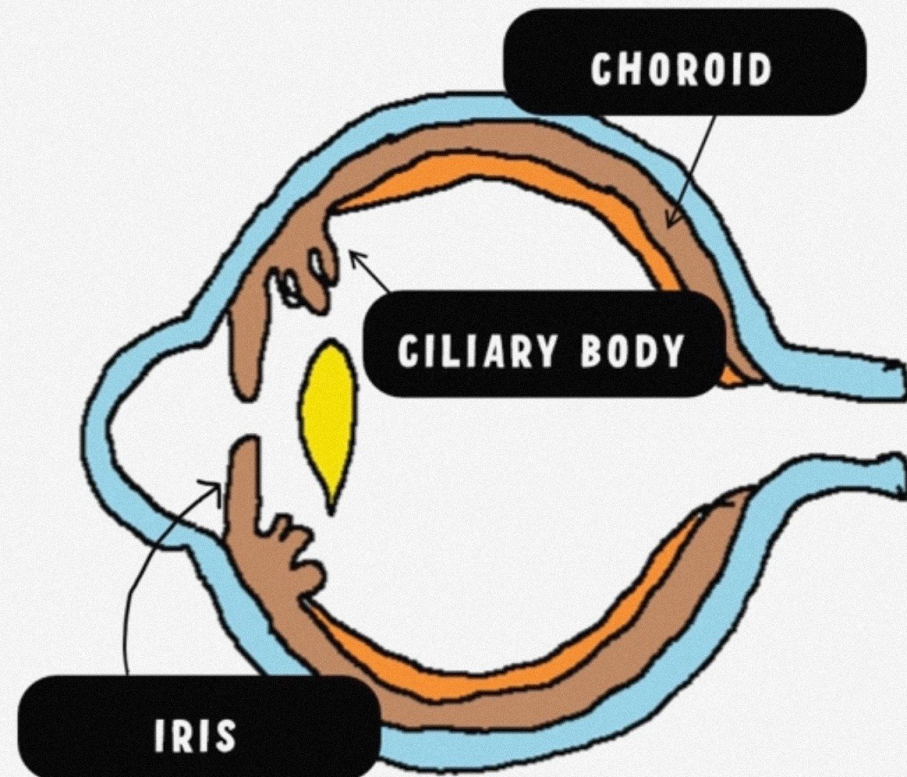
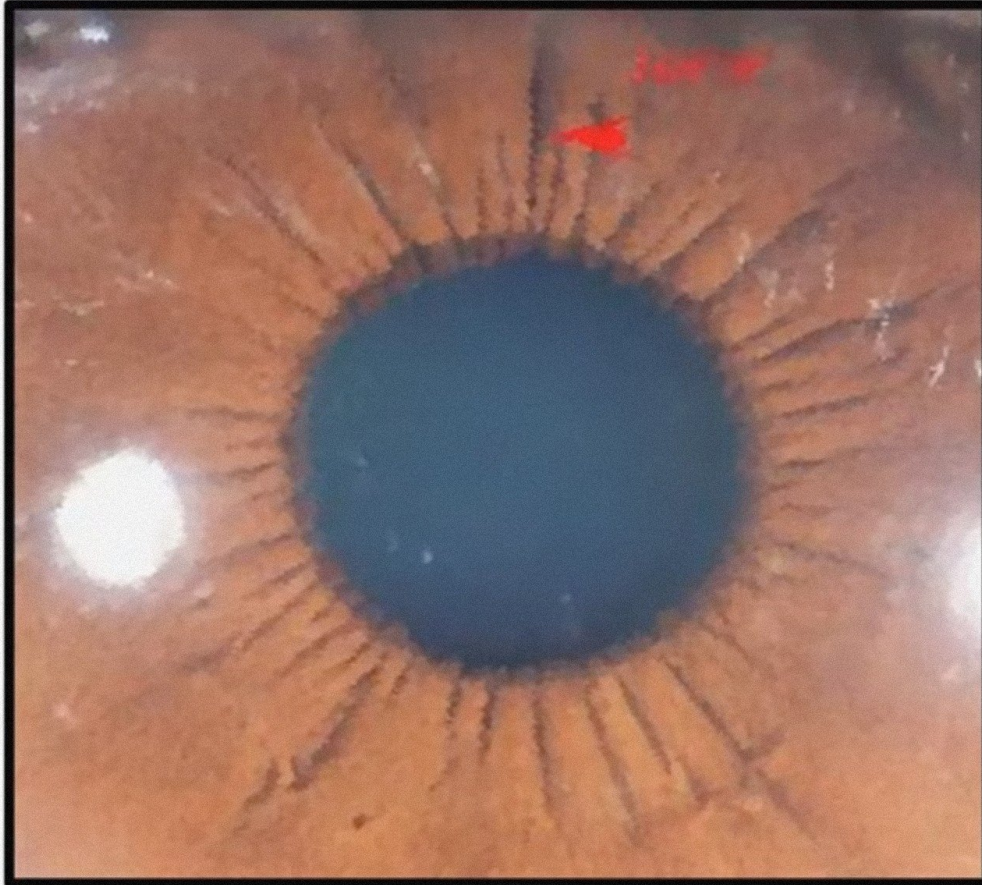


WHAT IS UVEAL TRACT ?

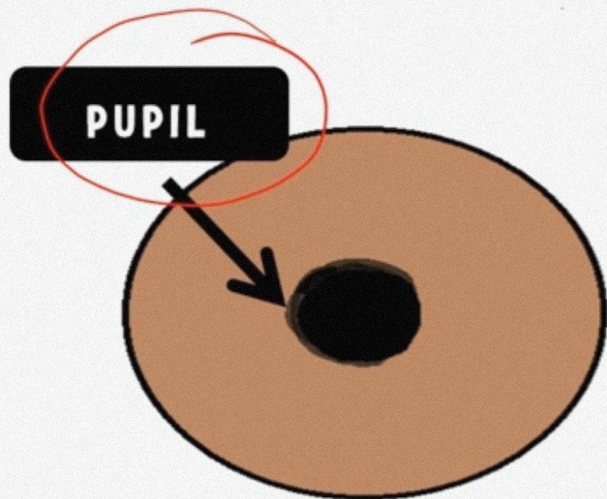
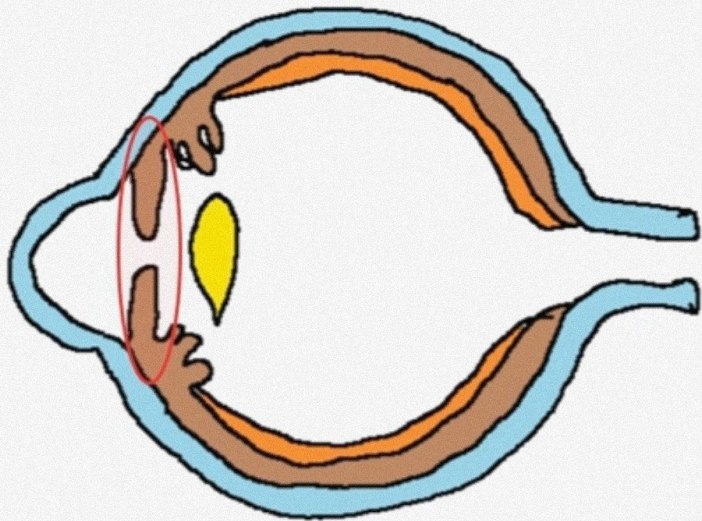
- The middle **Vascular** coat of the eye
- From anterior to the posterior it arbitrarily divided into
 1. **Iris**
 2. **Ciliary body**
 3. **Choroid**





ANATOMY OF IRIS





- **Anterior** part of the uvea
- Thin circular disc is analogous to a diaphragm of a camera.
- It has a central aperture ~ **PUPIL** which regulates the amount of light entering the eye
- Pupil is situated slightly **nasal** in the iris .

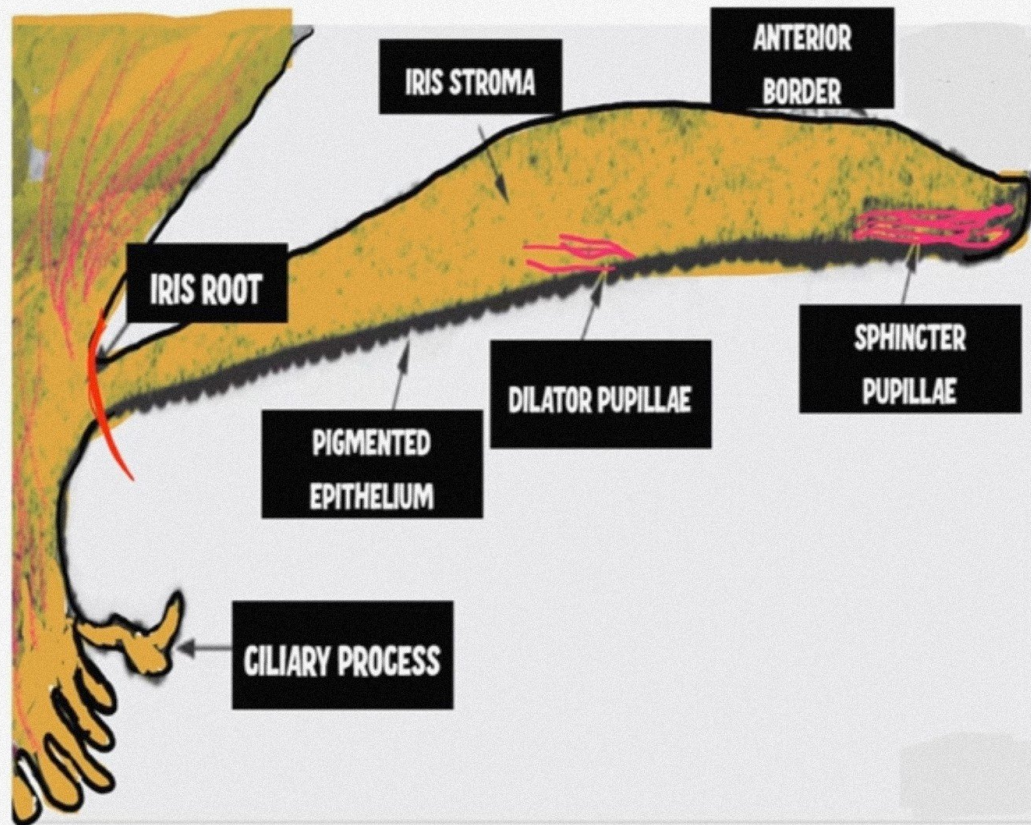




IRIS resembles a thin circular disc and is **analogous** to a diaphragm of a camera.



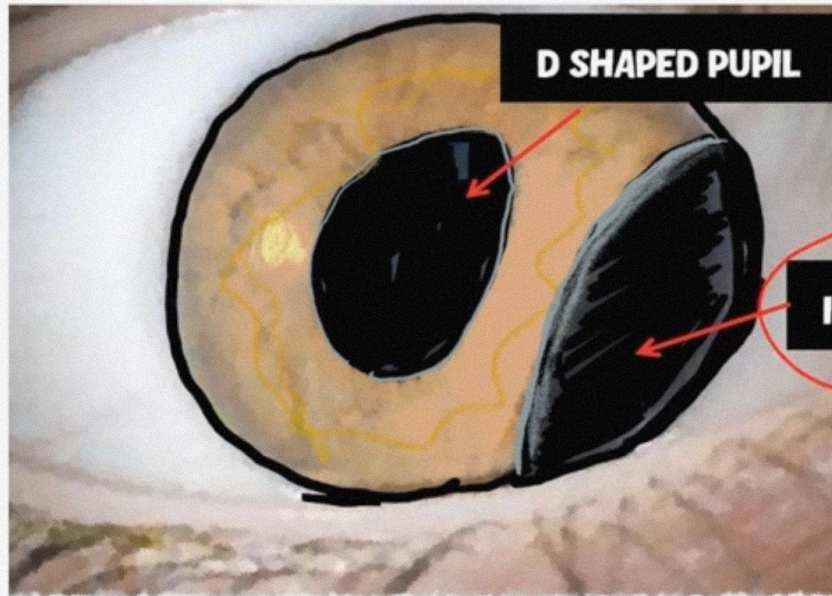
IRIS ROOT



- Iris is attached at the middle of the anterior surface of the ciliary body.
- This surface is called the “**face**” of the ciliary body.
- The attachment of iris is known as the **Root Of The Iris**
- **THINNEST** point of the iris

