

# Eye Histology

BY

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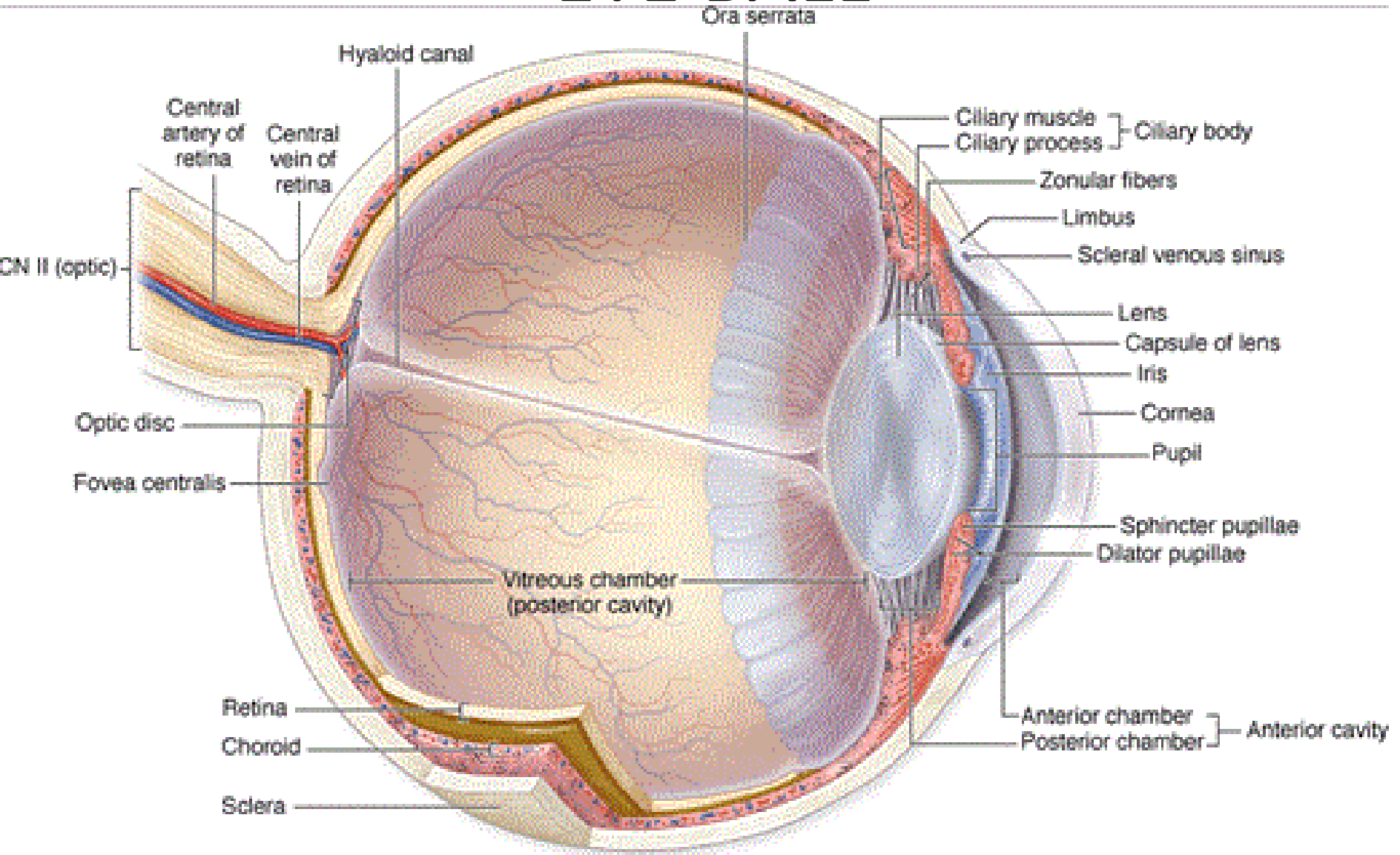
# Eye

The **eye** is a complex and highly developed photosensitive organ.

That analyses:-

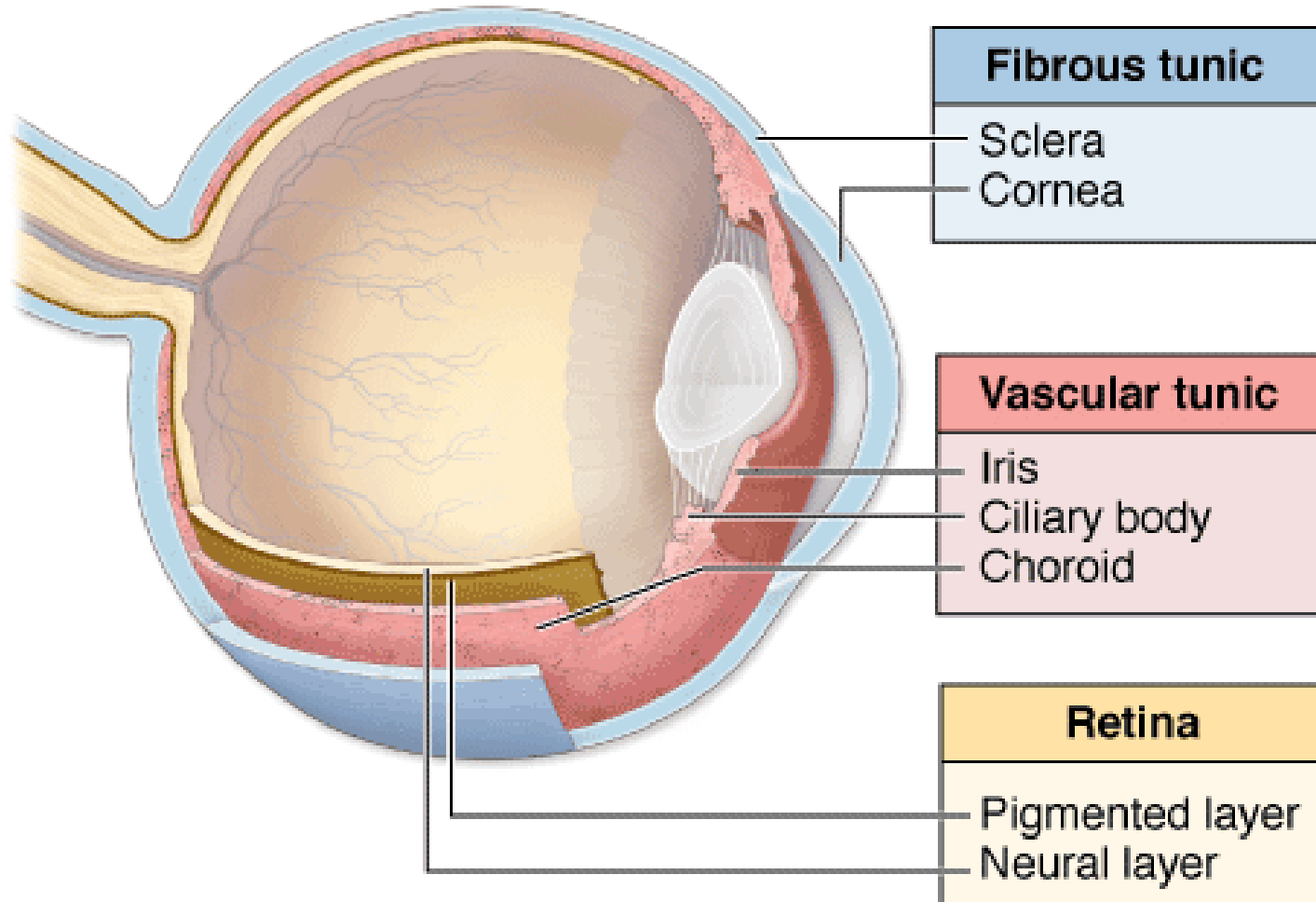
- The form
- Intensity
- And color of light reflected from objects, providing the sense of sight.
- The eyes are located in protective areas of the skull, the **orbits**, which also contain cushions of adipose tissue.

# EYE BALL



# HISTOLOGICAL DIVISION OF EYE BALL

➤ Each eye is composed of three concentric tunics or layers



# FIBROUS LAYER

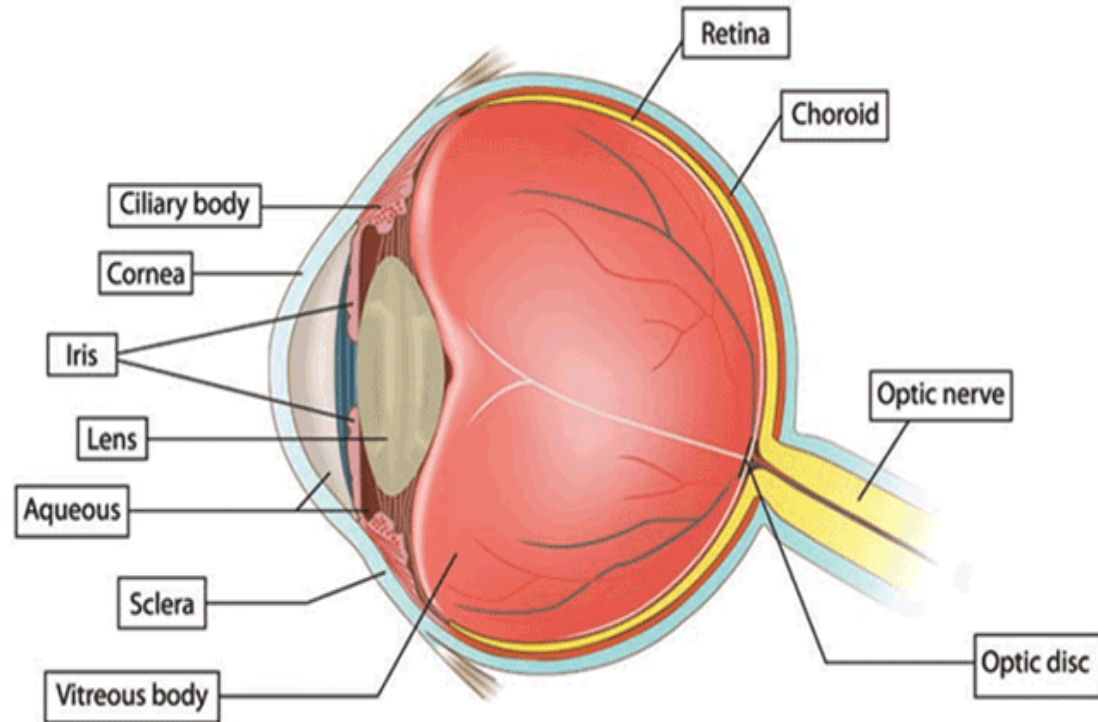
## • Function

1-protection

2-muscle Attachment(insertion)

