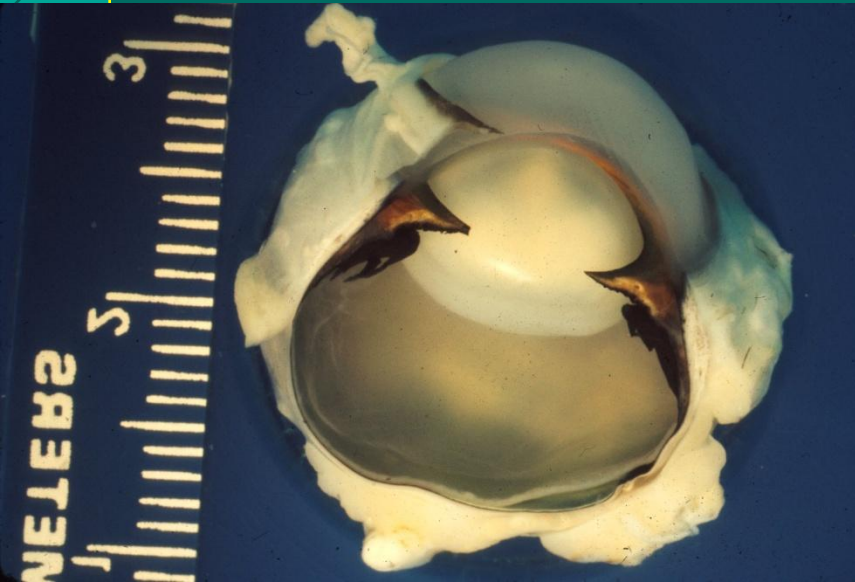
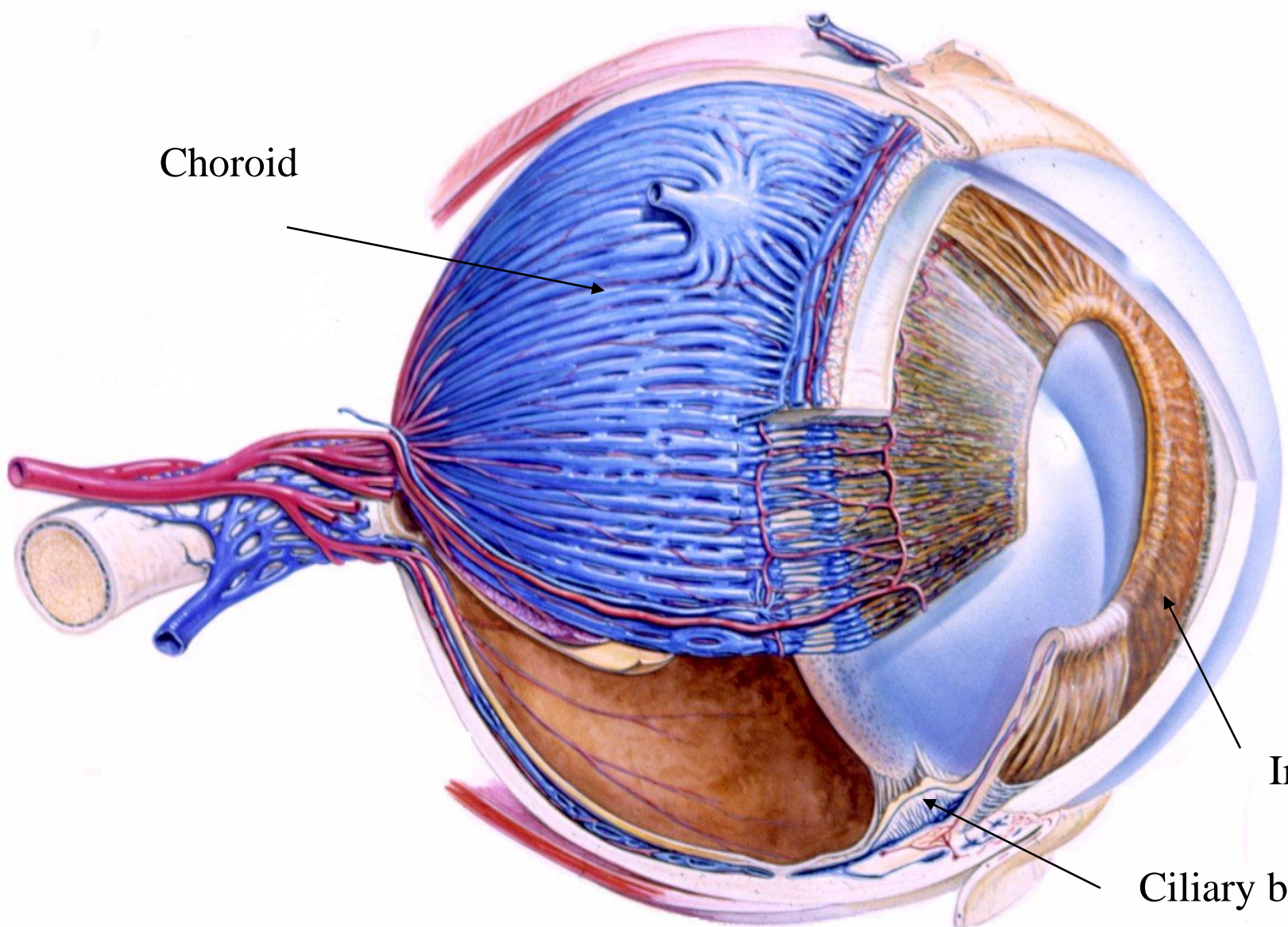


Anterior Uvea

University of Florida





Choroid

Iris

Ciliary body

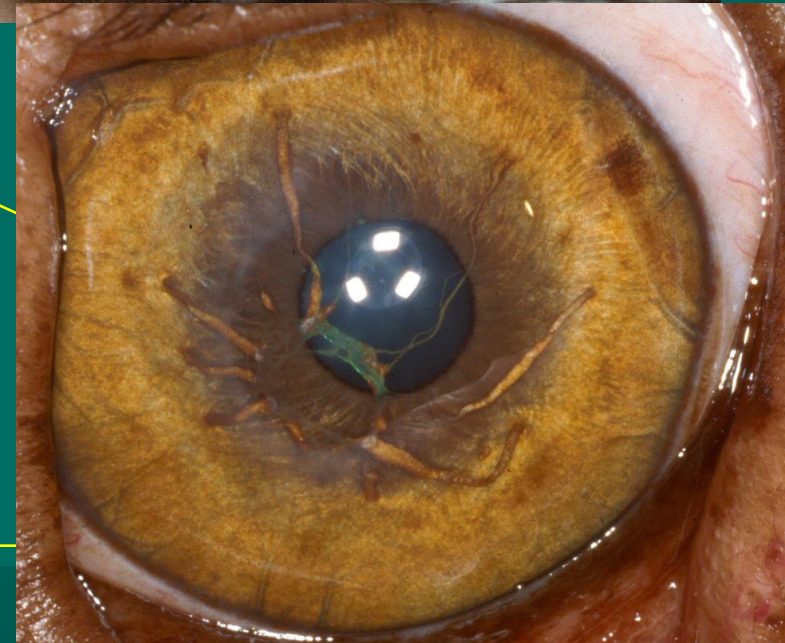
- Heterochromia - difference in color between the irides, or parts of one iris having different colors.

Hypopigmentation - Siamese and white cats, merle collies, harlequin Great Danes, Dalmatians, Siberian Huskies, Malamutes, Pinto, Appaloosa, white and some gray horses.



- Persistent Pupillary Membranes (PPM's)

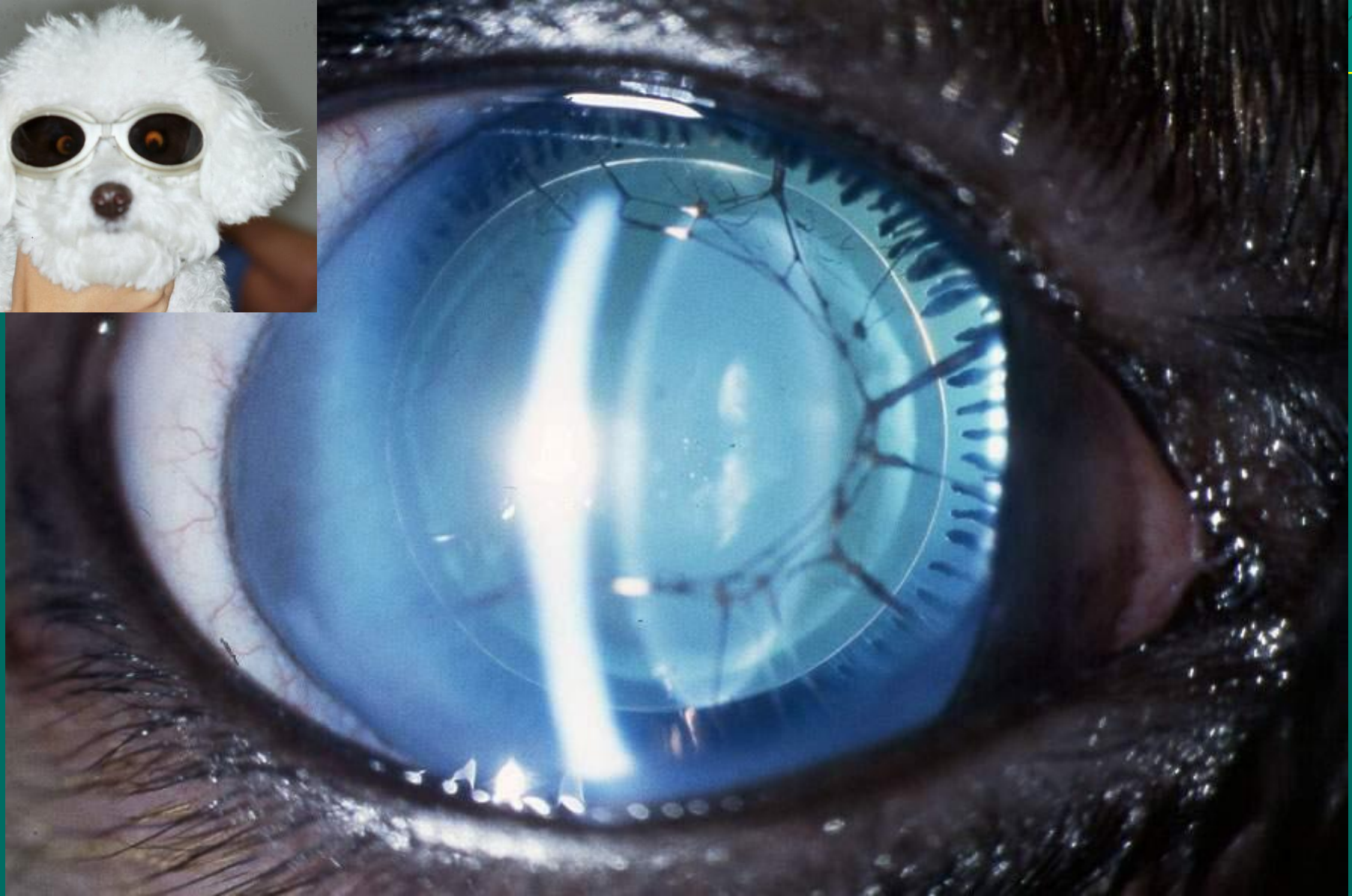
- In the fetus, the pupil is closed with a thin pupillary membrane that regresses prior to birth.
- PPM's are attached iris to iris, iris to lens, or iris to cornea.
- PPM's are heritable in the Basenji and the Collie.



