



المرحلة الثانية ٢٠٢٣-٢٠٢٤

Anatomy of the eye

13th Lecture : **The Retina parts and layers**

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The retina is a critical structure within the eye that plays a crucial role in vision. It consists of several layers, each with its unique functions.

Definition of the Retina:

- The retina is a thin, light-sensitive layer of tissue located at the back of the eye.
- It lines the inner surface of the eyeball and contains specialized cells that convert light into electrical signals, which are then transmitted to the brain for visual processing.

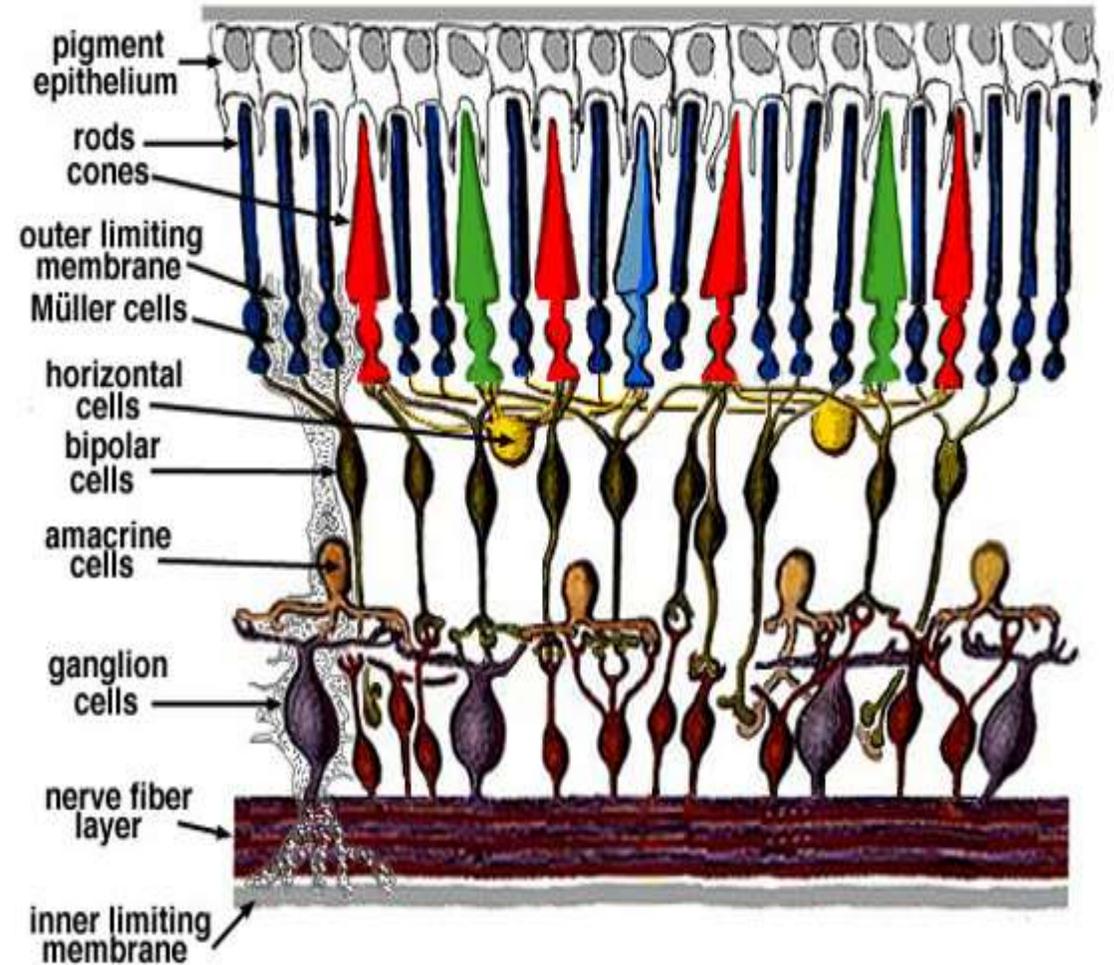
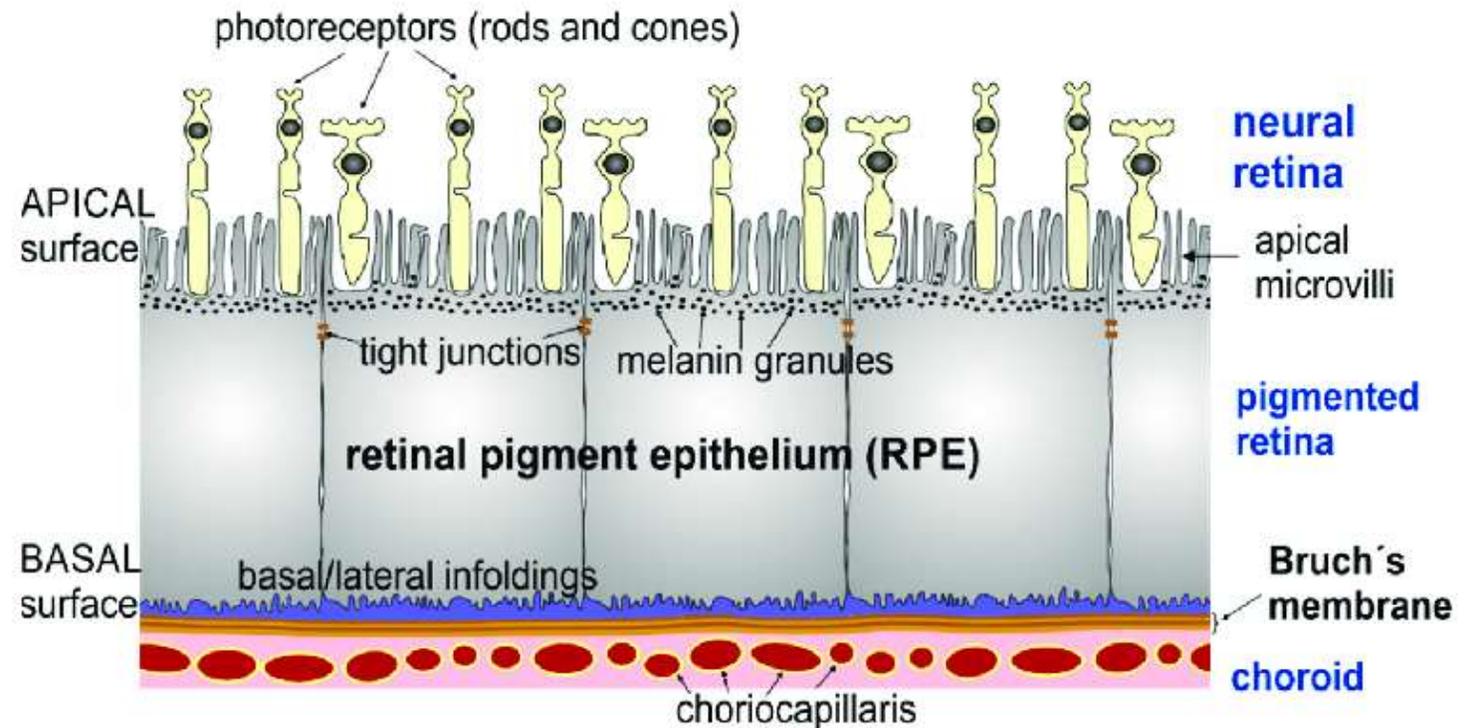


