

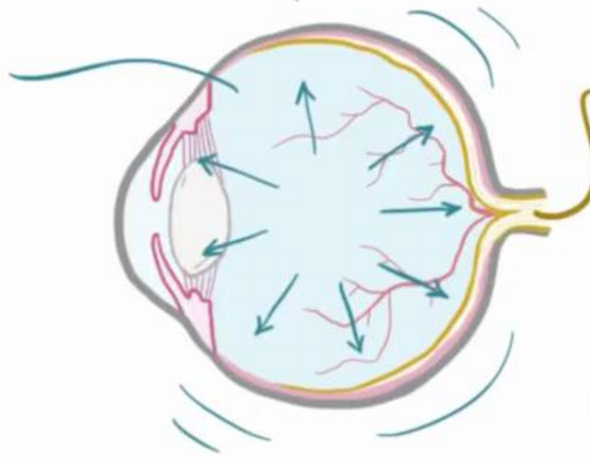


Dr. Dema Ziad Albatal

GLAUCOMA

* GROUP of EYE DISEASES *

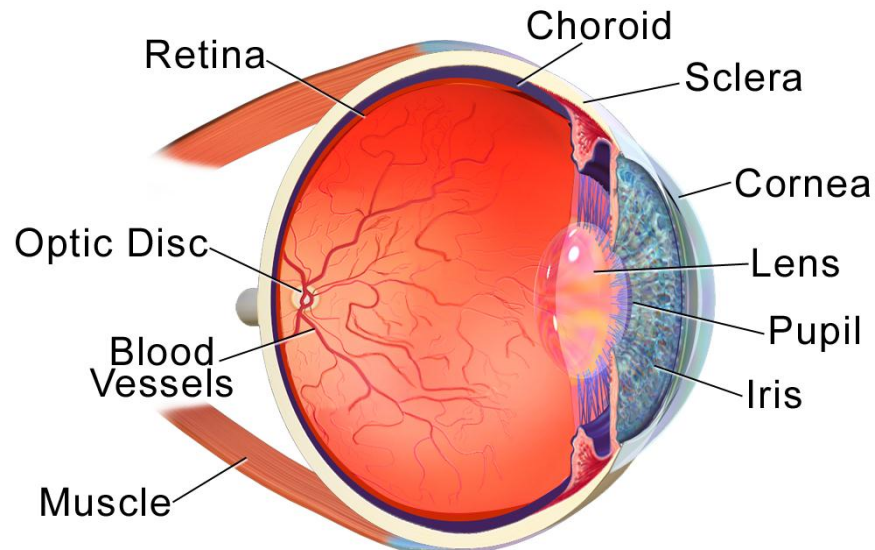
inside the eye
**INTRACULAR
HYPERTENSION**
increased pressure



**OPTIC NERVE
DAMAGED**

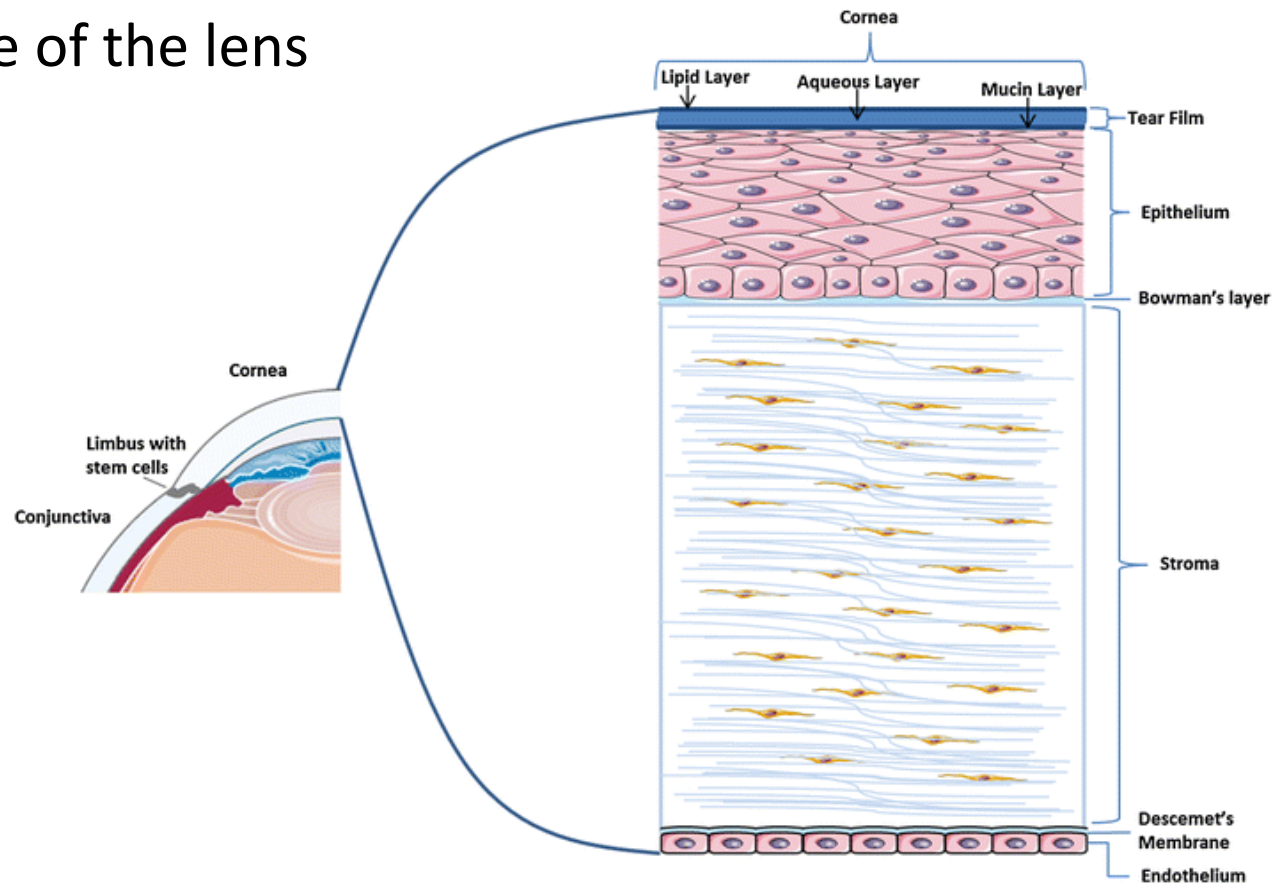
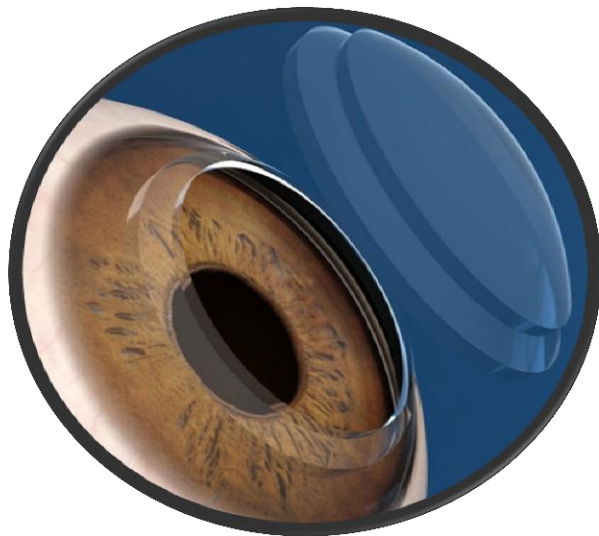
BLINDNESS