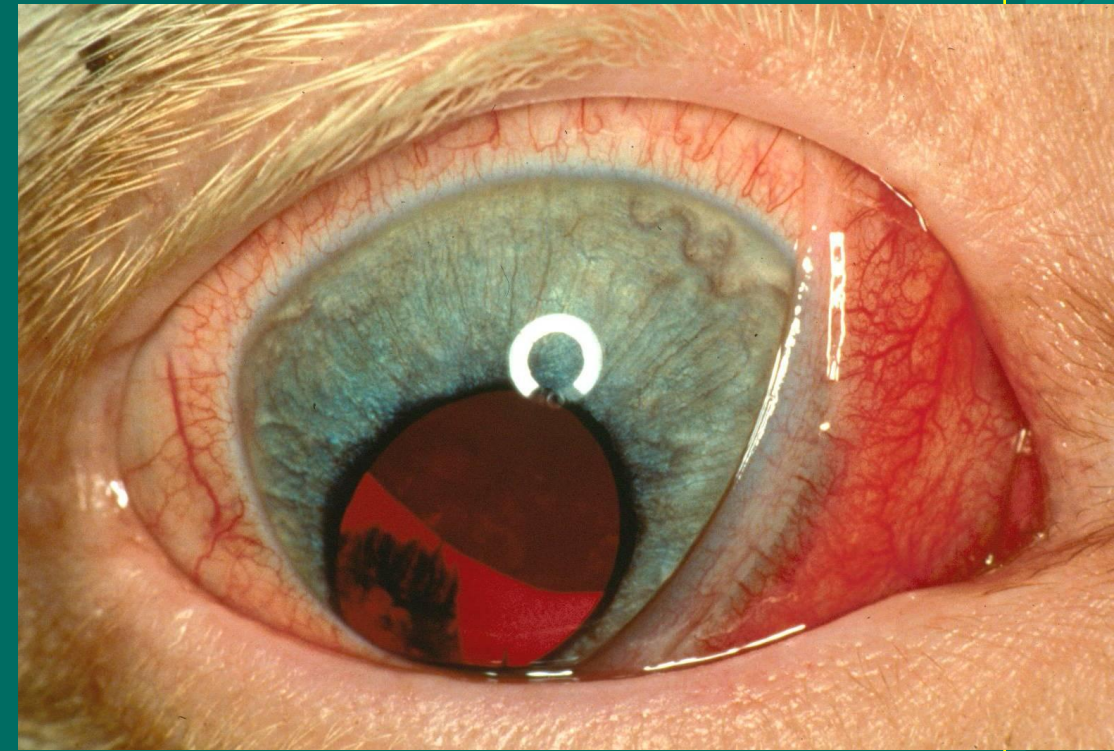
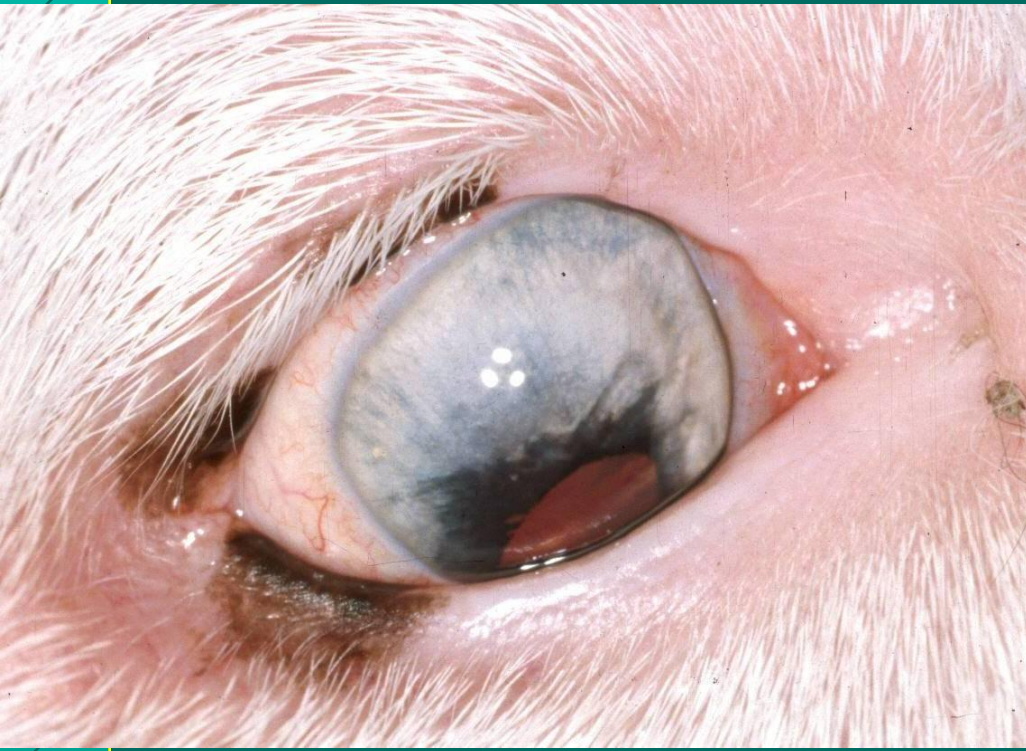
Iris hypoplasia

- Hypoplasia is incomplete development of the iris; aniridia is complete lack of iris tissue.





Aniridia: extreme iris hypoplasia



Corectopia

D-shaped pupil in cats



Nasal short ciliary nerve and malar short ciliary nerve innervate the iris sphincters. The nasal short ciliary nerve is abnormal in the OD. It cannot constrict.

Anterior Uveitis: iridocyclitis

“catch all” term

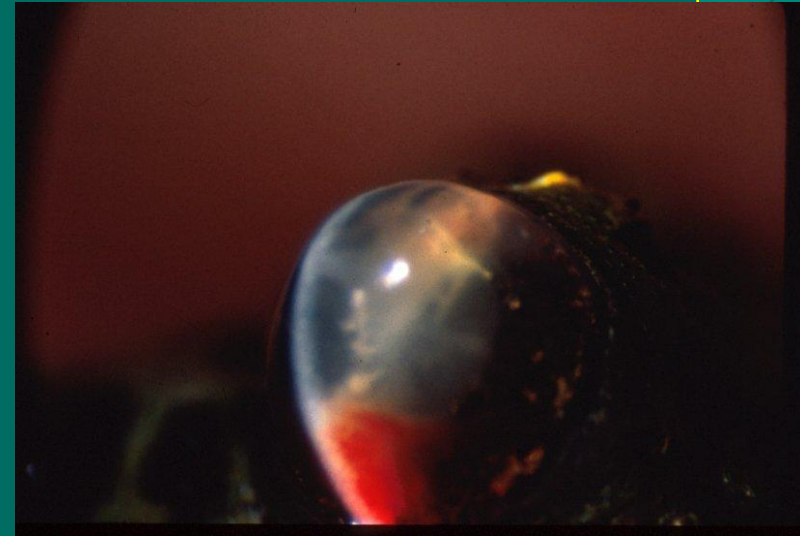
■ Etiology

– a. Infectious:

- Dogs: ICH, fungi, rickettsia, protothecosis
- Cats: FIV, FIP, FeLV, herpes, Toxo, Crypto, Bartonella

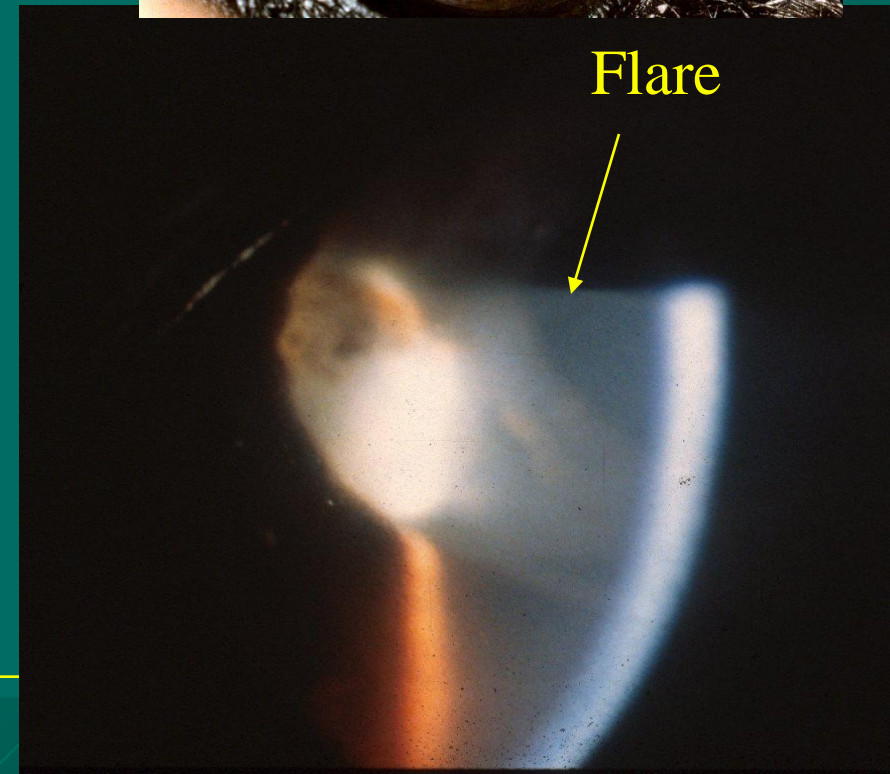
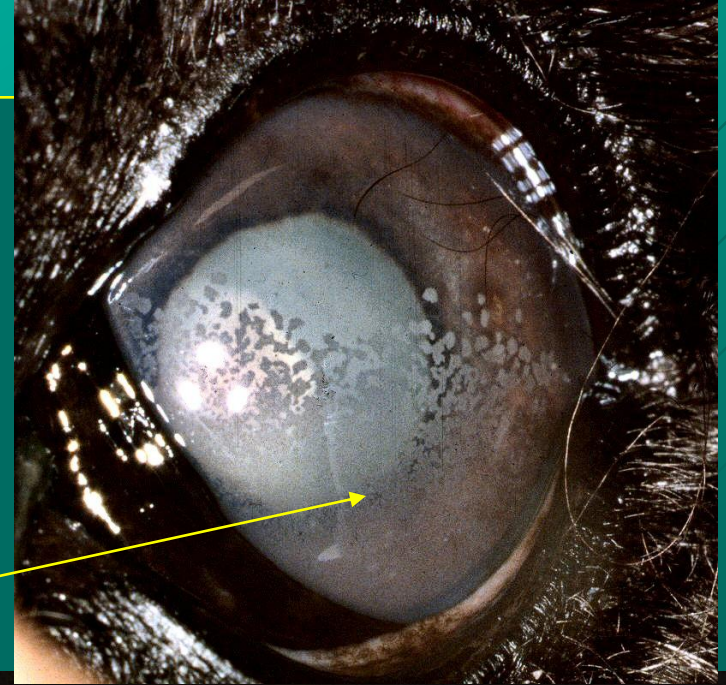
– b. Noninfectious