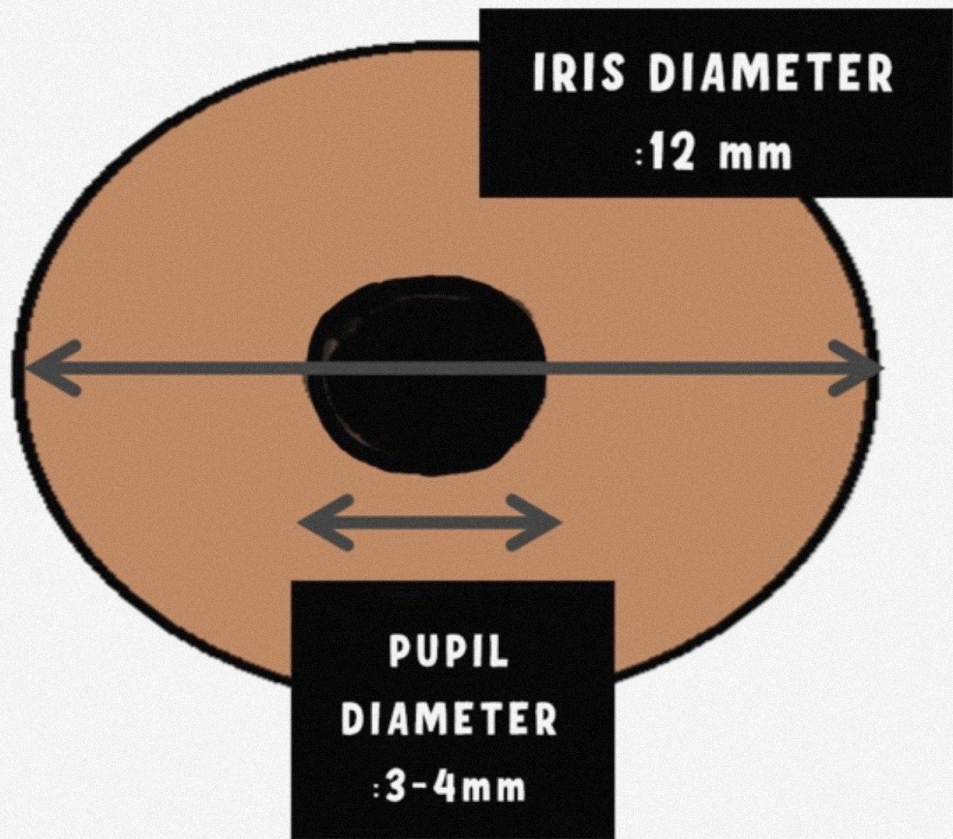


CLINICAL NUGGET



Iris detached from body





- ❖ Diameter of Iris : 12mm
- ❖ Thickness is 0.5 mm
- ❖ Pupil Diameter : 3-4 mm

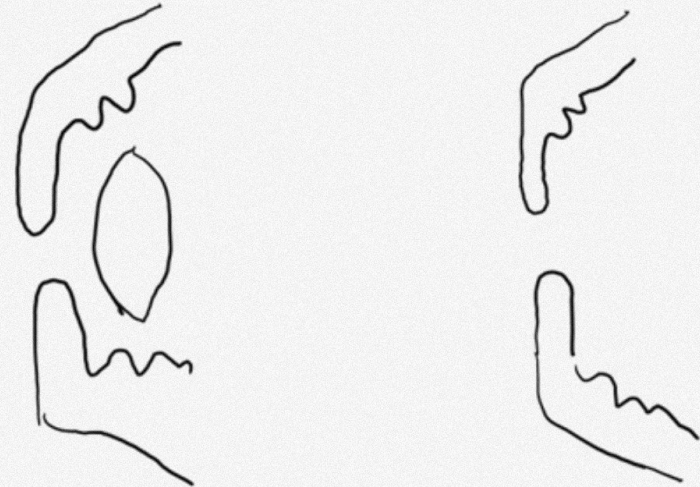


CLINICAL NUGGET : IRIDODONESIS

- The vibrating/trembling movement of the iris is known as iridodonesis.
- Loss of support from the lens .

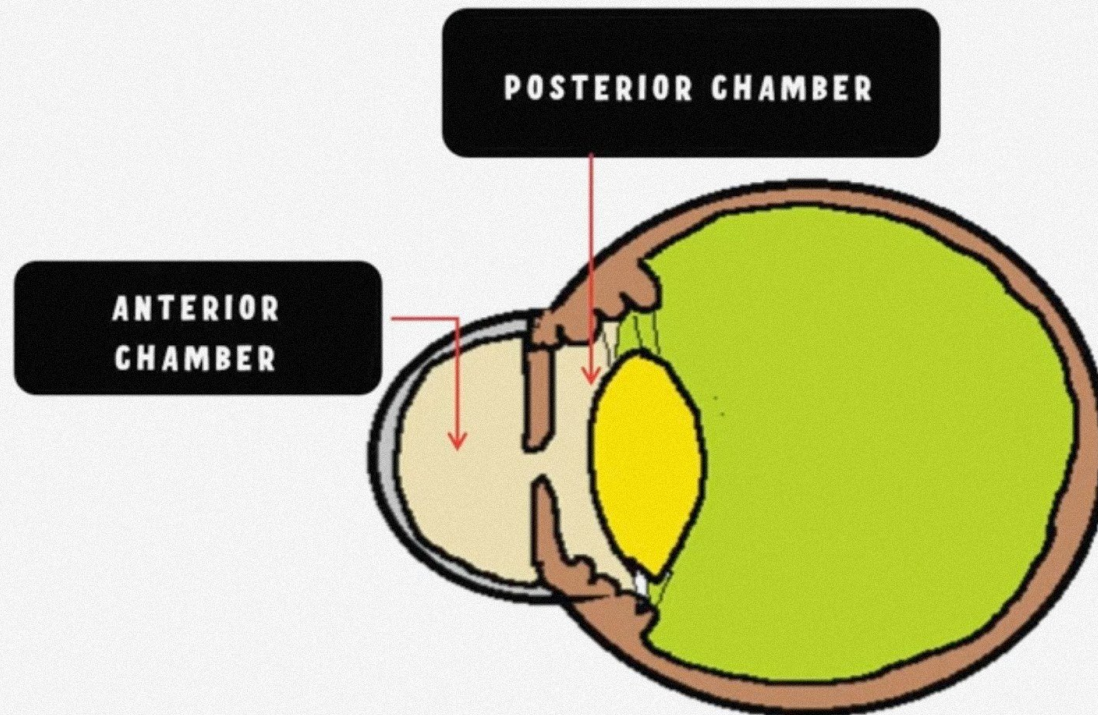
❖ Seen in

- Aphakia
- Subluxation of lens



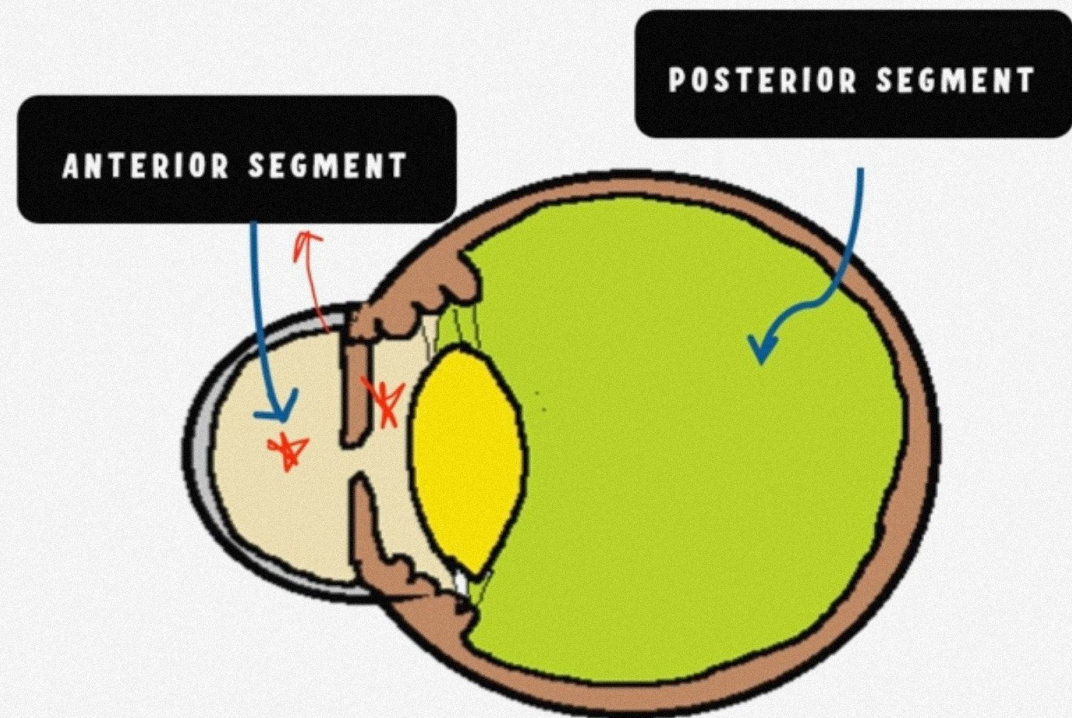
ANTERIOR CHAMBER v/s POSTERIOR CHAMBER

- The iris divides the space between the lens and the cornea into two chambers-



ANTERIOR SEGMENT v/s POSTERIOR SEGMENT

- Anterior chamber + Posterior Chamber = **ANTERIOR SEGMENT** (consists of the aqueous humour)
- Chamber between the lens and the retina = **POSTERIOR SEGMENT** (contains the Vitreous humour)

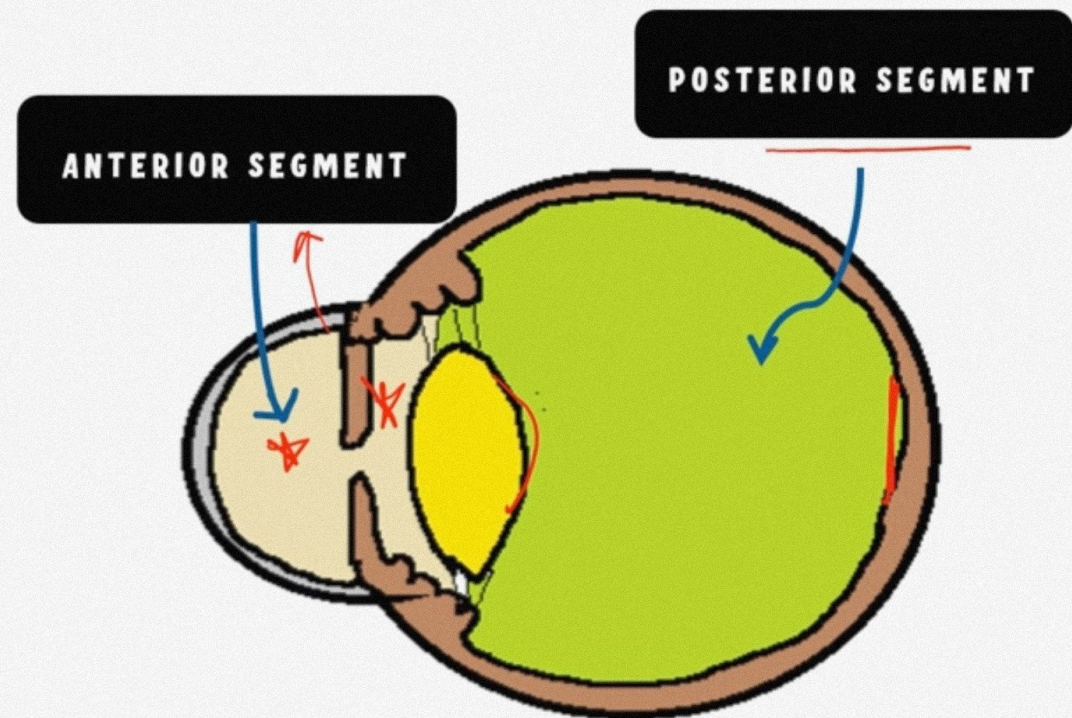


ANTERIOR SEGMENT v/s POSTERIOR SEGMENT

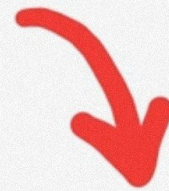
- Anterior chamber + Posterior Chamber = **ANTERIOR SEGMENT** (consists of the aqueous humour)

Segment

- Chamber between the lens and the retina = **POSTERIOR SEGMENT** (contains the Vitreous humour)



