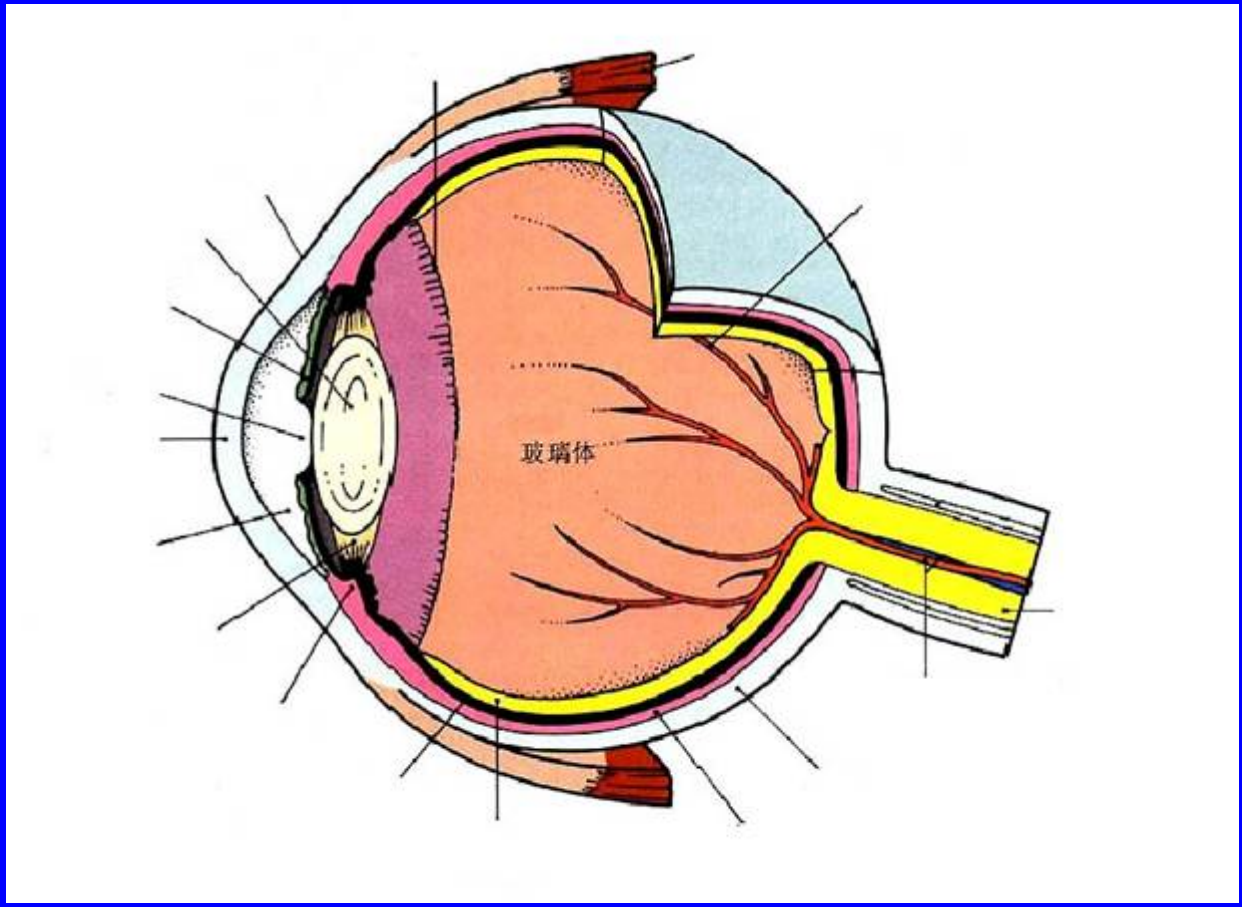
EYE AND EAR

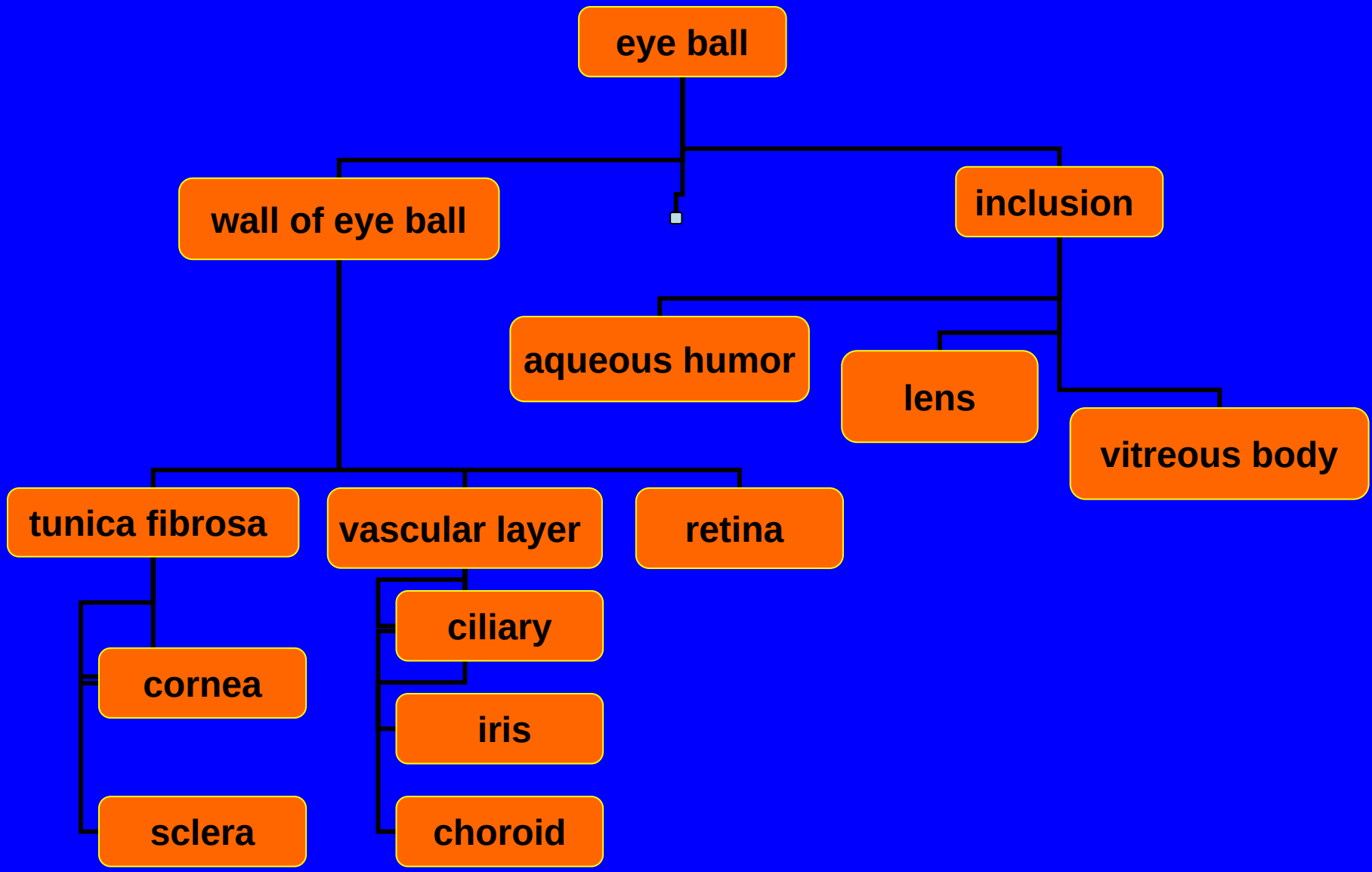
1. Eye

- **Including eye balls and accessory structure of the eye**

  eye balls consist of wall of eye balls and inclusion



wall of eye balls


eye ball
wall of eye ball
inclusion
aqueous humor
lens
vitreous body
tunica fibrosa
vascular layer
retina
ciliary
cornea
iris
sclera
choroid

