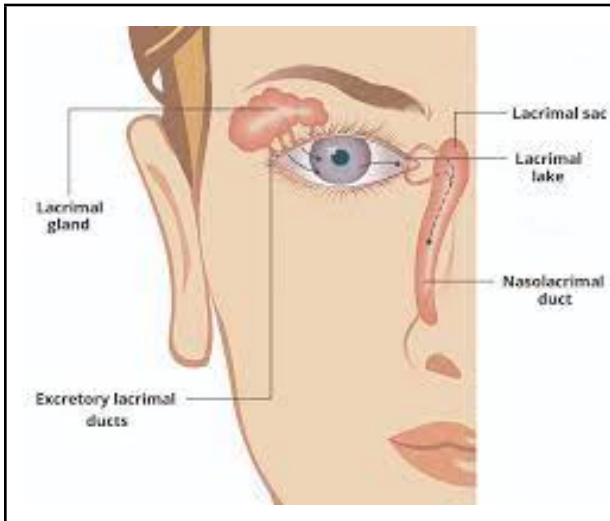
In the optic disk, there are no photoreceptor cells. Axons of the retinal ganglion cells gather at the optic disk and form the optic nerve, which carries the neural signal into the brain. Because there are no photoreceptors at the site of the optic disk, this location is also called the blind spot.

Macula & Fovea



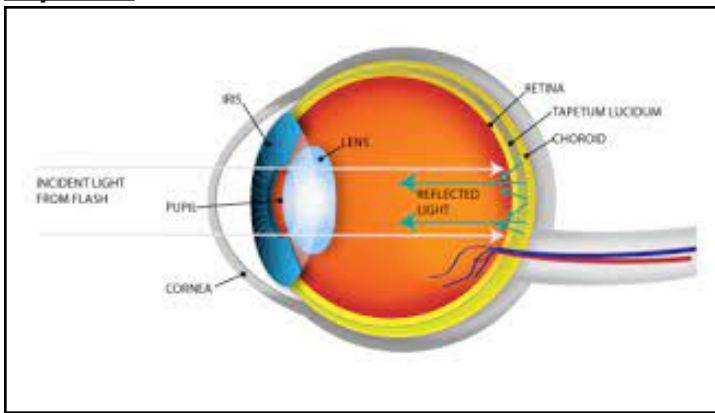
When an eye is looking directly at an object, light rays from that object are focused on the macula. The macula is the pigmented part of the retina located in the very center of the retina. In the center of the macula is a small pit called the fovea, perhaps the most important part of the eye. The fovea is the area responsible for sharp, detailed central vision (also called visual acuity). It contains a large amount of cones—nerve cells that are photoreceptors with high acuity.

Lacrimal Gland



The lacrimal gland is located within the orbit above the lateral end of the eye. It continually releases fluid which cleanses and protects the eye's surface as it lubricates and moistens it. These lacrimal secretions are commonly known as tears.

Tapetum



The tapetum (also called tapetum lucidum) is a reflective layer behind the retina that increases the amount of light for night vision in many vertebrates like cats, cows, deer, etc. This reflective layer is also what makes the eyes appear shiny. Humans do not have a tapetum.

Why Do Eyes Appear Red in Pictures (Source: <https://wonderopolis.org/wonder/where-do-red-eyes-come-from>)

Do you have red eyes? Or are they blue, brown or hazel? Of course, regardless of what color eyes you have, you may look like you have red eyes in photographs from time to time. Have you ever had your picture taken and noticed afterward that you look like an alien or a zombie with bright, glowing red eyes? This is called the “red eye effect.” Although it looks magical and somewhat sinister, there's a reasonable scientific explanation for it.

So what causes your blue (or brown or hazel) eyes to turn red in certain photographs? The red eye effect happens when flash pictures are taken in low-light situations. When the flash is located close to the camera lens (as it is in most cameras), you may be looking almost directly at the flash when you look at the camera lens. The red eye effect results when the light of the flash occurs too quickly for the pupil of the eye to close. The bright light of the flash passes into the eye through the pupil, reflects off the retina at the back of the eyeball and returns back out through the pupil. The camera records this reflected light, and it appears red because of the amount of blood located in the back of the eyeball.

The red eye effect tends to be stronger in people with light eye colors, light hair colors and fair complexions. Scientists believe this is because these people have less melanin in their eyes, which helps to reduce the red eye effect to some extent in people with darker eyes, hair colors and complexions.

If you have pets, you may have noticed that the red eye effect can be quite different in animals. Animals have a special reflective layer at the back of their eyes called the tapetum. The tapetum helps to enhance night vision. Depending upon the animal, the tapetum can cause a blue, green, or yellow eye effect.