ANATOMY OF IRIS

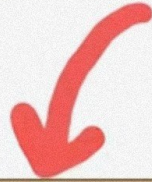


MACROSCOPIC ANATOMY/
SURFACE ANATOMY

MICROSCOPIC ANATOMY /
LAYERS OF IRIS



MACROSCOPIC ANATOMY/ SURFACE ANATOMY



**ANTERIOR SURFACE OF
IRIS**



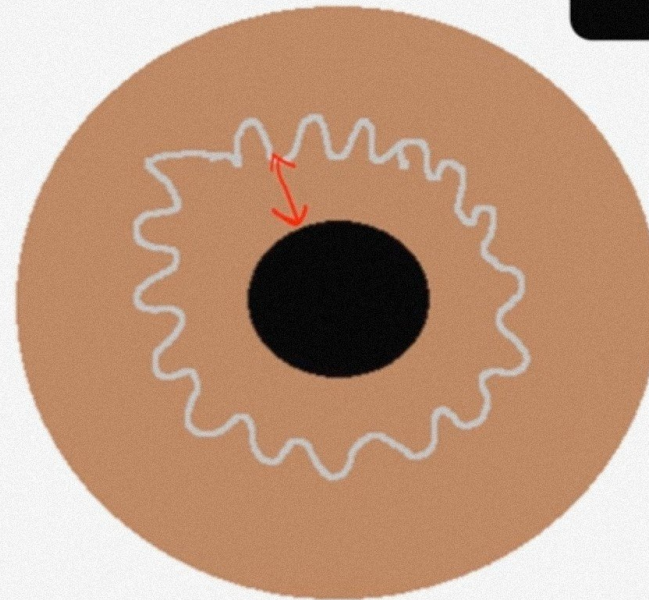
**POSTERIOR SURFACE
OF IRIS**



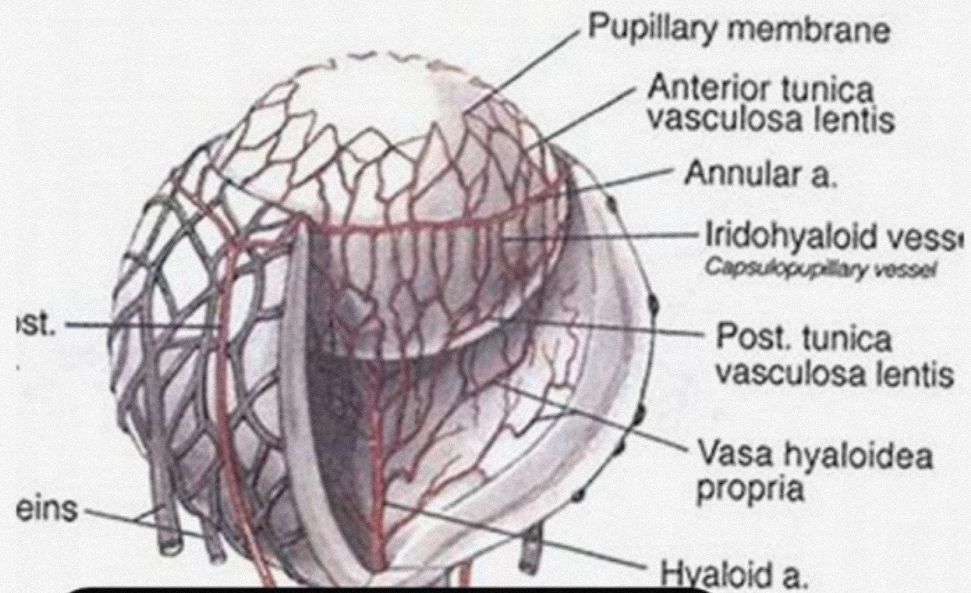
ANTERIOR SURFACE OF IRIS

- The anterior surface of the iris can be divided into two zones by a zig zag line known as the **COLLARETTE**
- The collarette is situated at **2** mm from the pupillary margin
- It represents the point of attachment of the pupillary membrane.

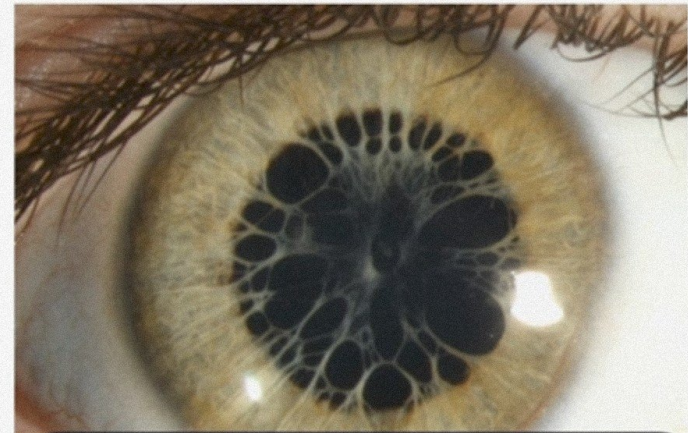
COLLARETTE



WHAT IS PUPILLARY MEMBRANE?



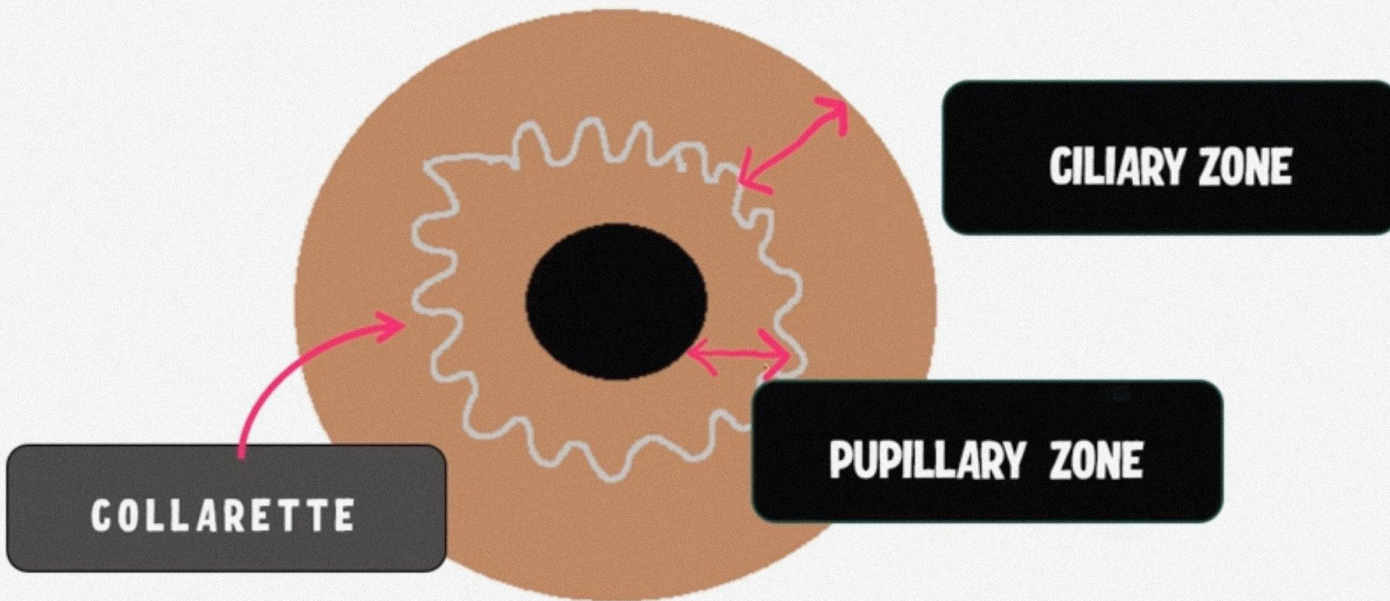
FETAL VASCULATURE



**PERSISTENT PUPILLARY
MEMBRANE**

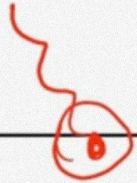


The collarette divides the anterior surface of iris into two zones :-



CILIARY ZONE

Outer Zone Of the Iris



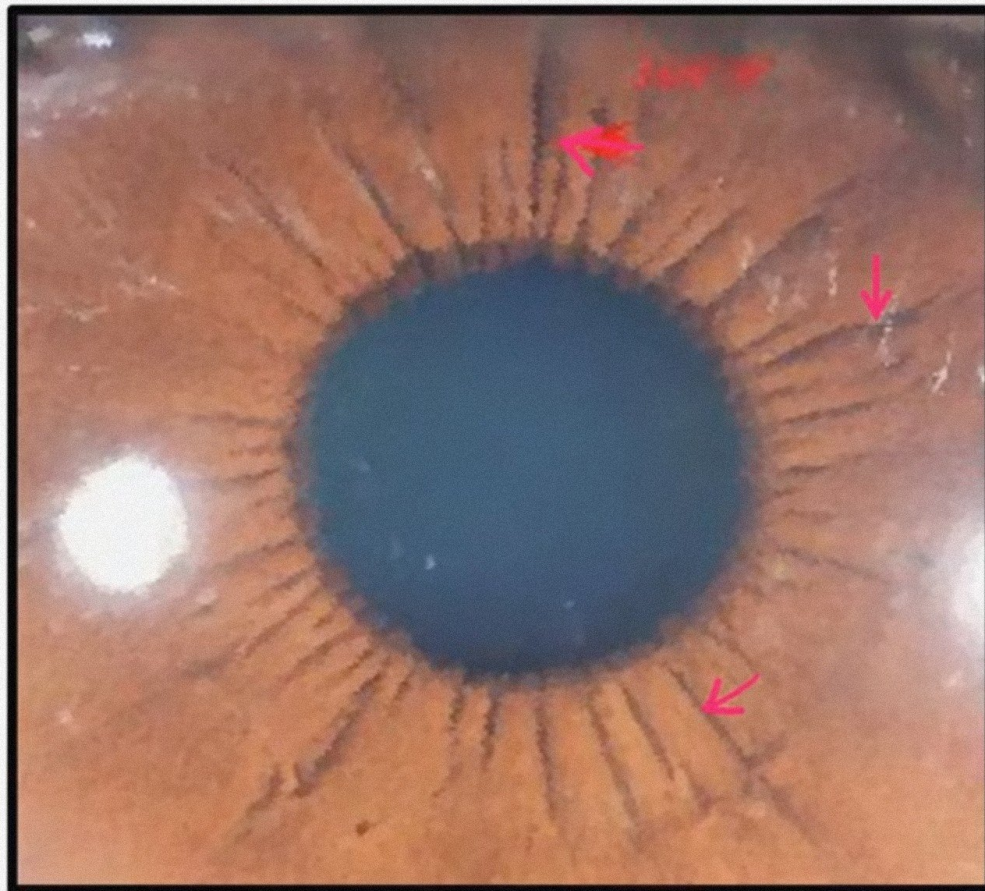
- **RADIAL STREAKS** : streaks corresponds to the radial iris vessels
- Straighter in miotic pupil.
- Becomes wavy when pupil is dilated

CONTRACTION FURROWS

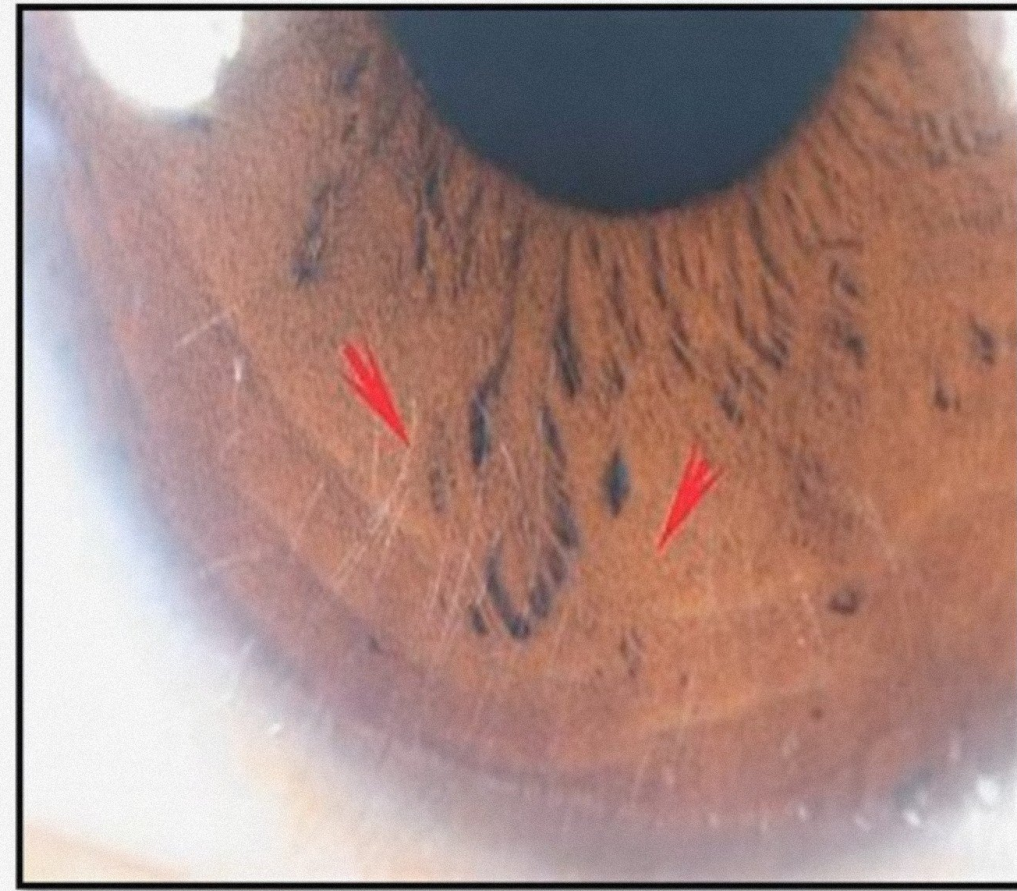
- Concentric faint lines parallel to the collarette
- More pronounced when pupil dilates
- More marked near the outer part of the ciliary zone.