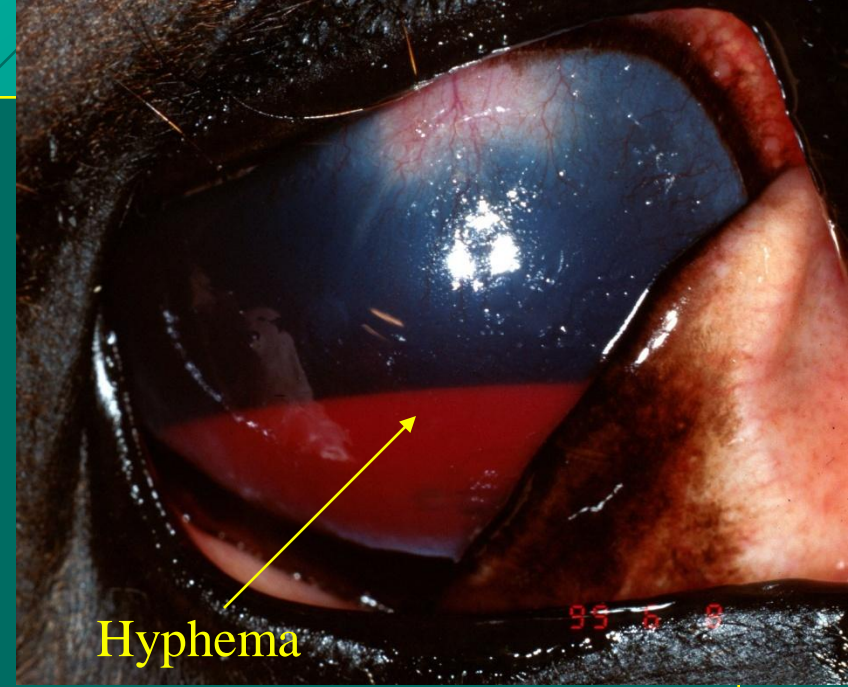
- Secondary to corneal ulcers
- OMSD such as lymphoma
- Immune mediated: VKH, SLE, LIU
- Idiopathic: common
- Traumatic



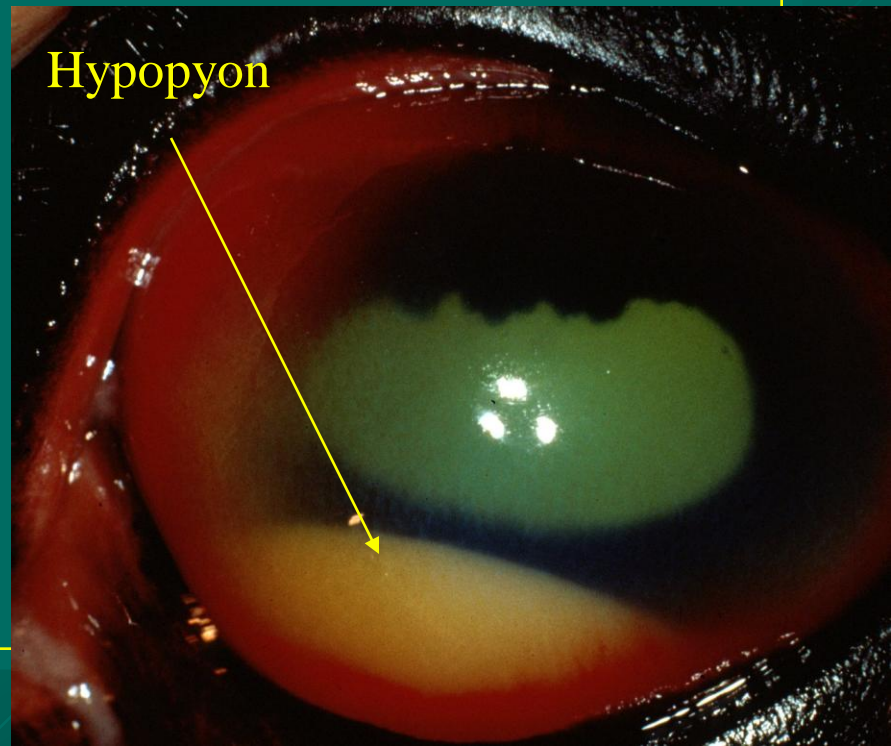
■ Clinical signs

- Photophobia, epiphora
- Prolapsed nictitans
- Conjunctivitis
- Scleral injection
- Corneal edema, KPs
- Aqueous flare
- Hyphema and/or hypopyon
- Miosis
- Hypotony
- Glaucoma may result.