## SCLERA:-

- Opaque white posterior five-sixths external layer is sclera
- Relatively avascular
- Contain type one collagen fiber
- Posteriorly thicken and join the epineurium covering optic nerve

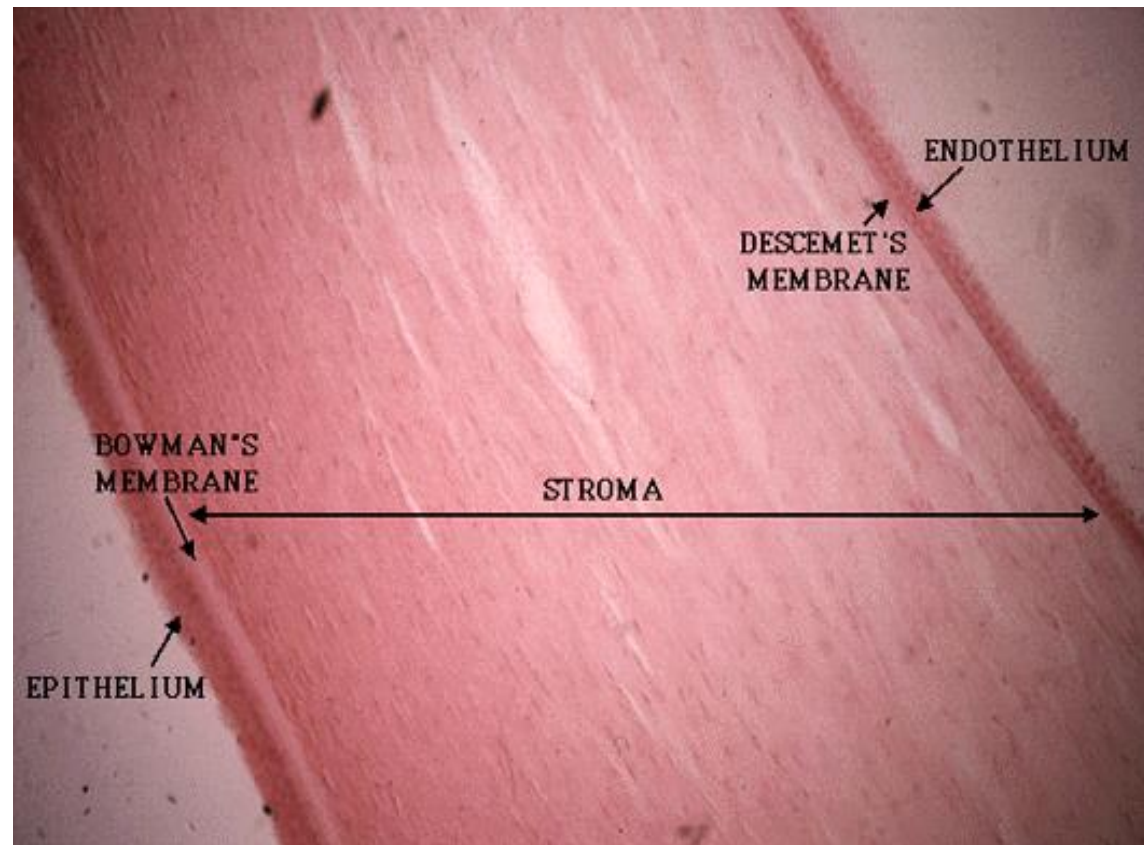
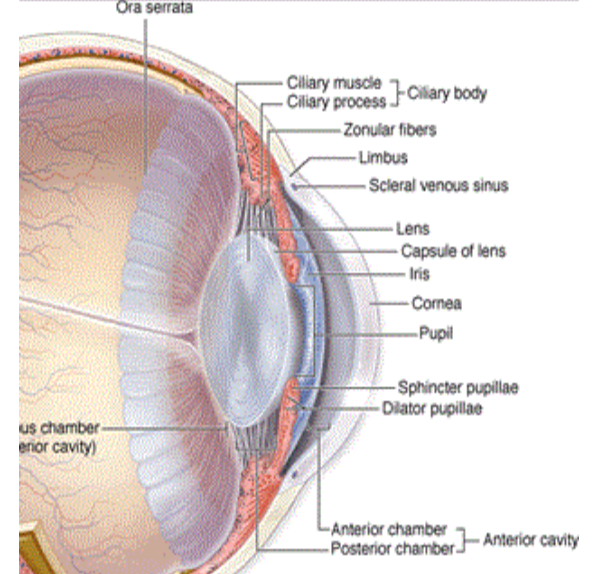


# Cornea

- Cover ant-one sixth of eye
- Colorless ,tranparent
- Completely avascular

## Section shows five layer :-

- 1-Ext stra squamous epithelium
- 2-Ant limiting membrane(Bowman,s memb)
- 3-Stroma or substantia propia
- 4-Post- limiting membrane(Descemet memb)
- 5-Inner simple squamous endothelium

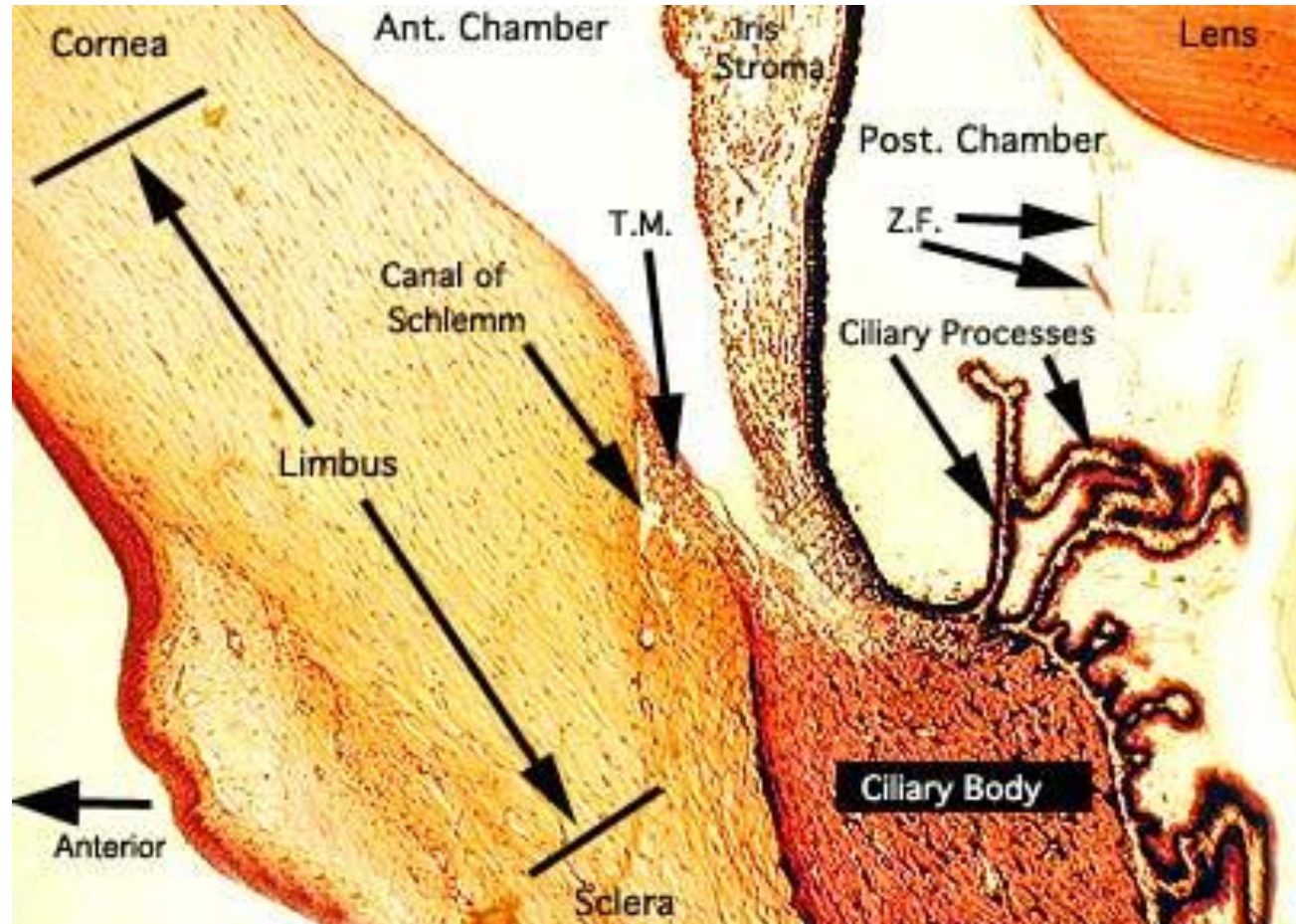




# LIMBUS

# (FIBROUS LAYER)

- Corneoscleral junction or limbus
- Transitional area...transparent stroma into opaque sclera.
- Contain microvasculature
- Descemet membrane and endothelium –lined channel called trabecular meshwork.
- Function drainage of aqueous humour from the ant chamber into canal of Schlemm or scleral venous sinus, then into episcleral vein of the sclera