RADIAL STREAKS

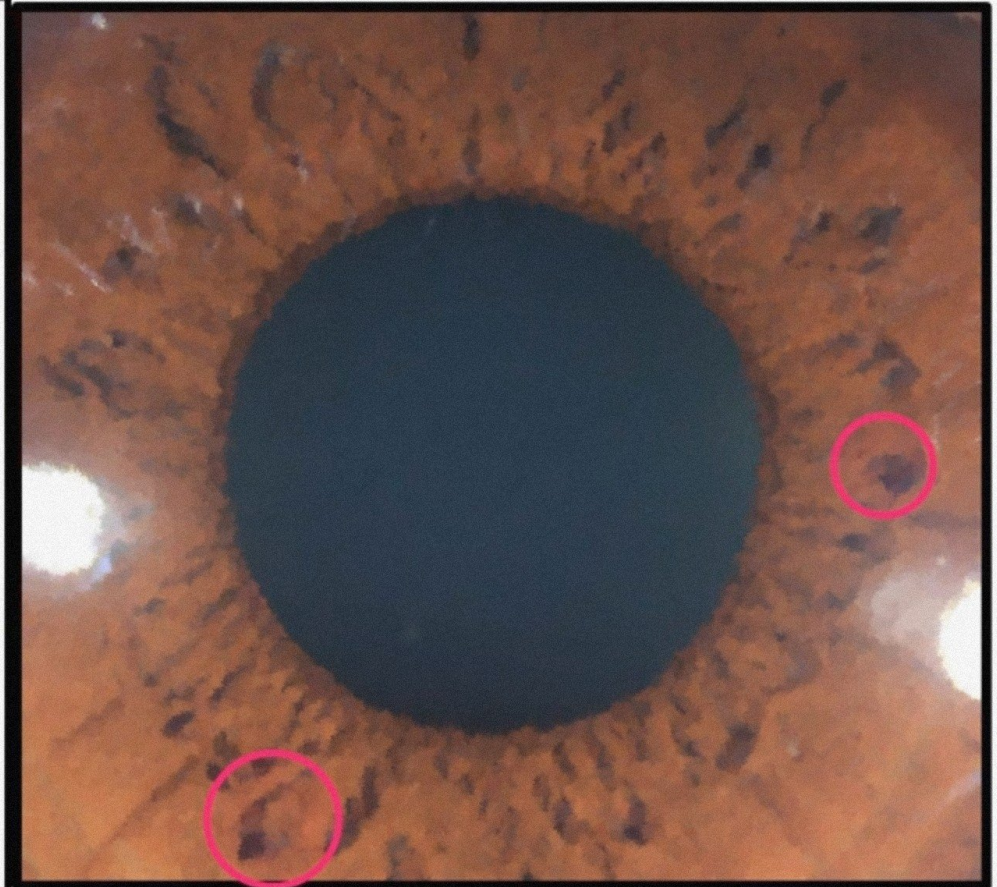


CONTRACTION FURROWS



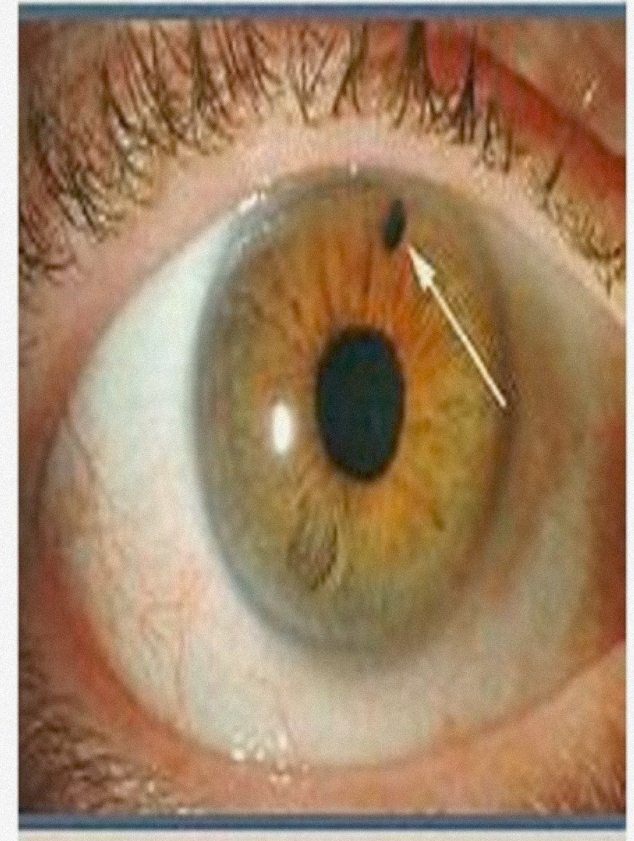
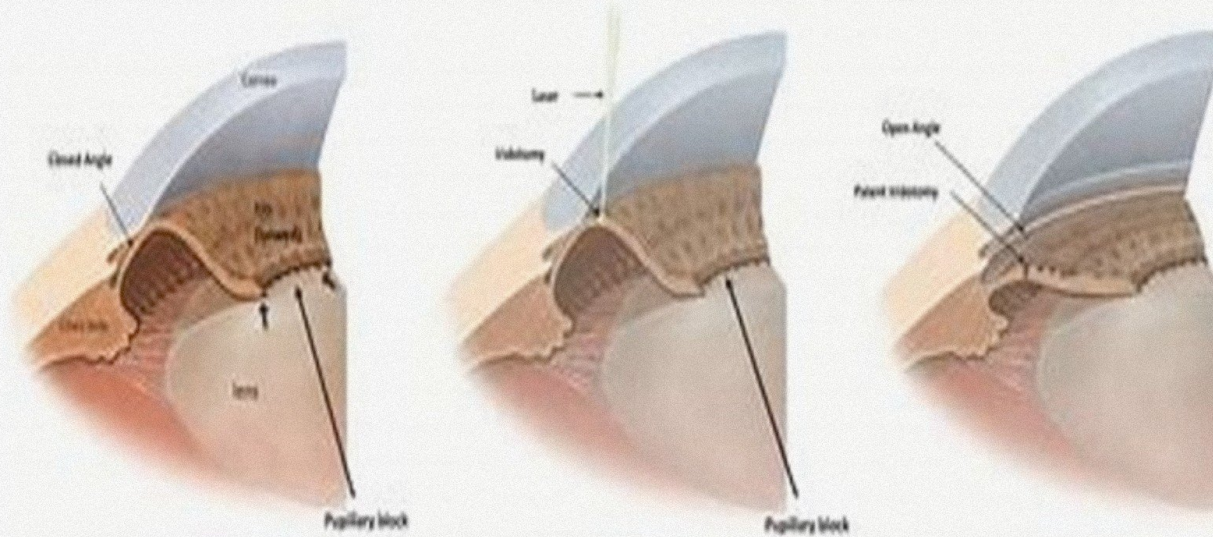
IRIS CRYPTS

CRYPTS : points where the anterior layer of the iris is absent
Arranged in two rows.
Peripheral crypts are present near the iris roots
Central crypts are present near the collarette.



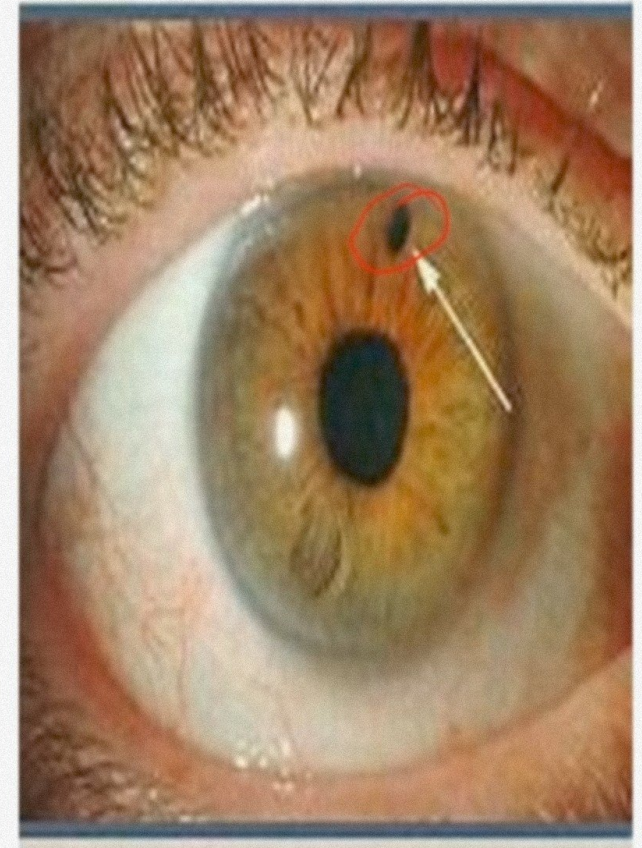
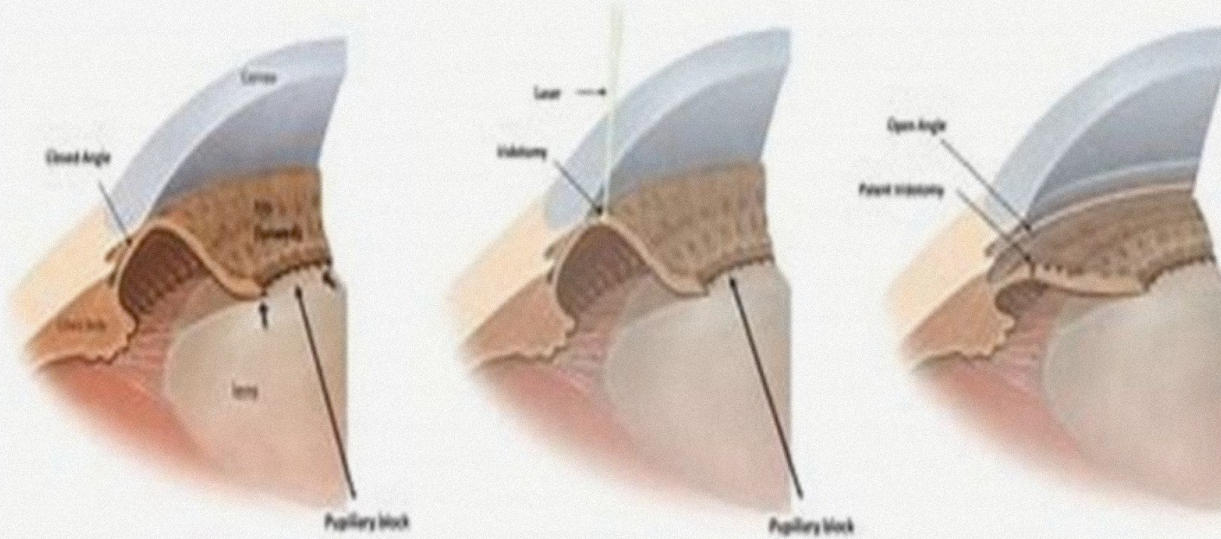
CLINICAL NUGGET

- Use of crypts for peripheral laser iridotomy .
- ~laser PI in angle closure disease



