

Anatomy of Eye

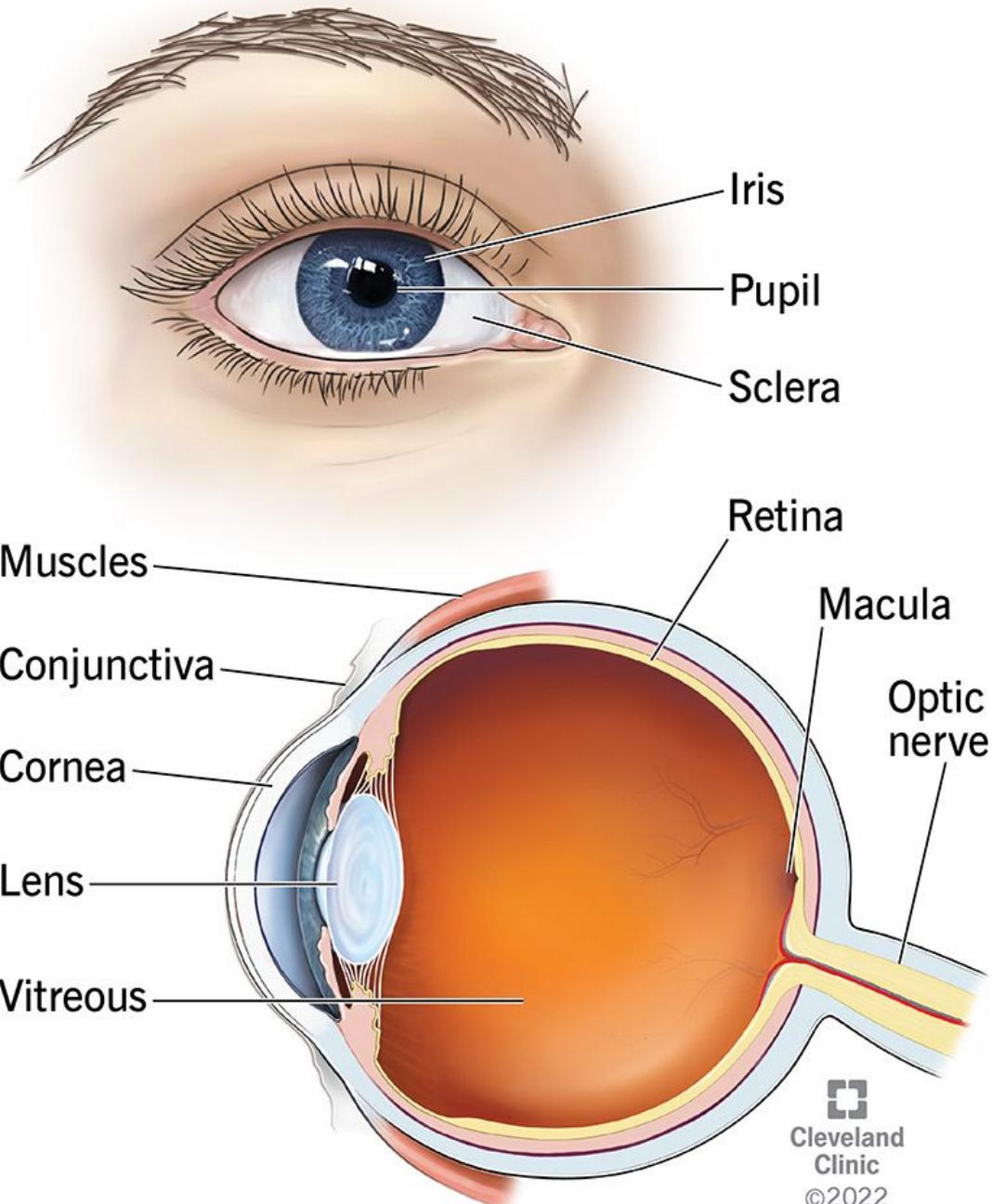
Ms. G. Sudhanthira M.E.,
AP/BME

Introduction

- . The eye is one of the most complex sensory organs, allowing us to perceive the world around us.
- . It works like a camera, focusing light to create images that are interpreted by the brain.
- . Understanding its anatomy and function helps in diagnosing and treating vision disorders.