# Corneal Ulcer

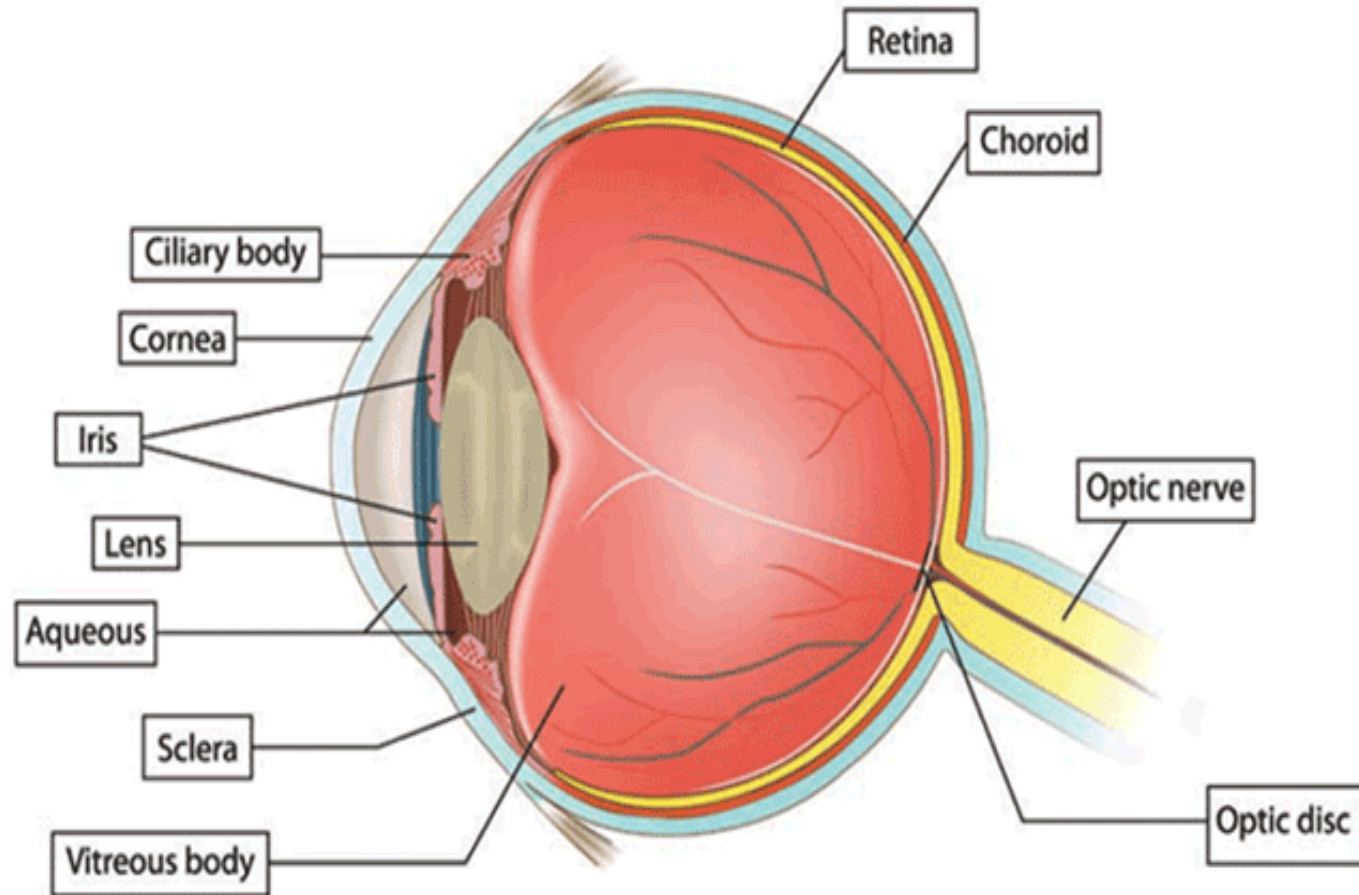
- A corneal ulcer may cause [pain](#),
- Feeling of a [foreign body in the eye](#);
- Tearing and pus or thick discharge draining from the eye may occur.
- If the ulcer is more centrally located in the cornea, vision might be blurry.
- There may be an increase in [pain](#) when the person looks at bright lights ([photophobia](#)).



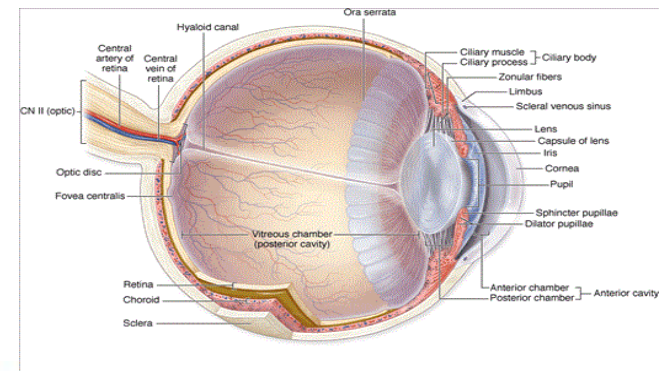
# Vascular layer

Consist of three parts  
from posterior to  
anterior :-

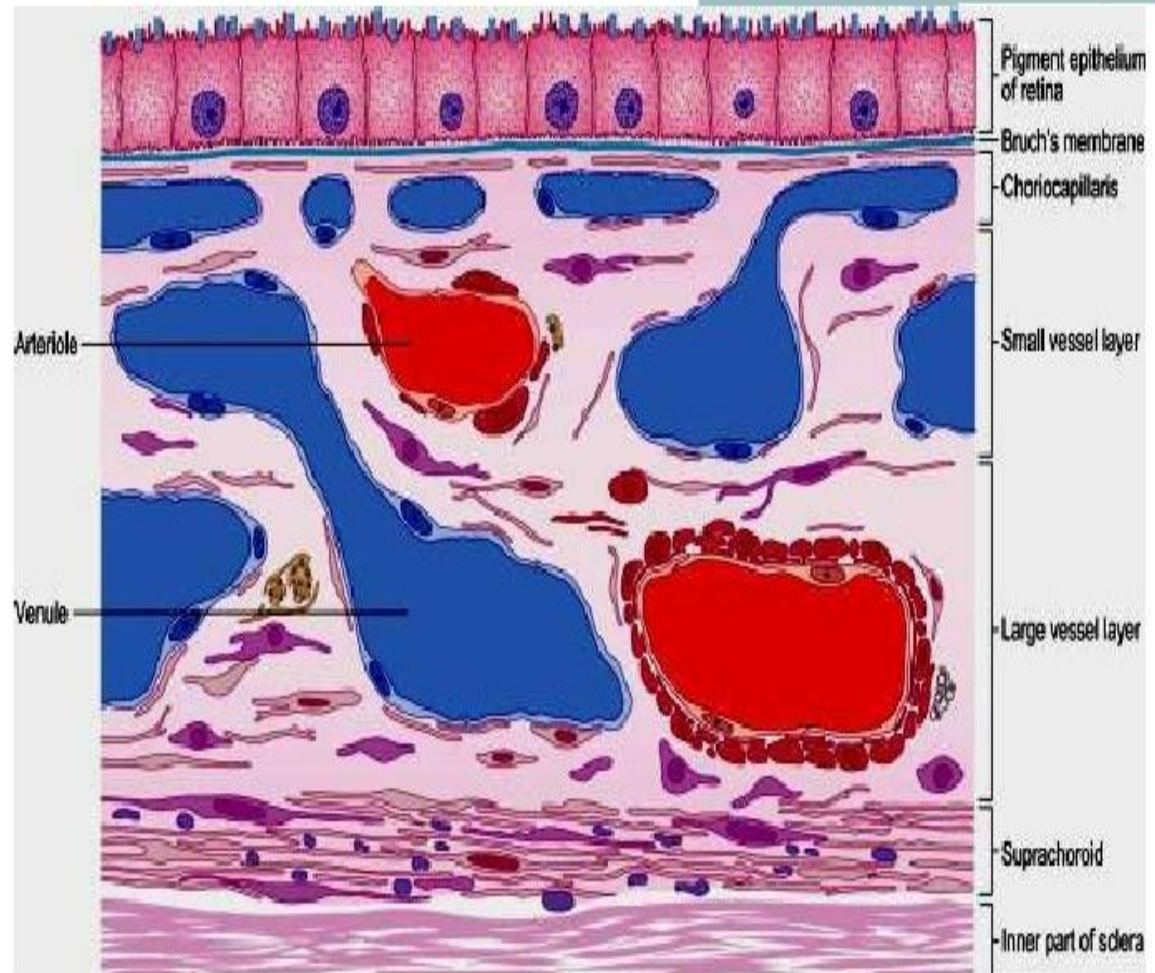
- choroid
- Ciliary body
- Iris



# Choroid

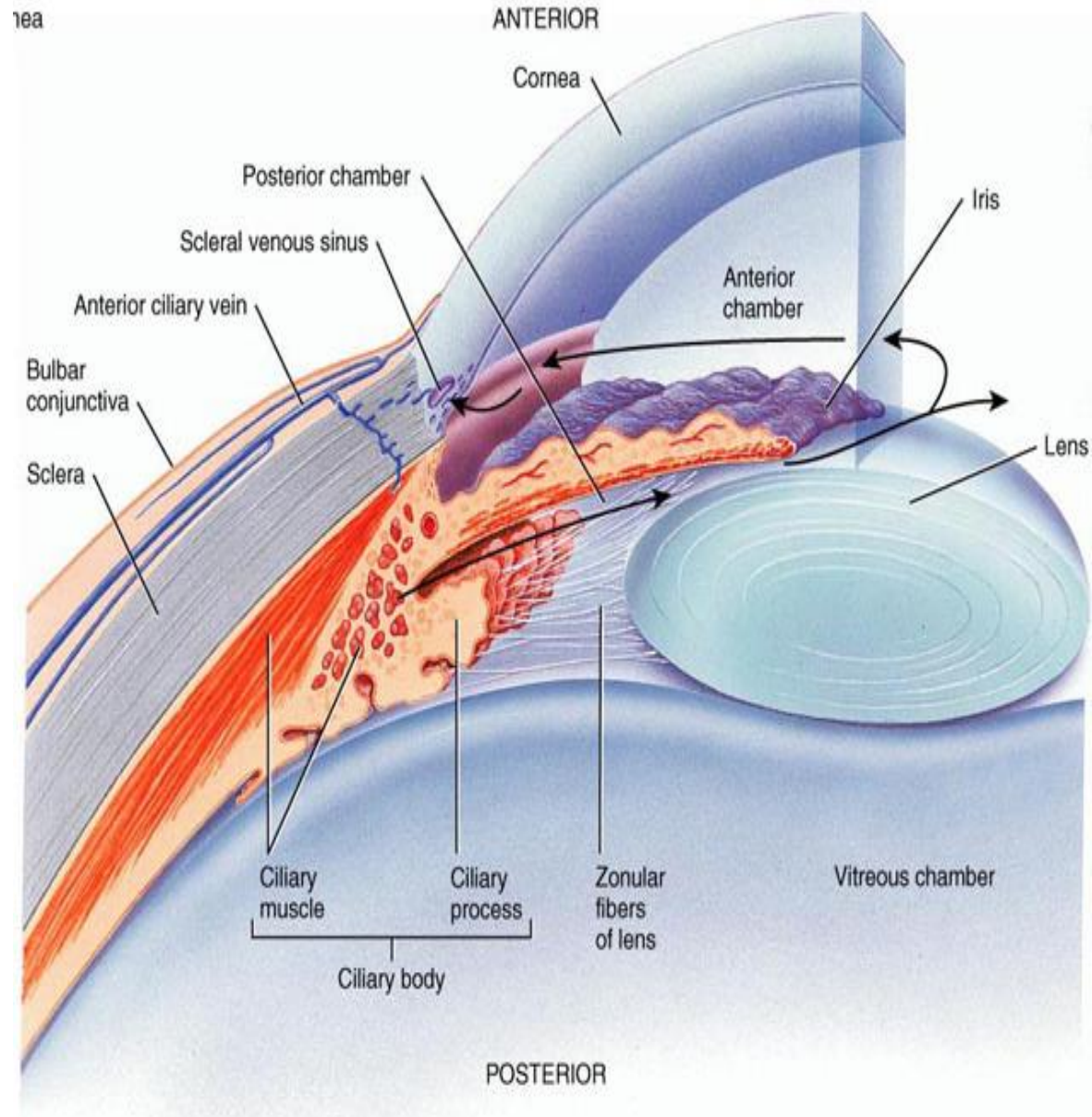


- Highly vascularised
- Rich in collagen, elastic fiber, fibroblast, plasma cell mast cell and melanocytes.
- Melanocytes give them black color.
- Suprachoroidal lamina attach to sclera
- Choriocapillary lamina is inner layer rich and provide nutrition to retina.
- Bruch,s membrane separate the choriocapillary layer from the retina extent from ora serrata to optic nerve