wall of eye balls

1. cornea

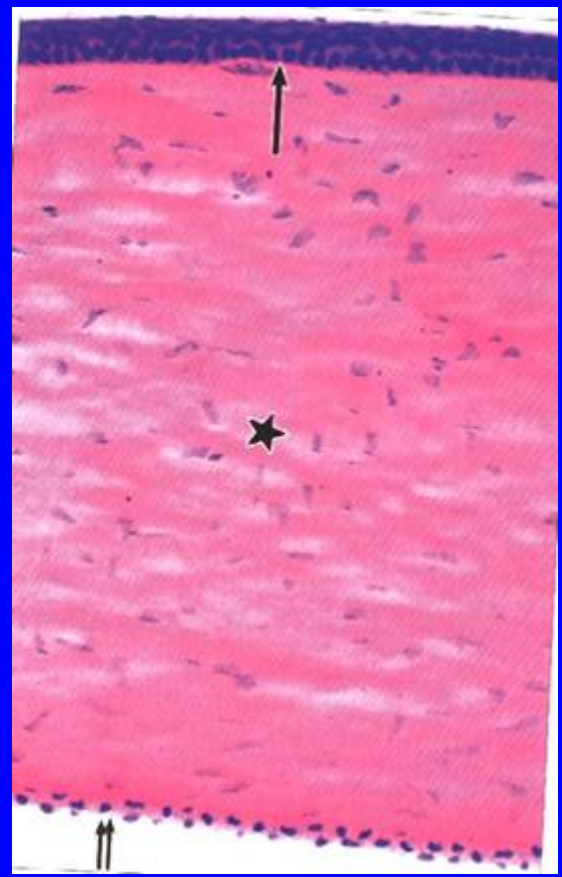
(1) corneal epithelium:

(2) anterior limiting lamina:

(3) corneal stroma:

(4) posterior limiting lamina：

(5) corneal endothelium：



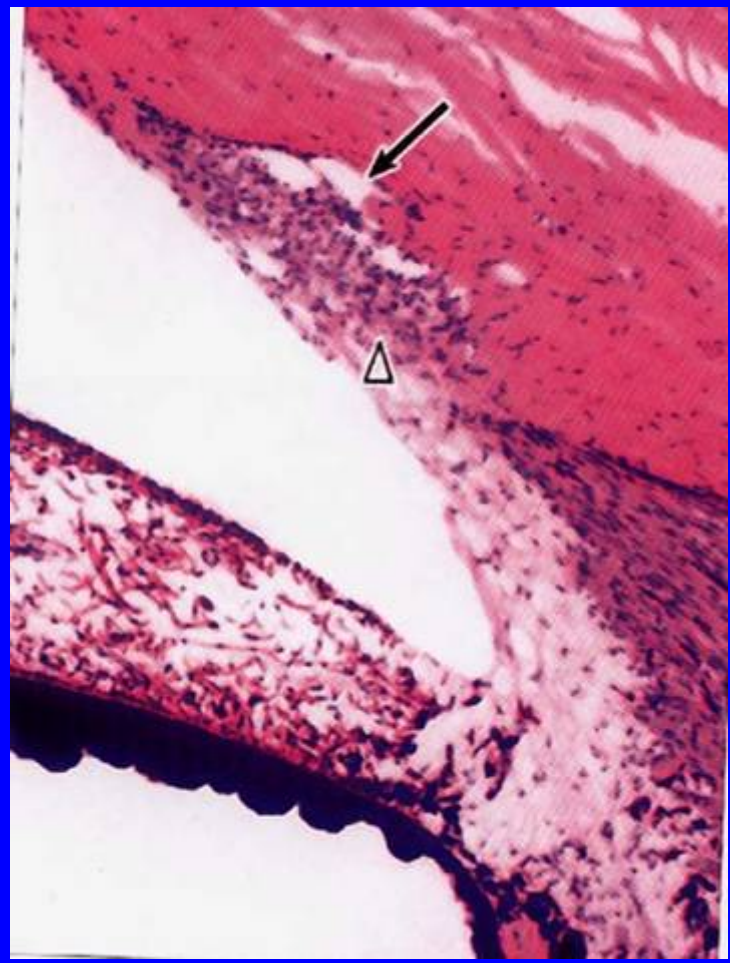
2. Sclera Dense connective tissue

Corneal limbus

Sinus venosus

Trabecular meshwork

Scleral spur



3. Iris

pupil

Iris is mainly composed of loose connective tissue with abundant vessel and pigmental cells

（1）anterior border layer：

（2）iris stroma：

（3）iris epithelium：

①anterior epithelium

sphincter pupillae muscle，

dilator pupillae muscle

②posterior：

4. ciliary body

- Cilliary processes
- ciliary zonule

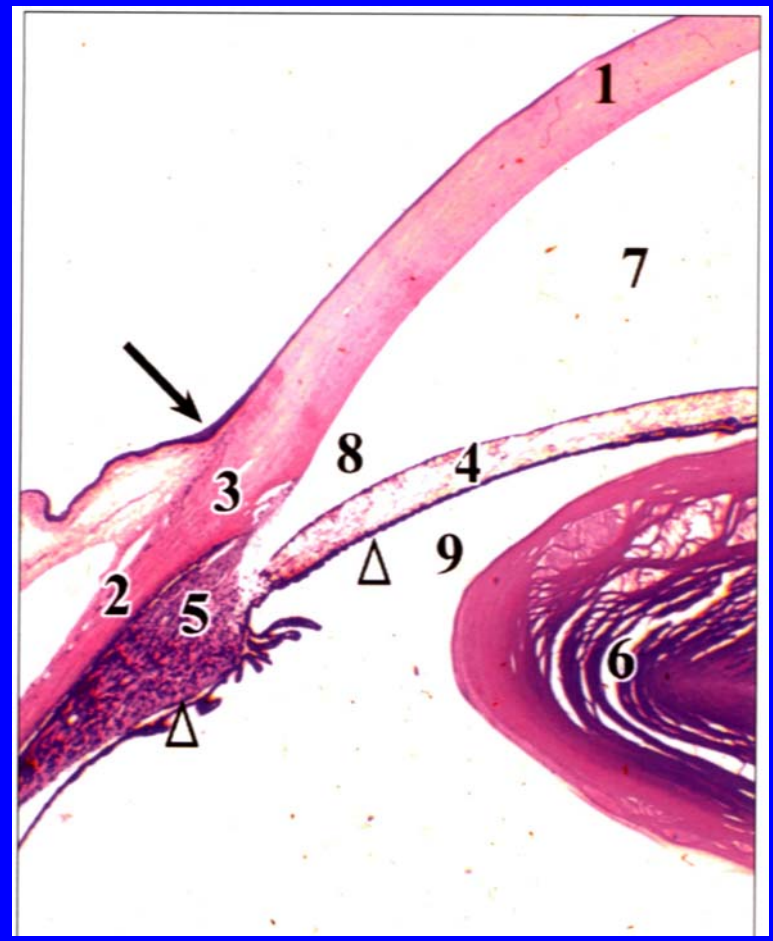
（1）ciliary muscle：

（2）ciliary stroma：

（3）ciliary body epithelium:

internal sublayer

external sublayer



5. choroid

loose connective tissue with abundant blood vessel and pigment cells

6. retina: high differentiation nervous tissue

4 layers of cells:

(1) Pigment epithelium

(2) Visual cells

(3) Bipolar cells

(4) Ganglion cells

Interneuron and glial cells

（1）pigment epithelium：

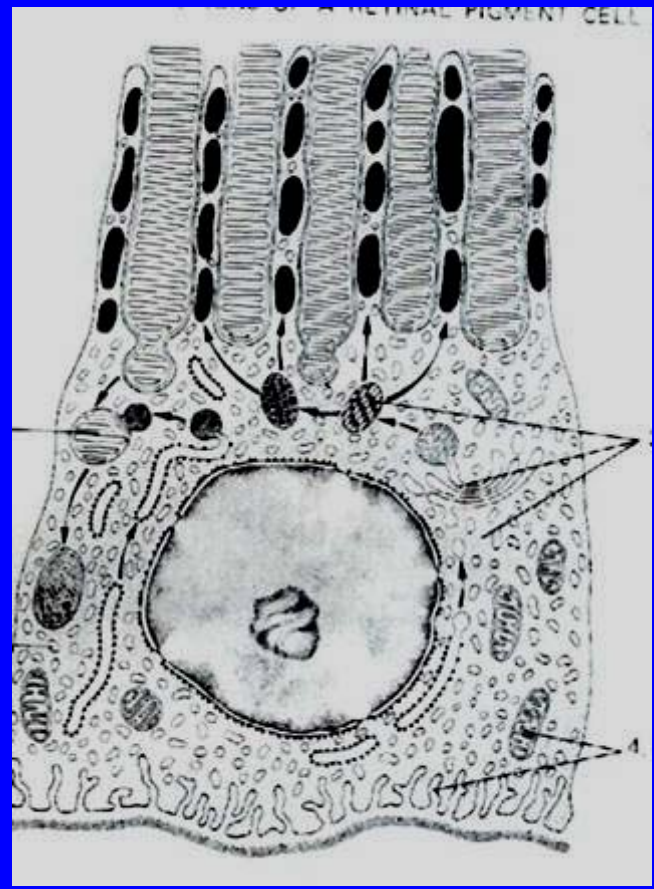
LM:

EM:

function：

（2）visual cell：

bipolar neuron，the rod and the cones, inner segment and outer segment



rod cells:

EM: inner segment: mitochondia, RER, Golgi complex and microtubules

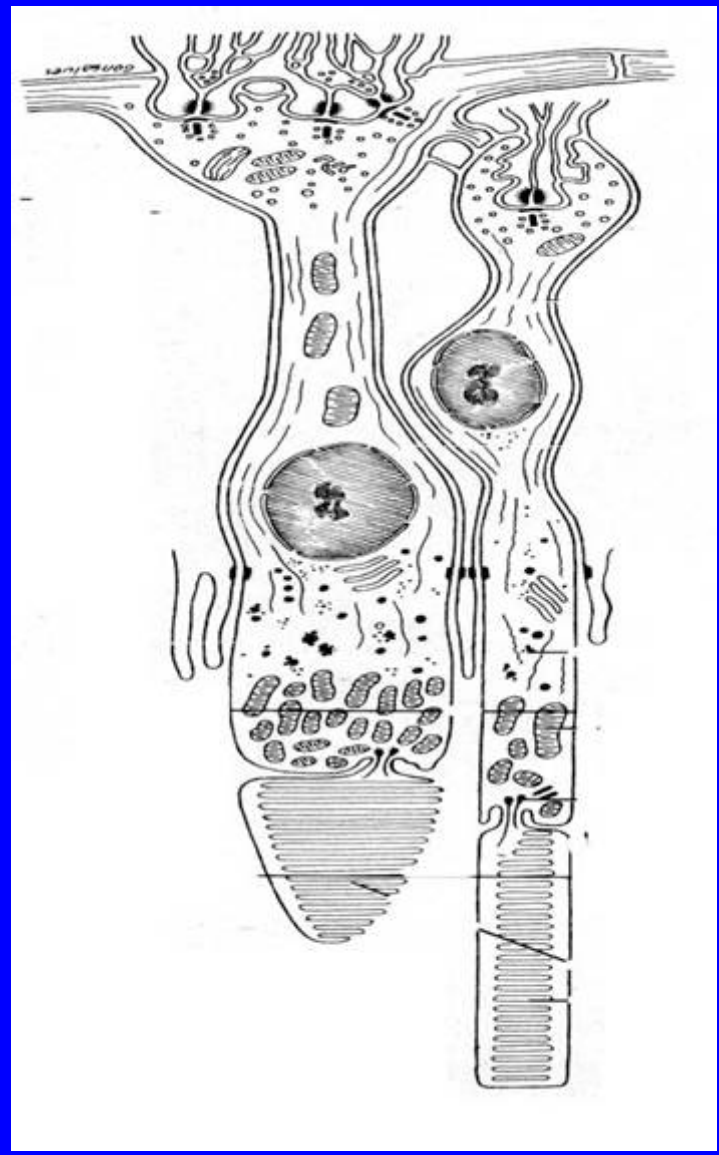
outer segment:

membranous disk

rhodopsin (11-cisretinal and opsin) Vitamine A

cone cells：

membranous disk, three kinds of cone cells, visual pigment (iodopsin)



（3）bipolar cells：

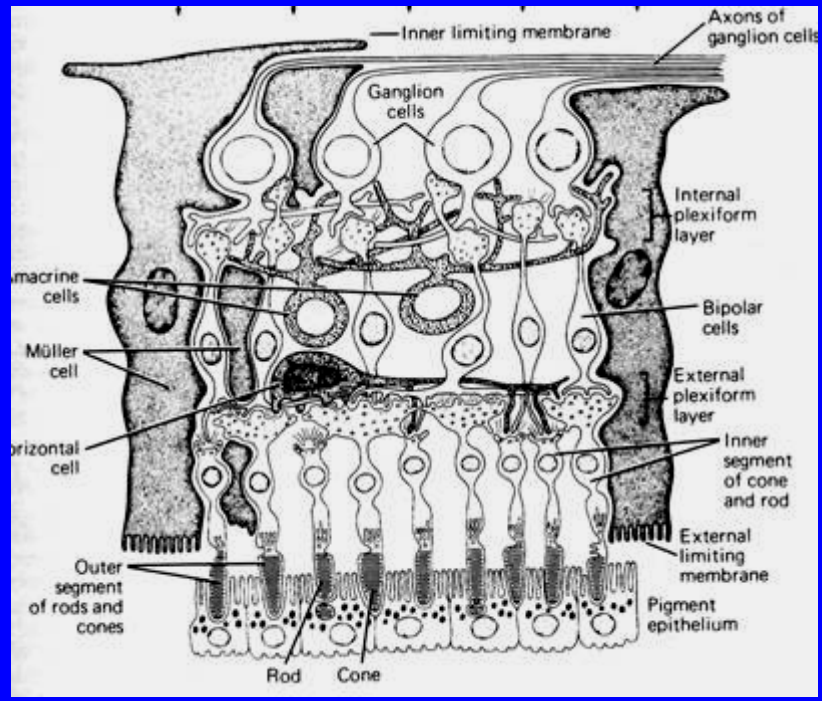
（4）ganglion cells： multipolar neuron with long axon forming optic nerve