CLINICAL NUGGET

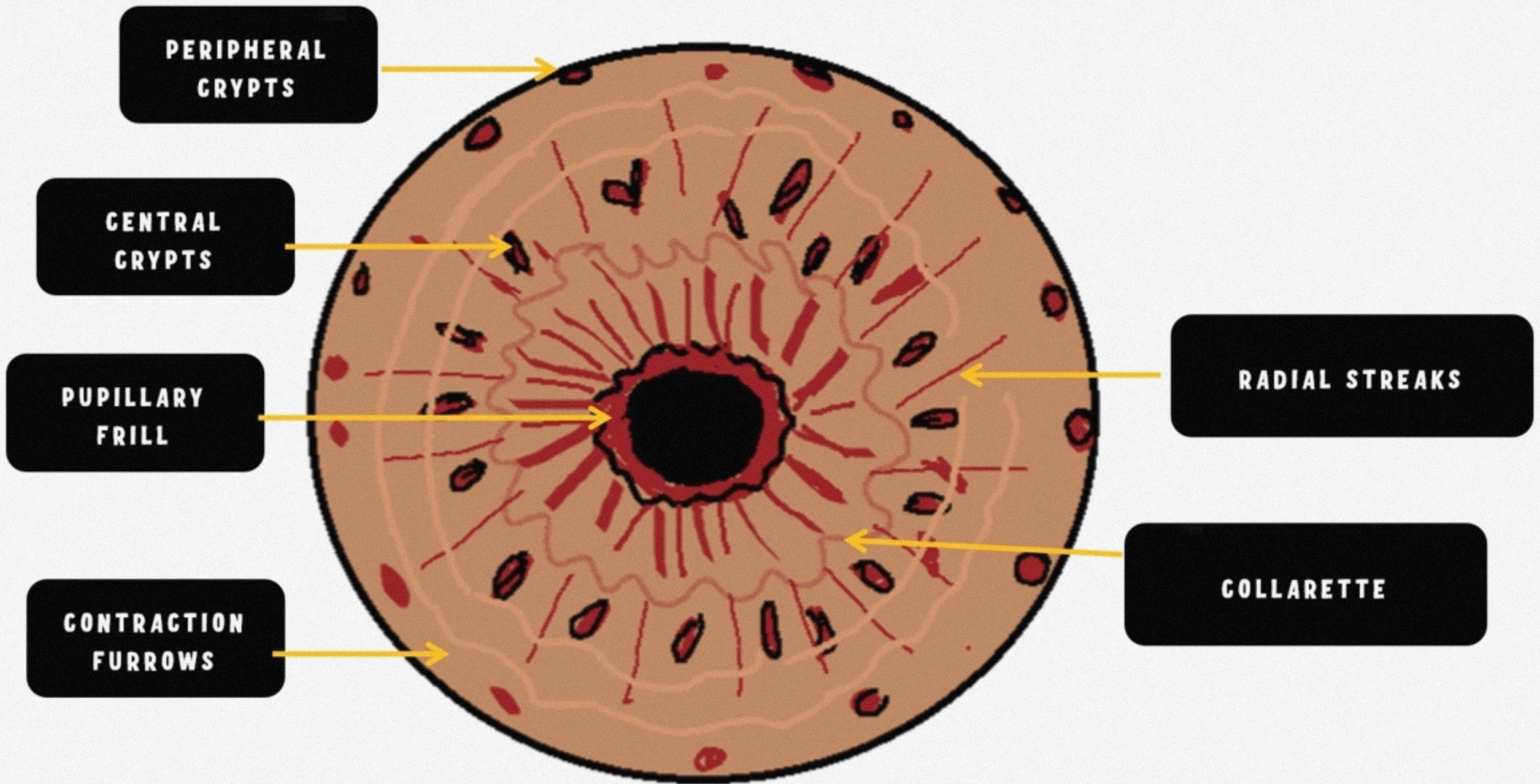
- Use of crypts for peripheral laser iridotomy .
- ~laser PI in angle closure disease

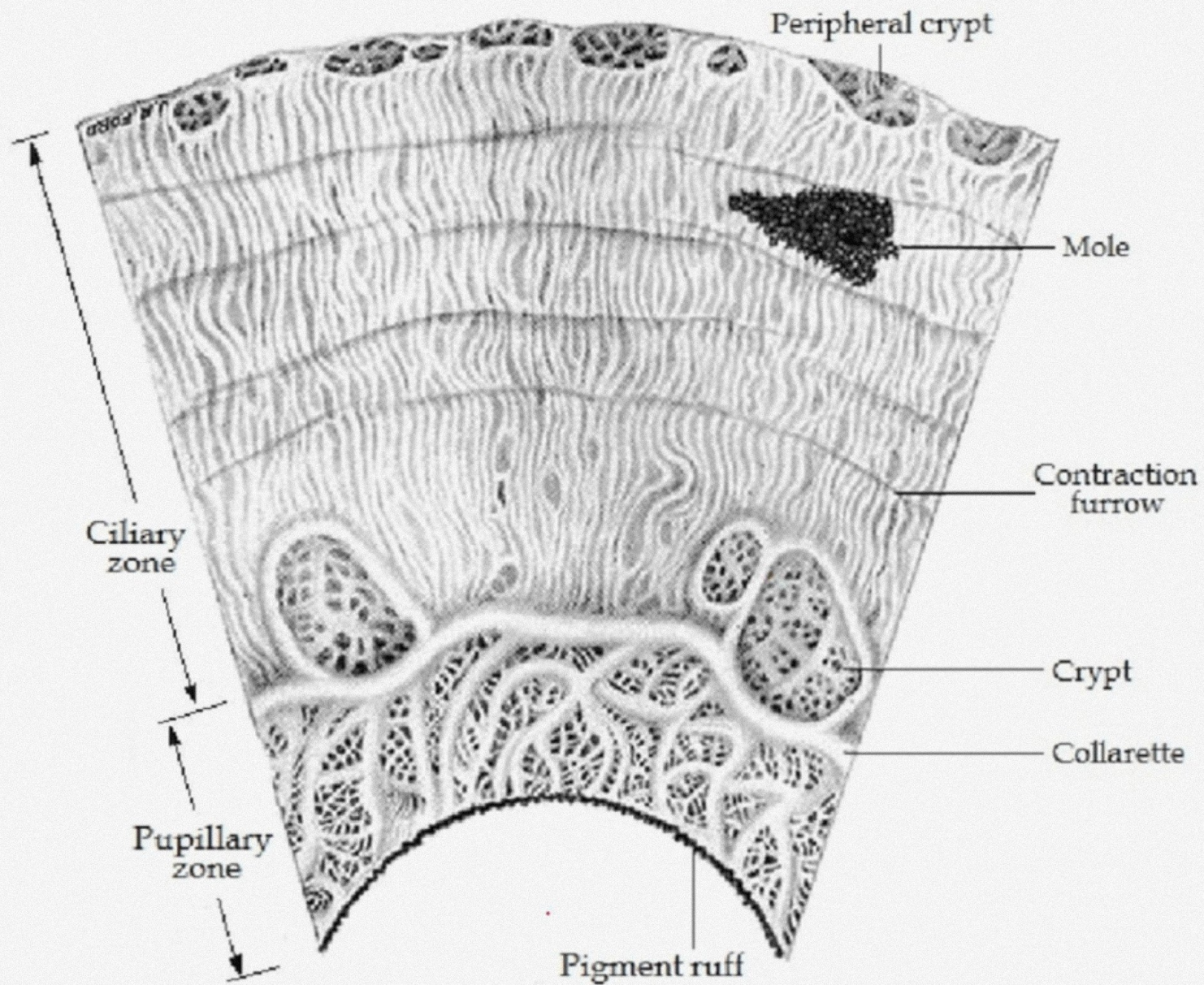


WHAT IS PUPILLARY FRILL ?

- It is a fringe of black pigment present at the end of the pupillary margin.
- It represents the **anterior end of the optic cup** embryologically
- There is a slight extension of the posterior iris pigment around the edge of the pupil leading to formation of the frill.





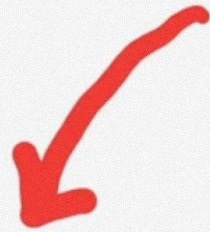


POSTERIOR SURFACE OF IRIS

- Pigmented due to pigmented epithelium
- Brown or blue in colour.
- Usually looks smooth to naked eye
- However microscopically seen → radial and concentric furrows and folds are seen