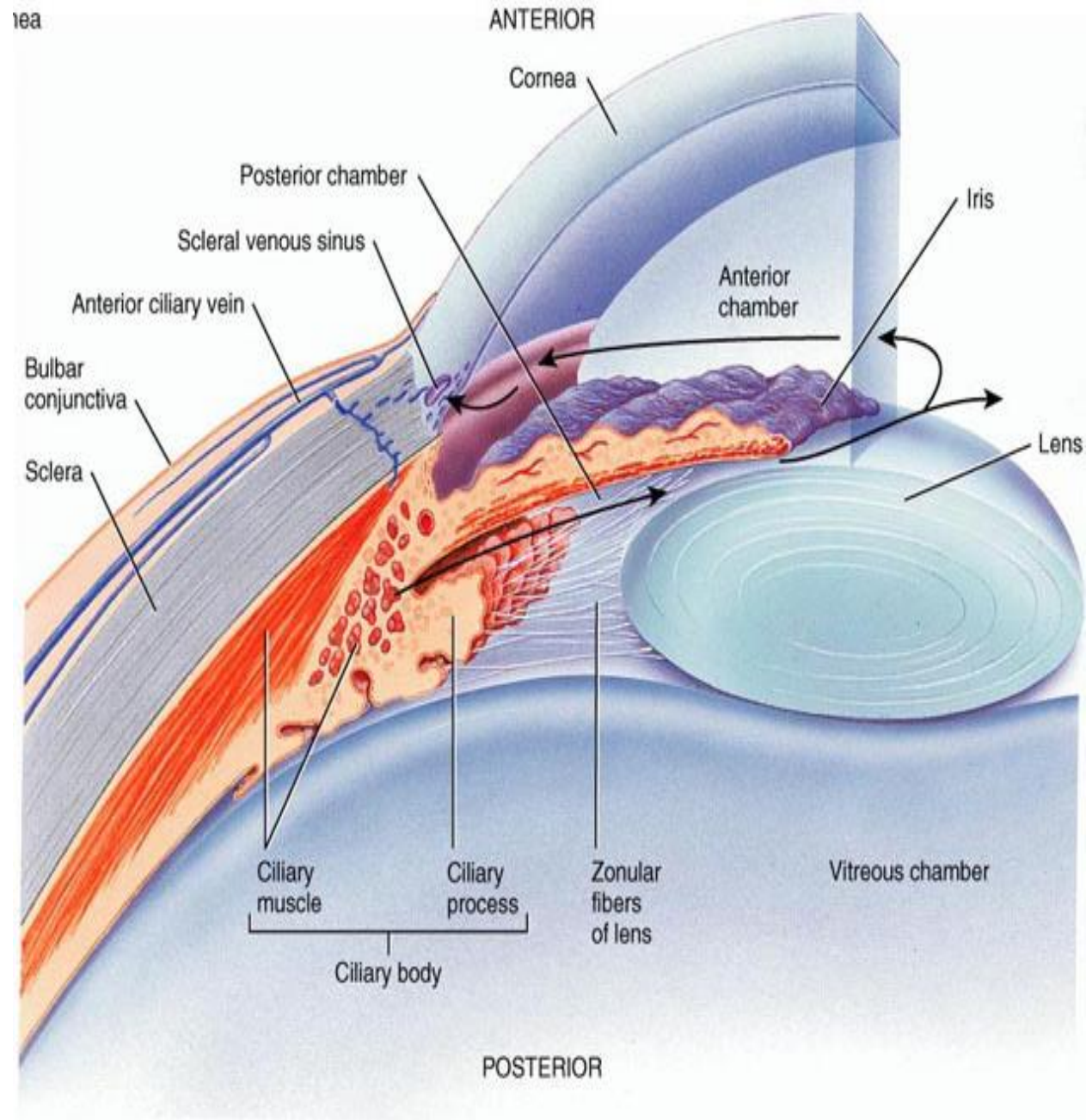
# Ciliary body

- Ciliary body have (muscle and processes)
- Anterior expansion of choroid at level of lens.
- Triangular shape
  - longe base contracting the sclera
  - Another side in contact with vitreous body
  - And the third facing the posterior chamber (lens)
  - Covered by double layer of low columnar epithelium
- ❑ Ciliary process have stratified columnar epithelium



# Iris

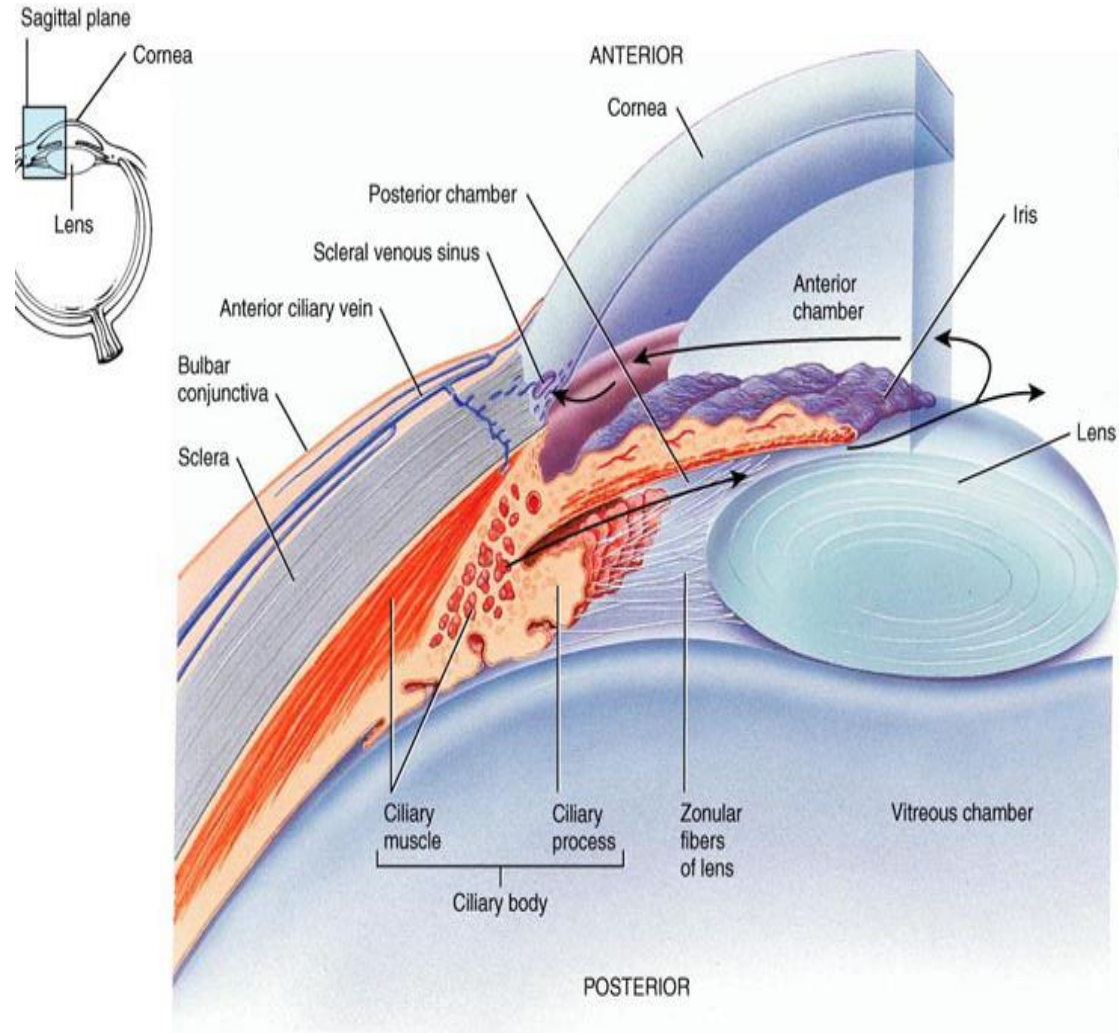
- Anterior expansion of uvea(middle layer)
- Partially cover the lens
- Leaving the pupil
- Anterior not cover by epithelium
- Anterior contain irregular layer of fibroblast, and malonocytes.
- Stroma :-loose connective with microvasculature