（5）horizontal cells，amacrine cells and interplexiform cells

(6) radial neuroglia cells

so called Müller cells：

The processes form internal and external limiting membrane



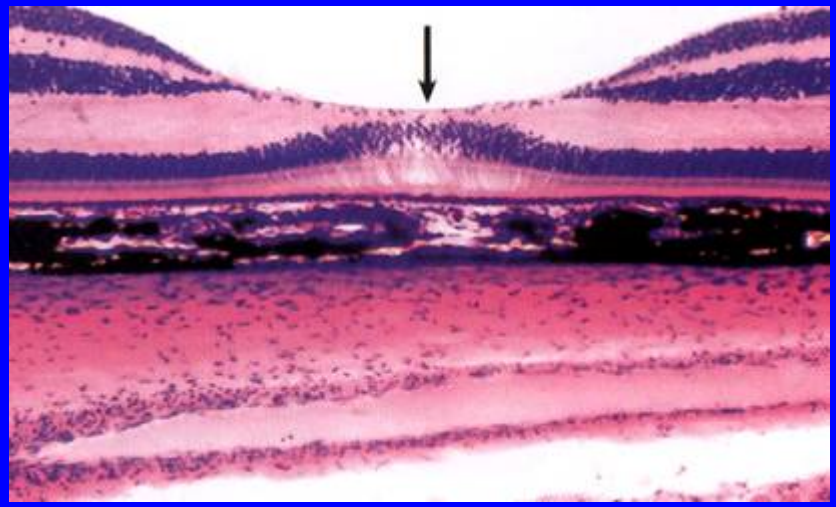
INCLUSION OF EYE BALL

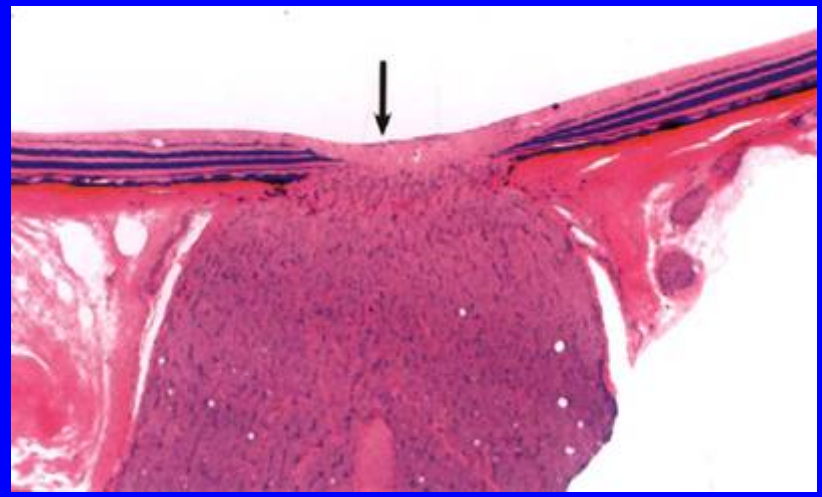
1. lens:
   Lens capsule：
   Lens epithelium:
   Lens fiber：
2. vitreous body:
3. aqueous humor:
   circulation of aqueous humor

（7） macula lutea and papilla of optic nerve

macula lutea: central fovea, no the rod cells (visual center)

Papilla of optic nerve:





Accessory Structure of The Eye

1. eyelid
   （1）skin
   （2）subskin tissue
   （3）musicularis
   （4）tarsus：tarsal glands
   （5）conjunctiva

EAR

1. External ear :

auricle, external auditory meatus and tympanic membrane

2. Middle ear:

tympanic cavity、pharyngotympanic tube

3. Internal ear:

(1) osseous labyrinth

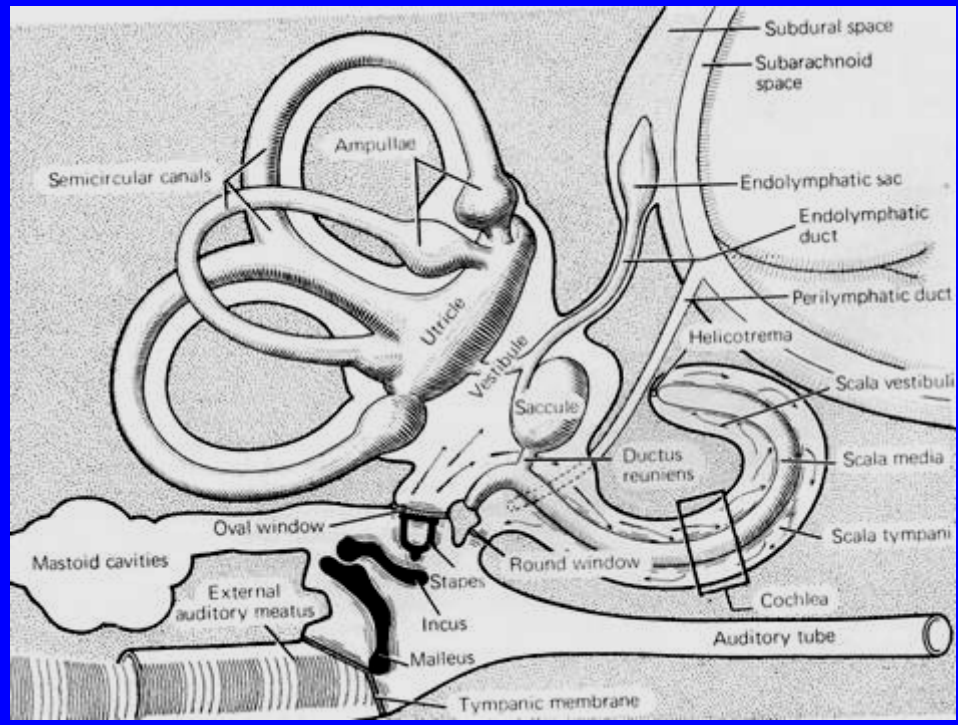
osteosemicircular canals

vestibule

Cochlea

oval window

Round window

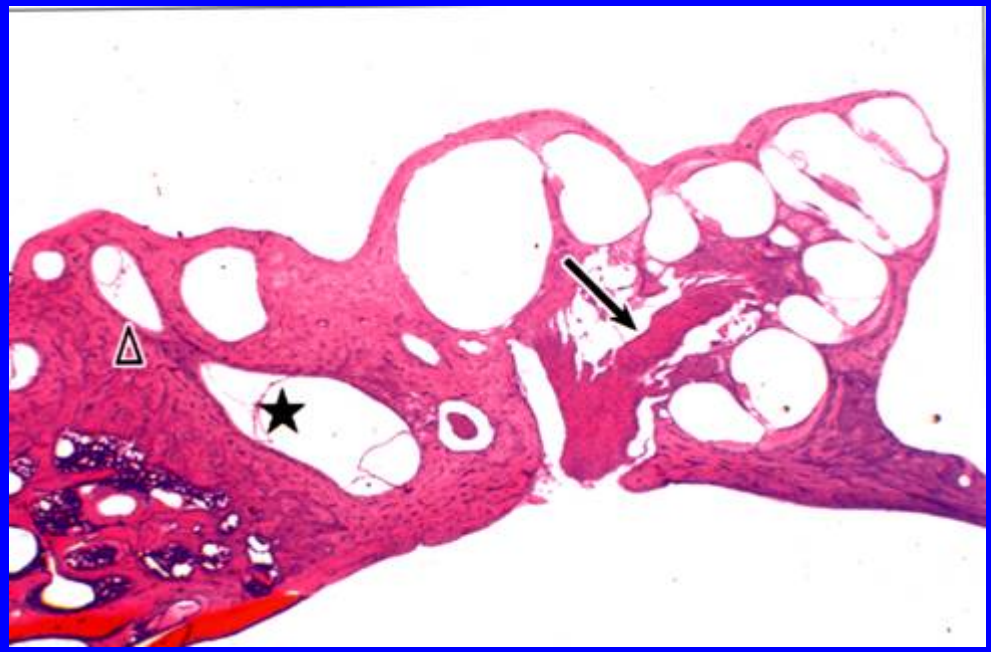


cochlea：cochlea axis osseous spiral lamina scala vestibuli，tympanic scala，cochlea pore