Aqueous Humor	Vitreous Humor
Thin watery fluid	Gel-like fluid
Anterior segment	Posterior segment
Transparent	Transparent
Supporting shape	Supporting shape + absorbing shocks
Supplies nutrients + nourishment + remove waste	99% water 1% collagen + hyaluronic acid



Anterior chamber borders:

1. Posterior surface of the Cornea
(endothelium)
2. Anterior surface of the iris
3. Anterior surface of the lens



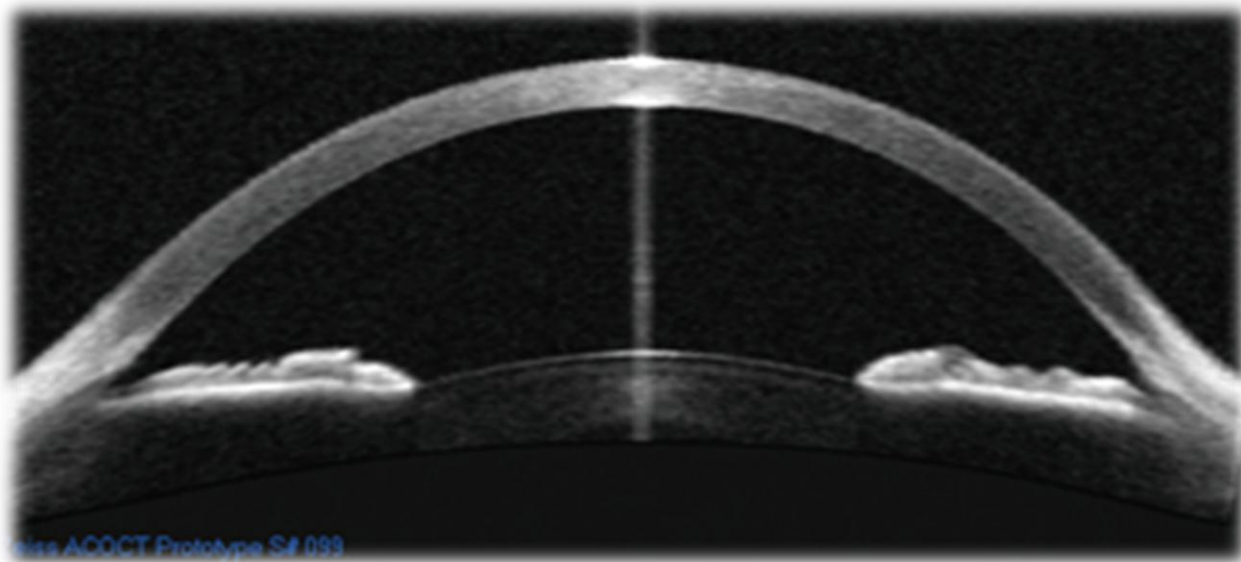
Depth : 3 – 3.15 mm (4.4 * 2.2) decreases 0.01 mm per year

hyper myopic < hypo myopic

children < Adults

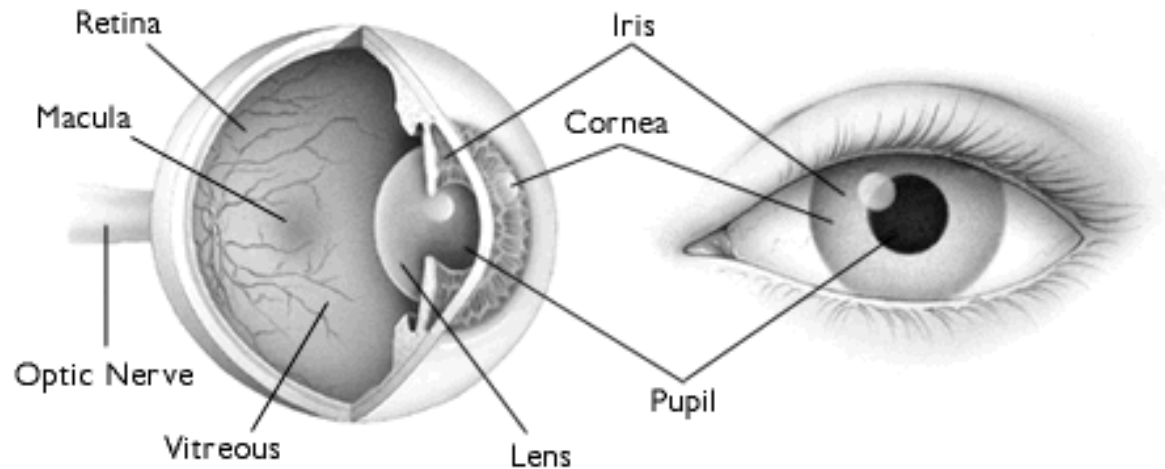
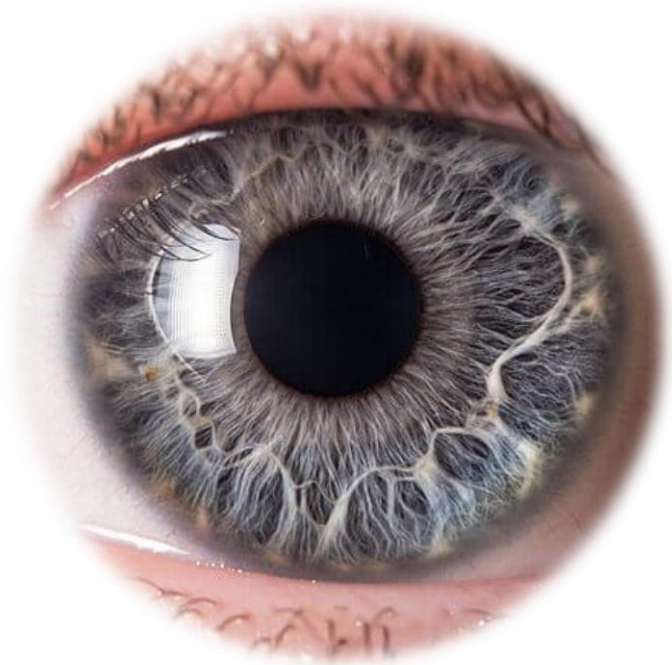
Distance : 11.3 * 12.4