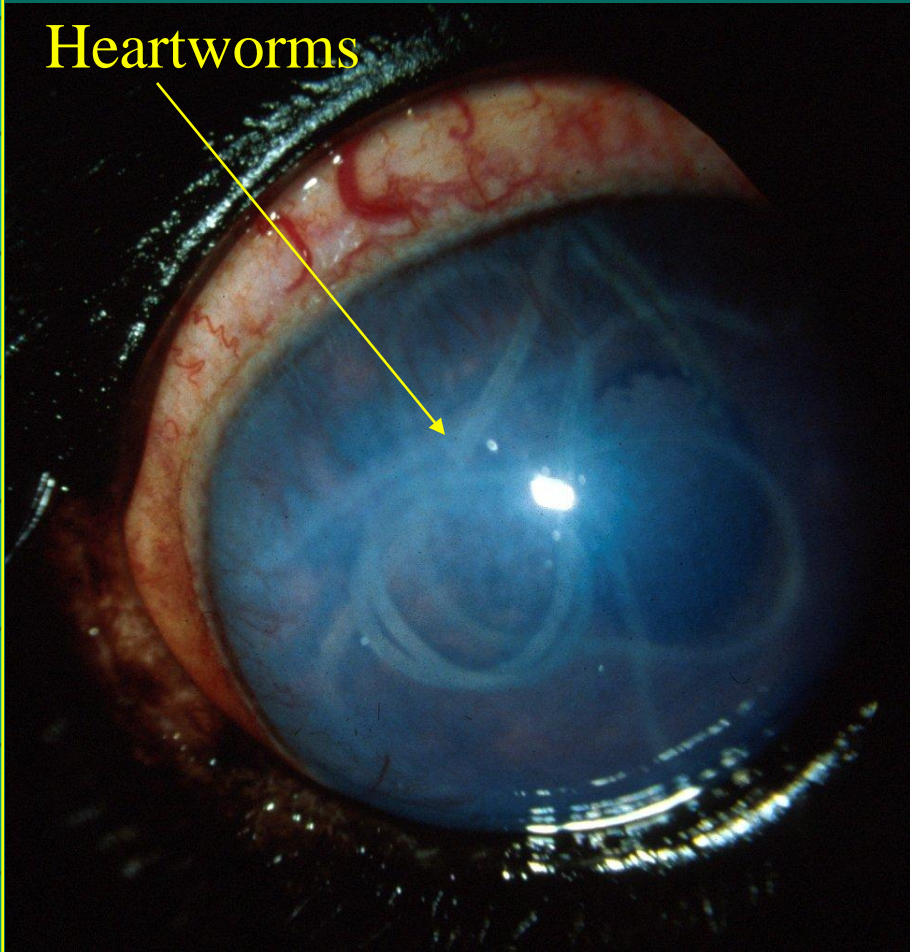




Hyphema



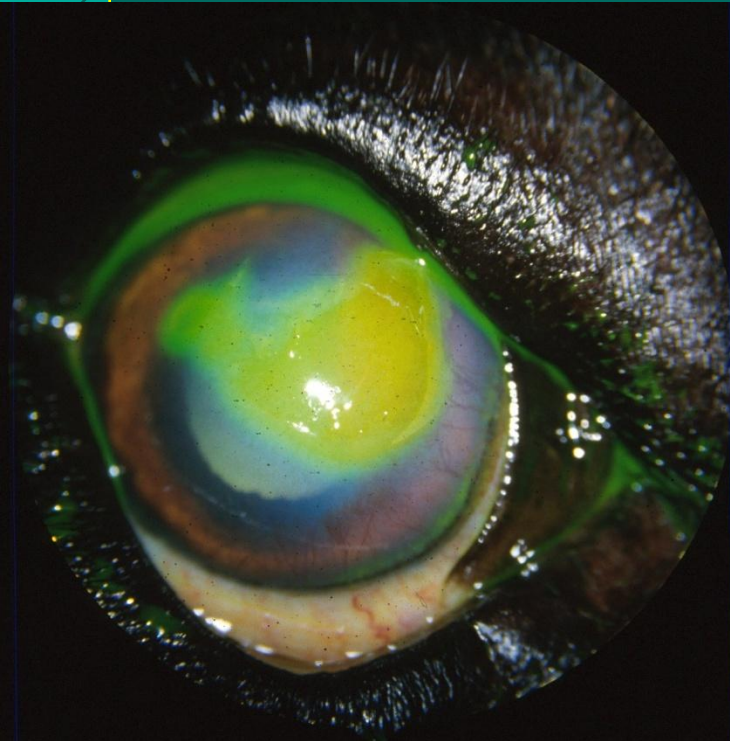
Hypopyon



Heartworms

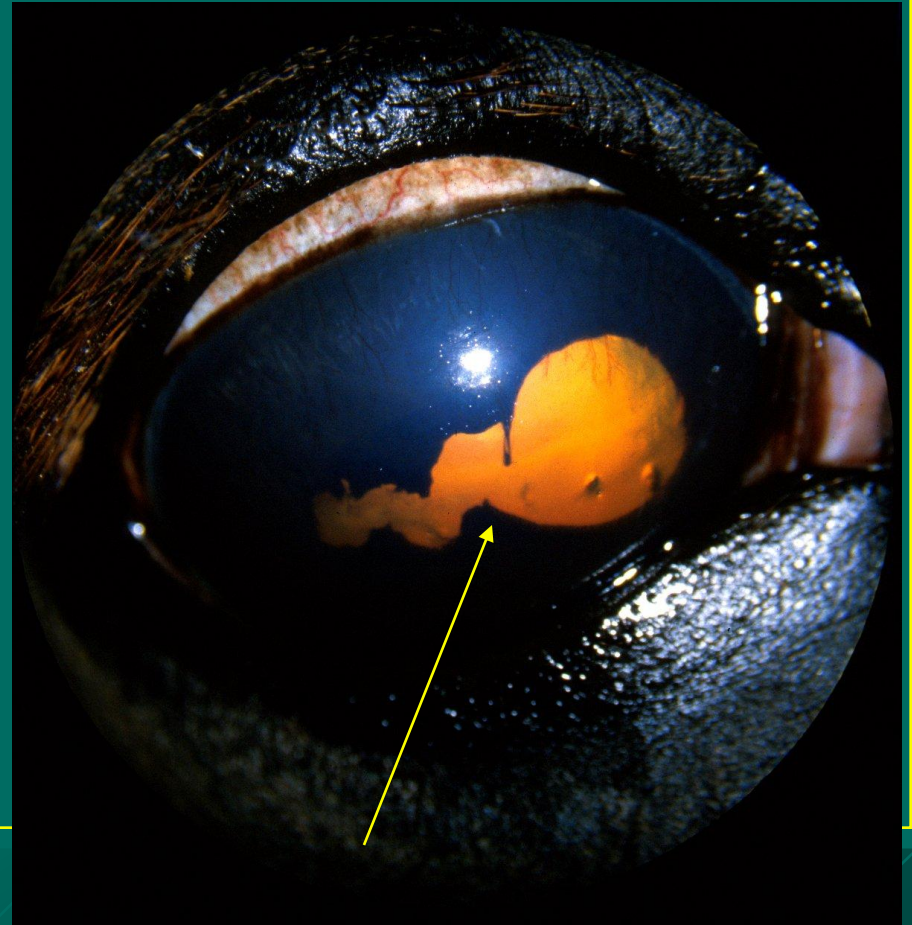
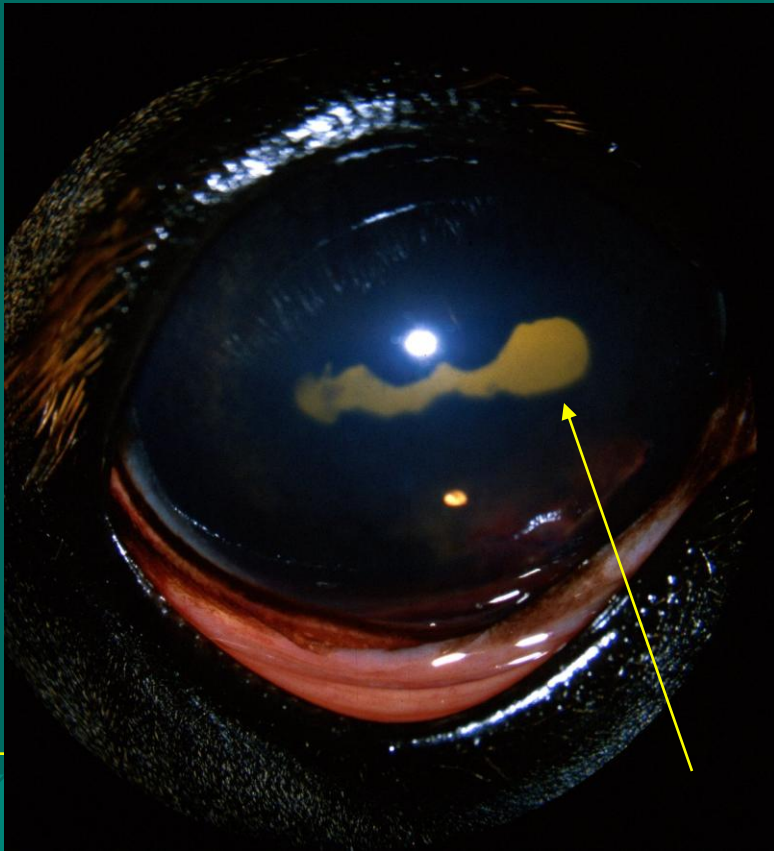
Differential diagnosis for uveitis

- a. Ulcers
- b. Glaucoma
- c. Conjunctivitis



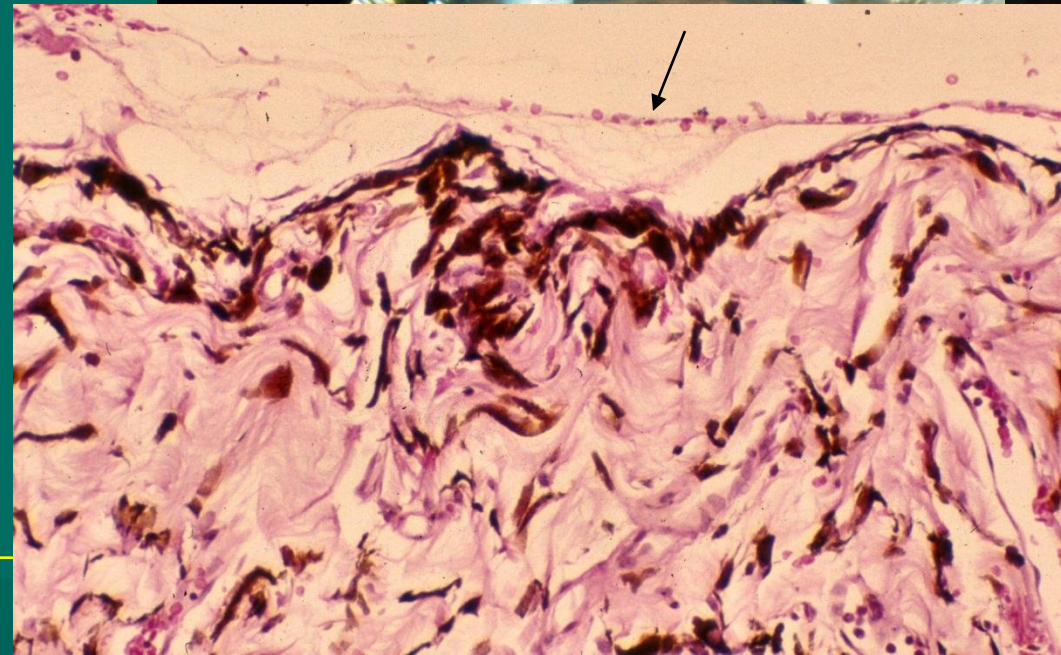
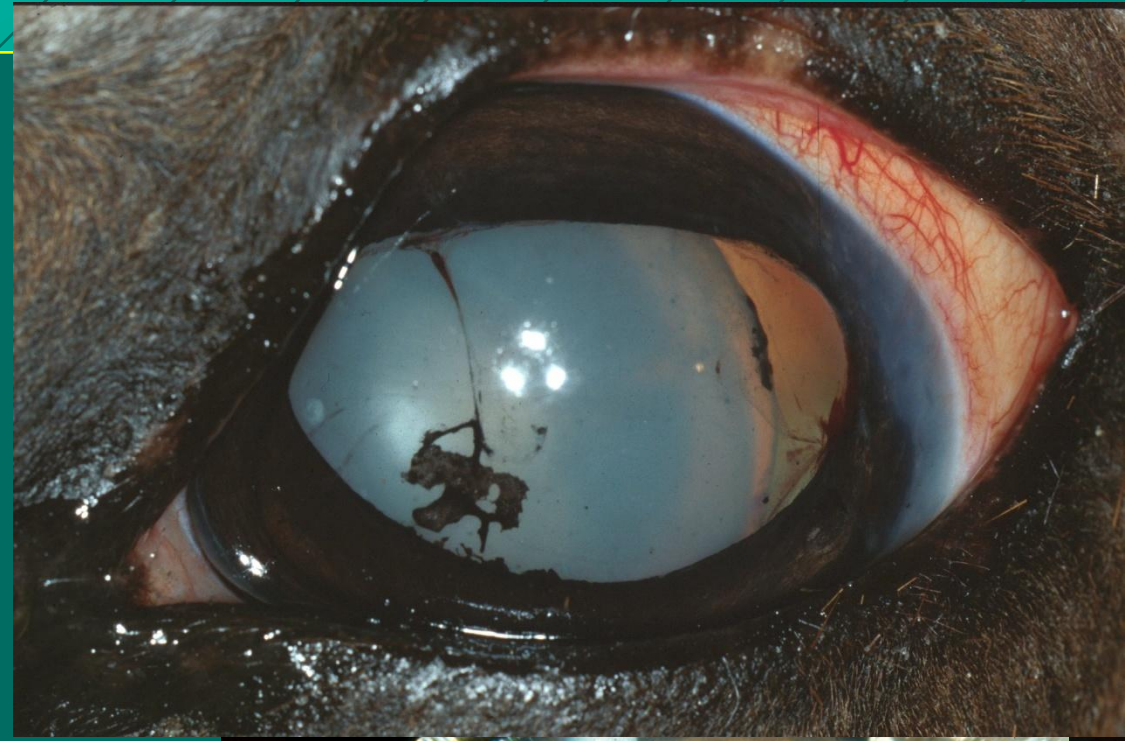
■ Treatment of Anterior Uveitis

- a. Mydriatics/Cycloplegics: atropine
- b. Treat cause if identified
- c. Topical and/or systemic steroids and NSAIDS
- d. Antibiotics

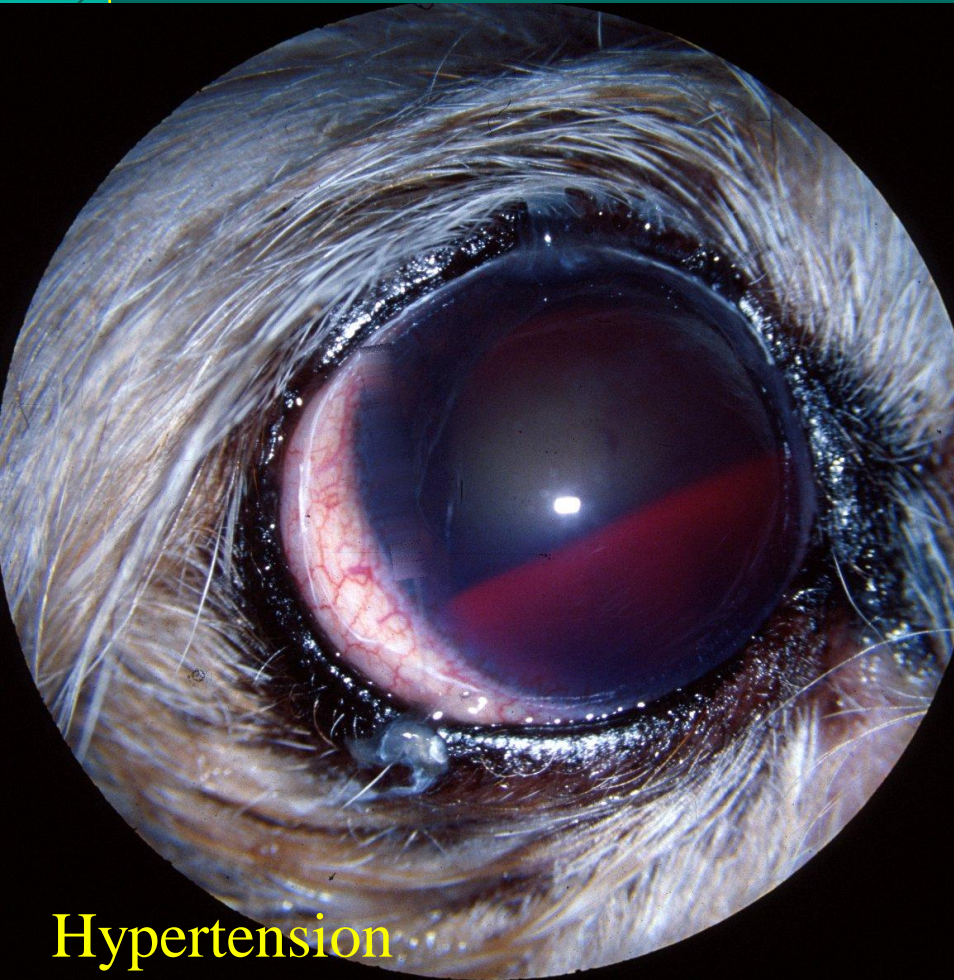


■ Complications of Uveitis

- a. Recurrent or persistent, eg horses and cats.
- b. Anterior synechia, Corneal edema
- c. Iris bombé and glaucoma
- d. Phthisis bulbi
- e. Cataract and lens luxation
- f. Secondary glaucoma
- g. PIFM and ectropion uveae



- If you have HYPHEMA you have **uveitis**.
- Hyphema is a nonspecific sign of uveitis.