# IRIS (CONT)

## POSTERIOR SURFACE

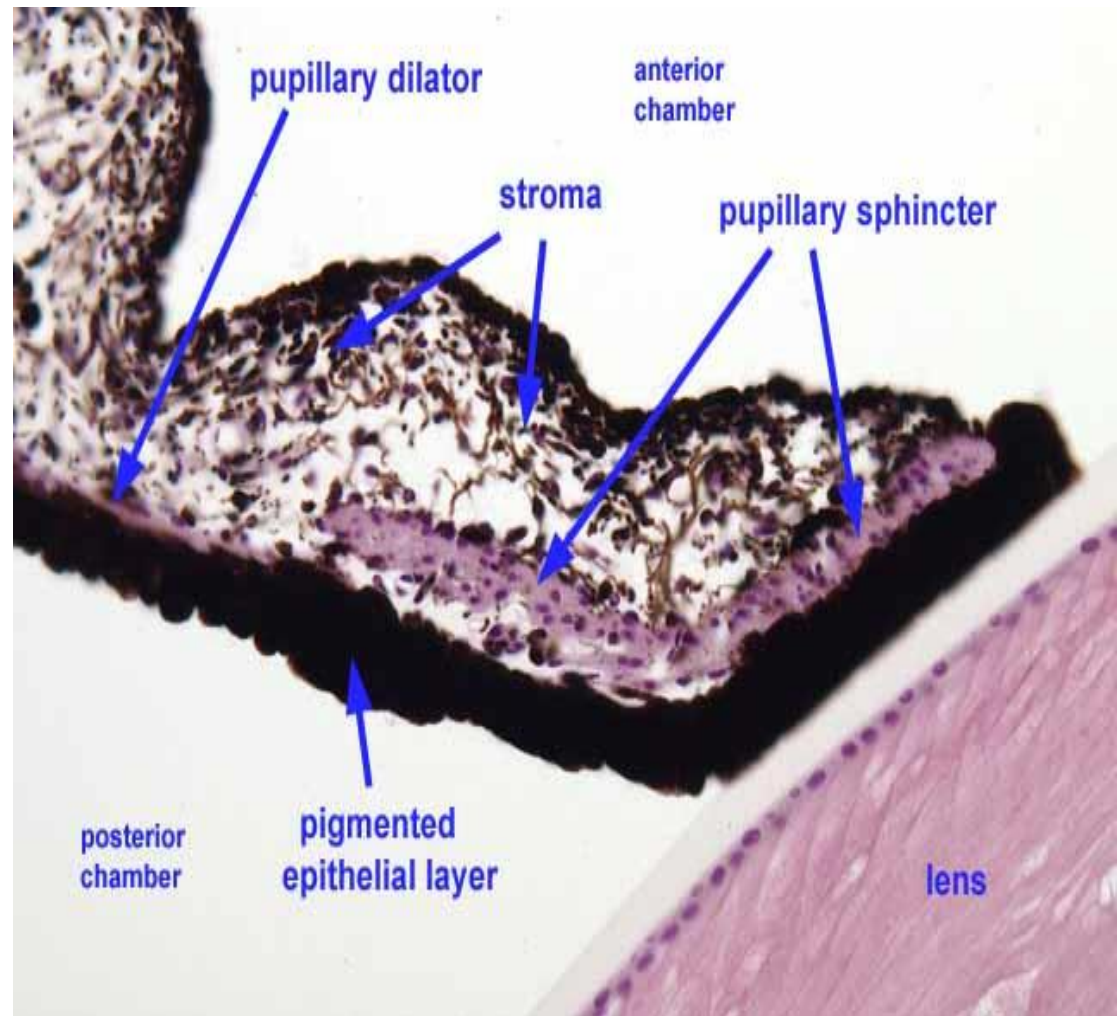
- Have smooth and contain epithium that continuous with ciliary body and process.
- Prevent entering light to interior chamber except at pupil.
- Underline epithelial cell form dilated pupillary muscle along the posterior side of iris



# Iris (conti)

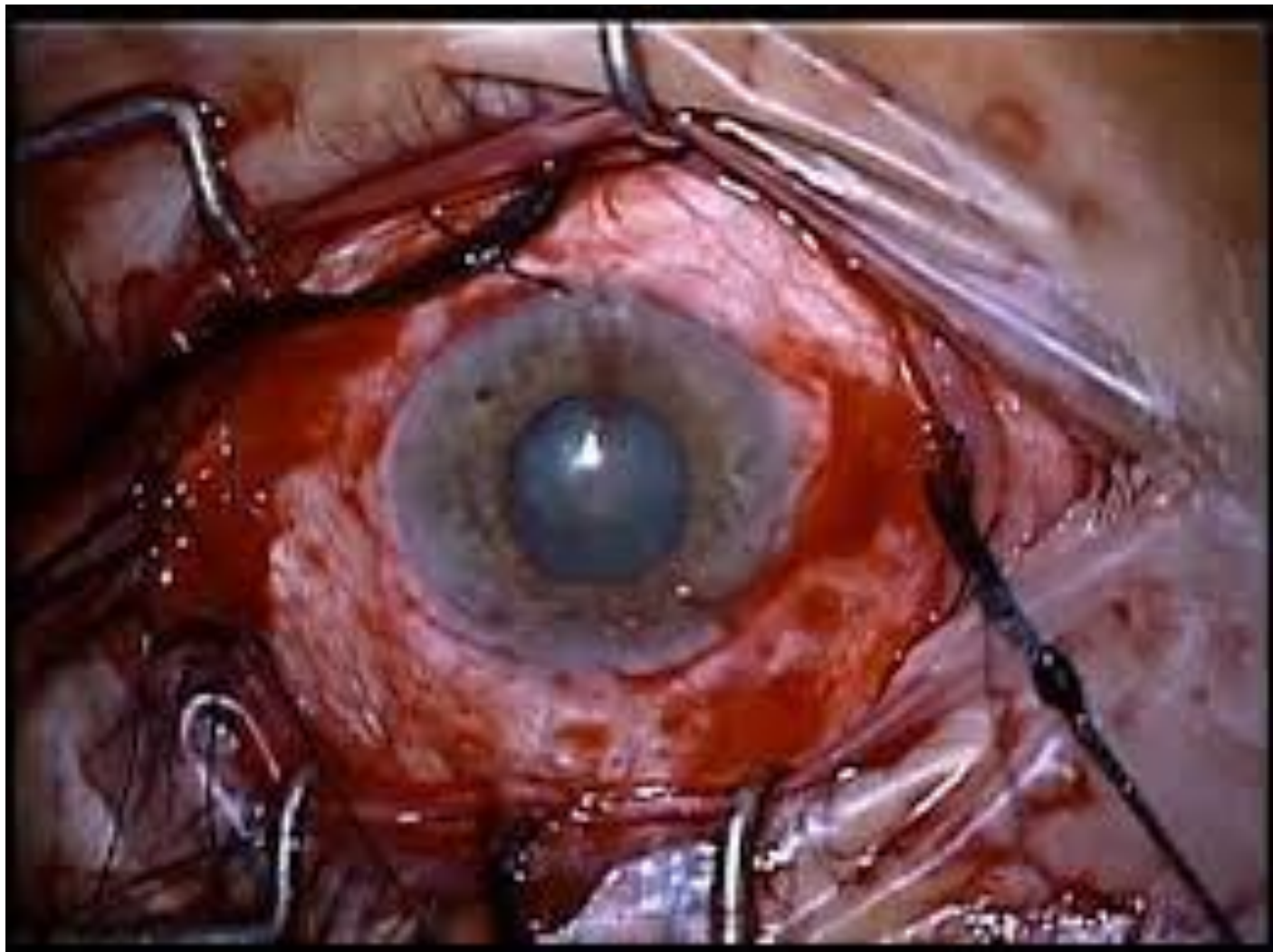
- Melanocytes form color of eye.
- **Albinism** ----no pigment have pink color due to blood vessel of the stroma.
- **Sphincter pupillae muscle**

Form by smooth muscle bundle disposed in circular array near pupillary margin.