Volume : 0.25 ml of aqueous humor decreases 0.11 microliter per year



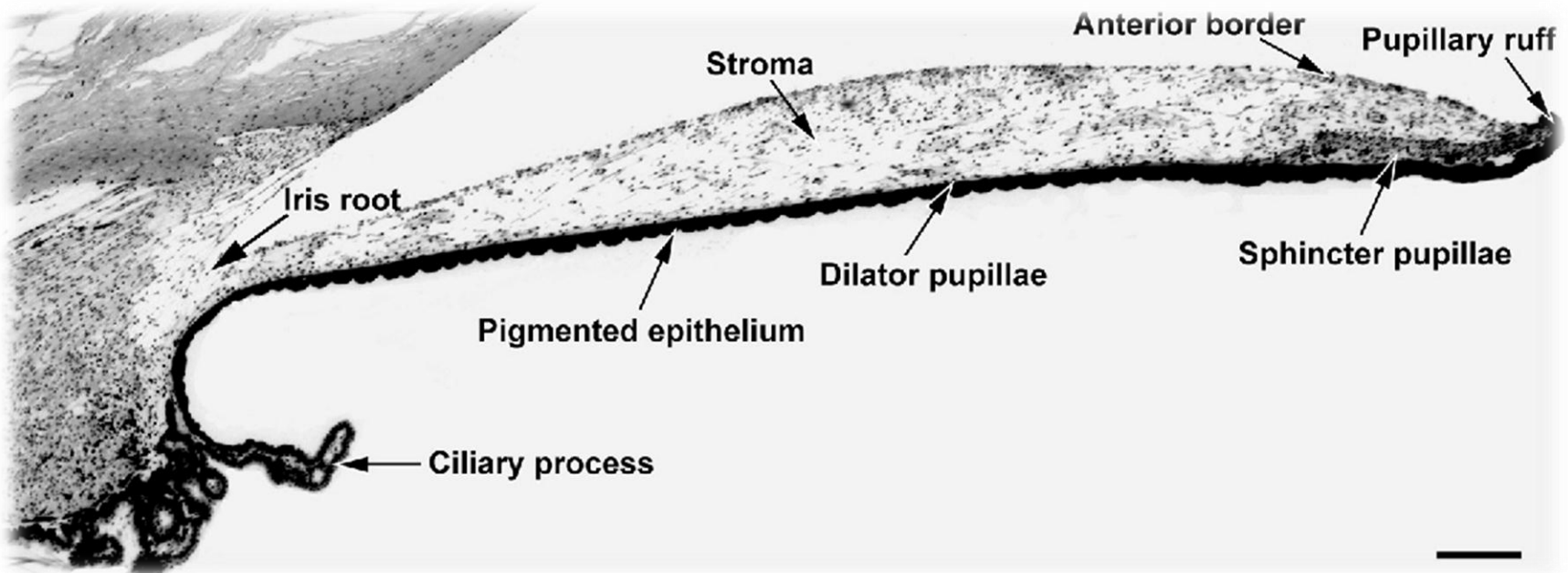
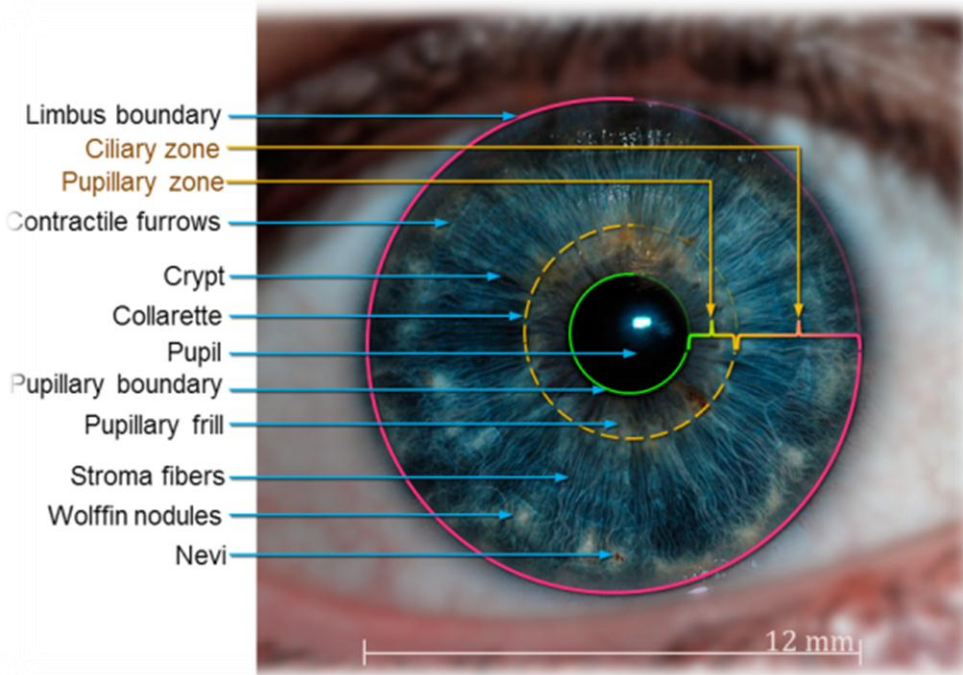
Anterior chamber borders:

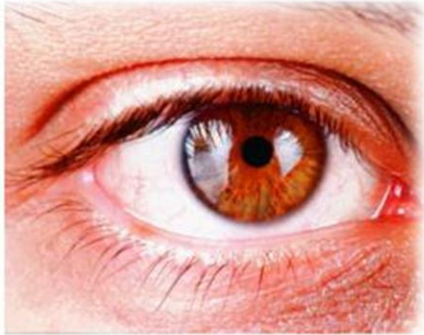
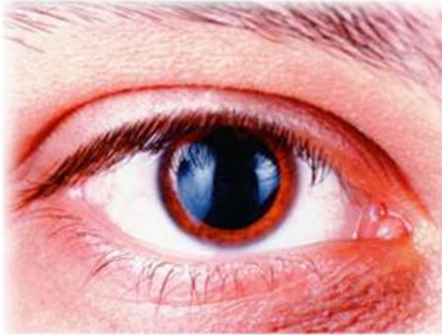
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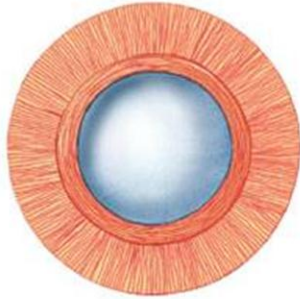
مكونات اللحمية :

- ✓ ألياف الكولاجين
- ✓ صانعات الليف
- ✓ الخلايا الصباغية
- ✓ العضلات المقبضة والموسعة للحدقة
- ✓ الأوعية الدموية
- ✓ الألياف العصبية الحركية والحسية
- ✓ لا تحتوي على ألياف مرنة

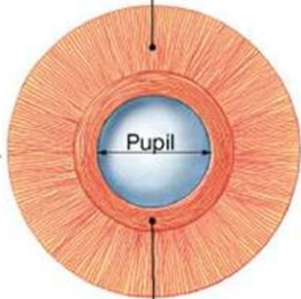




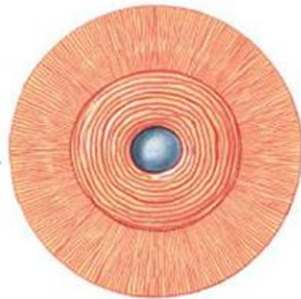
Pupillary dilator muscles (radial)



