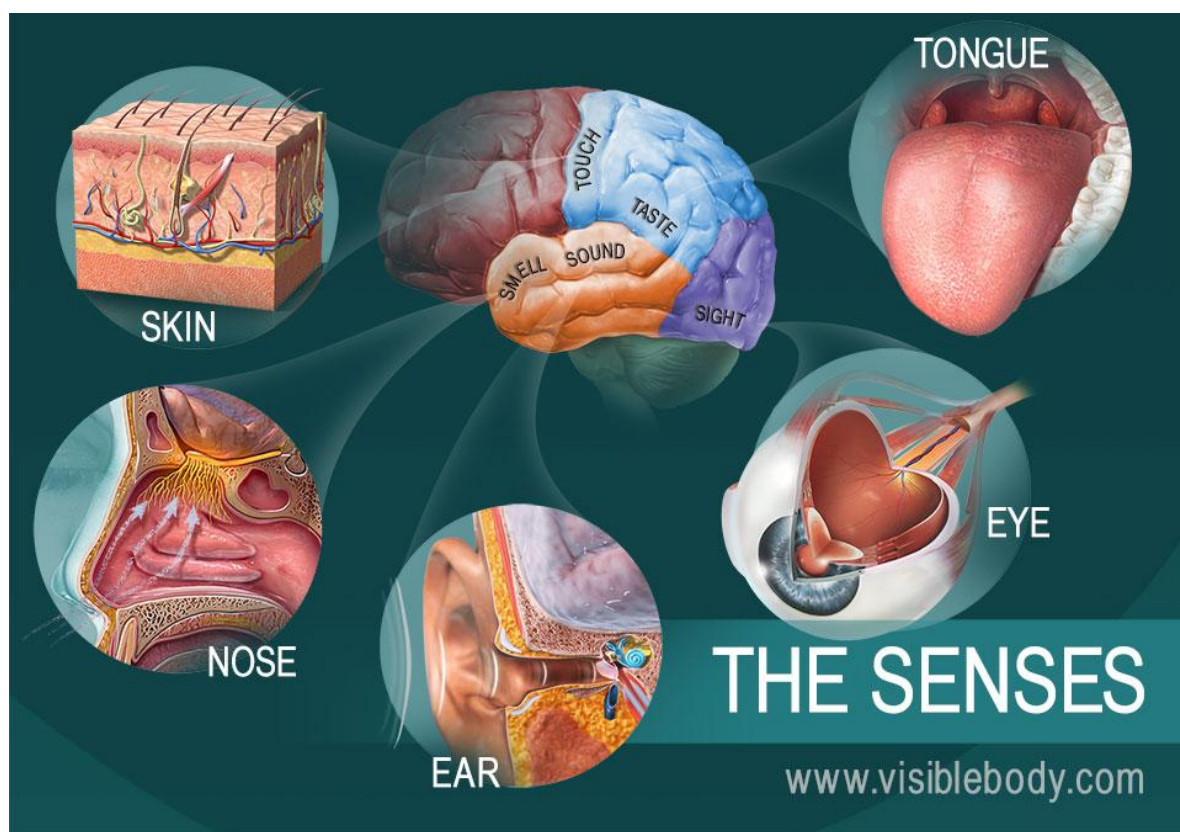


SENSES

The nervous system must receive and process information about the world outside in order to react, communicate, and keep the body healthy and safe. Much of this information comes through the sensory organs: the eyes, ears, nose, tongue, and skin. Specialized cells and tissues within these organs receive raw stimuli and translate them into signals **that can be used by the nervous system**. Nerves relay the signals to the brain, which interprets them as sight (vision), sound (hearing), smell (olfaction), taste (gustation), and touch (tactile perception).