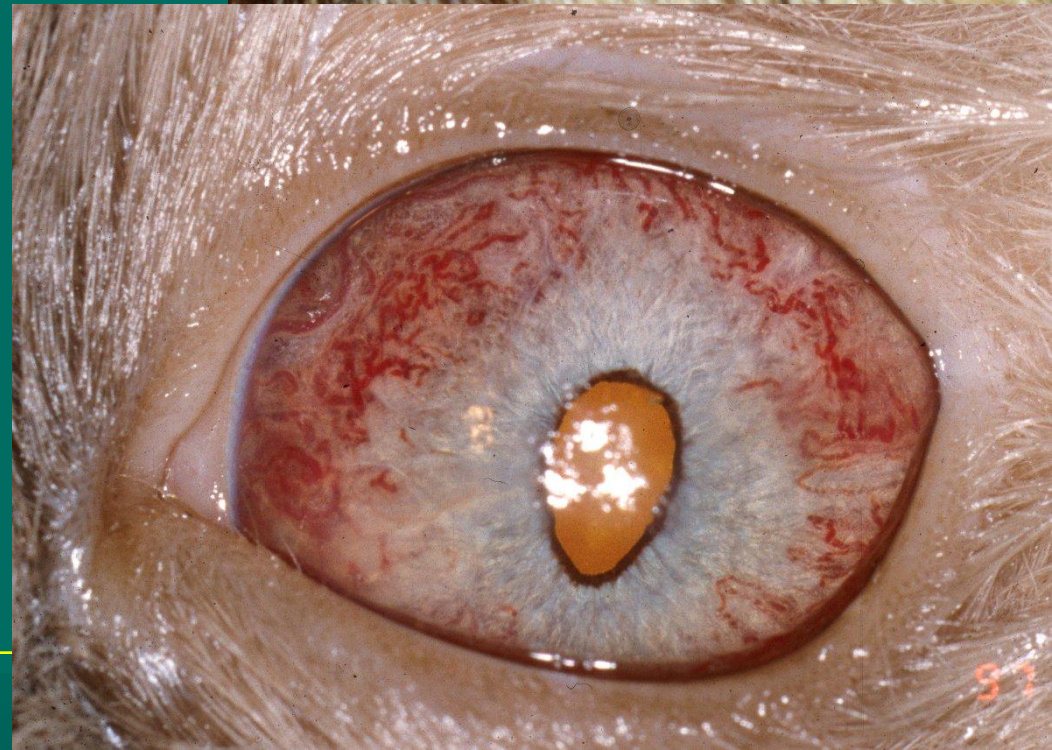
Hypertension



FIP

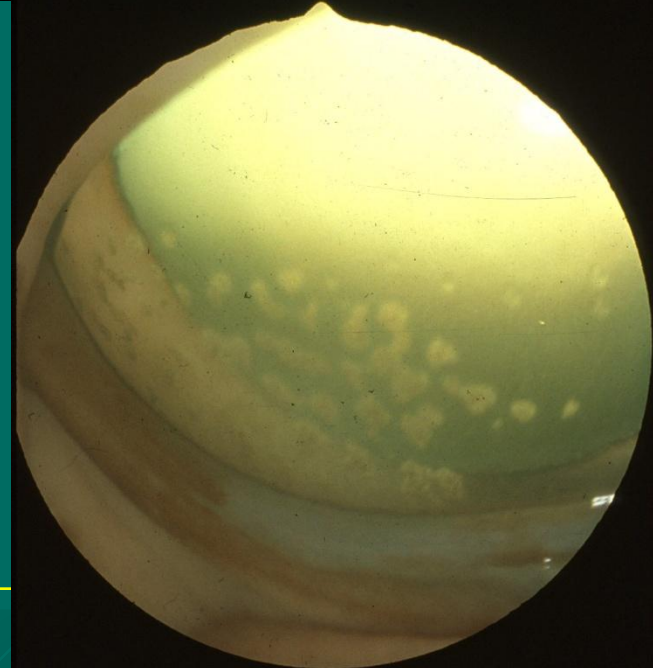
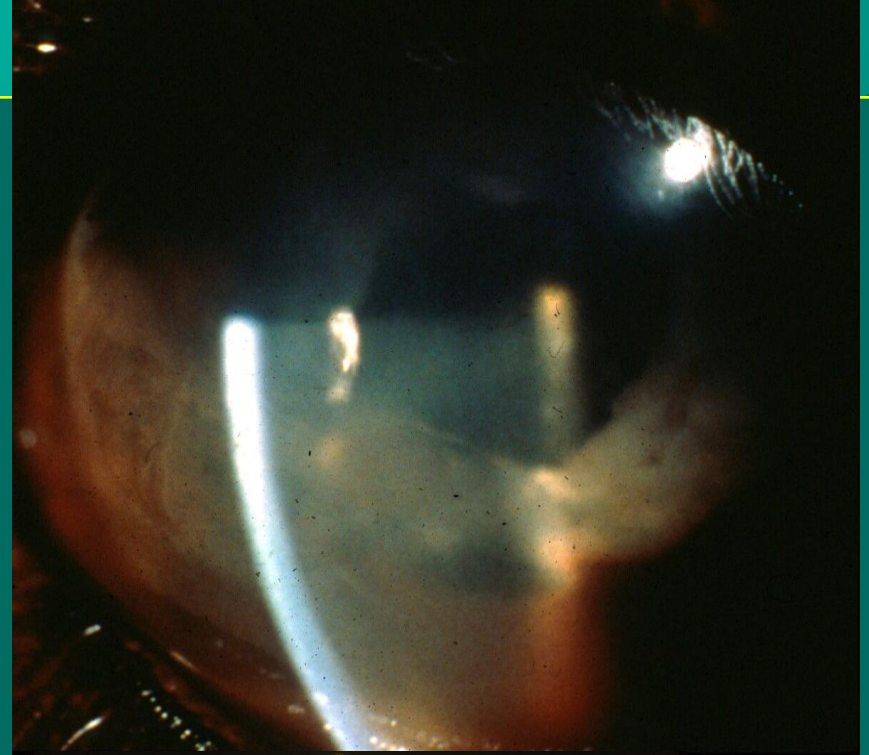
Uveitis in cats

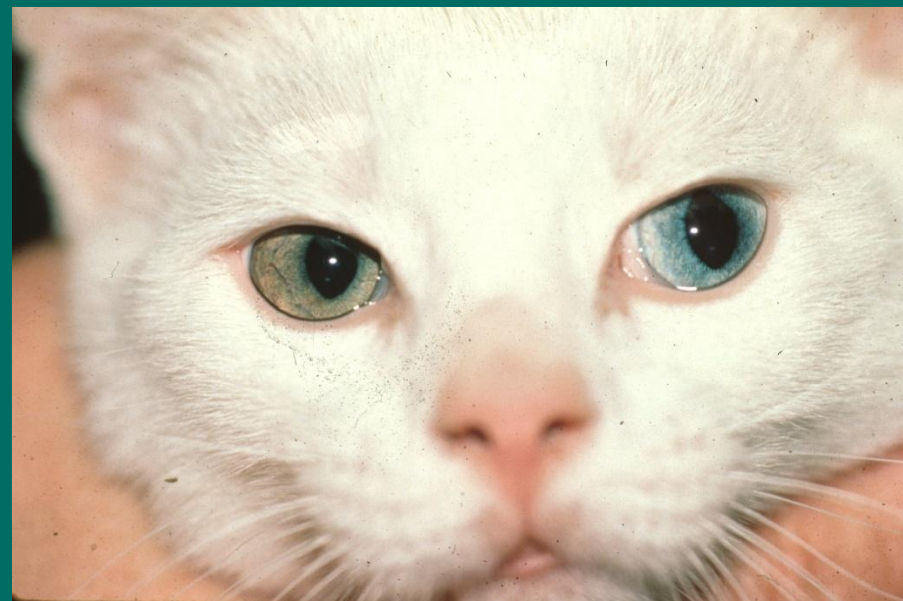
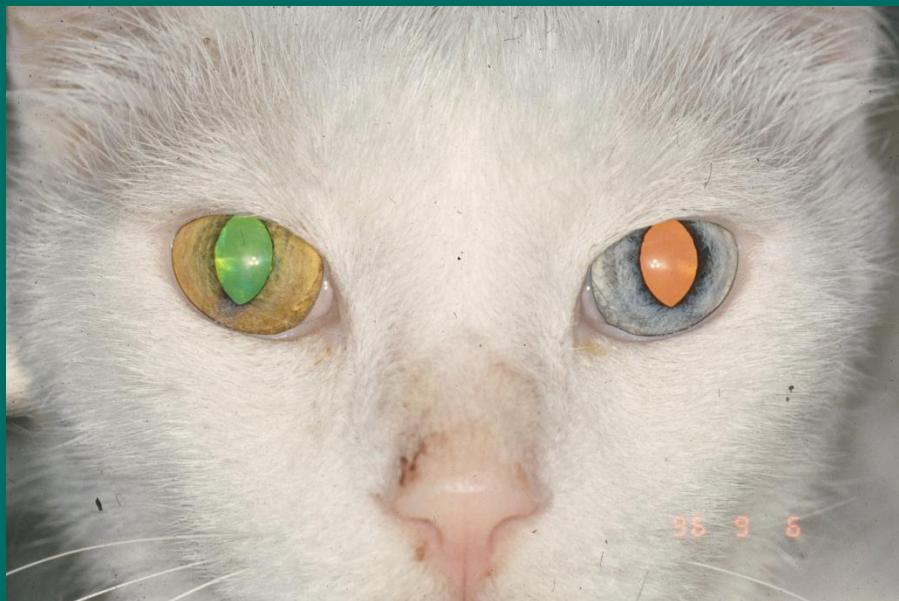
- viral: FeLV, FIV, FIP, herpes
- toxoplasmosis
- crypto, blasto, histo, coccidioides
- neoplastic
- idiopathic/immune-mediated
 - Food allergies- “green pea and duck diets are curative!!”