Dilators contract



Pupillary constrictor muscles (sphincter)



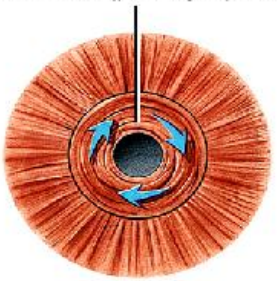
Constrictors contract

Pupil dilates as radial muscles of iris contract (sympathetic)



Dim light

Pupil constricts as circular muscles of iris contract (parasympathetic)



Bright light

Blood supply :

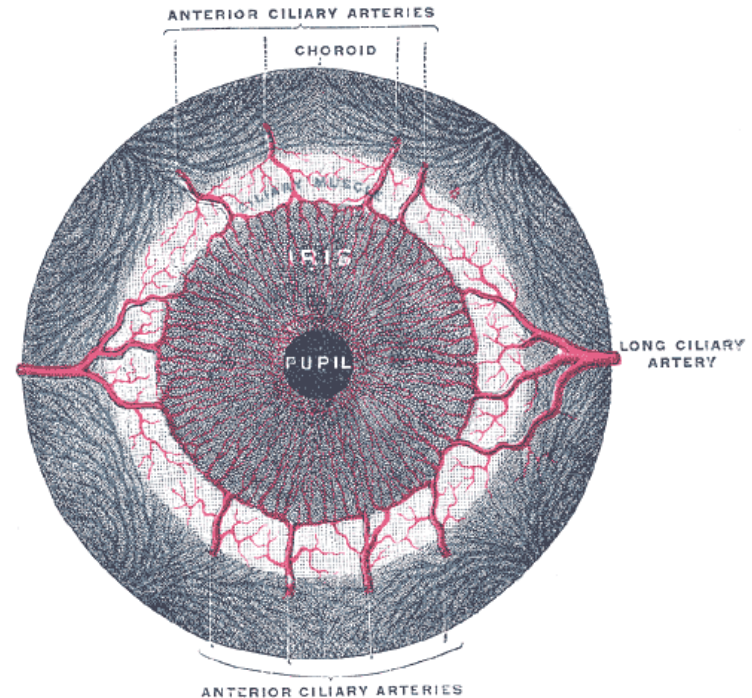
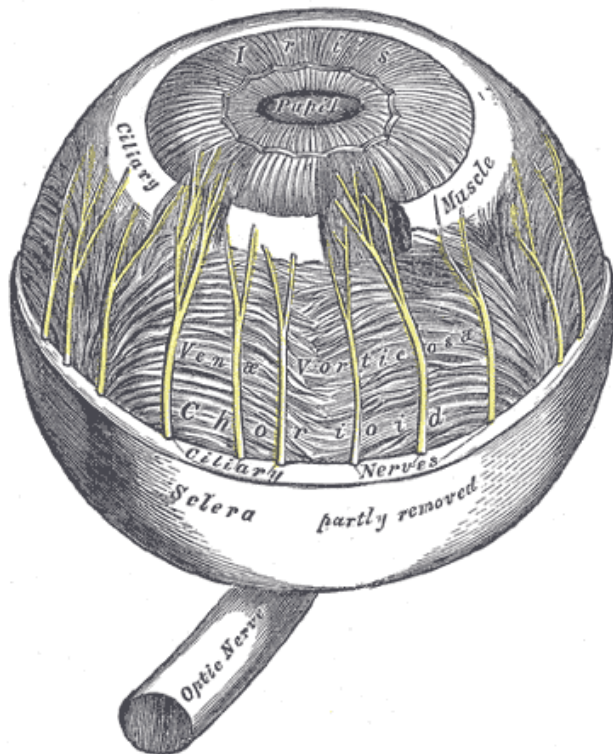
2 long posterior ciliary artery + 7 anterior ciliary arteries

Nerve supply :

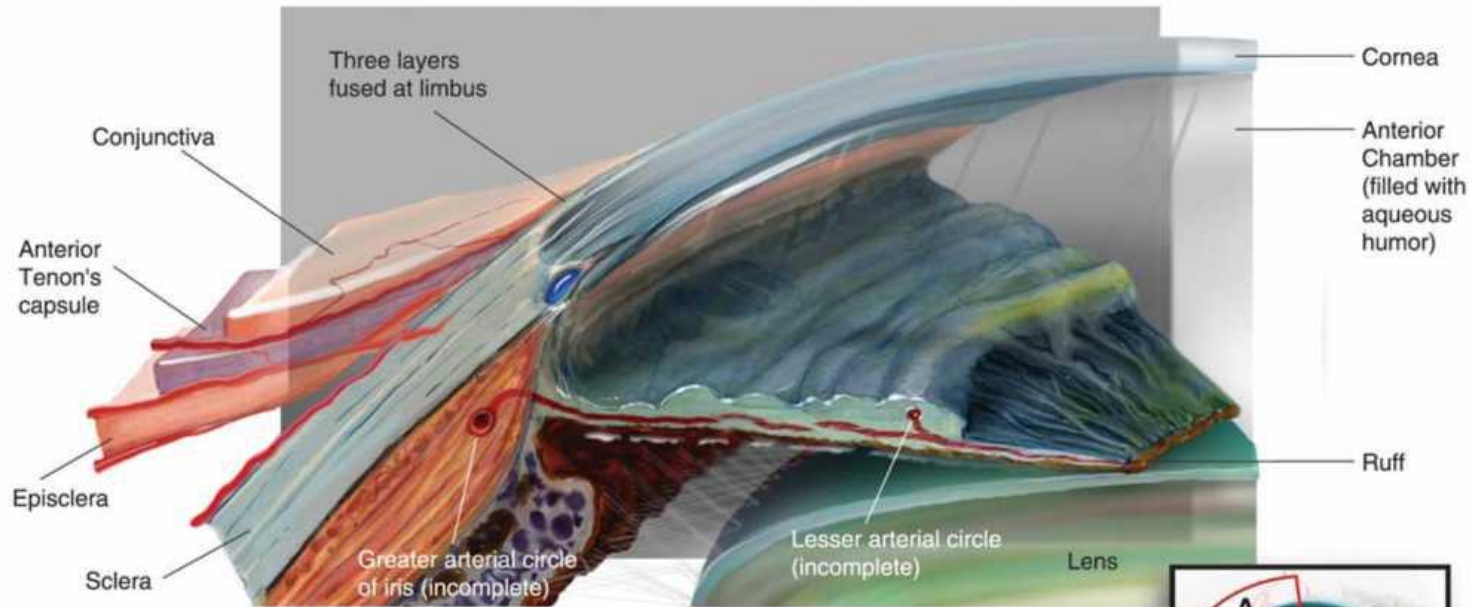
Dilated muscle : Long posterior ciliary nerve → nasociliary branch →
Ophthalmic nerve → Trigeminal nerve