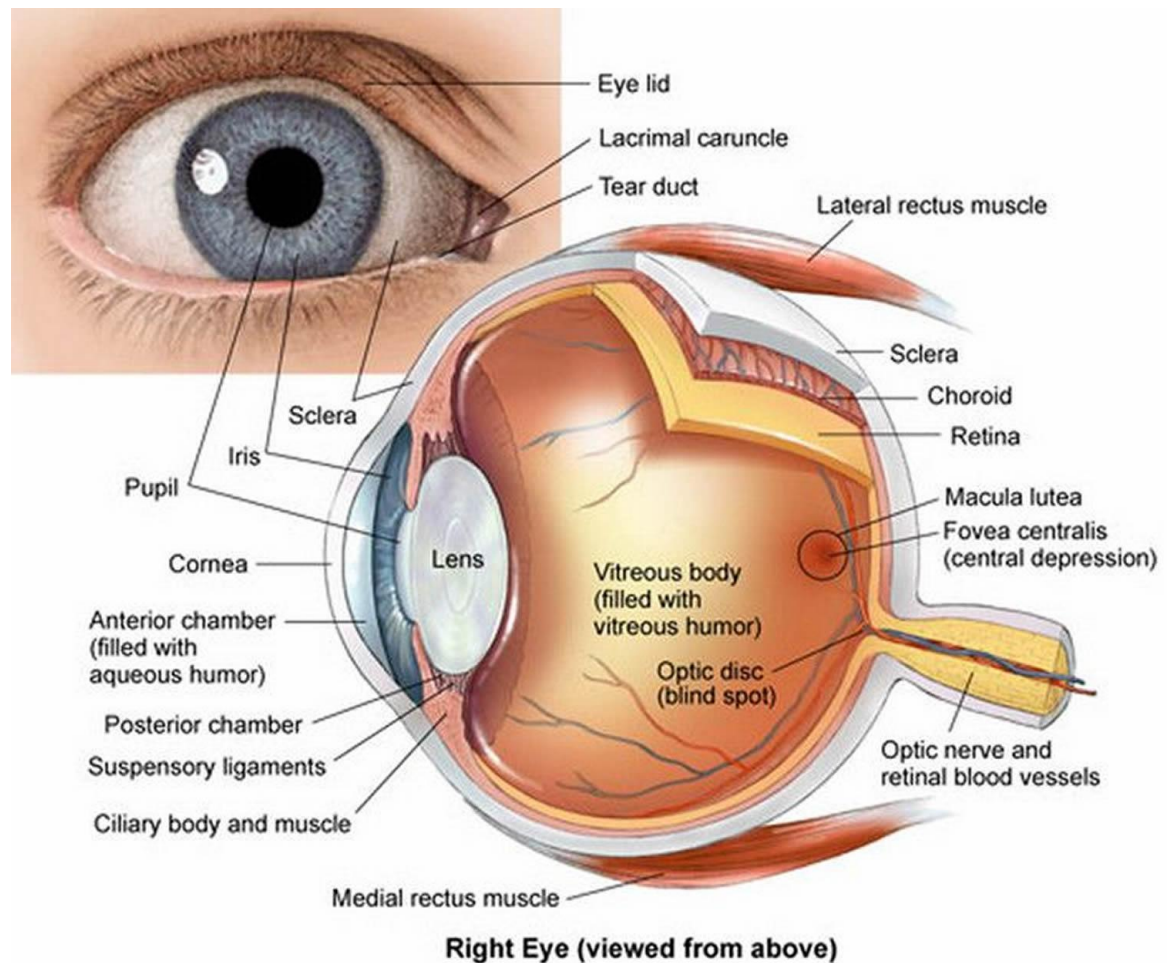


Vision

Vision needs to have the work of both the eyes and the brain to process any information. The majority of the stimuli is done in the eyes and then the information is sent to the brain by the way of nerve impulses. At least one-third of the information of what the eye sees is processed in the cerebral cortex of the brain.

Anatomy of the eye

The human eye is **an** elongated ball about 1inch (2.5 cm) in diameter and is protected by a bony socket in the skull. The eye has three layers or coats that make up the exterior wall of the eyeball, which are the sclera, choroid, and retina.