ANATOMY OF IRIS



MACROSCOPIC ANATOMY/
SURFACE ANATOMY

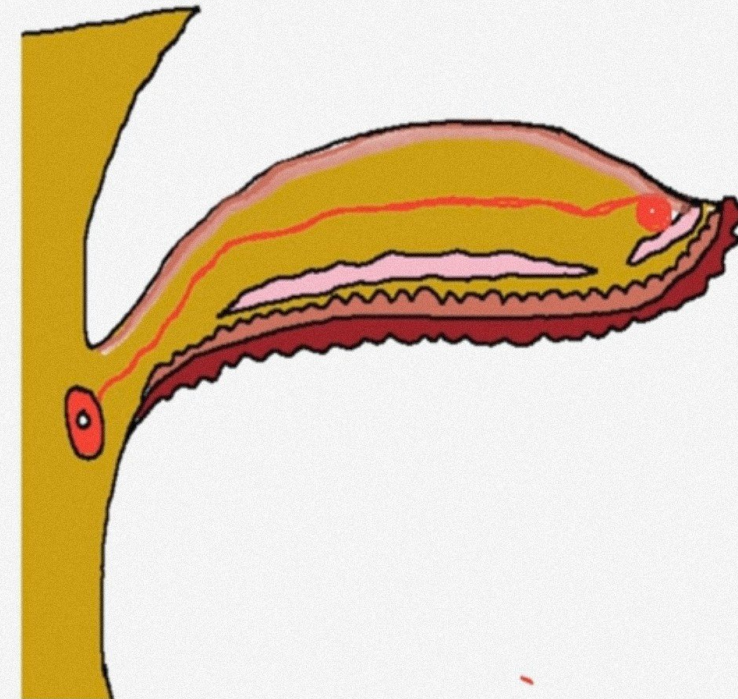


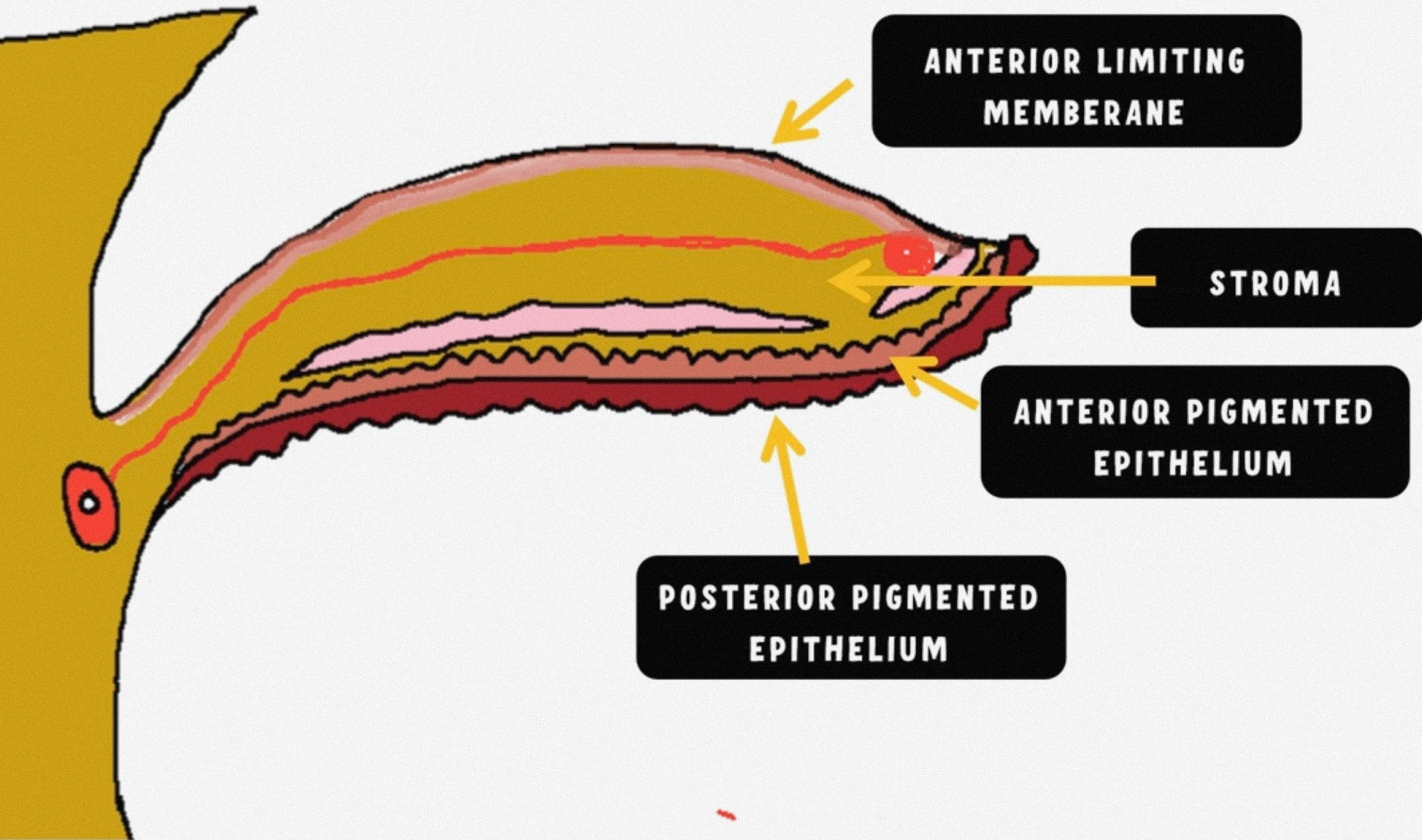
MICROSCOPIC ANATOMY /
LAYERS OF IRIS



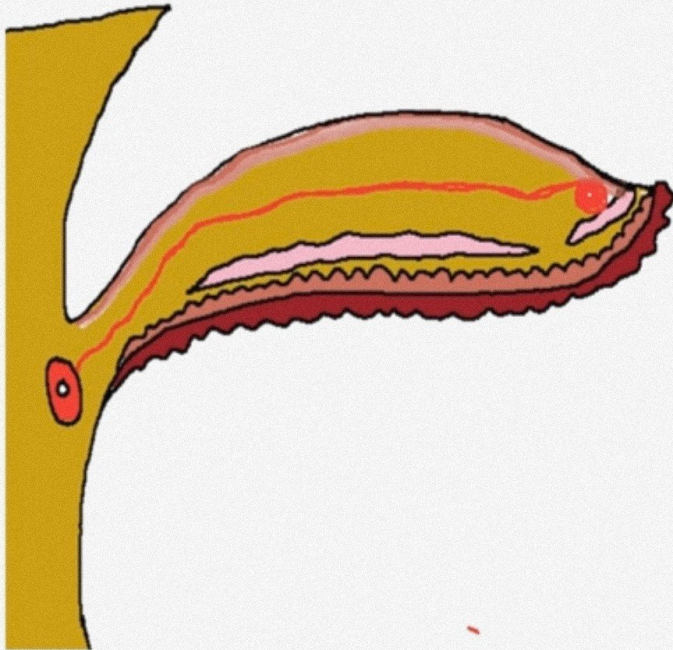
MICROSCOPIC ANATOMY / LAYERS OF IRIS

- The iris consists of **4** layers . From anterior to posterior these are:-
 - **Anterior limiting layer**
 - **Iris Stroma**
 - **Anterior Epithelium / (*Anterior Pigmented epithelium*)**
 - **Posterior Pigmented Epithelium**



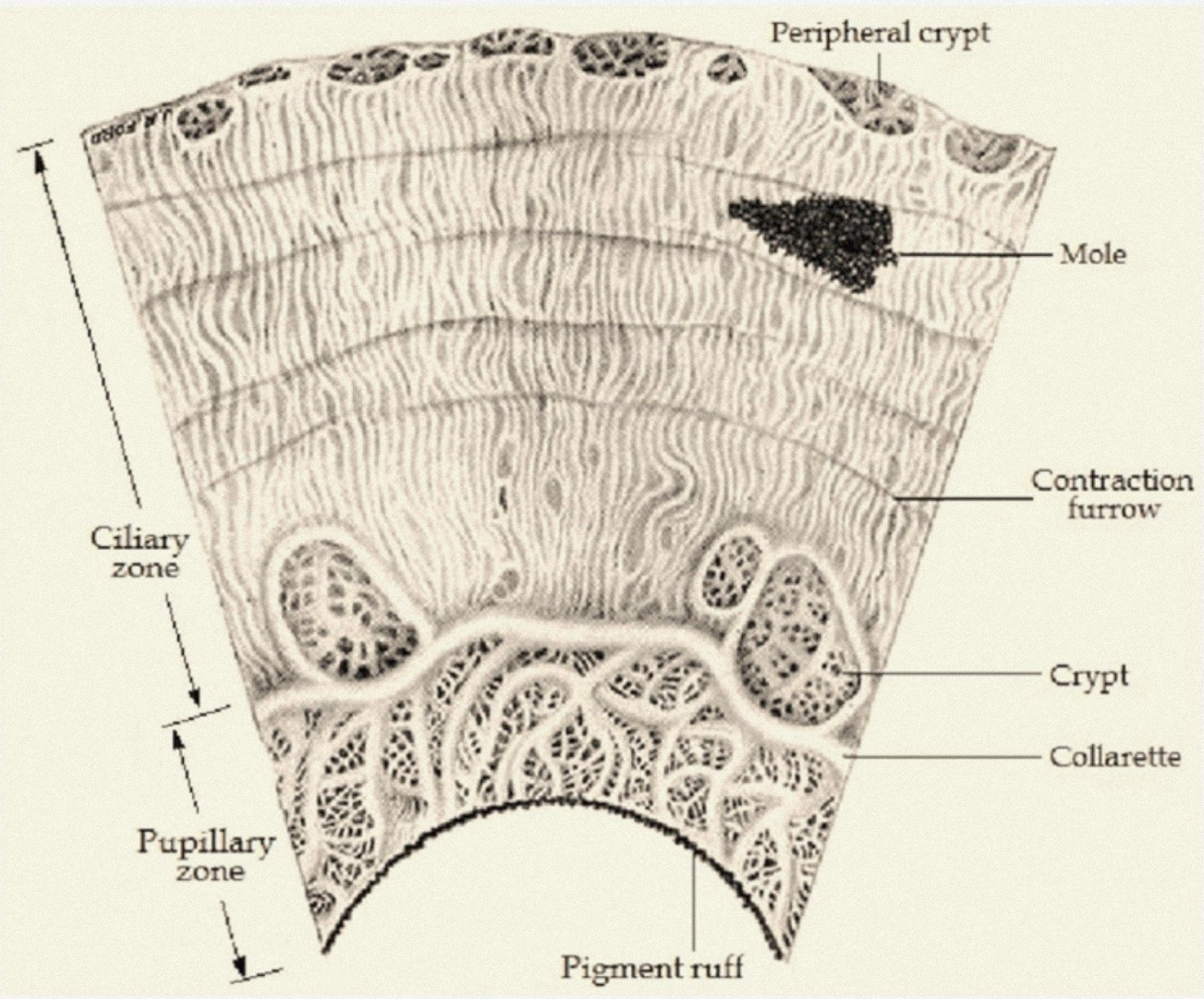


LAYER 1 : ANTERIOR LIMITING LAYER



- Not an epithelium
- Most anterior condensed part of the stroma
- Consists of melanocytes and fibroblasts.
- Decides the color of the iris
- **Thin and few melanocytes – blue iris**
- **Thick and many melanocytes – black/brown iridis**



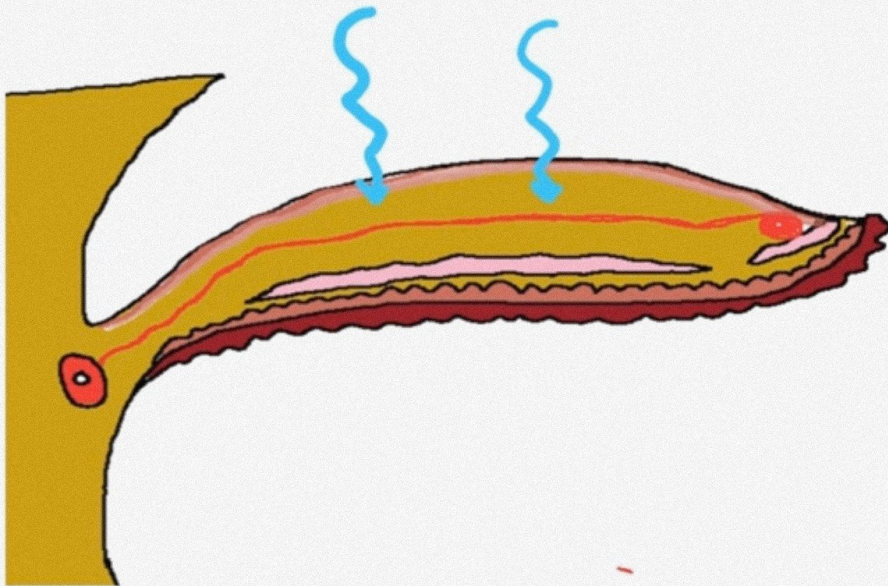


Absent in crypts
and thinner in
furrows



CLINICAL NUGGET

Aqueous Humour

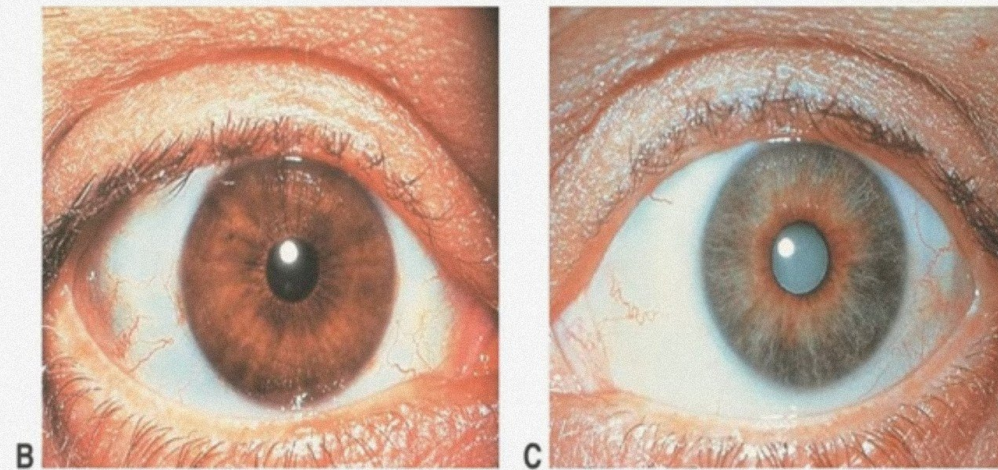


- Because anterior limiting layer is not a true epithelium, it can absorb aqueous into the stroma of the iris .



CLINICAL NUGGET : IRIS HETEROCHROMIA In FUCHS UVEITIS

- Progressive atrophy of the anterior layer and stroma of the iris
- Loss of iris colour (**heterochromia**)
- Severe atrophy : Inverted Heterochromia
- **Transillumination defects** - advanced disease
- **Blurring of iris crypts** : Darker individuals



LAYER 2: IRIS STROMA

- Forms the bulk of the iris tissue
- Consists of the network of collagen and ground substance
- Also consists of :