Sympathetic

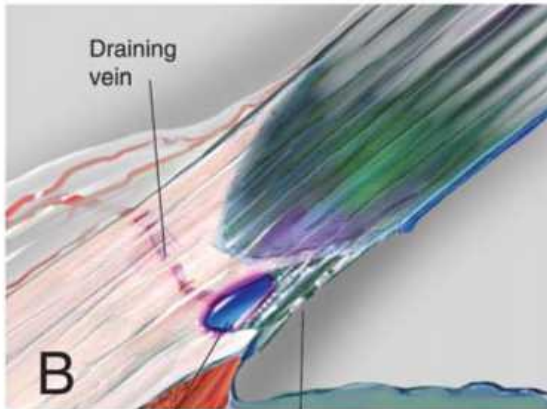
Sphincter muscle : short ciliary nerve → ciliary ganglion → ophthalmic nerve
parasympathetic



The Limbus

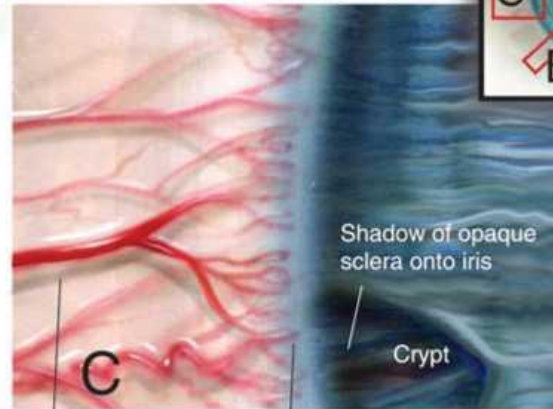


A



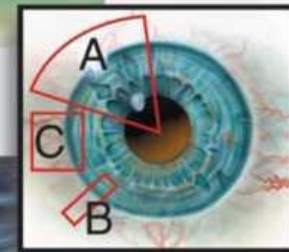
B

Canal of Schlemm
Trabecular meshwork



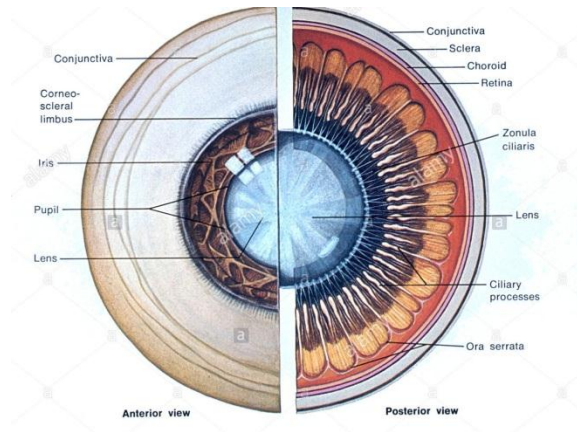
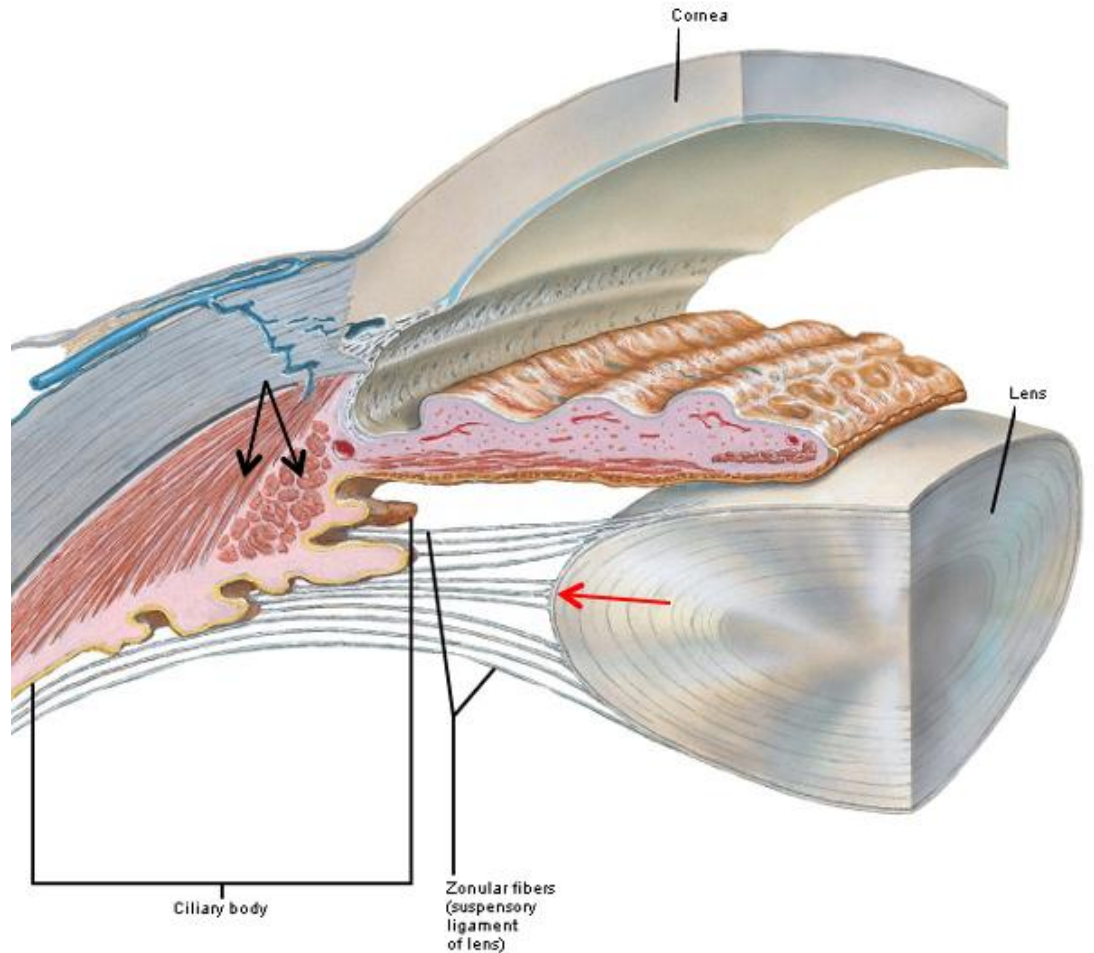
C

Shadows beneath vessels
Limbal arcades



The ciliary body :

