

The eye

The **eye** is a complex sensory organ that provides the sense of sight.

Layers of the Eye:

The eyeball is surrounded by three layers: an outer tough fibrous connective tissue layer (tunica fibrosa) includes the **sclera**, the white portion, and the **cornea**, the transparent portion, a middle layer or uvea (tunica vasculosa) composed of highly vascular pigmented choroid, the ciliary body (consisting of ciliary processes and smooth ciliary muscle) and the iris, and the innermost layer (tunica interna) composed of the photosensitive retina. The retina, the inner layer, includes an outer pigment epithelium, the inner neural retina, and the epithelium of the ciliary body and iris. The neural retina is continuous with the central nervous system through the optic nerve.

The sclera is a white, opaque layer that consists predominantly of dense connective tissue. The sclera is a thick fibrous layer containing flat collagen bundles.

The sclera is divided into three layers:

- The **episcleral layer (episclera)**, the external layer, is the loose connective tissue.
- The **substantia propria (sclera proper)**, is composed of a dense network of thick collagen fibers.
- The **suprachoroid lamina (lamina fusca)**, the inner aspect of the sclera, is located adjacent to the choroid and contains thinner collagen fibers and elastic fibers as well as fibroblasts, melanocytes, macrophages, and other connective tissue cells.

The junction between the cornea and sclera occurs at the transition area called the limbus located in the anterior region of the eye. In the posterior region of the eye, where the optic nerve.

The cornea is the anterior window of the eye.

The cornea consists of five layers: Three cellular layers and two noncellular layers.

- **Corneal epithelium**
- **Bowman's membrane (anterior basement membrane)**
- **Corneal stroma**
- **Descemet's membrane (posterior basement membrane)**

- **Corneal endothelium**(posterior epithelium).

The corneal epithelium is a nonkeratinized stratified squamous epithelium.

The corneal epithelium consists of approximately five layers of nonkeratinized cells and measures about 50 µm in average thickness.

The corneal endothelium is a single layer of squamous cells covering the surface of the cornea that faces the anterior chamber.

The corneal stroma, also called **substantia propria**, is composed of about 60 thin lamellae. Each lamella consists of parallel bundles of collagen fibrils. Located between lamellae are nearly complete sheets of slender, flattened fibroblasts. **The corneal stroma constitutes 90% of the corneal thickness.**

The corneoscleral limbus is the transitional zone between the cornea and sclera.

Vascular Coat (Uvea)

Its consist of three layer from anterior to posterior :

The iris, the most anterior part of the vascular coat, forms a contractile diaphragm in front of the lens.

The **iris** arises from the anterior border of the ciliary body. It consists of highly vascularized connective tissue stroma that is covered on its posterior surface by highly pigmented cells, the **posterior pigment epithelium**. The basal lamina of these cells faces the posterior chamber of the eye.

The layers of the ciliary body are similar to those of the iris and consist of a stroma and an epithelium. The stroma is divided into two layers:

- An **outer layer** of smooth muscle, the **ciliary muscle**, makes up the bulk of the ciliary body.
- An **inner vascular region** extends into the ciliary processes.

Ciliary processes are ridge like extensions of the ciliary body from which zonular fibers emerge and extend to the lens.

The choroid is subdivided in to several layer :

The suprachoroid layer with melanocytes ,(consist of fine collagen fiber ,a network of elastic fiber and fibroblast) ,

The vascular layer (its contains medium sized and large blood vessels. In the loose connective tissue between the blood vessels are large ,flat melanocyte that impart a dark color to this layer) ,

The choriocapillaris layer (contains a network of capillary with large lumina) , and the transparent limiting membrane or glassy
(Bruch) membrane (the inner most layer of the choroid the brush membrane lies adjacent to the pigment epithelium cells of the retina and separates the choroid and retina).