Fig. 2. Simple diagram of the organization of the retina.

1. Retinal Pigment Epithelium (RPE):

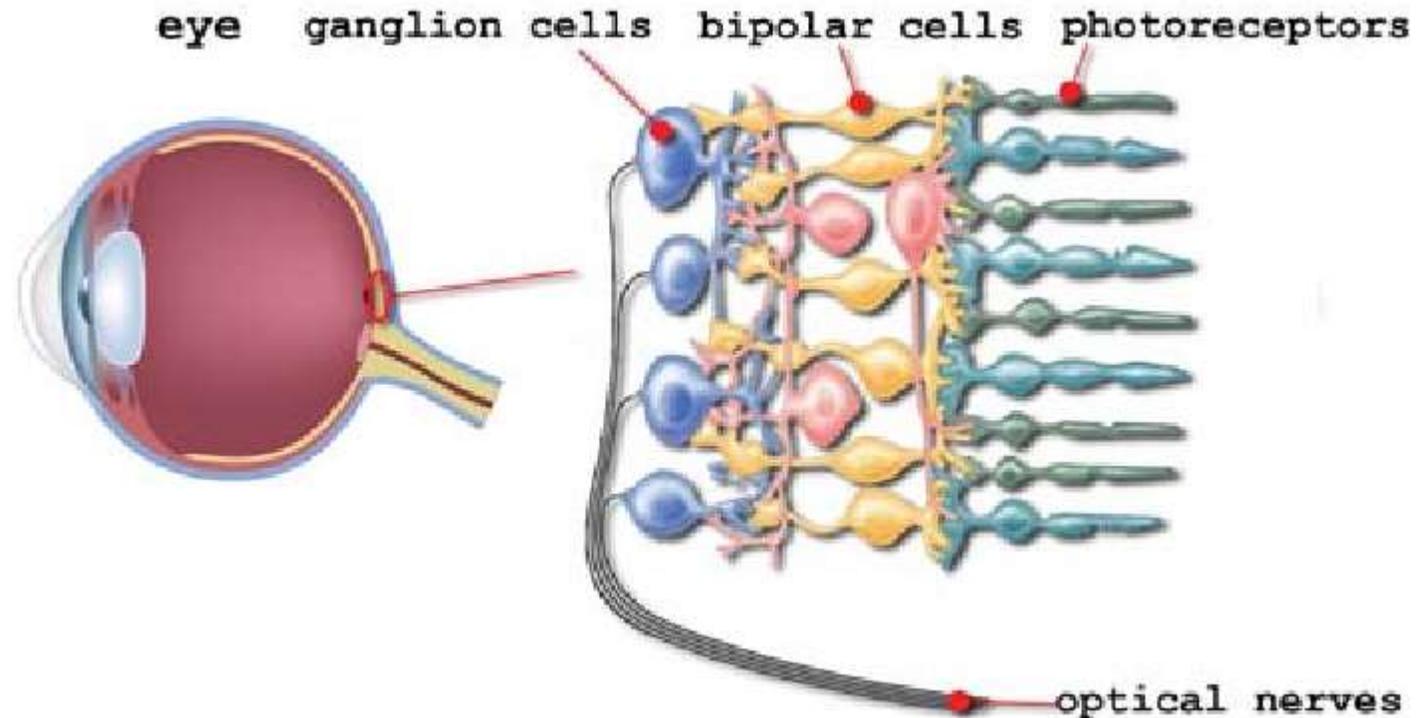
- The retinal pigment epithelium is the outermost layer of the retina, lying adjacent to the choroid.
- It consists of a single layer of pigmented cells that provide nourishment and support to the other retinal layers.
- The RPE also plays a vital role in absorbing excess light and preventing light from scattering within the eye.

Retinal Pigment Epithelium (RPE):
Outermost layer of the retina
Provides nourishment and support
Absorbs excess light