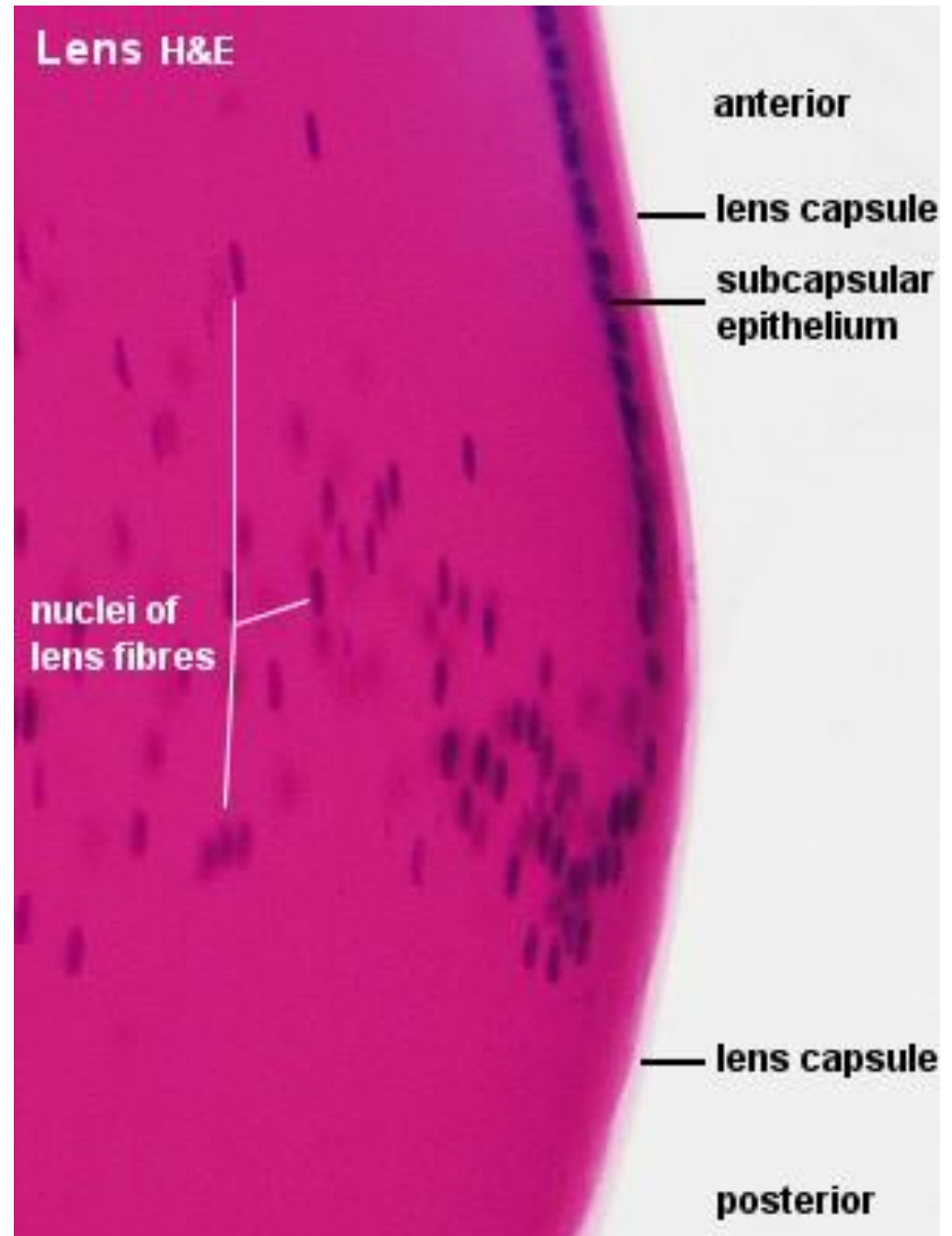




# Lens

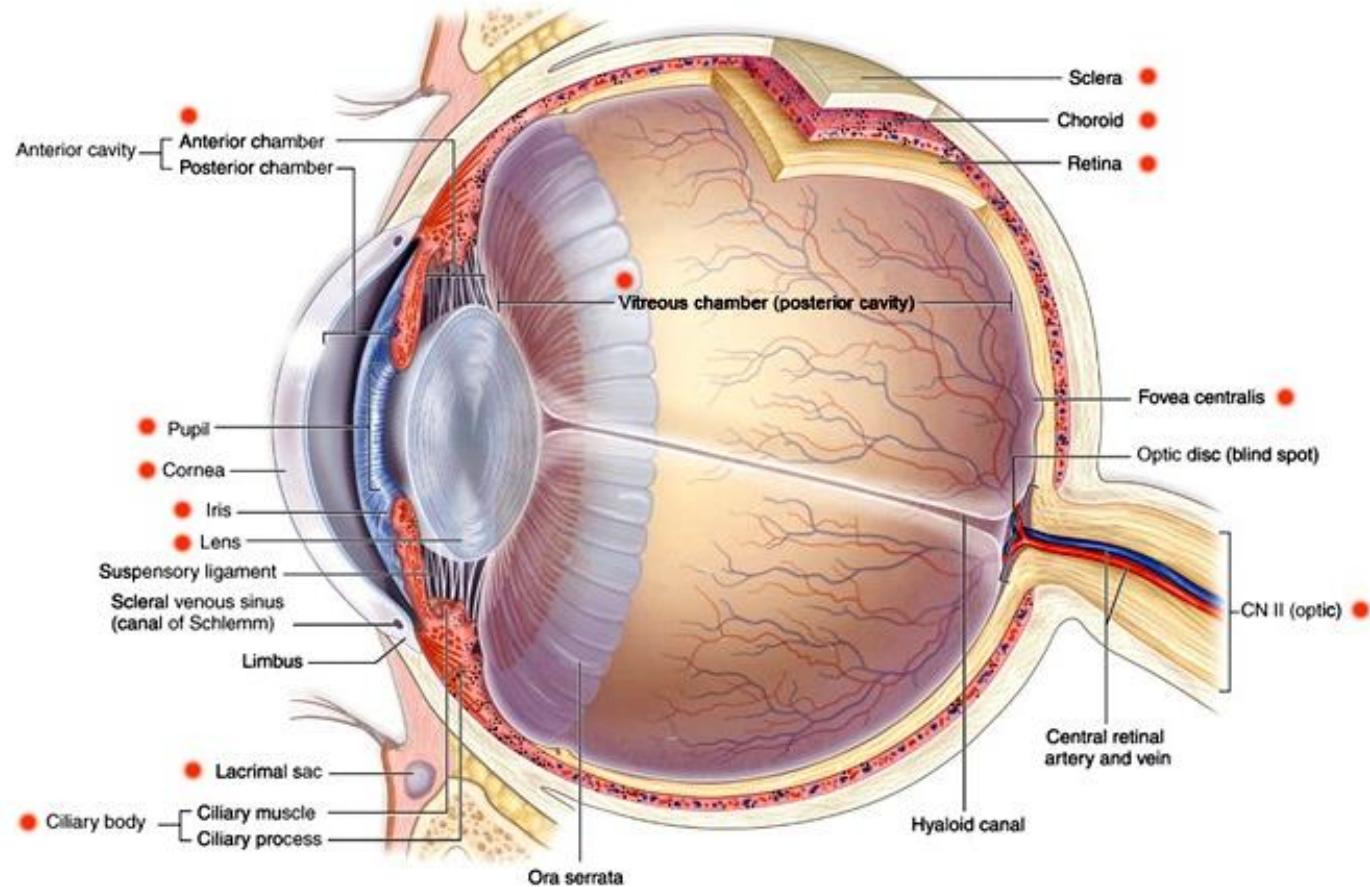
The lens consists of

- lens capsule
- the subcapsular epithelium
- And lens fibres.
- It does not contain blood vessels or nerves.



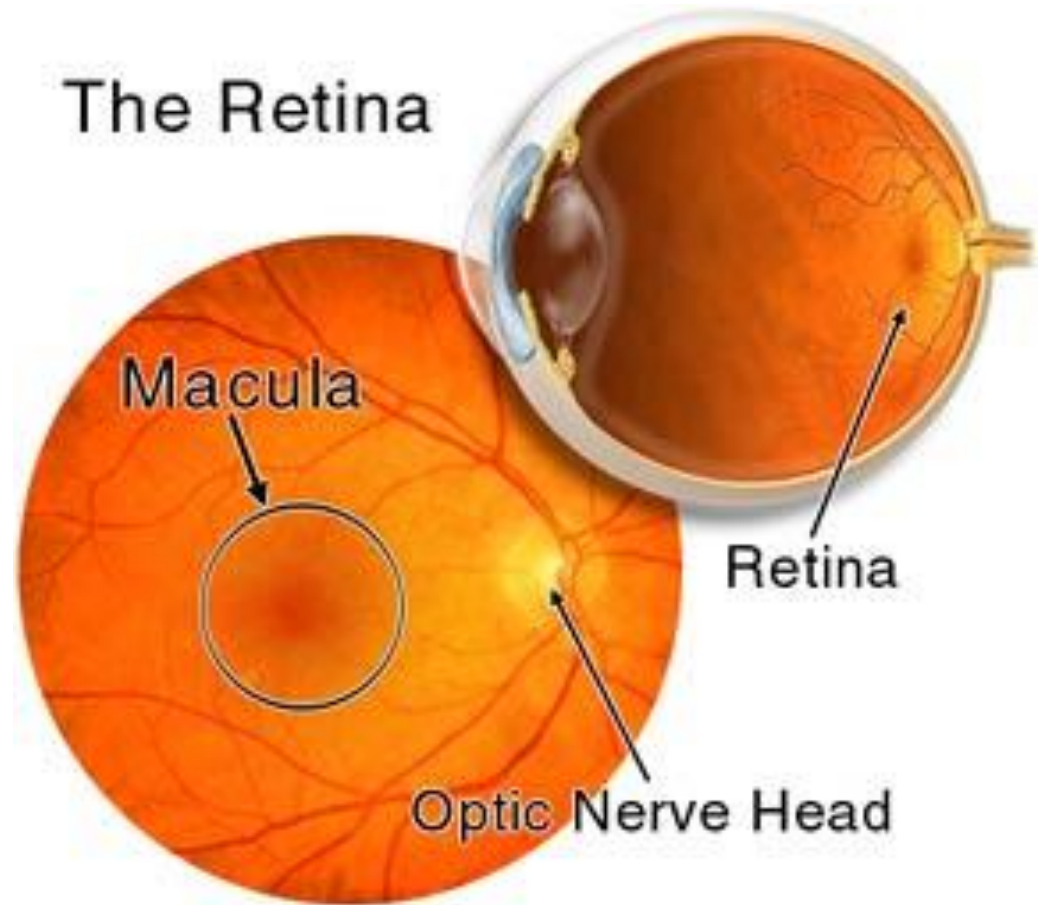
# Ora Serrata

- Sharp ant most boundary of retina.
- Mostly present behind ciliary body
- Forming inner lining of ciliary body
- And posterior part of iris
- It is a non photosensitive portion of retina



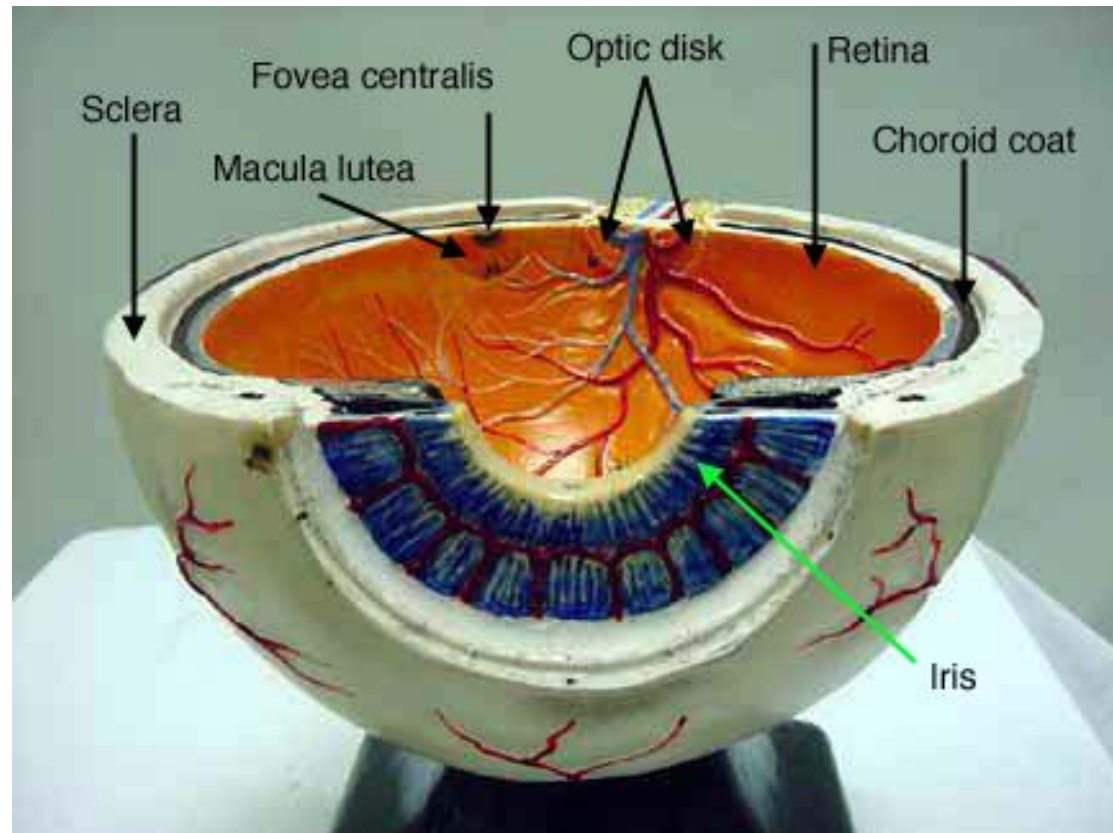
# Macula lutea or Fovea

- Small yellow–pigmented spot.
- With shallow central depression called fovea.
- Rod and blood vessel are absent
- And cone are maximum in concentration.
- Area greatest visual acuity
- Visual axis of the eye passes through the fovea, produce sharpest color discrimination.