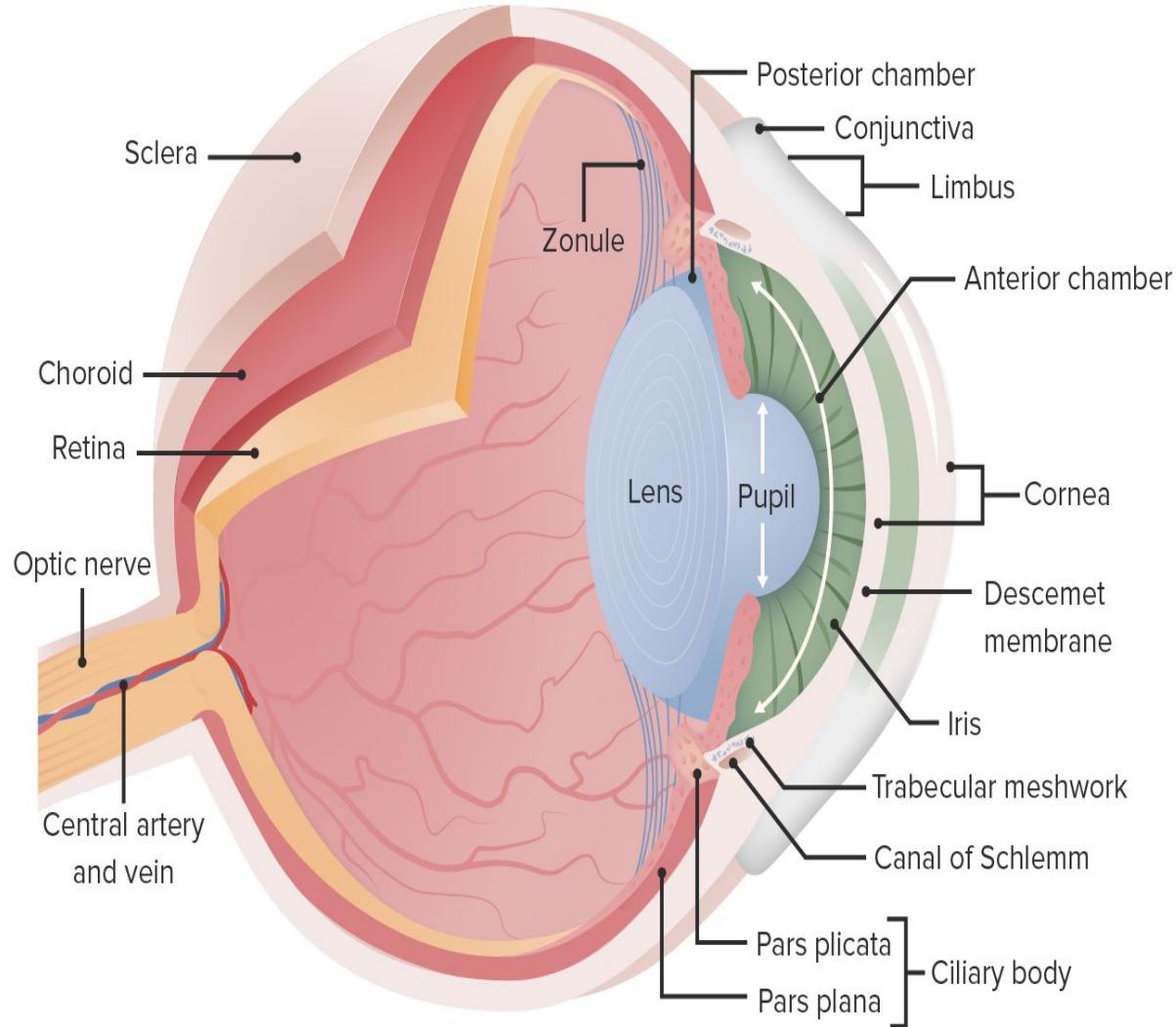
External Structures of the Eye

- **Eyelids & Eyelashes:** Protect the eye from dust, debris, and excessive light.
- **Conjunctiva:** A thin membrane covering the front of the eye and inside the eyelids, preventing infections.
- **Lacrimal Apparatus:** Produces tears to keep the eye moist and wash away irritants.
- **Example:** Blinking spreads tear film across the eye, preventing dryness.



Internal Structures of the Eye

- The eye has **three main layers:**
 - **Outer Layer:**
 - **Sclera:** White, tough outer layer that provides structure.
 - **Cornea:** Transparent front part that refracts light into the eye.
 - **Middle Layer (Uvea):**
 - **Choroid:** Provides blood supply to the retina.
 - **Ciliary Body:** Controls lens shape for focusing.
 - **Iris:** Colored part of the eye that regulates pupil size.
 - **Inner Layer:**
 - **Retina:** Contains photoreceptors that convert light into neural signals.



Internal Structures of the Eye

- **Cornea:** The eye's primary focusing structure, bending incoming light to direct it towards the lens.
- **Lens:** Adjusts its shape (by ciliary muscles) to focus on near or distant objects.
- **Example:** The lens flattens for distant objects and thickens for near objects.
- **Aqueous Humor:**
 - A clear fluid in the anterior chamber that nourishes the cornea and maintains intraocular pressure.
 - Drains through the **trabecular meshwork**; blockages can lead to **glaucoma**.
- **Vitreous Body:**
 - A gel-like substance in the posterior chamber that maintains the eye's shape and optical clarity.
 - Degeneration can cause **floaters** (small debris casting shadows on the retina).

Retina & Photoreceptors:

- The retina converts light into electrical signals through specialized **photoreceptors**:
 - **Rods**: Function in low light (night vision), located in peripheral retina.
 - **Cones**: Detect color (red, green, blue) and are concentrated in the **fovea centralis** for sharp central vision.
- **Example**: Reading relies on cones for fine detail, while rods help us navigate in the dark.

Optic Nerve & Visual Pathway:

- The **optic nerve** transmits signals from the retina to the brain.
- At the **optic chiasm**, nerve fibers from each eye partially cross, ensuring depth perception.
- The **visual cortex** in the occipital lobe interprets these signals as images.
- **Example**: A stroke affecting the occipital lobe can cause visual impairments

Accommodation & Near/Far Vision:

- **Accommodation**: The lens changes shape to focus light on the retina.
- **Ciliary Muscles**: Contract for near objects, relax for far objects.
- **Presbyopia**: Age-related loss of accommodation, requiring reading glasses.
- **Example**: Holding a book farther away as one ages is a sign of presbyopia.