1. Ciliary epithelium
2. Ciliary stroma
3. Ciliary muscles

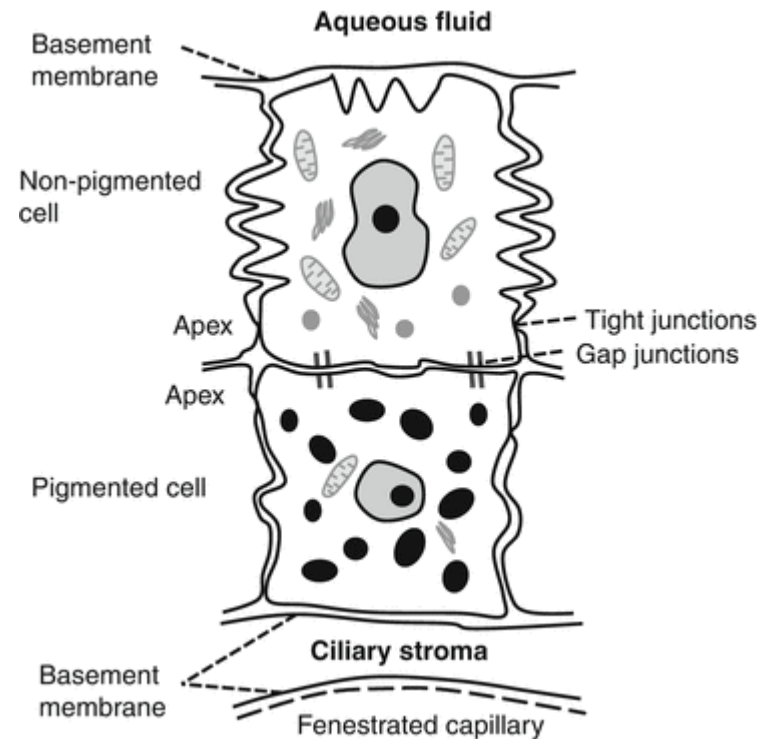


Ciliary epithelium :

- Nonpigmented
- Pigmented

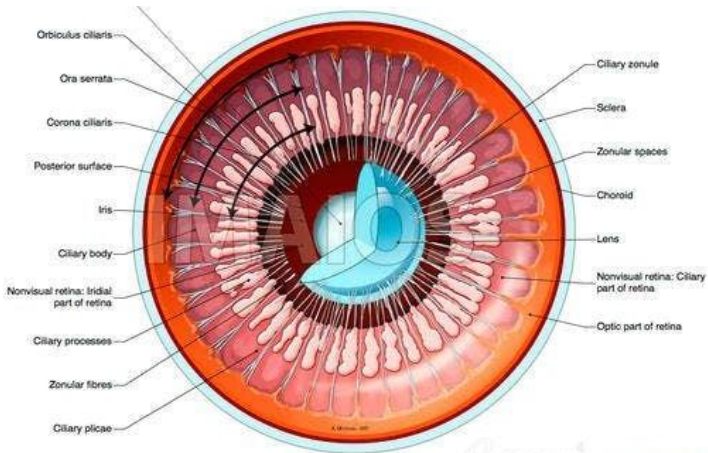
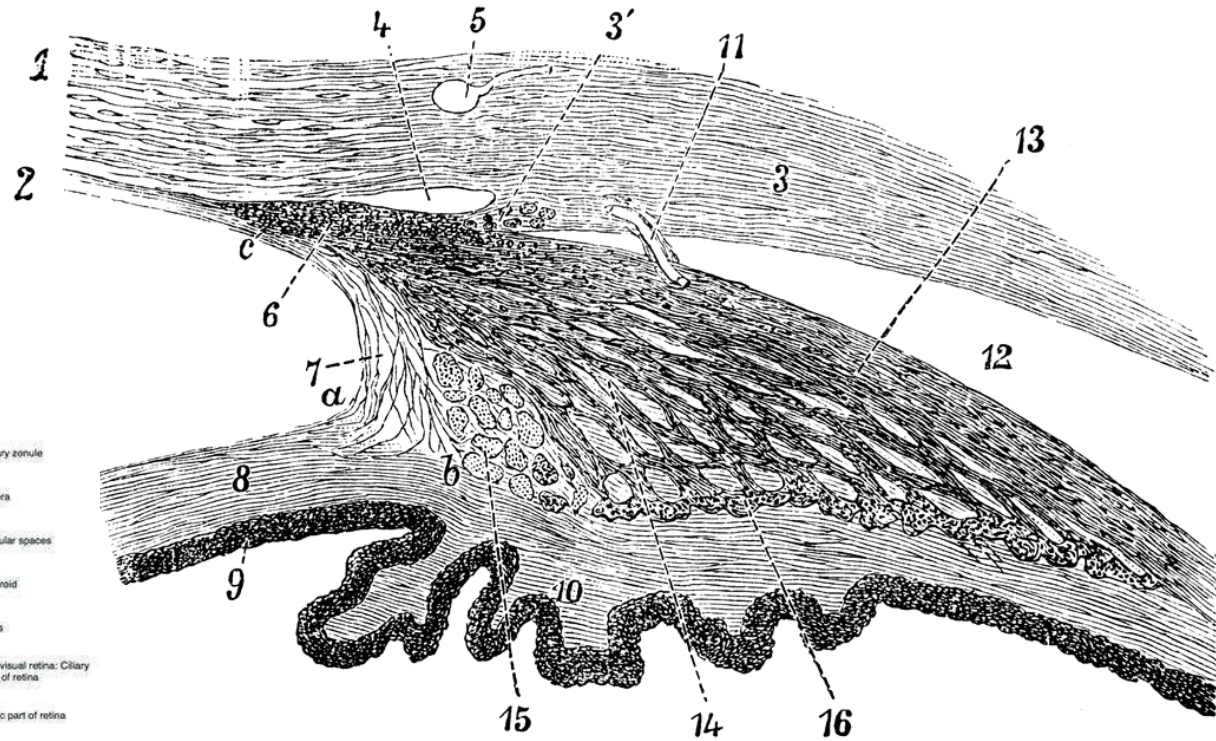
Ciliary stroma :