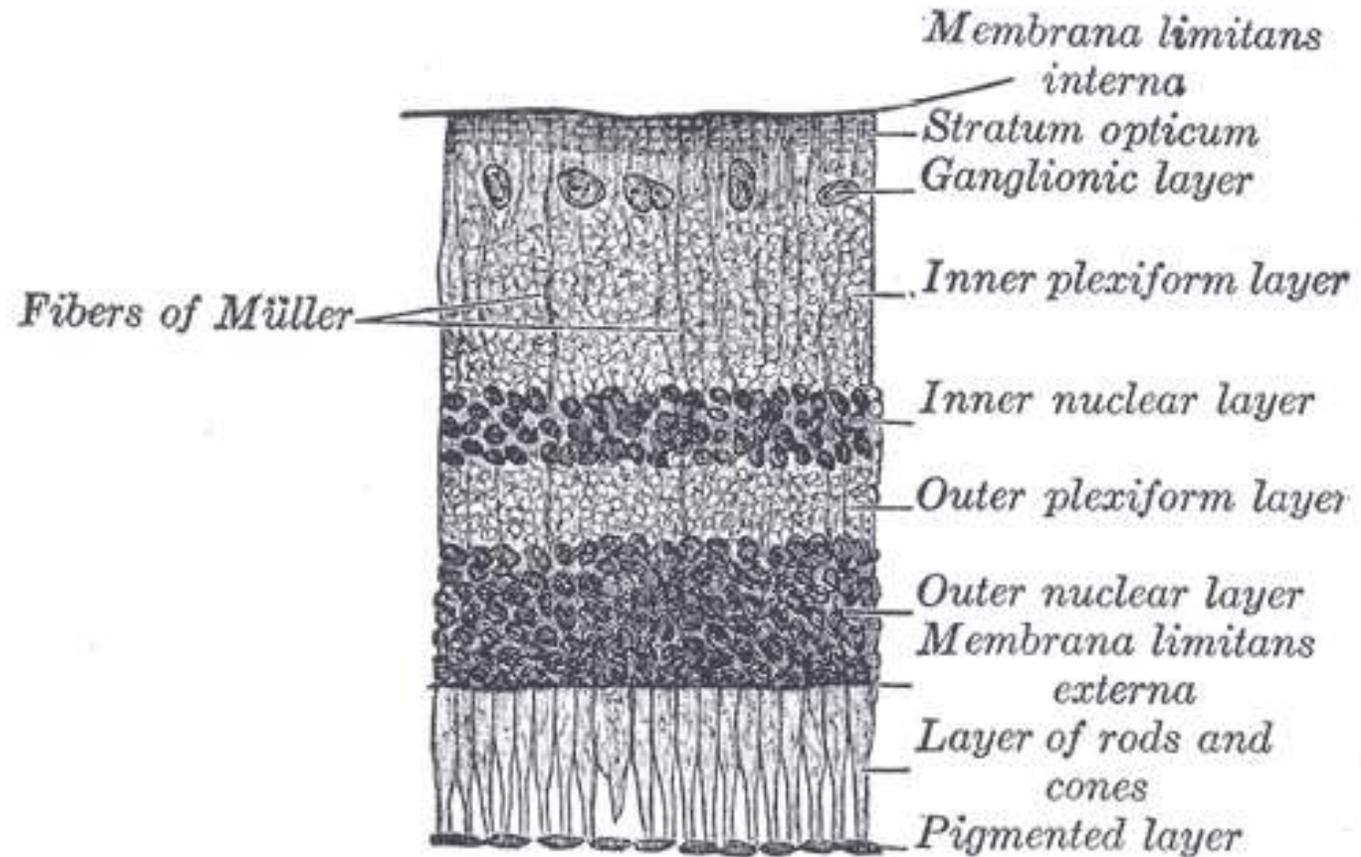
2. Photoreceptor Layer:

- The photoreceptor layer is the next layer of the retina, located just beneath the retinal pigment epithelium.
- It contains two types of specialized cells called photoreceptors: rods and cones.
- Rods are responsible for vision in dim light and detecting shades of gray.
- Cones are responsible for color vision, visual acuity, and function best in bright light conditions.



Outer Nuclear Layer:

The outer nuclear layer lies beneath the photoreceptor layer and contains the cell bodies of the photoreceptor cells.



Outer Plexiform Layer:

The outer plexiform layer is a synaptic layer where the processes of photoreceptor cells and bipolar cells interact and transmit signals.

Inner Nuclear Layer:

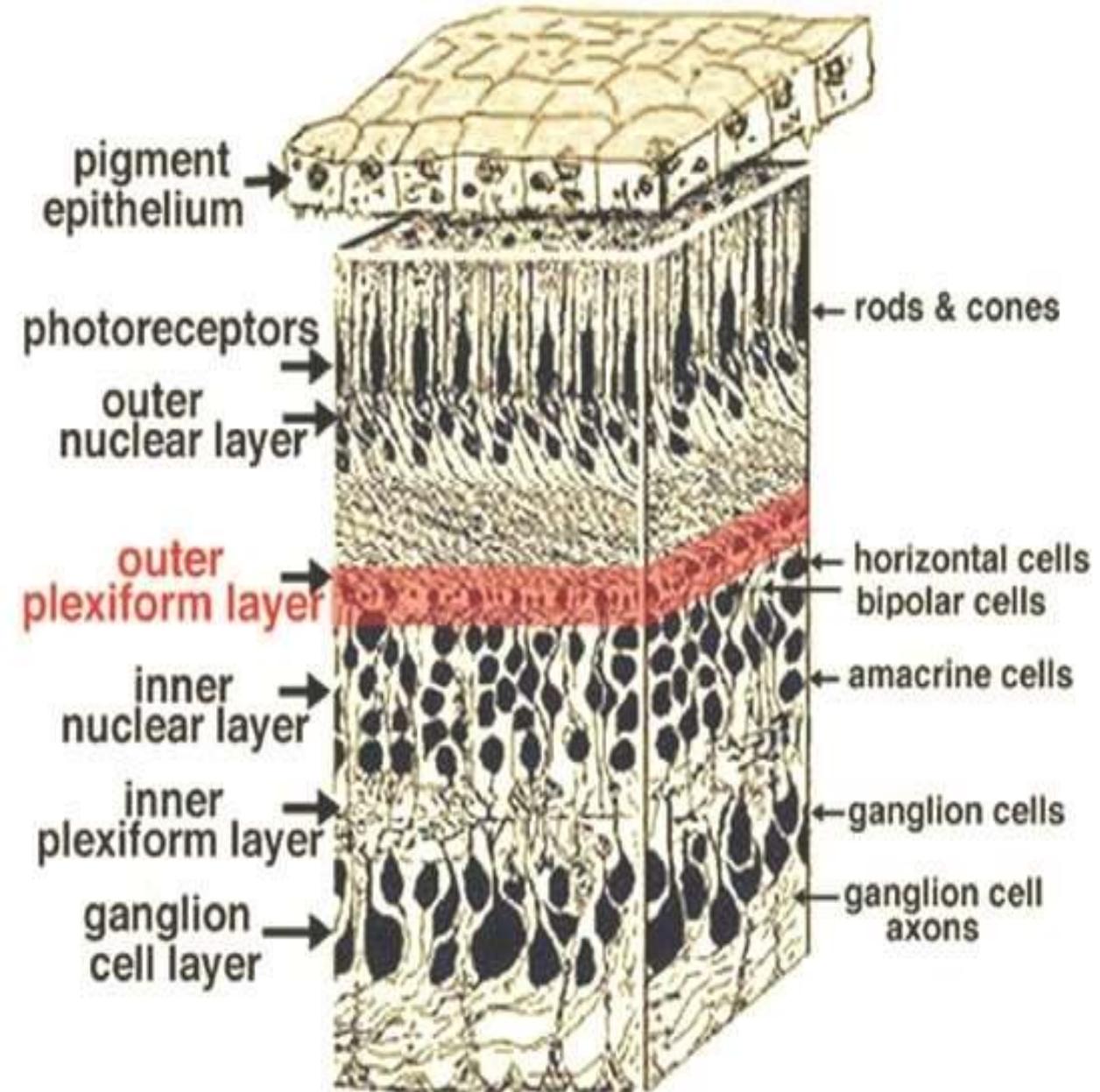
The inner nuclear layer is the layer between the outer and inner plexiform layers.

It contains the cell bodies of bipolar cells, horizontal cells, and amacrine cells.

Bipolar cells receive signals from photoreceptor cells and transmit them to ganglion cells.

Inner Plexiform Layer:

The inner plexiform layer is a synaptic layer where bipolar cells and ganglion cells interact and transmit signals.