Uveitis-clinical signs

- aqueous flare
- hypotony
- miosis
- iridal hyperemia
- iris color change
- keratic precipitates
- synechiae





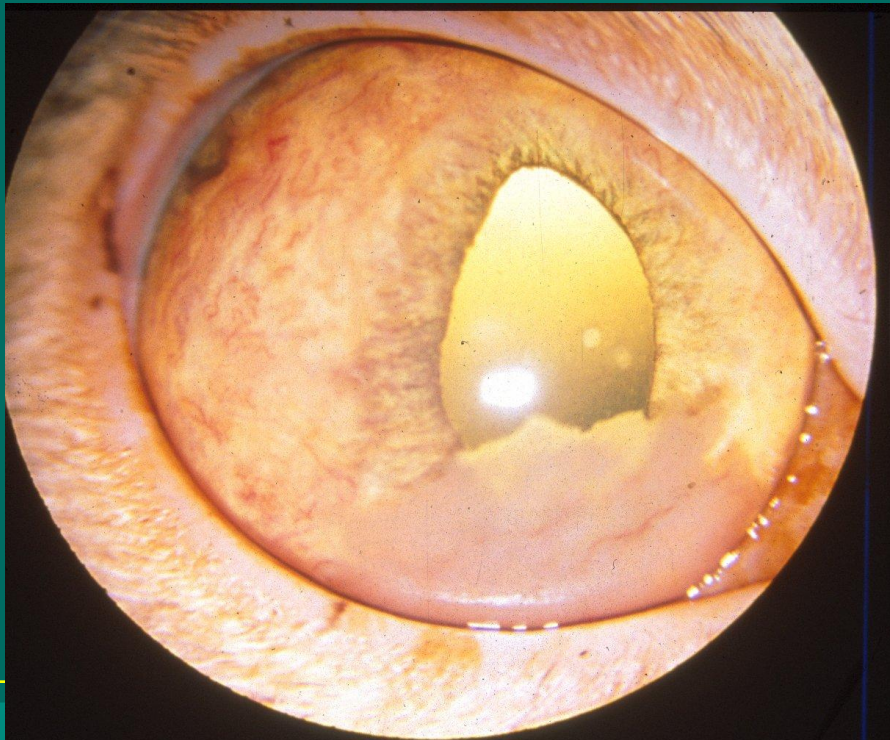
Which cat used to have 2 blue eyes?

Iris bombe



Anterior Uveal Neoplasia

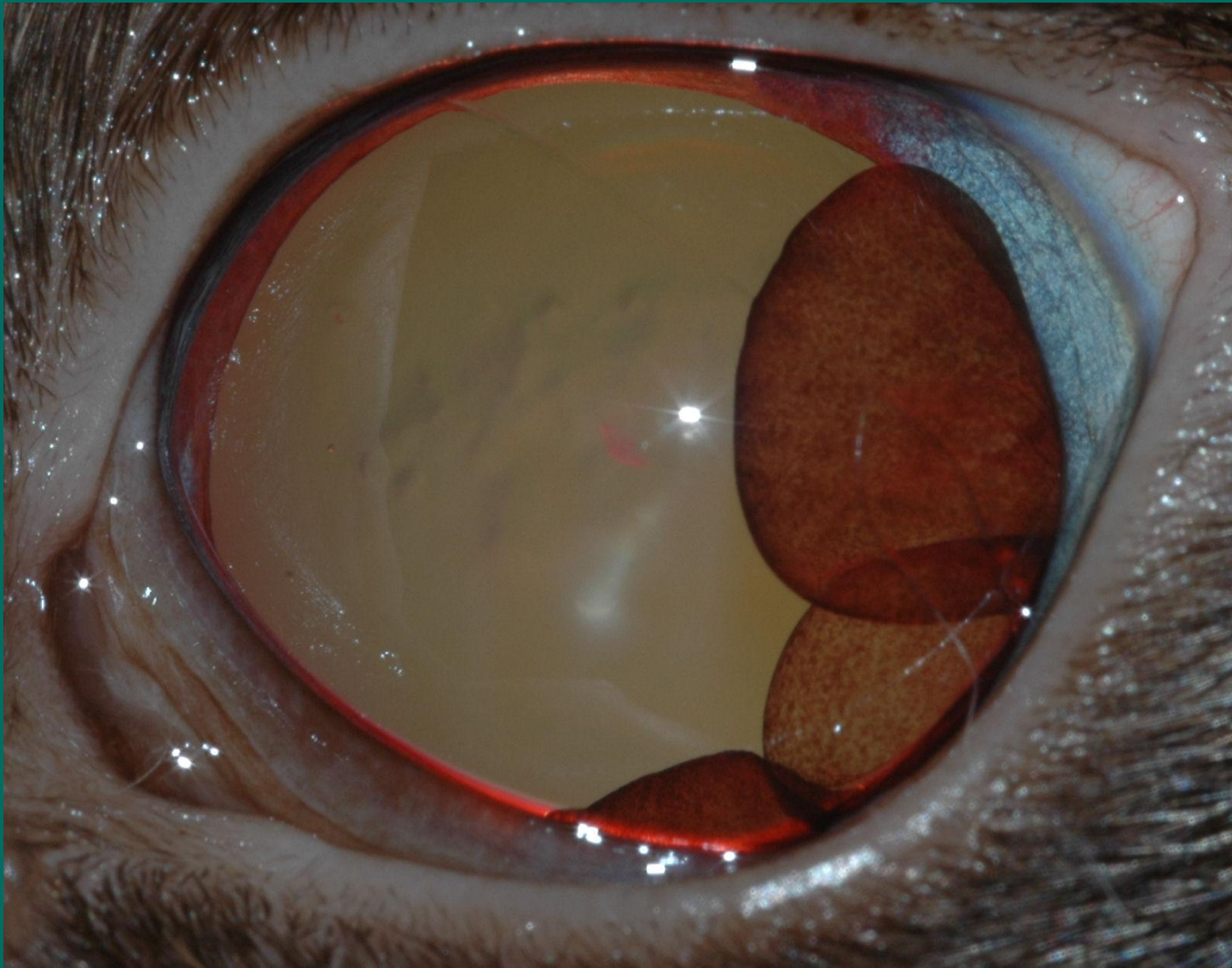
- Dogs: Most common primary and secondary intraocular tumors are melanomas and lymphoma.
- Cats: Iris lymphoma and diffuse iris melanomas
- Signs: Change in color or a visible mass in the iris, hyphema.



■ Iris Cysts:

- Seem to increase after uveitis. Boston terrier, labs and goldens. Resemble tumors but they are hollow. Tumors are solid.



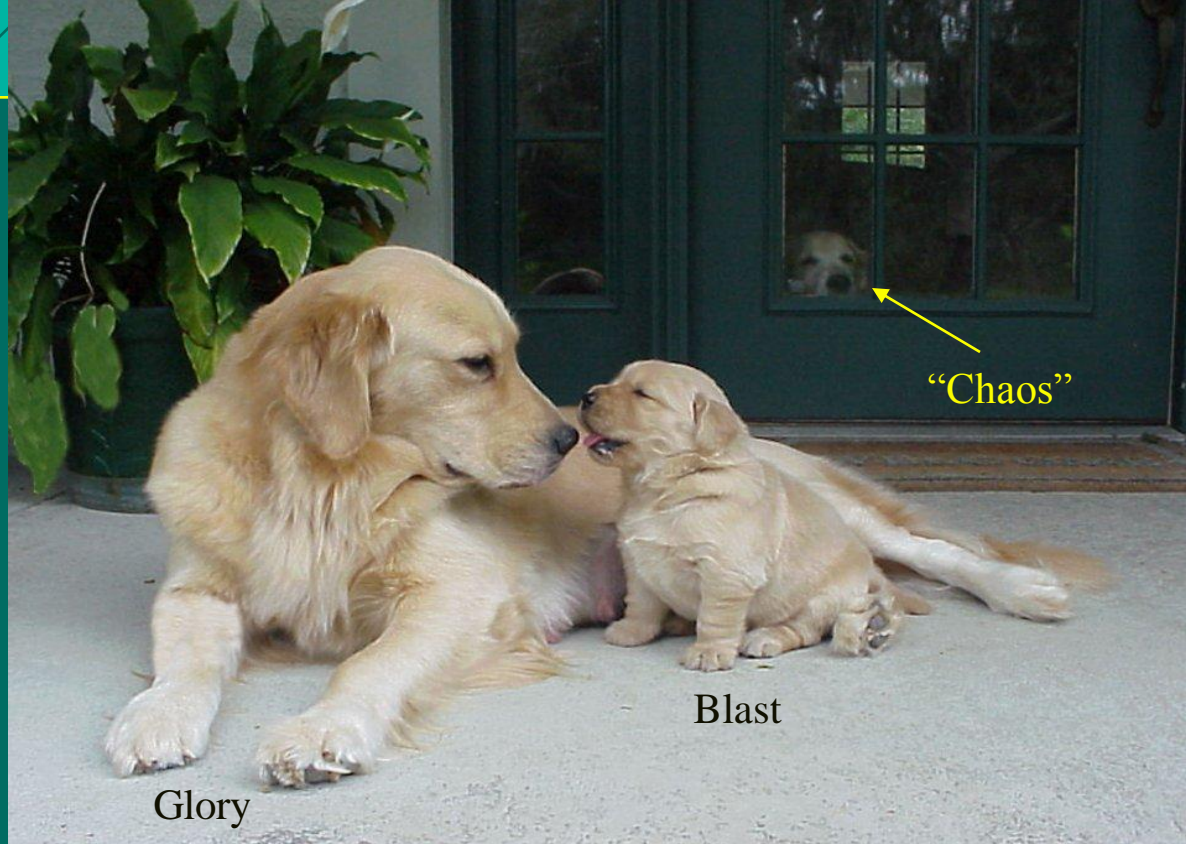


Kodak

Iris Atrophy:

Multiple holes develop in the iris. Pupillary margin becomes irregular. Pupil responds poorly to light. Senile usually.