(2) membranous labyrinth

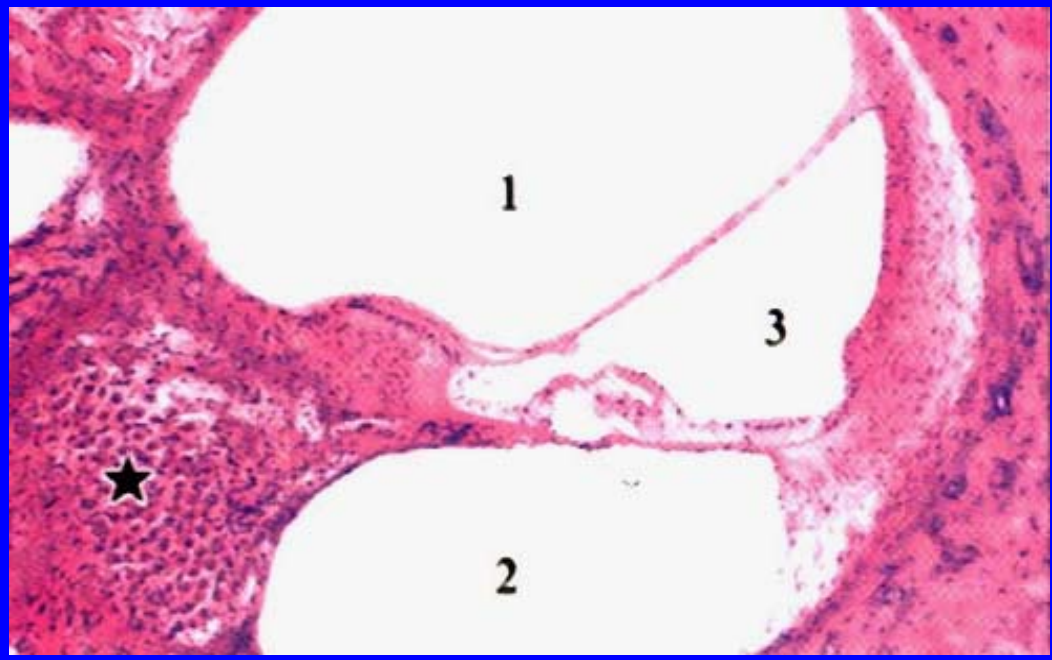
A. membranous semicircular canal

B. sacculi and utriculi



C. Membranous cochlea

three walls，vestibular membrane，stria vascularis，spiral ligament，osseous piral lamina and membranous piral lamina，spiral limbus，spiral organ (Corti organ)



（1）crista ampullaris

Supporting cells： cupula

Hair cells：

function：

Lamina propia：

（2）macula utriculi and macula sacculi

macula acustica，

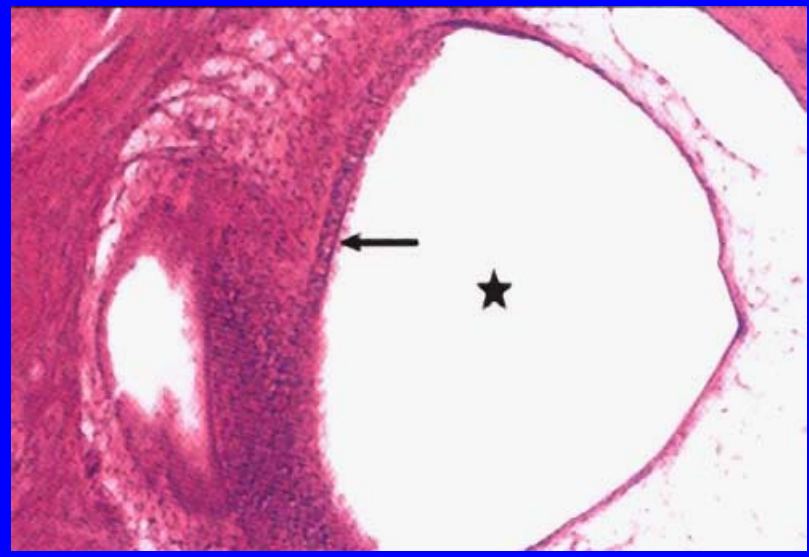
supportint cells:

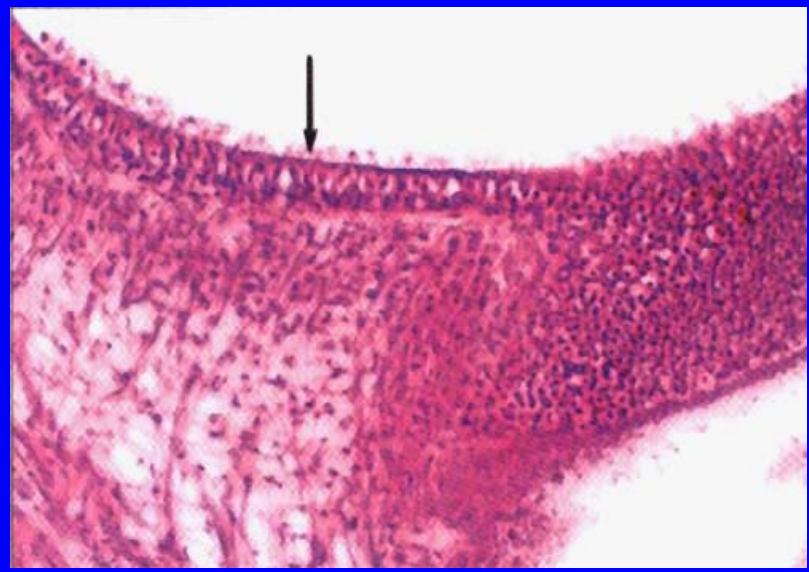
hair cells:

otolithic membrane:

membrane statoconium （CaCO3 crystal)

Function:





（3）spiral organ:

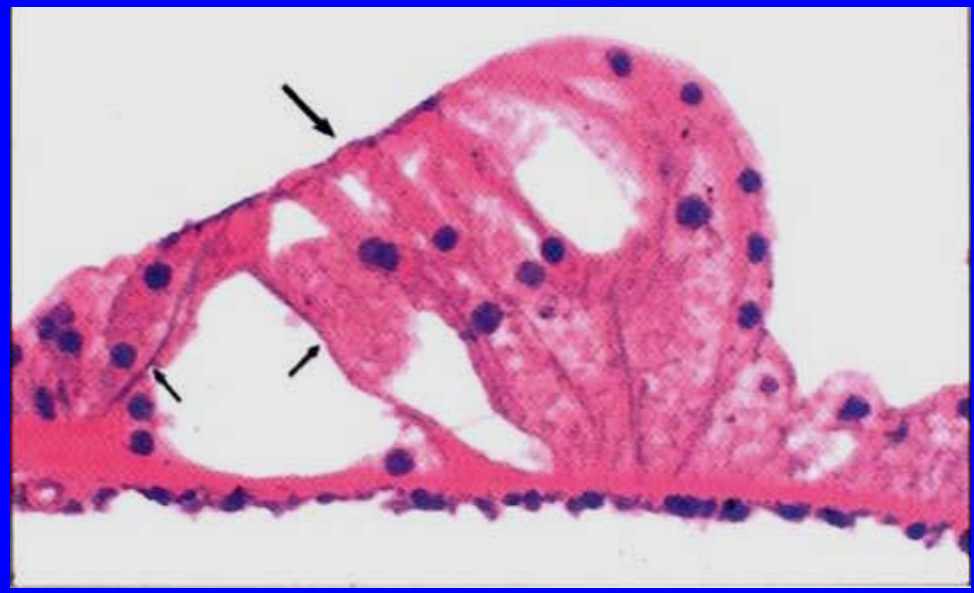
so called Corti organ：

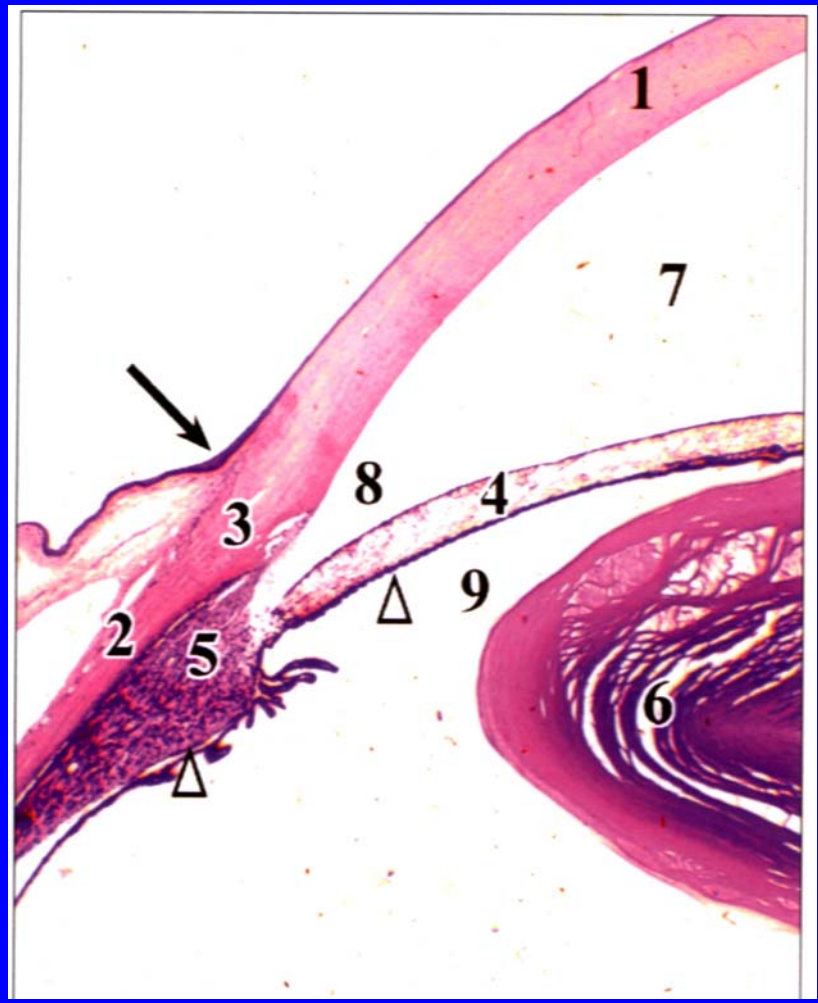
- Supporting cells：
- Pilar cells（internal , external pilar cells): inner tunnel
- Phalahgeal cells（internal, external phalahgeal cells)
- Hair cells (internal , external hair cells):