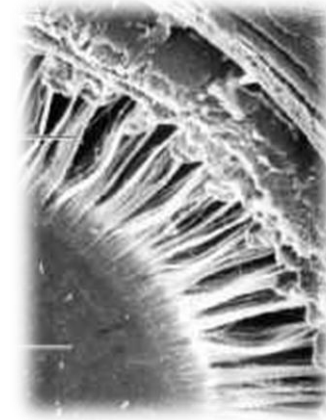
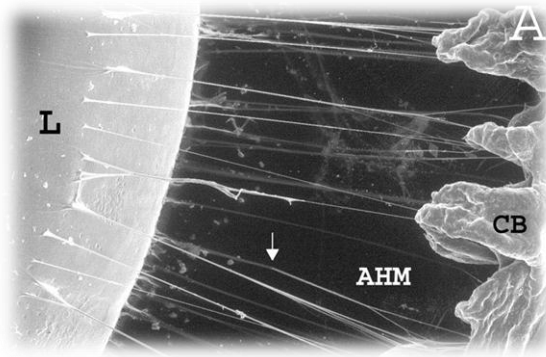
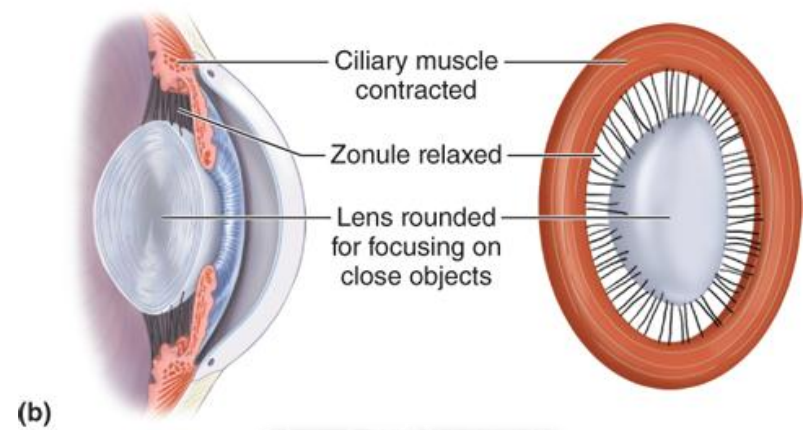
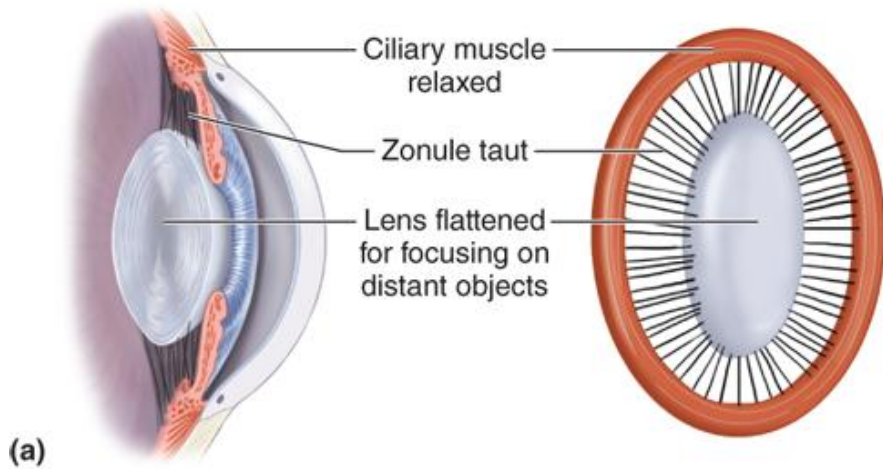
- Connective tissue
- Mylanocytes
- Blood Vessels



Ciliary muscles:

1. Longitudinal fibers (عضلة بروك)
2. Radial fibers
3. Circular fibers (عضلة مولر)





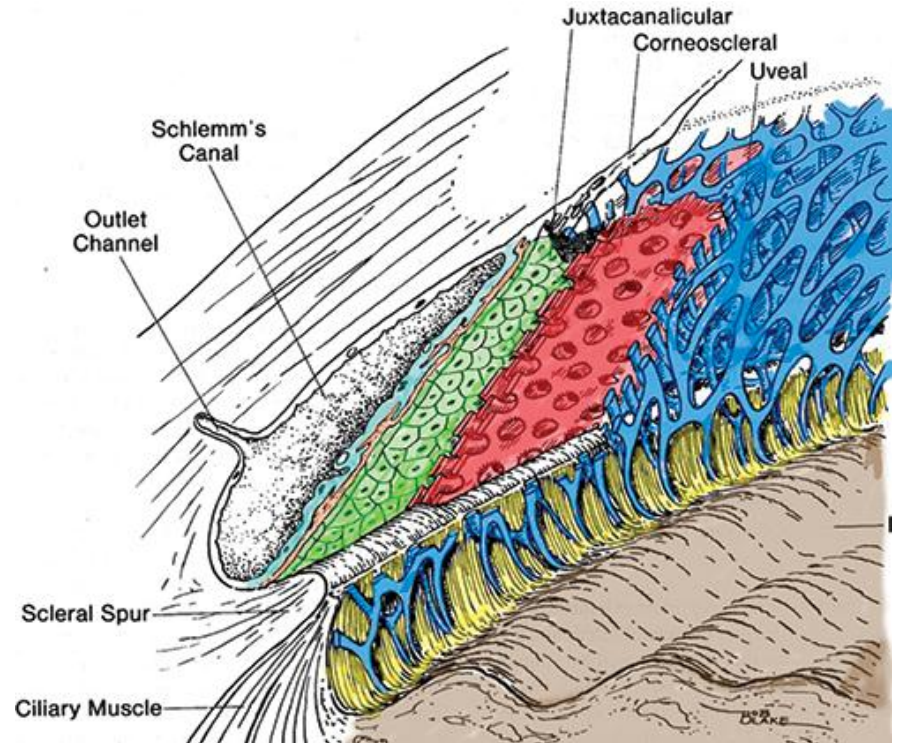
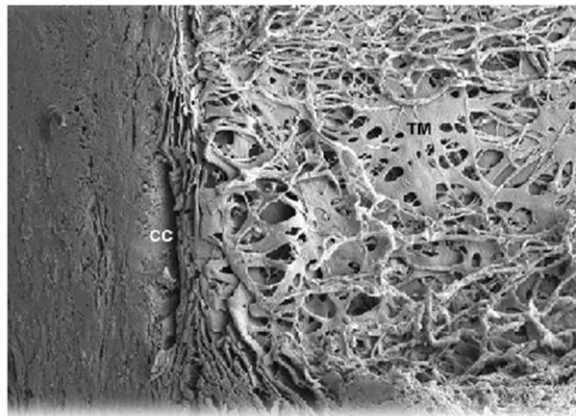
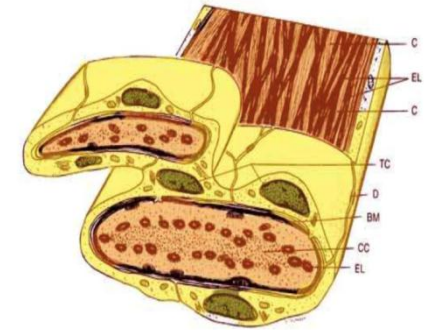
Parasympathetic: Short Ciliary Nerves → Ciliary Ganglion → Oculomotor Nerve
→ Edinger Westphal Nucleus

