

# The eye 2

## **The Retina :**

The retina represents the innermost layer of the eye.

## **Layers of the Retina :**

**Ten layers of cells and their processes constitute the retina.**

The ten layers of the retina, from outside inward, are :

1. **Retinal pigment epithelium :** the outer layer of the retina, actually not part of the neural retina but intimately associated with it.
2. **Layer of rods and cones:** contains the outer and inner segments of photoreceptor cells.
3. **Outer limiting membrane:** the apical boundary of Müller's cells.
4. **Outer nuclear layer:** contains the cell bodies (nuclei) of retinal rods and cones.
5. **Outer plexiform layer:** contains the processes of retinal rods and cones and processes of the horizontal, amacrine, and bipolar cells that connect to them.
6. **Inner nuclear layer:** contains the cell bodies (nuclei) of horizontal, amacrine, bipolar, and Müller's cells.
7. **Inner plexiform layer:** contains the processes of horizontal, amacrine, bipolar, and ganglion cells that connect to each other.
8. **Ganglion cell layer:** contains the cell bodies (nuclei) of ganglion cells.
9. **Layer of optic nerve fibers:** contains processes of ganglion cells that lead from the retina to the brain.
10. **Inner limiting membrane:** composed of the basal lamina of Müller's cells.

## **Chambers of the Eye**

**The layers of the eye and the lens serve as boundaries for three chambers within the eye.**

The chambers of the eye are the following :

- The **anterior chamber** is the space between the cornea and the iris.
- The **posterior chamber** is the space between the posterior surface of the iris and the anterior surface of the lens.
- The **vitreous chamber** is the space between the posterior surface of the lens and the neural retina.

- The **aqueous humor** is the watery fluid located in the anterior and posterior chambers.
- The **lens** is a transparent, crystalline, biconvex structure suspended from the inner surface of the ciliary body by a ring of radially oriented fibers, the **zonule of Zinn**.
- The **vitreous body** is composed of a transparent gel substance that fills the vitreous chamber.

The fluid component of the vitreous body is called the **vitreous humor** .

**Eyelids (palpebrae)** consist of upper and lower eyelids. The outer layer of the eyelid is covered by thin skin , a keratinized stratified squamous epithelium, over a loose elastic connective tissue layer. The skin contains hair follicles, which are much smaller than eyelash follicles (found only in the lid margin). Orbicularis oculi muscle fibers are located beneath the skin. The inner surface of the lid is a layer of palpebral conjunctiva, covered by stratified low columnar epithelium, which is in contact with the eyeball. The tarsal (meibomian) glands, embedded in the tarsal plate, lie between the orbicularis muscles and palpebral conjunctiva. Each gland has a single duct that opens at the lid margin.

Three types of **muscles** control **upper eyelid movement**.

(1) The **orbicularis oculi muscle** is a sheet of striated muscle that is oriented in a circle around the eye. It is responsible for closing the eyelids.(2)The **levator palpebrae superioris muscle** is a band of striated muscle ,It is functions to open the eyelid(3)The **superior tarsal muscle**, also called the **Müller muscle**, is a smooth muscle that inserts on the superior tarsal plate and works with the levator palpebrae superior muscle to raise the upper eyelid.