Glory

Blast

“Chaos”

Pigmentary Uveitis in the Golden Retriever

University of Florida

“Pigmentary Uveitis”

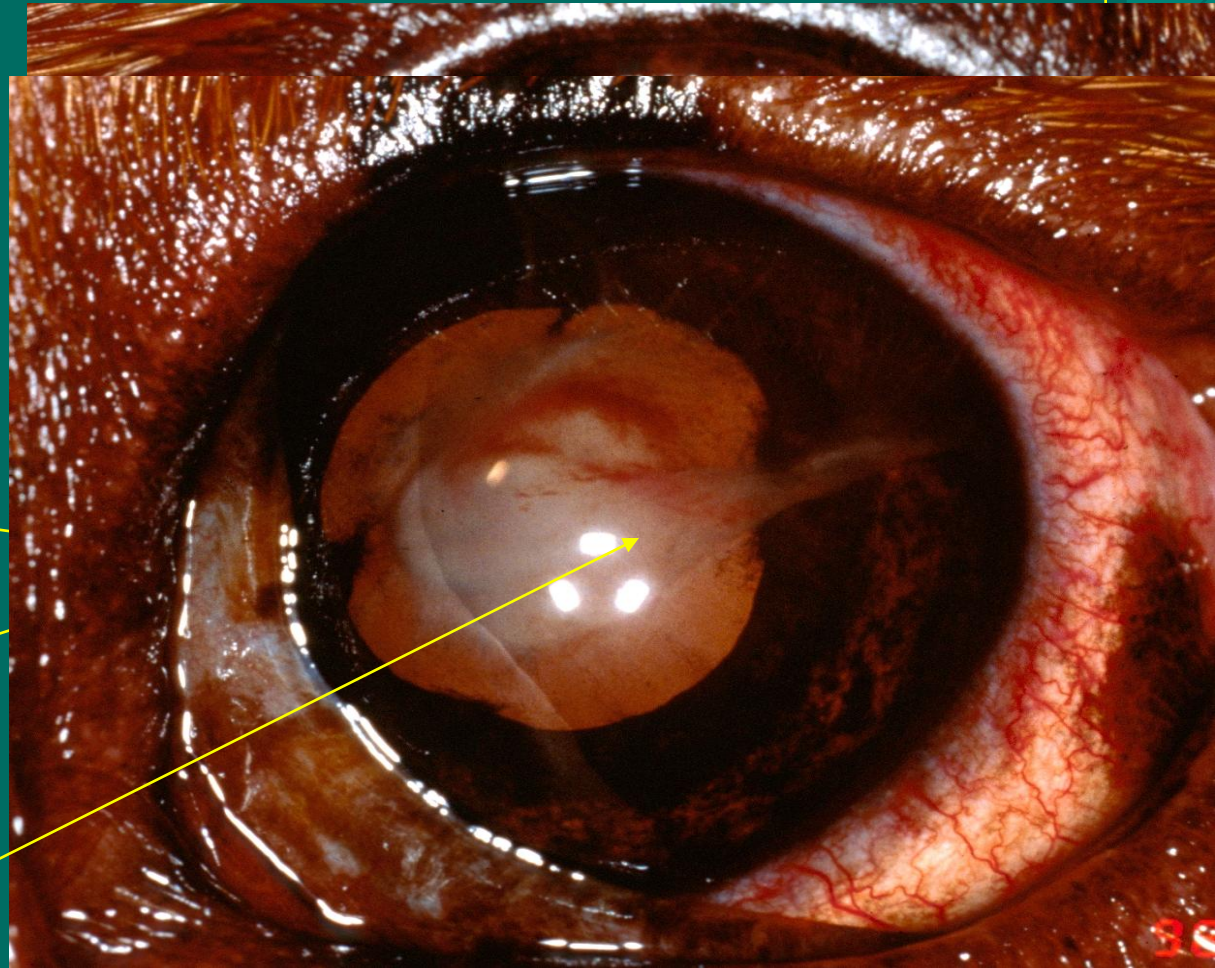
- progressive iridocyclitis
- not associated with infection or systemic disease
- hereditary
- immune mediated
- arose in Golden Retrievers in the northeastern USA
- in Florida now

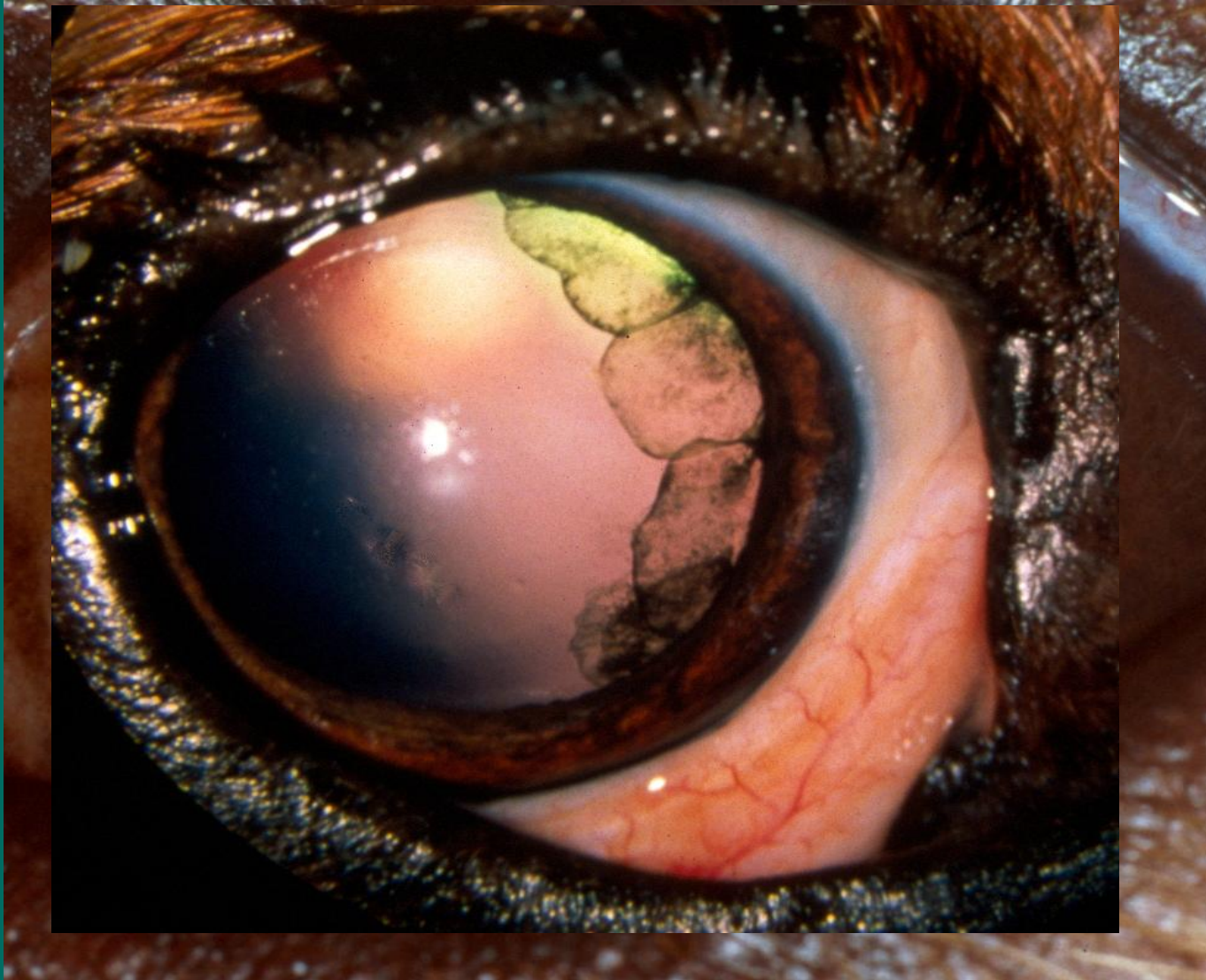


Blast as a mom!

Clinical Signs

- 88% OU in both sexes
- mean age = 8.6 ± 2.1 yrs
- radial anterior lens capsule pigment
- single to multiple iridociliary cysts are found in 13%
- Fibrin in AC in 37%