Sympathetic: Paravascular Plexus

Sensory Nerves: Long Ciliary Nerves → Trigeminal Nerve

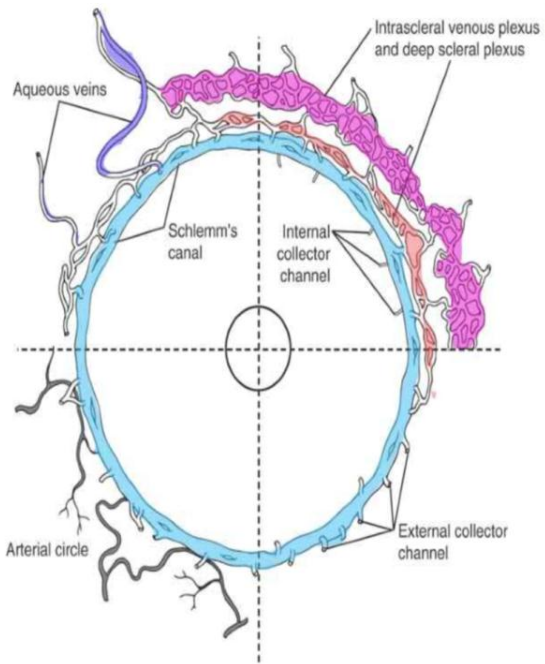
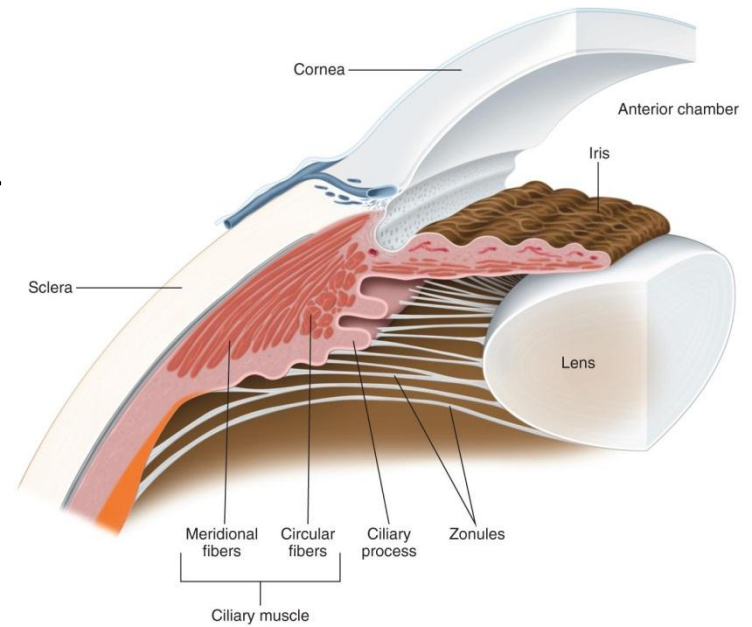
Trabecular meshwork :

1. Uveal meshwork (25-75 micrometer)
2. Corneoscleral meshwork (5-50 micrometer)
3. Juxtacanalicular meshwork

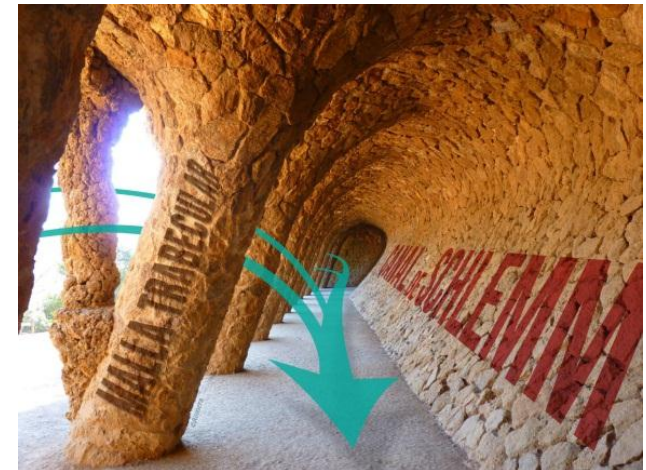


Schlemm's canal :

- ❖ Duct with diameter of 190-350 micrometer
- ❖ 25-35 collector ducts at the scleral aspect



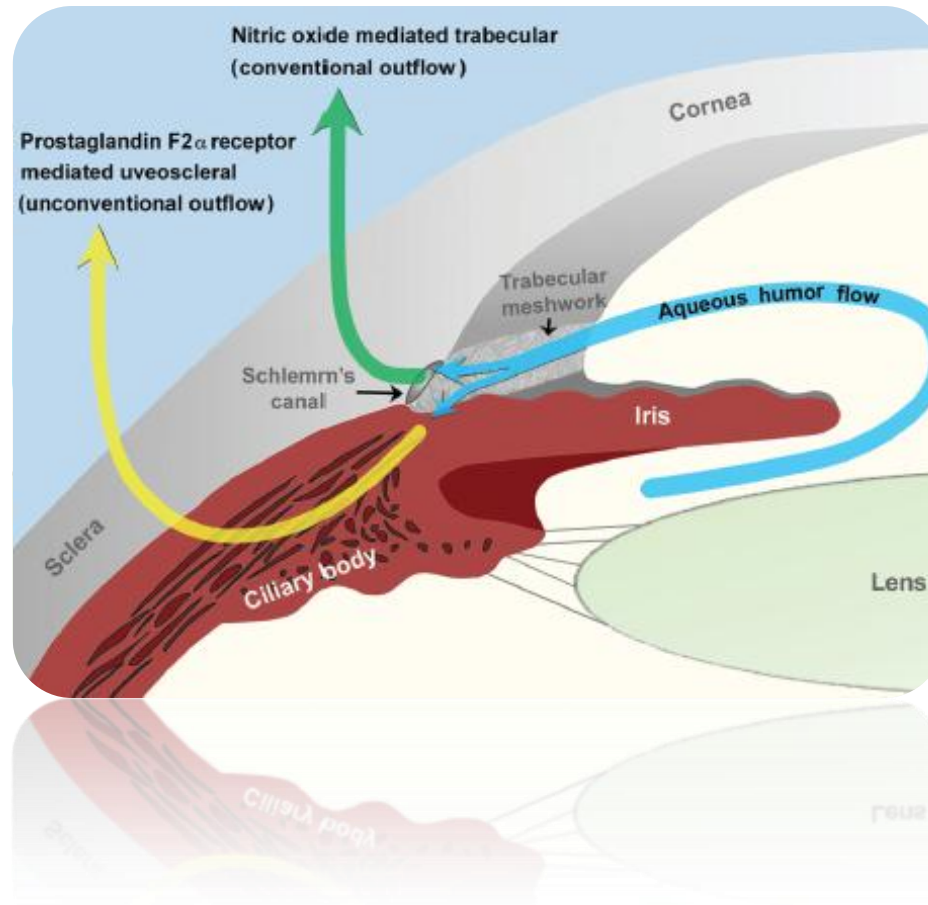
FLOW PATHWAYS BEYOND SCHLEMM'S CANAL



Aqueous Humor outflow

Conventional pathway

- ✓ 70-90%
- ✓ Pressure Dependent
- ✓ Trabeculum → Schlemm Plexus → Episcleral Veins



Unconventional pathway

- ✓ 10-30%
- ✓ Pressure Independent
- ✓ Iris & ciliary body stroma → Supracoroid → Vortex Veins & Scleral Emmissary Canals

Determinants of Aqueous Humor functions



Aqueous humor formation



- Inflammation
- Blood Pressure
- Hypo osmolarity of plasma

Resistance in outflow channels



- Age
- Pupillary block
- Trabecular Meshwork Block

Episcleral venous pressure



- Increased CVP
- Valsalva
- Hypercarbia
- Carotid Cavernous Fistula



- Detachment
- Drugs
- Anaesthesia



- Accommodation
- Drugs



- Hypotension
- Decreased carotid flow
- Decreased CVP



GLAUCOMA



Thank You