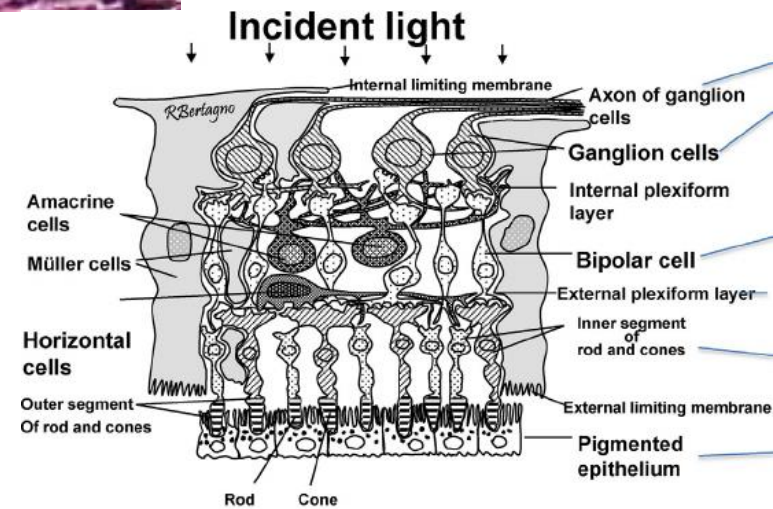
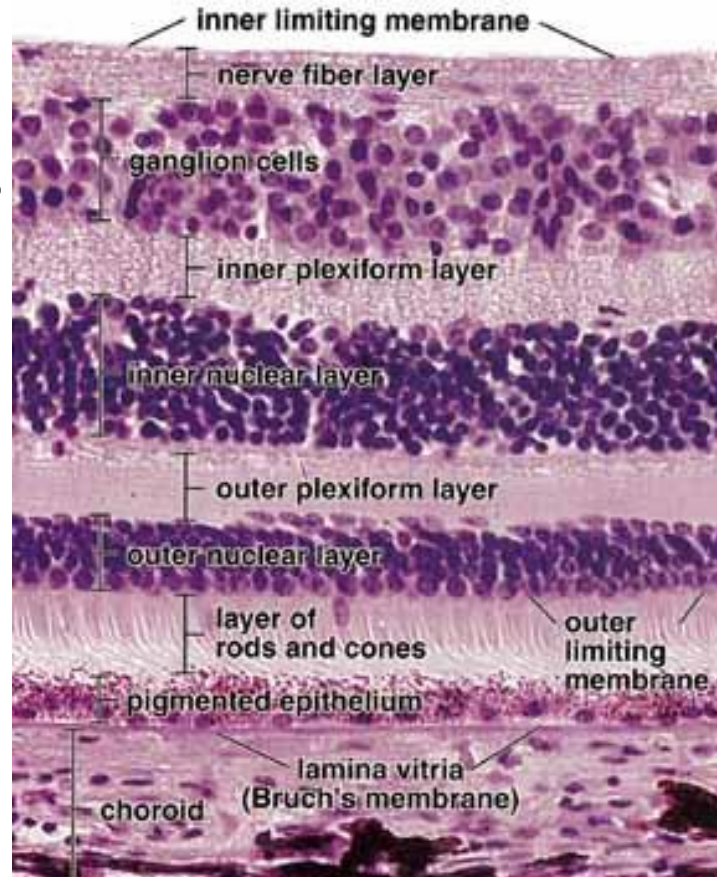
# Optic papilla or Optic disk

- Region where optic nerve leave the eyeball
- Lack the rod and cones called blind spot



# Retinal organization .

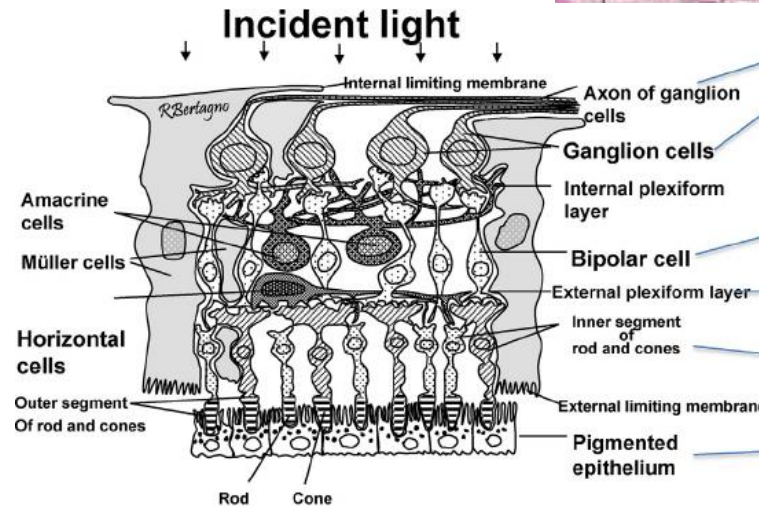
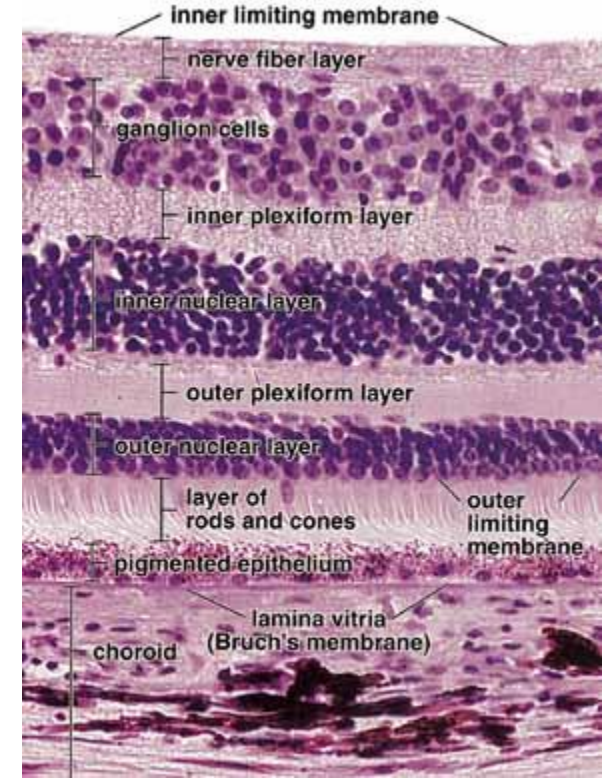
- The retina is made of several cell layers:
- Outermost layer—pigmented epithelium cells
- Basement membrane of P.E.cells forms the inner most layer of glassy (Bruch,s) membrane of choriod.
- The cubiodal P.E. CELLS contain melanin pigments granules in their cytoplasm.



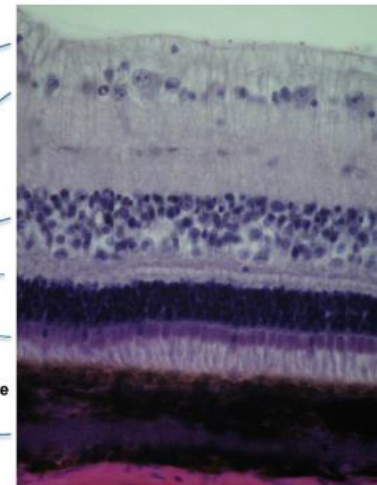
(a)

# Retinal organization

- **Photoreceptor cells** –  
Adjacent to P.E CELLS
- Rods lie along the periphery & cones lie at the B/W it.
- Formed by muller,s cells.(neuroglial cells)
- Situated next to outer limiting membrane.
- **Outer nuclear layer.**  
Contain nuclei of rod and cones and outer process of Muller,s cells.



(a)



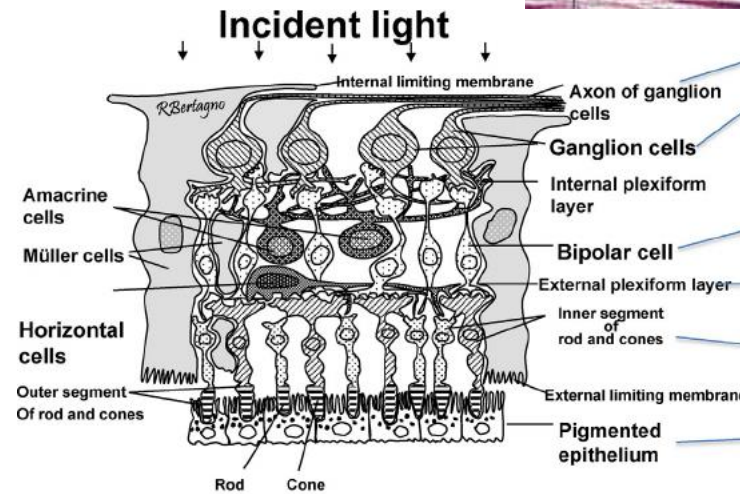
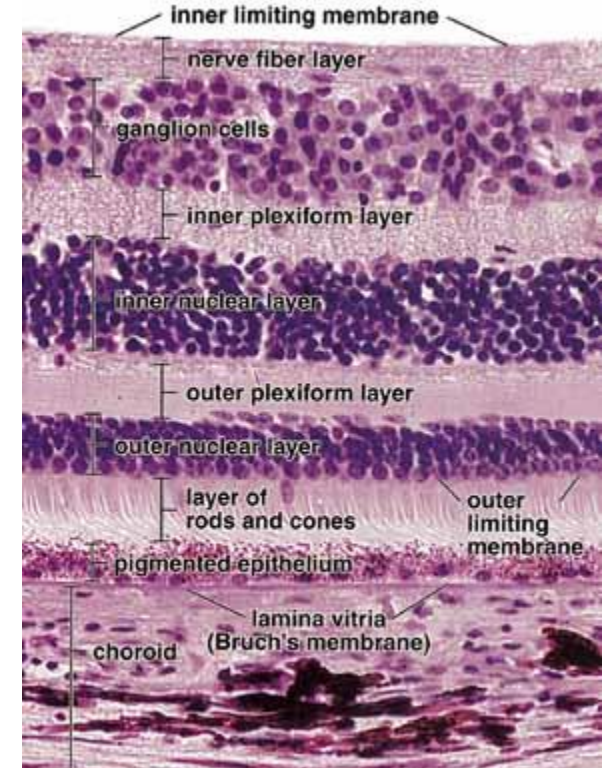
(b)