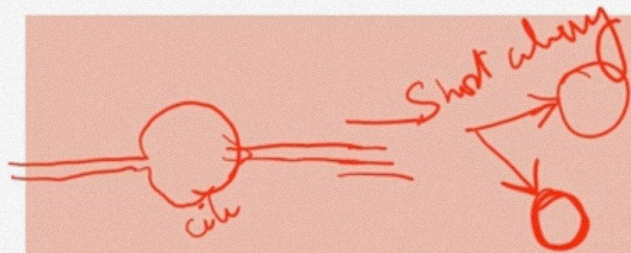
- **SPHINCTER PUPILLAE**

- **VESSELS AND NERVES**

- **DILATOR PUPILLAE**

- **PIGMENT AND OTHER CELLS**





MUSCLES OF IRIS

SPHINCTER PUPILLAE

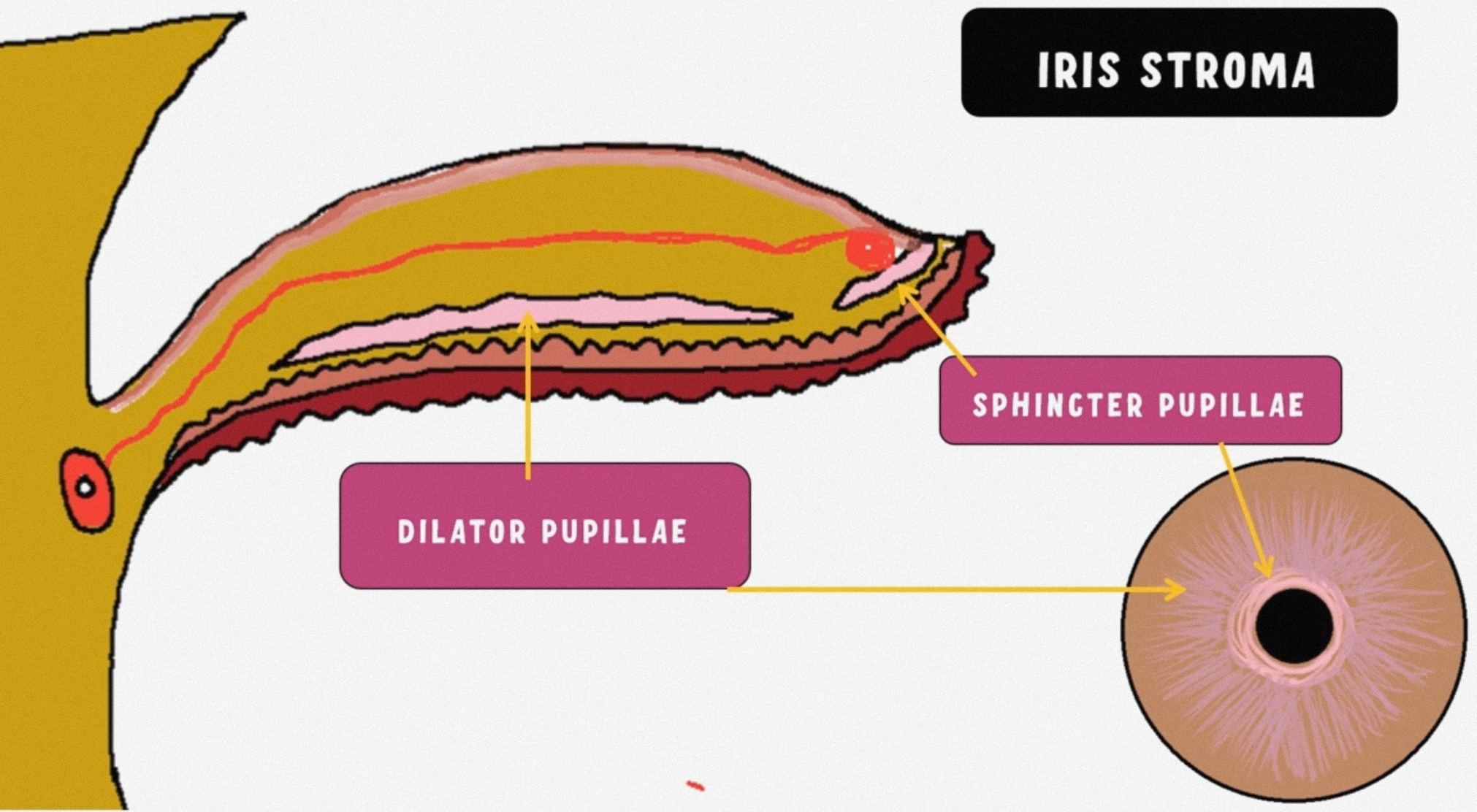
- 1 mm circular band around the pupil
- Derived from the **ectoderm**
- Causes constriction of pupil
- Innervated by the parasympathetics postganglionic fibres of third nerve via short ciliary nerve

DILATOR PUPILLAE

- Situated in the stroma of ciliary zone
- Has myoepithelium origins
- Dilates the pupil
- Supplied by the cervical sympathetic via long ciliary nerve?

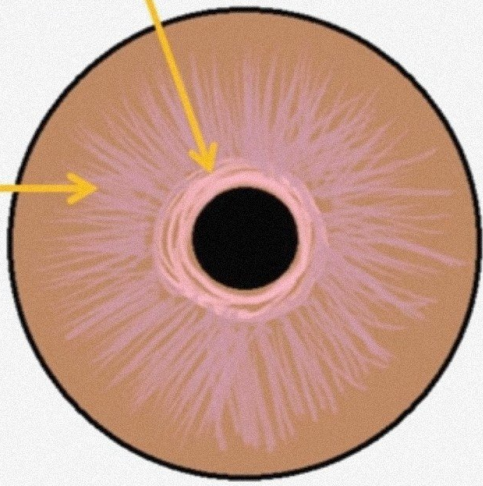


IRIS STROMA



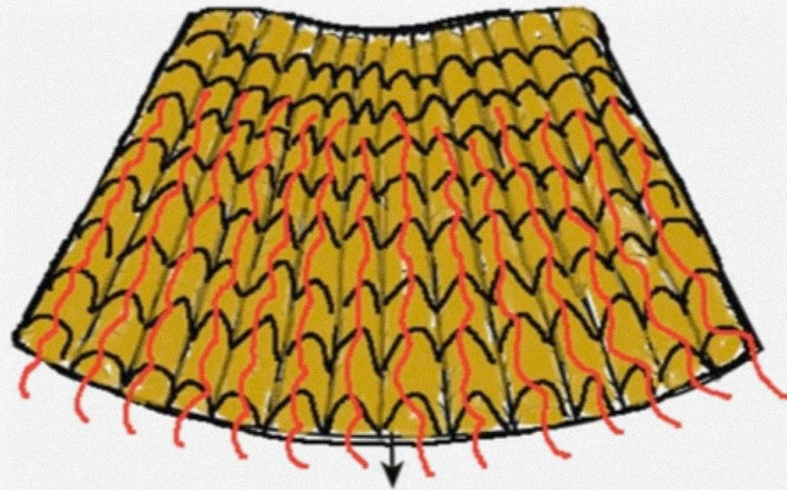
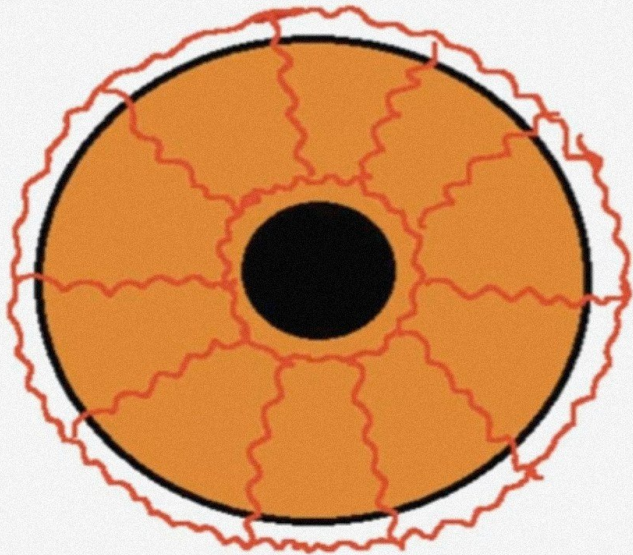
DILATOR PUPILLAE

SPHINCTER PUPILLAE



VESSELS OF IRIS

- Radial and are branches of the major arterial circle
- Responsible for formation of the radial furrows.





PECULARITIES OF IRIS VESSELS

- They lack internal elastic lamina
- Have non fenestrated endothelium

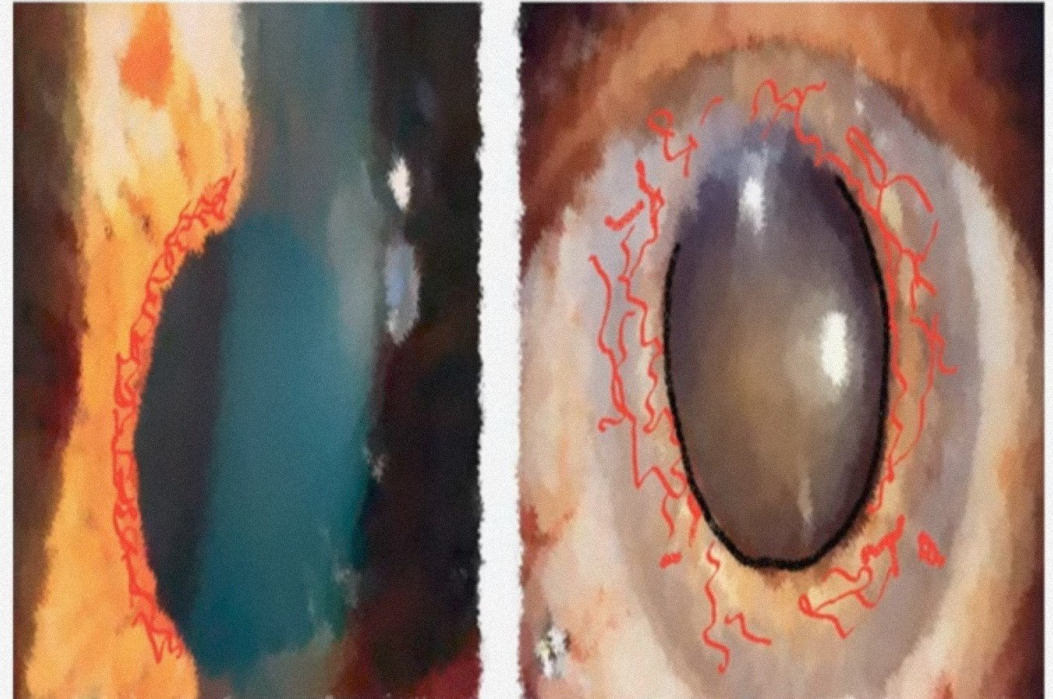


CLINICAL NUGGET :

RUBIOSIS IRIDIS (NORMAL V/S ABNORMAL IRIS VESSELS)

Abnormal vascularisation:

- Chronic uveitis
 - Neovascular glaucoma
- Vessels are not radial/
 - Irregular in shape



CLINICAL NUGGET :

RUBIOSIS IRIDIS (NORMAL V/S ABNORMAL IRIS VESSELS)

Abnormal vascularisation:

- Chronic uveitis
- Neovascular glaucoma

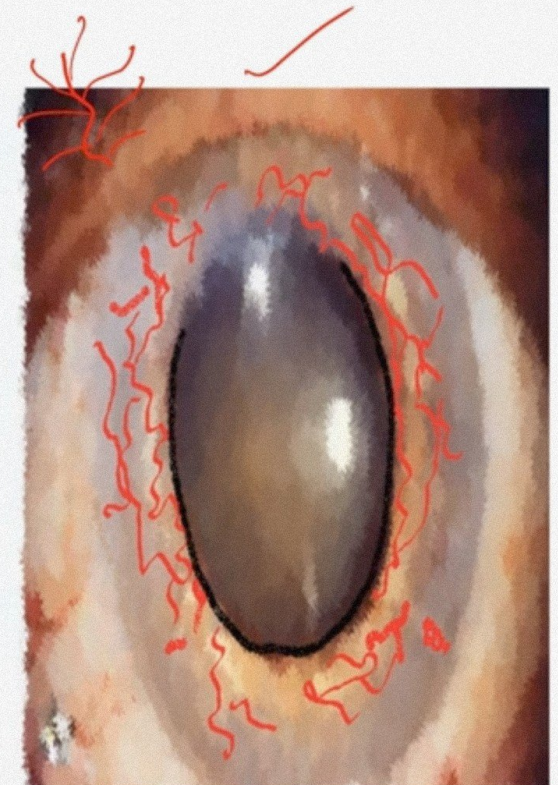
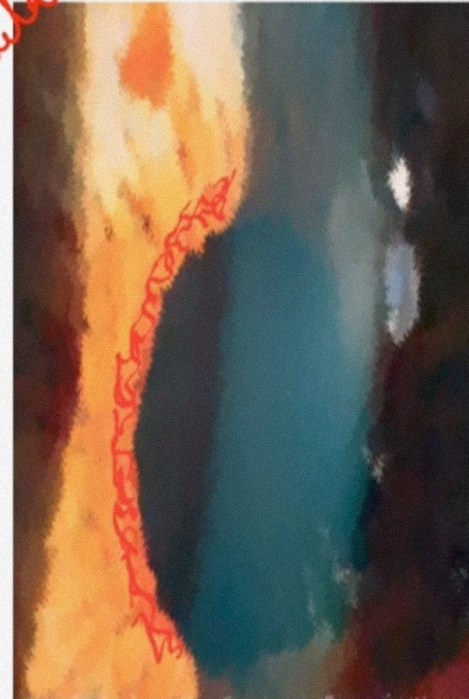
- Vessels are not radial/
- Irregular in shape

DILATED IRIS VESSELS :