tectorial membrane,

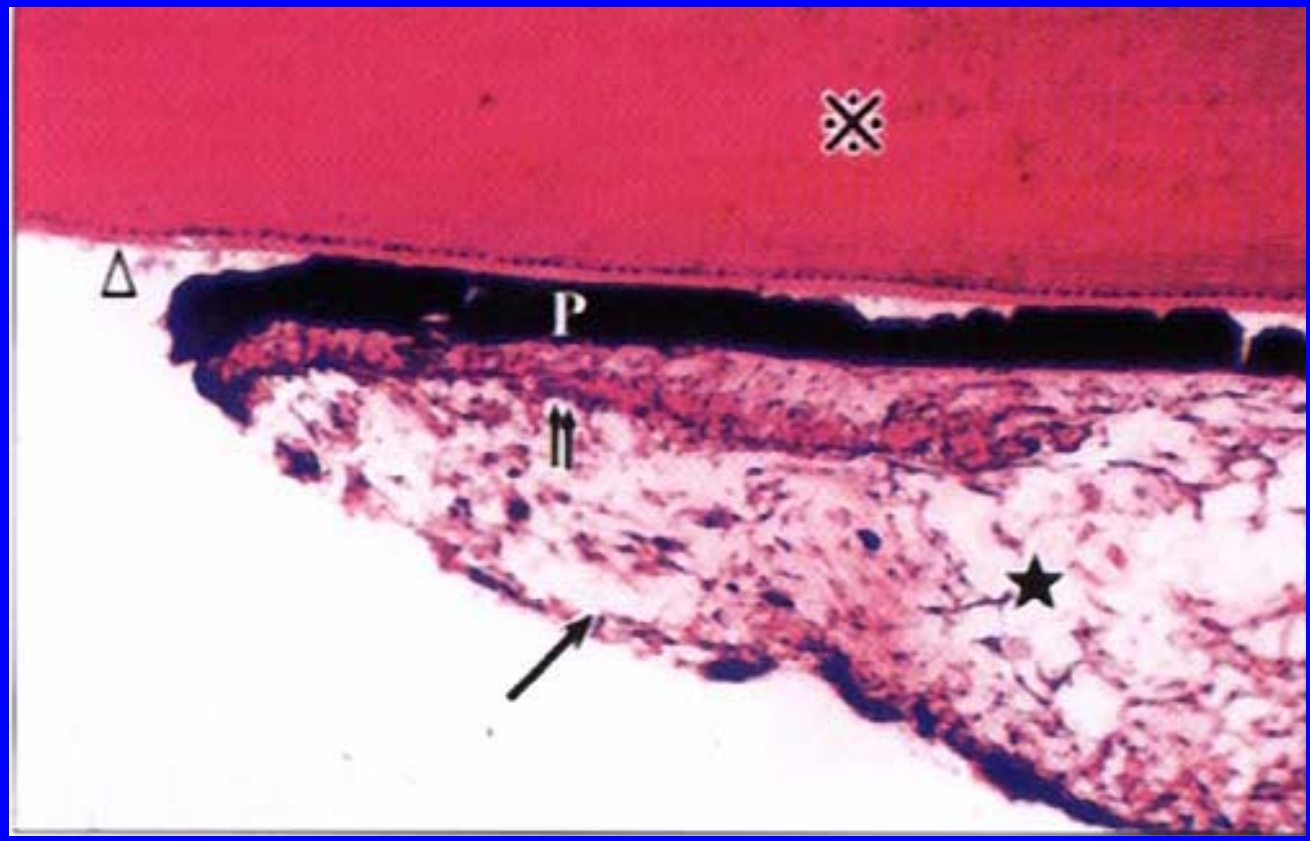
auditory string

- Spiral ganglion
- Pathway of sound
- wave transport：

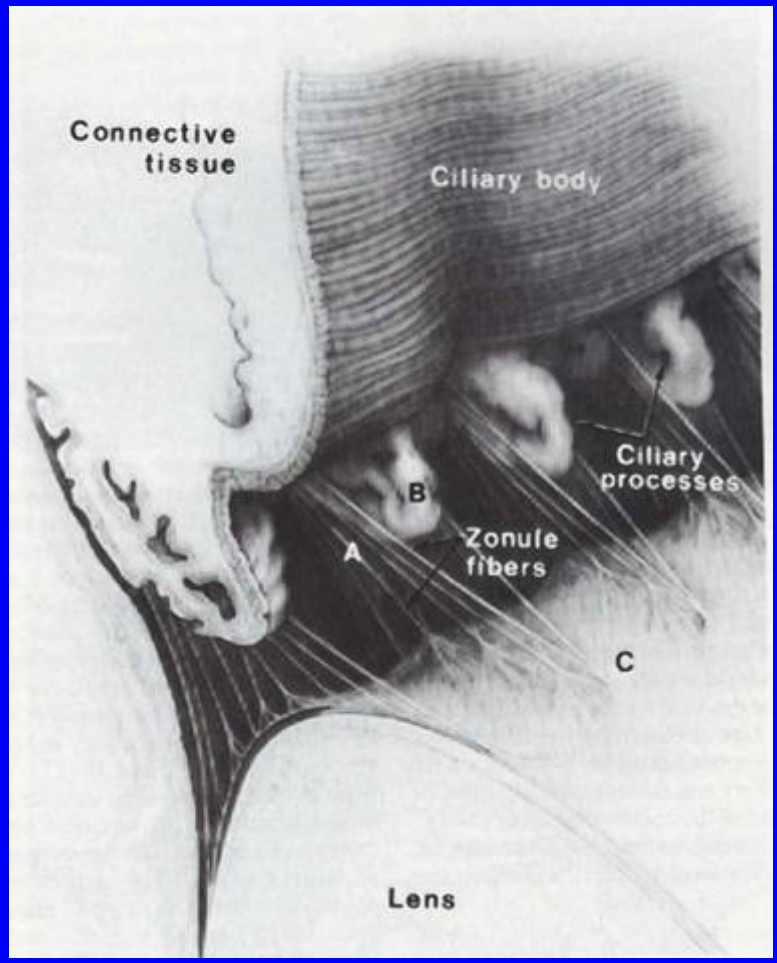




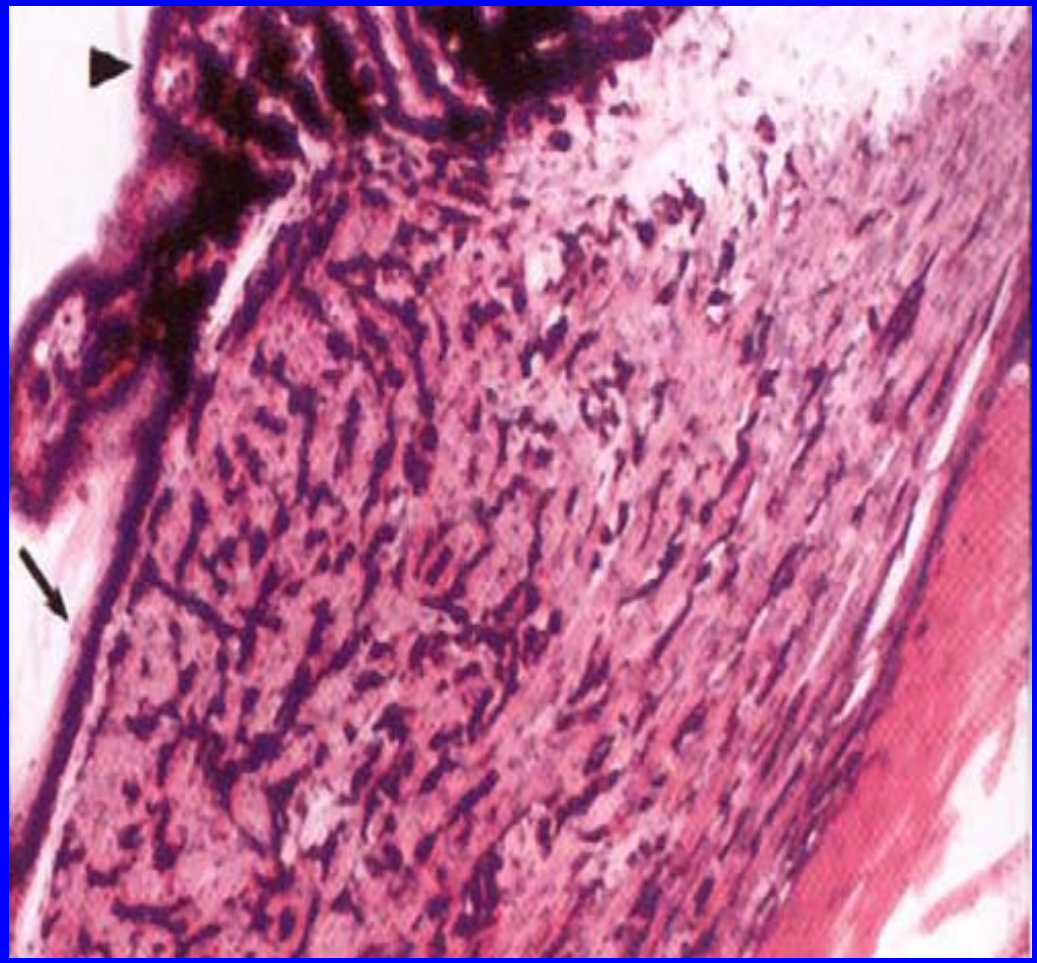
corneal limbus



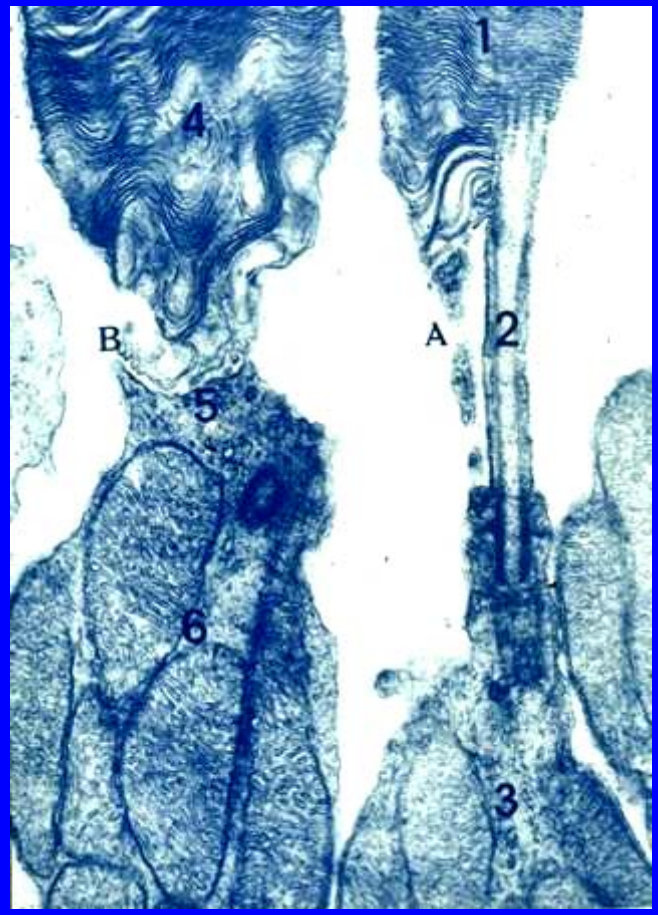