Ganglion Cell Layer:

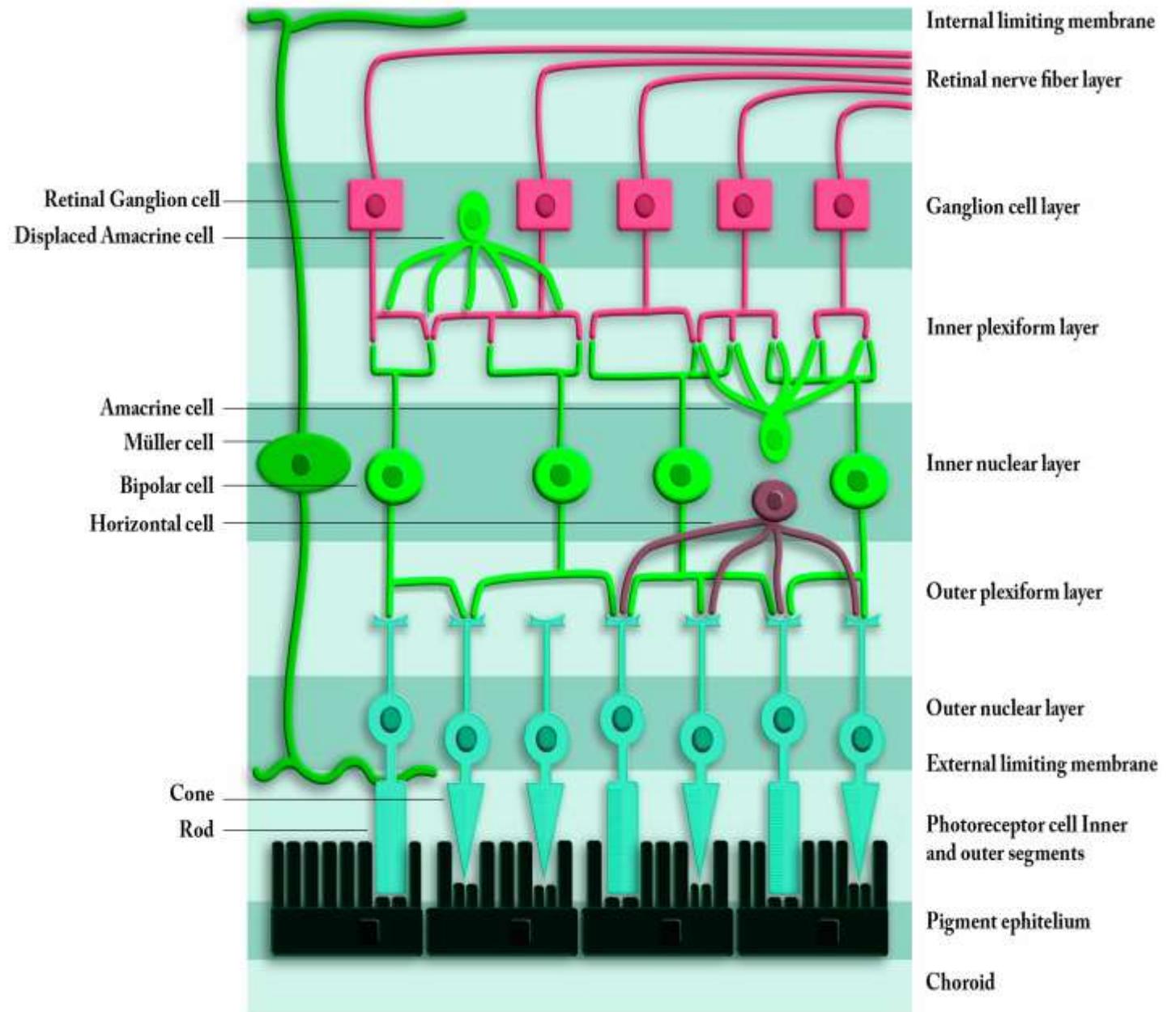
The ganglion cell layer is the innermost layer of the retina, adjacent to the vitreous humor. It contains the cell bodies of ganglion cells, whose axons form the optic nerve, transmitting visual information to the brain.

Nerve Fiber Layer:

The nerve fiber layer is composed of the axons of ganglion cells, which bundle together to form the optic nerve.

These axons transmit visual information from the retina to the brain for further processing.

Each layer plays a unique role in capturing, processing, and transmitting visual signals. The photoreceptor layer detects light, the bipolar and amacrine cells facilitate signal transmission, and the ganglion cells form the optic nerve, connecting the retina to the brain.



Conclusion:

The retina is a complex structure in the eye.

Its layers work together to process visual information.

**THANKS SEE YOU IN NEXT
LECTURE**