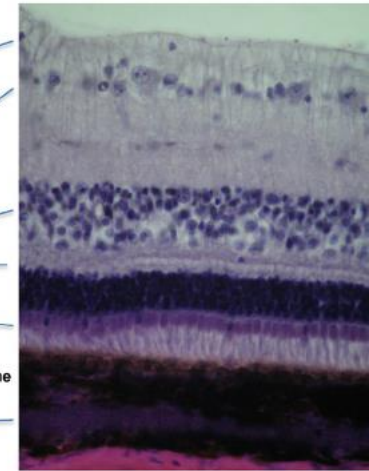
# Retinal organization

## Outer plexiform layer:

- ❖ Contain axon of rod and cone
- ❖ That synapse with the dendrites of bipolar cells and horizontal cells
- ❖ That connect the rod and cones to ganglion cell layer



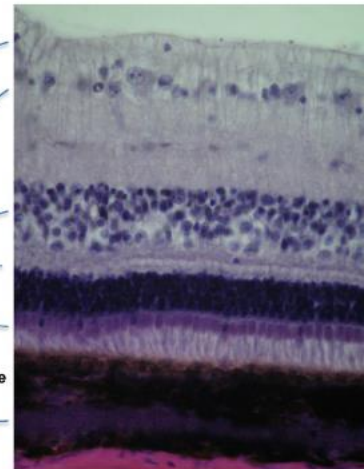
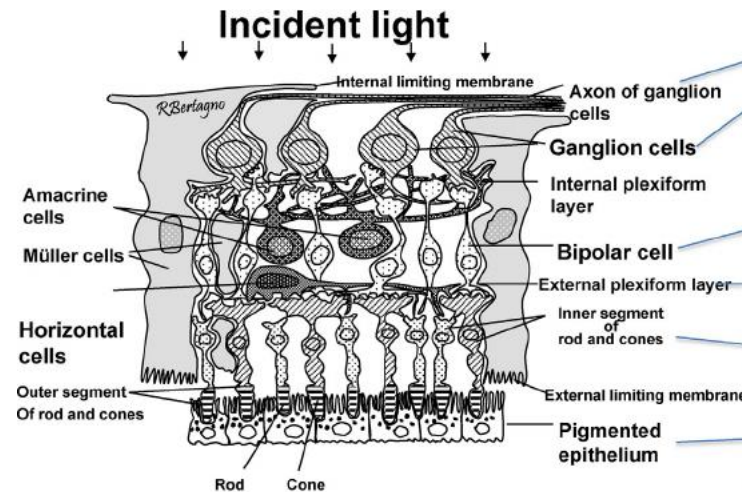
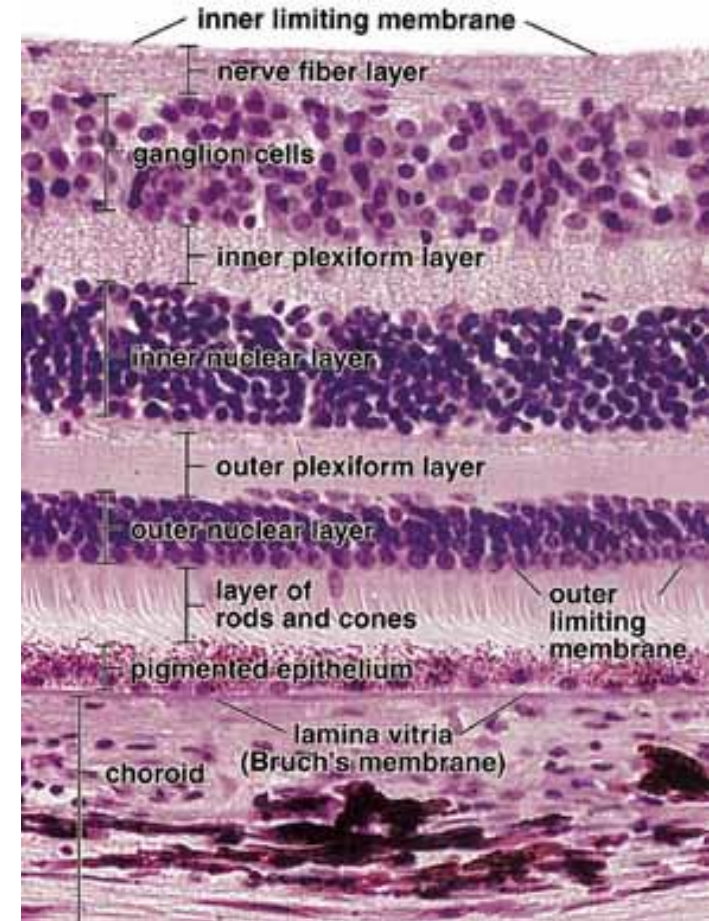
(a)



(b)

# Retinal organization

- **Inner nuclear layer:**  
Contain nuclei of bipolar, horizontal, amacrine and Müller cells.
- **Inner plexiform layer:**  
Contain axon of bipolar cells and amacrine cells. synapses with the dendrites of the ganglion



# Retinal organization

- **Ganglion cell layer:**

Have the cell bodies of ganglion cells and neuroglial cells.

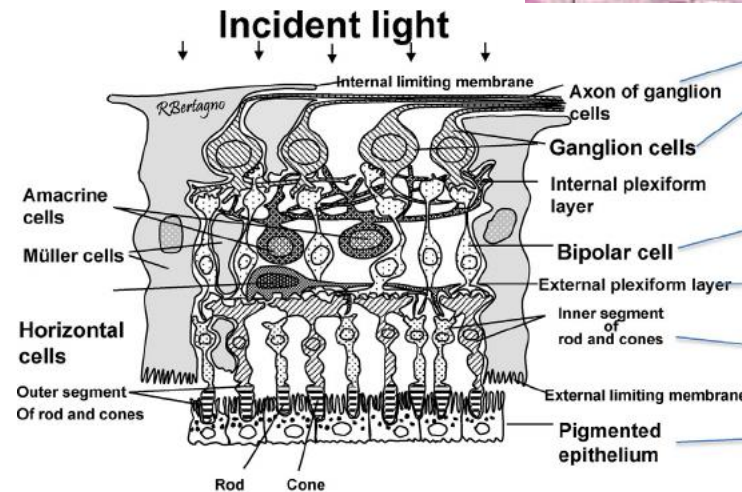
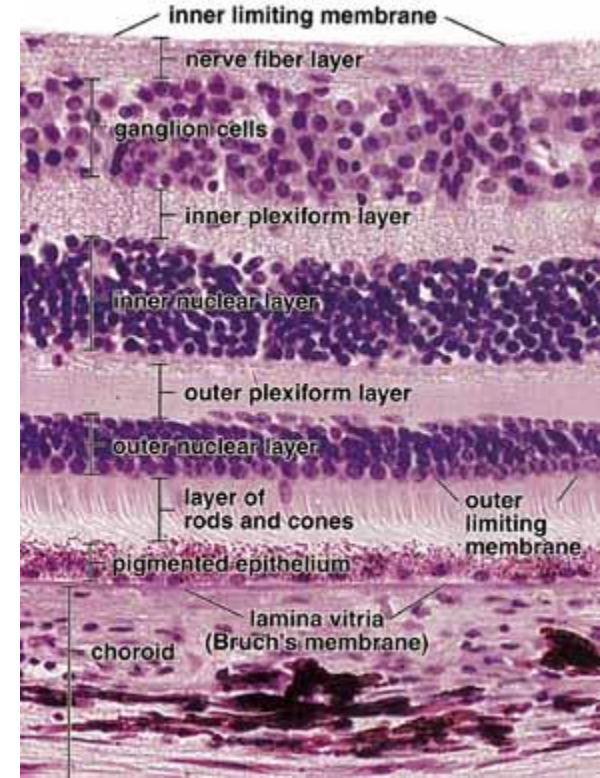
Dendrites from ganglion cell synapses in the inner plexiform layer.

- **Optic neve formation:**

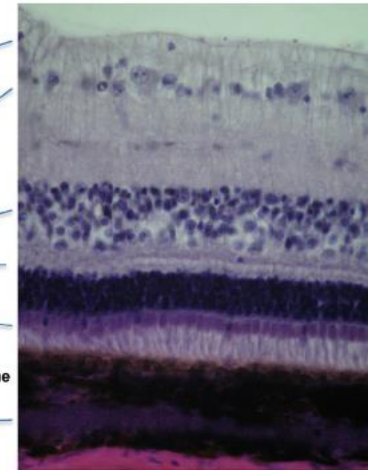
The axons of the ganglion cells form the optic nerve and also contain inner fiber of muller ,s cells.

- **Inner limiting membrane:**

Inner fiber of muller,s cells expand to form inner limiting membrane .



(a)



(b)

# Retinal Detachment

- Describes an emergency situation
- In which a thin layer of tissue (the retina) at the back of the eye pulls away from its normal position.
- Retinal detachment separates the retinal cells from the layer of blood vessels that provides oxygen and nourishment.
- The longer retinal detachment goes untreated, the greater your risk of permanent vision loss in the affected eye.



# Symptom

## Retinal detachment

- Itself is painless.
- But warning signs almost always appear before it occurs or has advanced, such as:
- The sudden appearance of many floaters — tiny specks that seem to drift through your field of vision
- Flashes of light in one or both eyes
- Blurred vision
- Gradually reduced side (peripheral) vision
- A curtain-like shadow over your visual field

# How Retinal Detachment Occurs

- when the gel-like material (vitreous) leaks through a retinal hole or tear and collects underneath the retina.
- Aging or retinal disorders can cause the retina to thin.
- Fluid inside the vitreous then finds its way through the tear and collects under the retina, peeling it away from the underlying tissues.
- The areas where the retina is detached lose this blood supply and stop working, so you lose vision.



Retinal detachment

A fundus photograph of the retina showing a large, pale, elevated area of retinal detachment. The detached portion is on the left side of the image, while the attached retina on the right shows a normal vascular network. The optic disc is visible in the center, and the overall color of the retina is a healthy orange-red.

Thank you