Layers of the eye:

Sclera

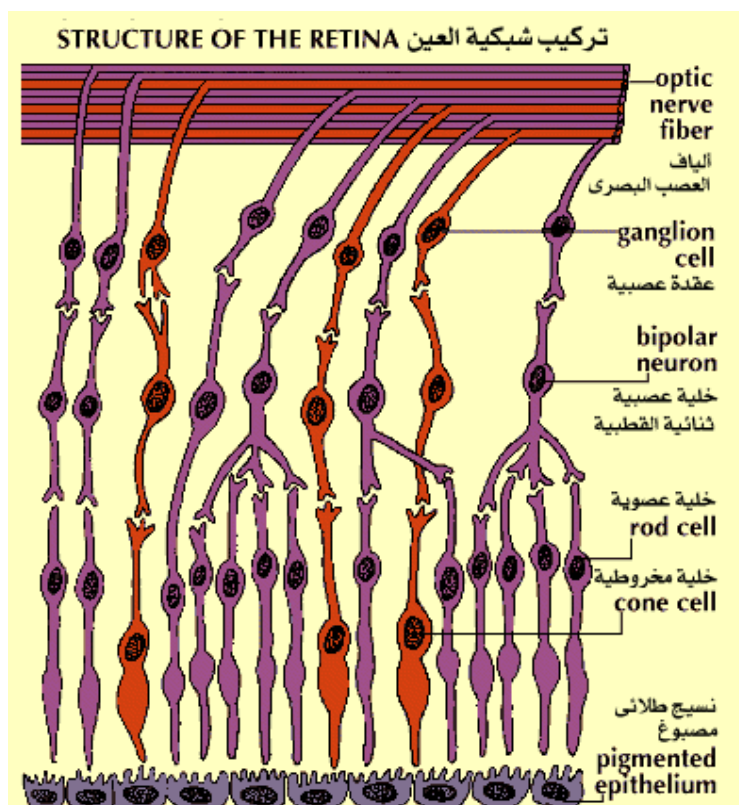
The outer layer of the eye is the sclera, which is a tough white fibrous layer that maintains, protects and supports the shape of the eye.

Choroid

The middle thin layer of the eye is the choroid, also known as the choroidea or choroid coat, it is the vascular layer of the eye lying between the retina and the sclera. The choroid provides oxygen and nourishment to the outer layers of the retina.

Retina

The third or the innermost layer of the eye is called the retina. Within the retina there are cells called rod cells and cone cells also known as photoreceptors. The rod cells are very sensitive to light and do not see color, that is why when we are in a darkened room we see only shades of gray. The cone cells are sensitive to different wavelengths of light, and that is how we are able to tell different colors. **The cone cells are sensitive to red, blue, and green light. The lack of cones sensitive to red, blue, or green light causes individuals to have deficiencies in color vision or various kinds of color blindness.** At the center of the retina is the optic disc, sometimes known as "The blind spot" because it lacks photoreceptors. It is where the optic nerve leaves the eye and takes the nerve impulses to the brain. The cornea and the lens of the eye focus the light onto a small area of the retina called the fovea where the cone cells are densely packed. The fovea is a pit that has the highest visual acuity and is responsible for our sharp central vision. There are no rods in the fovea.



Parts of the eye:

- 1) Conjunctiva: a thin layer of tissue that covers the entire front of your eye, except for the cornea.
- 2) Cornea: a clear dome over the iris that refracts light rays and acts like the outer window of the eye.
- 3) Iris: the colored part of the eye. It contains circular and radial muscles that controls the diameter of the pupil. The circular muscles is responsible for decreasing the diameter of the pupil. While, the radial muscles is responsible for increasing the diameter of the pupil.
- 4) Pupil: the black circular opening in the center of the iris, that changes its size as the amount of light changes (the more light, the smaller the hole) and it allows light to reach the retina.
- 5) Lens: a crystalline structure located just behind the iris. It focuses light onto the retina.