ROSEOLAE

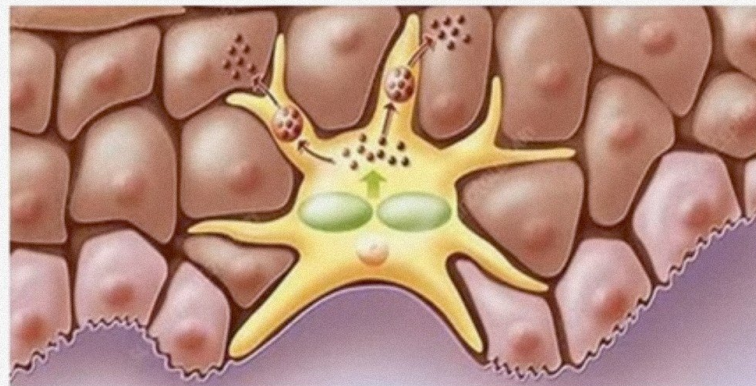
Seen in syphilis

VEGE
neovascularis



CELLS OF IRIS STROMA

- **MELANOCYTES** : have melanosomes and branching filaments
- **CLUMP CELLS** : round in shape without branching filaments
- Other cells in iris are the fibroblasts, macrophages and lymphocytes



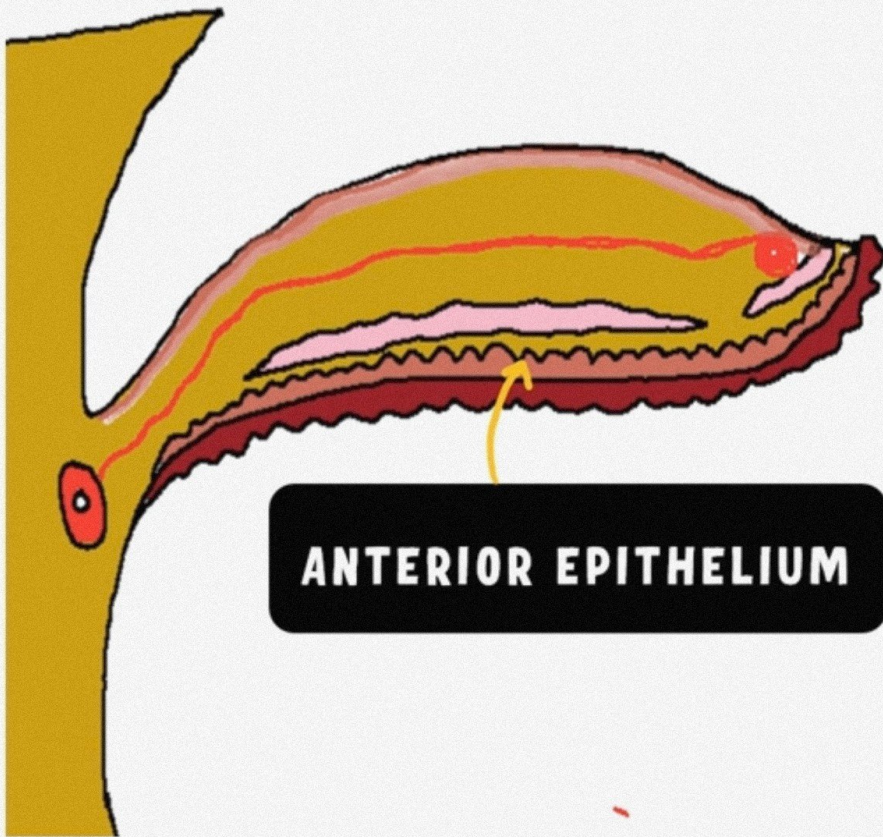
CLINICAL NUGGET : Heterochromia in Horner Syndrome

- Iris pigmentation determined by the number of melanin granules in the melanocytes
- Sympathetic innervation during fetal life determines the migration of the melanocytes
- Patients with horner syndrome → lighter Iris

**WHICH ANTIGLAUCOMA MEDICATION CAUSES DARKENING OF THE IRIS AND
HYPERTRICHOSIS?**



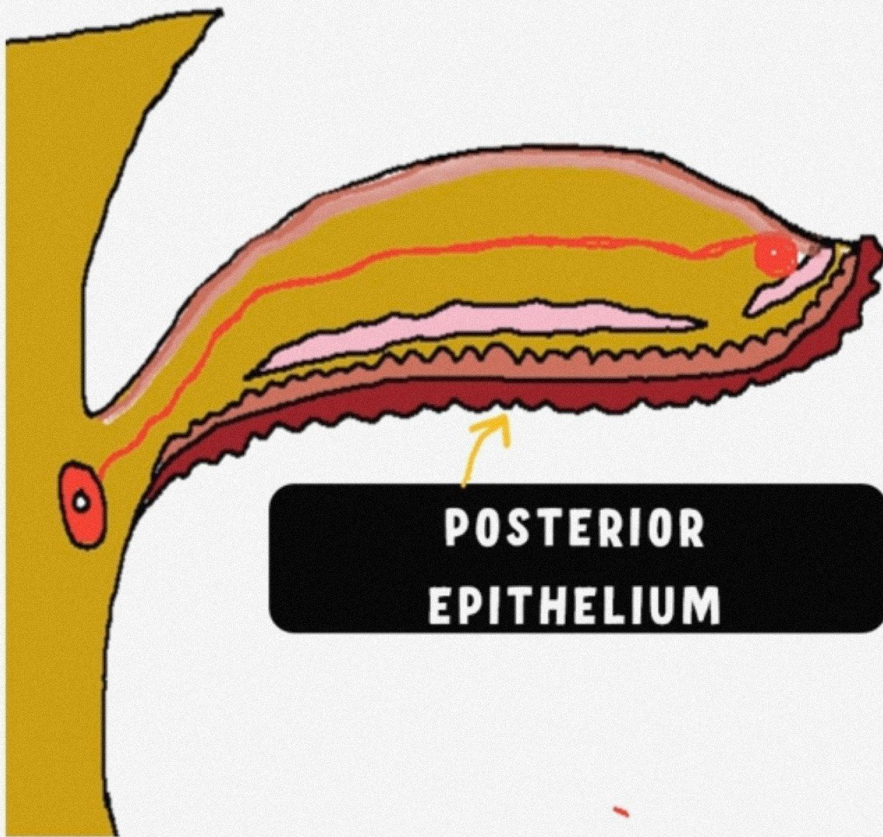
LAYER 3 : ANTERIOR EPITHELIUM



- Also Pigmented layer (do not get confused)
- Anterior continuation of pigmented layer of Ciliary Body and Choroid
- Not as heavily pigmented as the posterior epithelium.
- Give origin to the dilator pupillae muscle



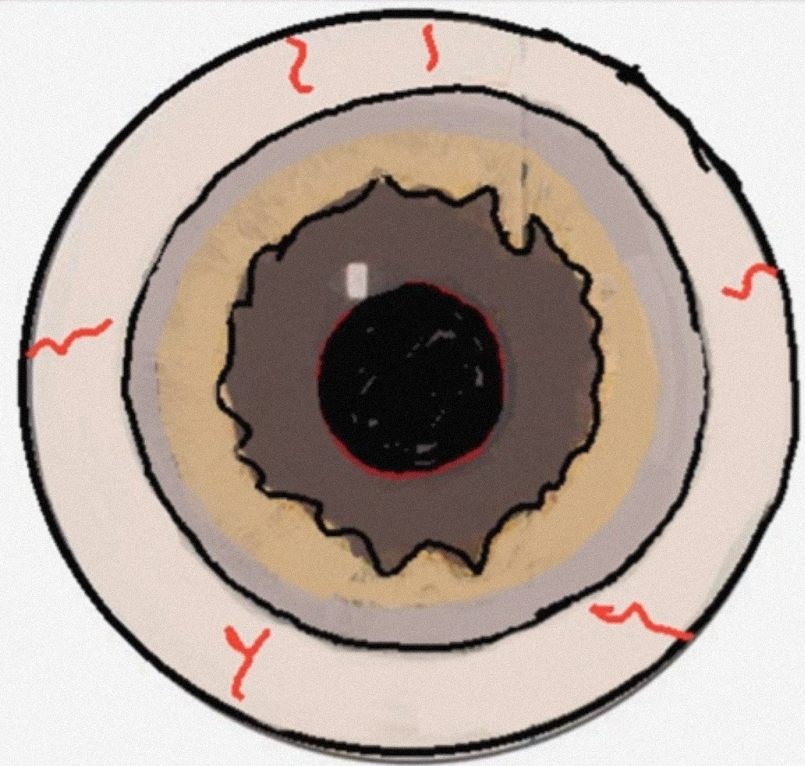
LAYER 3 : POSTERIOR PIGMENTED EPITHELIUM



- Heavily pigmented
- Derived from the inner layer of the optic cup.
- Anterior continuation of the non pigmented layer of the ciliary body which is a continuation of the neurosensory retina.
- Consists of many melanocytes
- At the pupillary margin forms the frill and meets the anterior epithelium .



CLINICAL NUGGET : ECTROPION UVEA





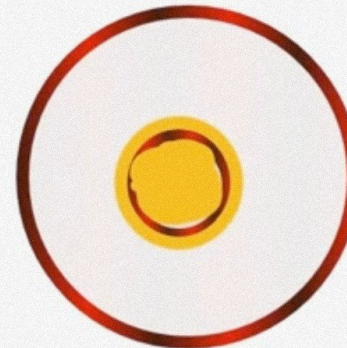
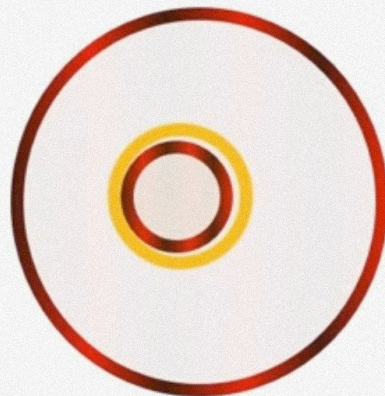
IRIS resembles a thin circular disc and is **analogous** to a diaphragm of a camera.



CLINICAL NUGGET

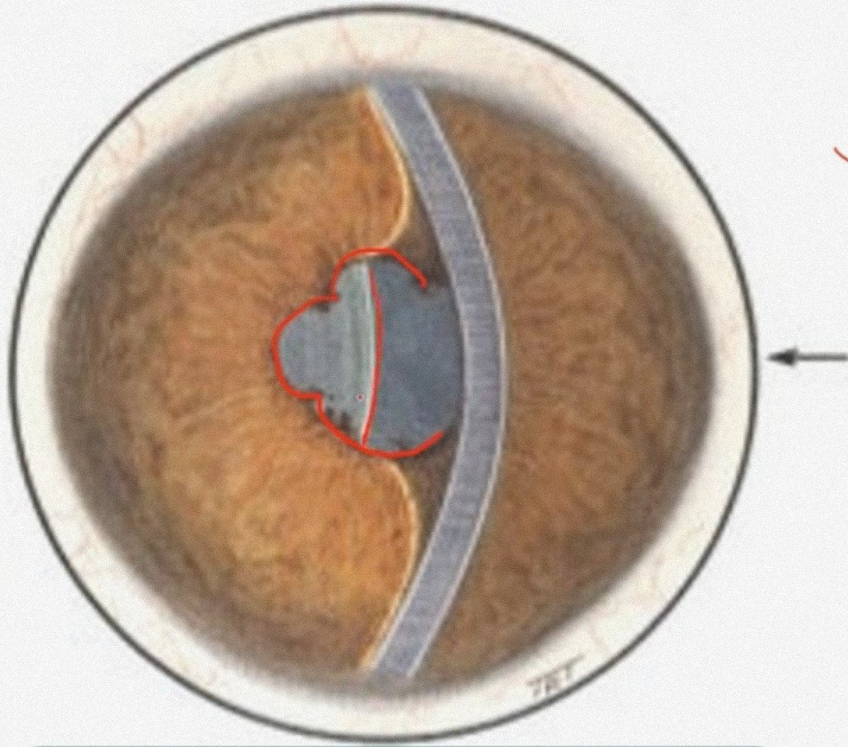
- In inflammation/Uveitis
- Iris becomes swollen and muddy in appearance
- Pupillary reactions are abolished/ sluggish
- Iris may stick on the lens ~synechiae formation

SECLUSIO PUPILLAE
=360 degrees
synechiae



OCCLUSIO PUPILLAE
=360 degrees
synechiae with lens
not visible





V/S

**SECLUSIO PUPILLAE = 360 degrees
synechia**



**OCCLUSIO PUPILLAE = 360 degrees
synechia with lens not visible**