Iris in HE

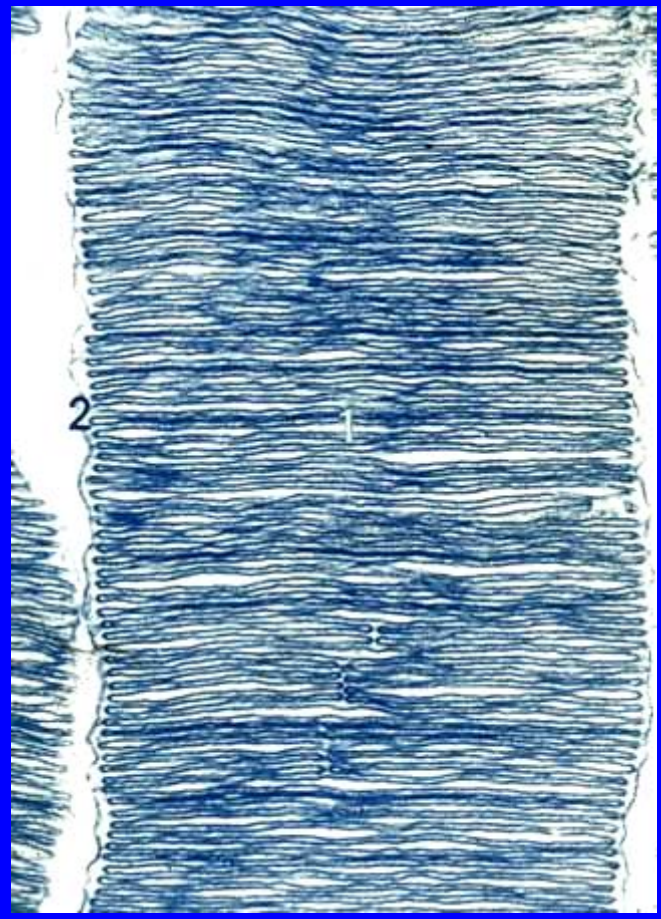


cilliary body

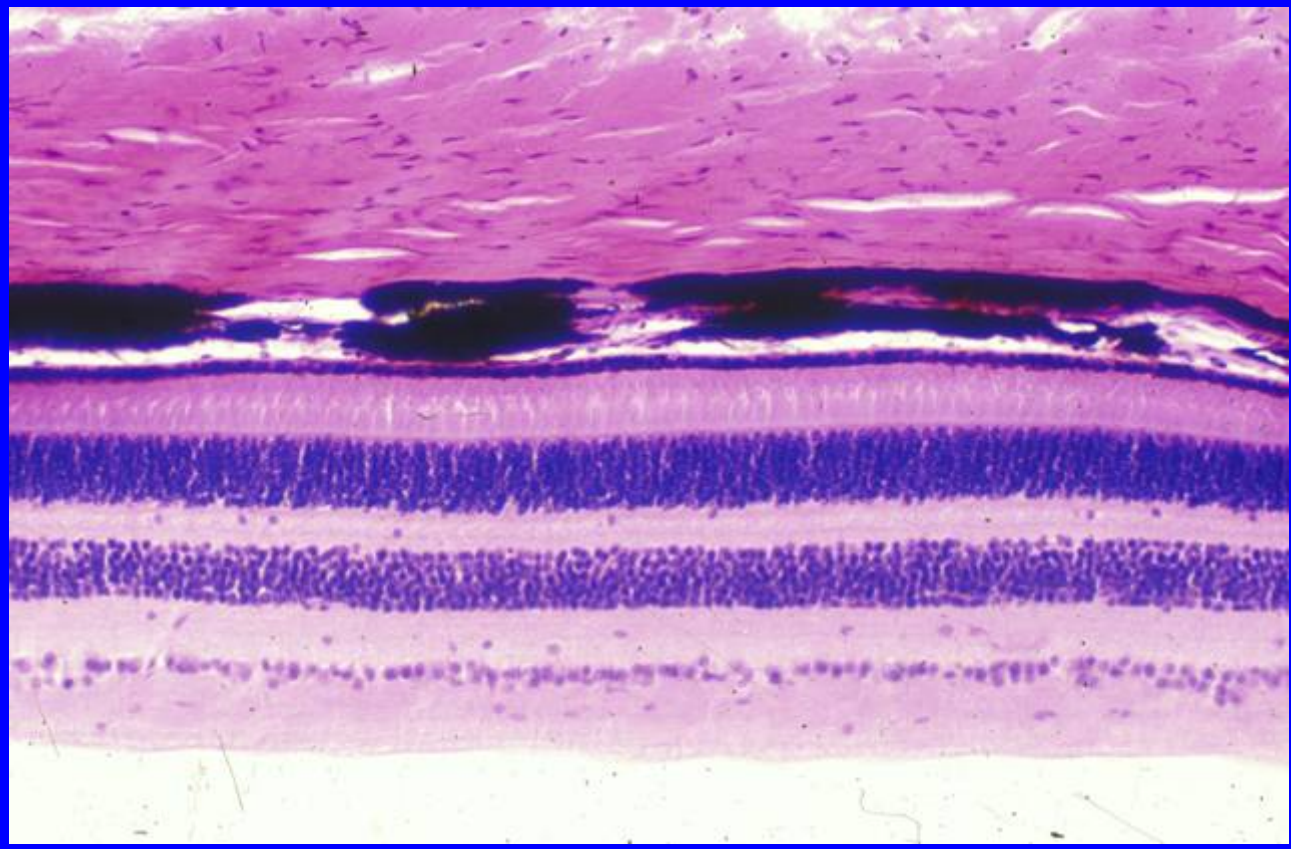


ciliary body in LM

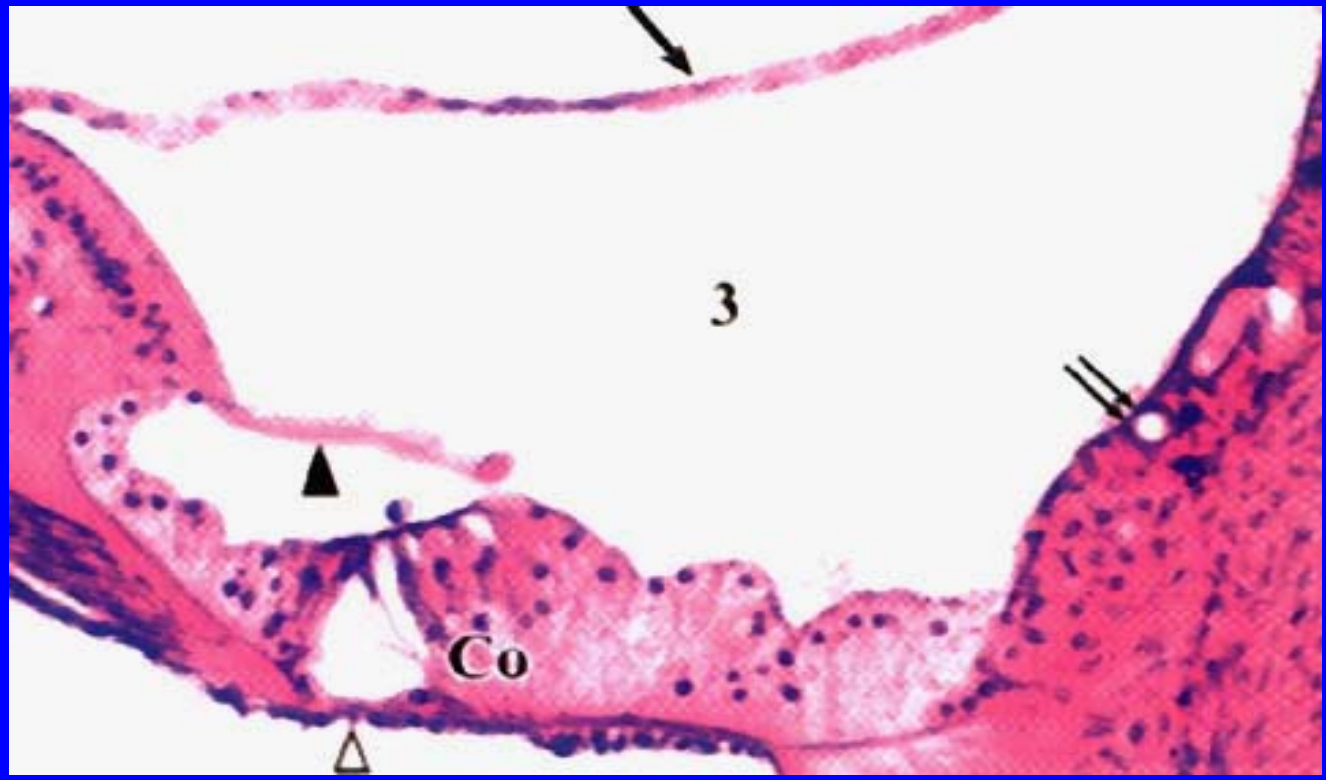




membranous disc



posterior portion of eye ball



spiral organ