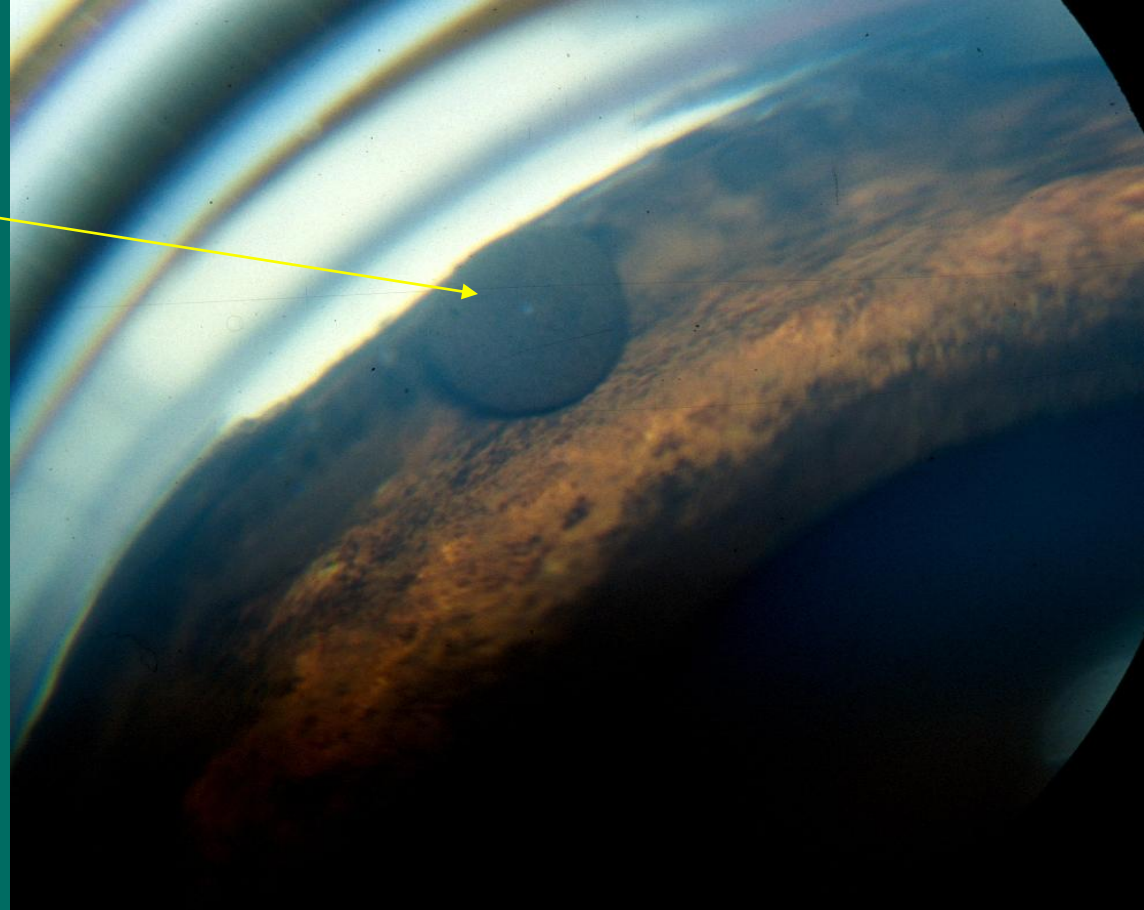






■ Ty 221802

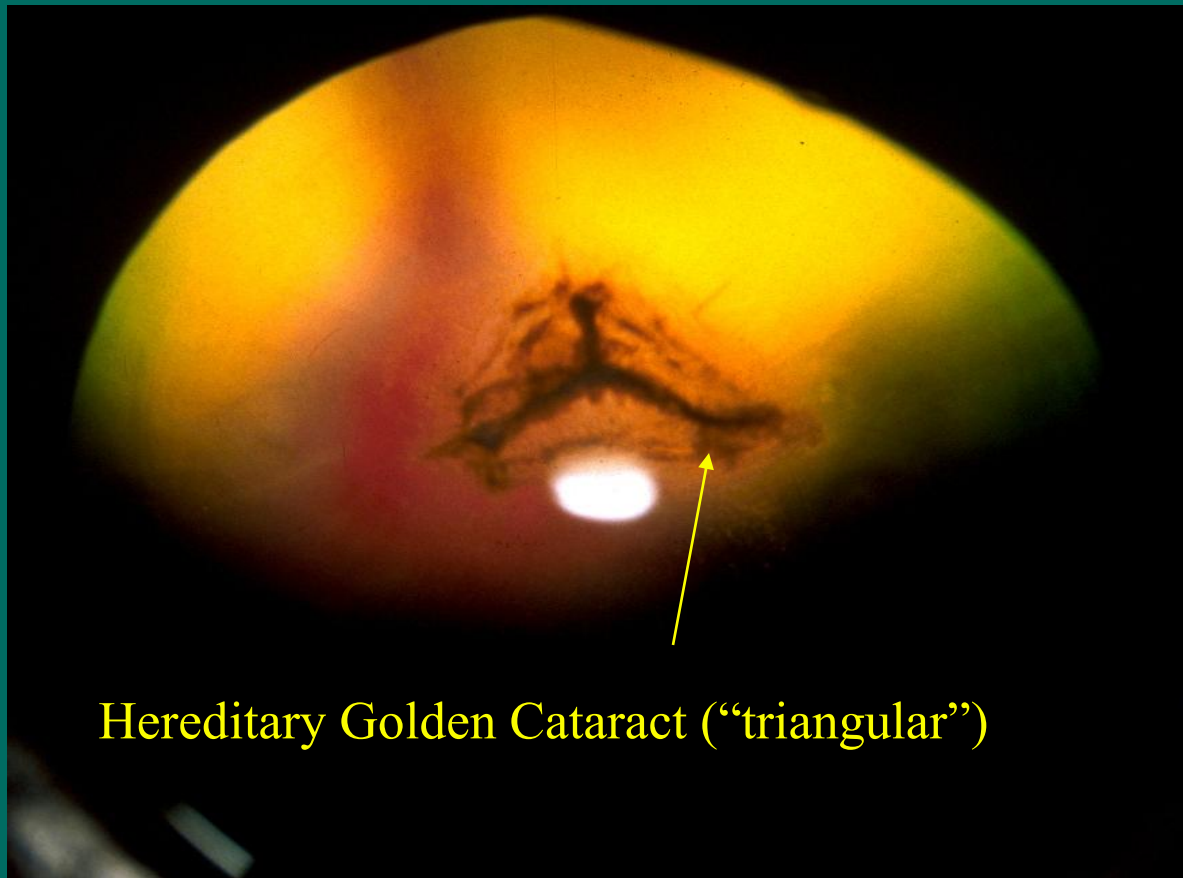
- Glaucoma secondary to cyst and angle collapse is rapidly progressive (46%)
- Glaucoma develops in 9.4 ± 2.2 months
- It always leads to blindness!!



- Prednisolone acetate (TID) and diclofenac (Voltaren TID) are used in Golden Retrievers with mild uveitis.
- Systemic prednisone is added to cases with active uveitis.
- 0.5% timolol maleate (BID) and 2% dorzolamide (TID) in glaucoma
- Lasering the ciliary body in medically refractory eyes



The prognosis for saving sight in Golden Retrievers with this progressive uveitis is guarded.



Hereditary Golden Cataract (“triangular”)

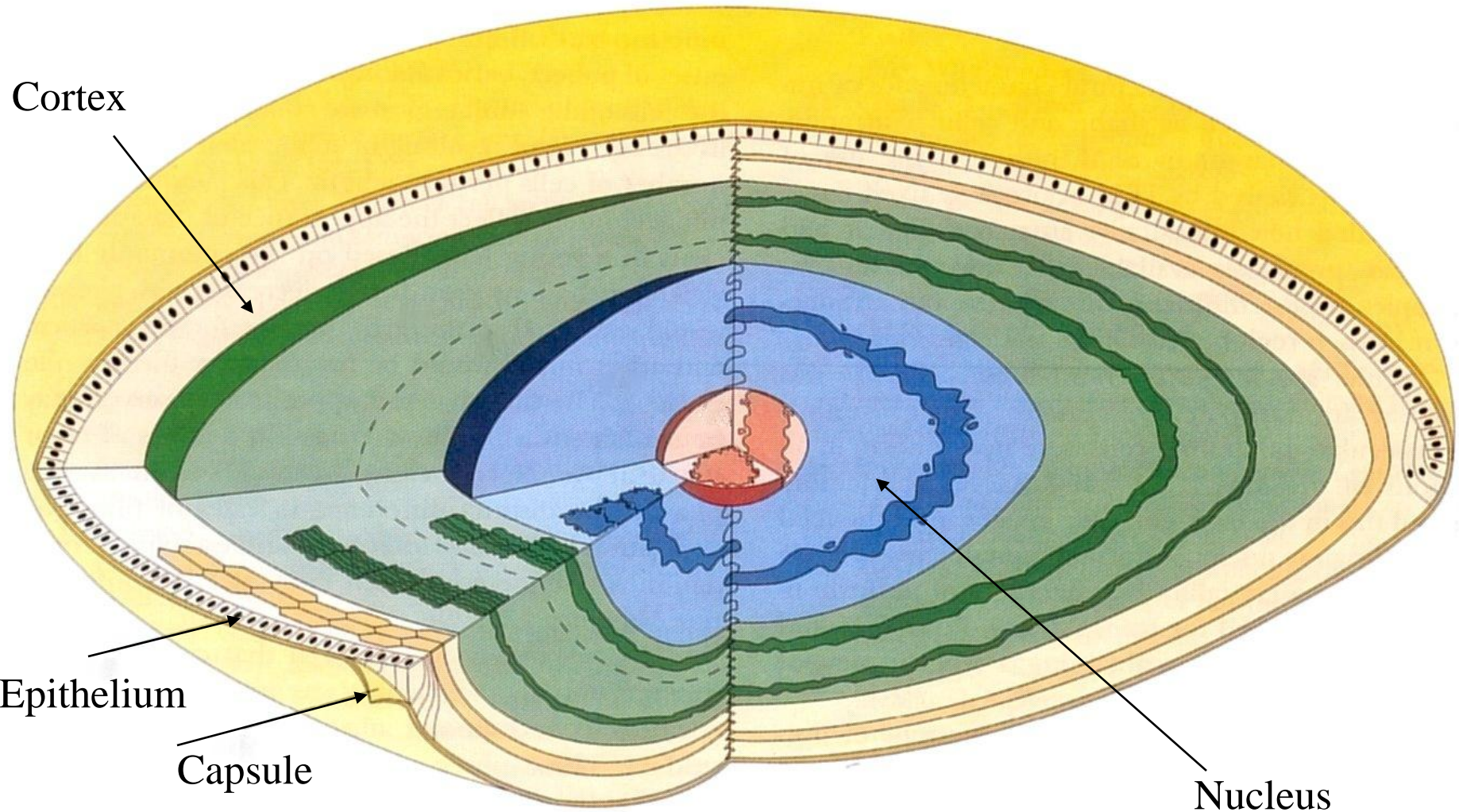


My mom is "Blast". My name is "Boom".
Save Sight!!

DISEASES AND SURGERY OF THE LENS

University of Florida





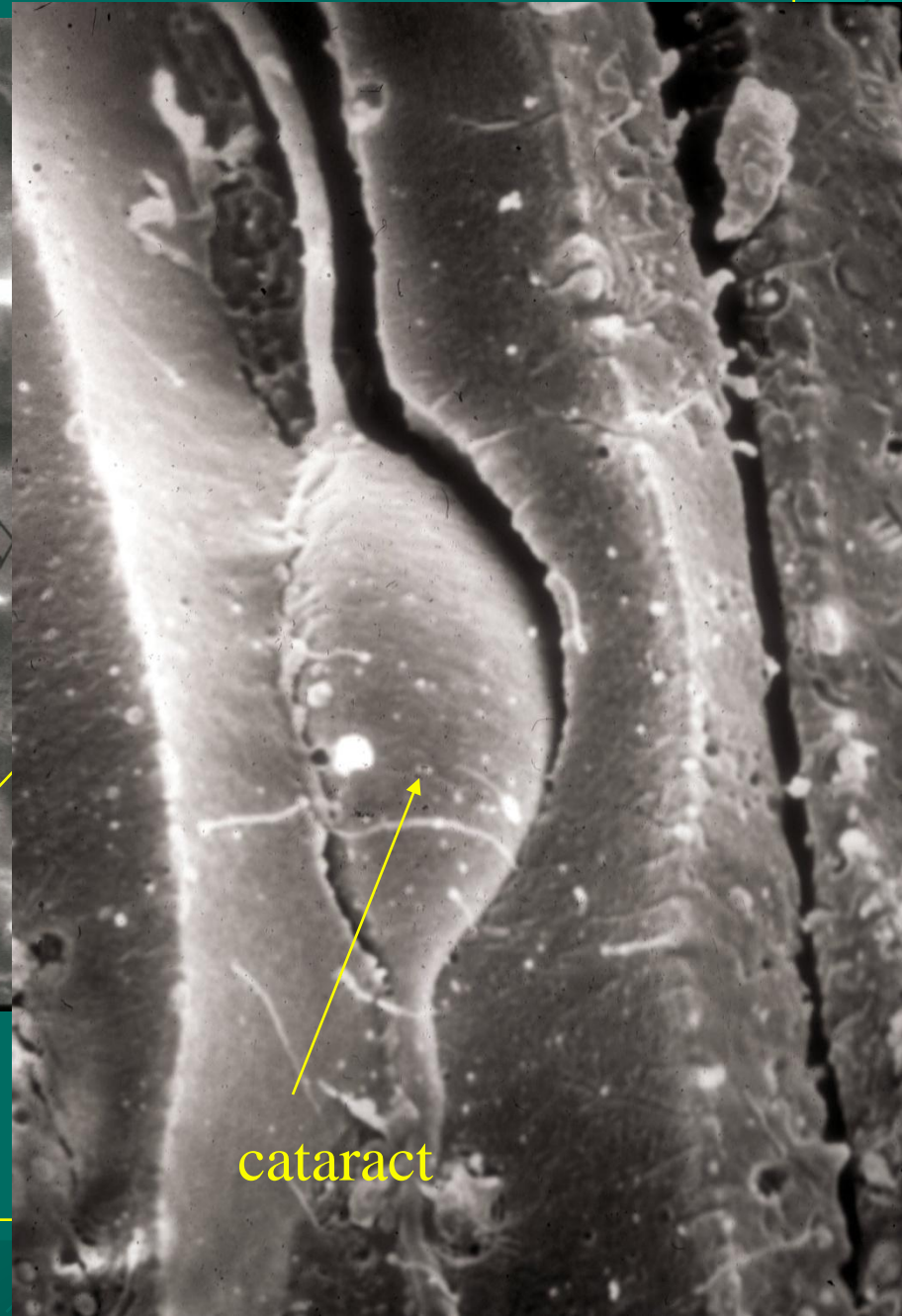
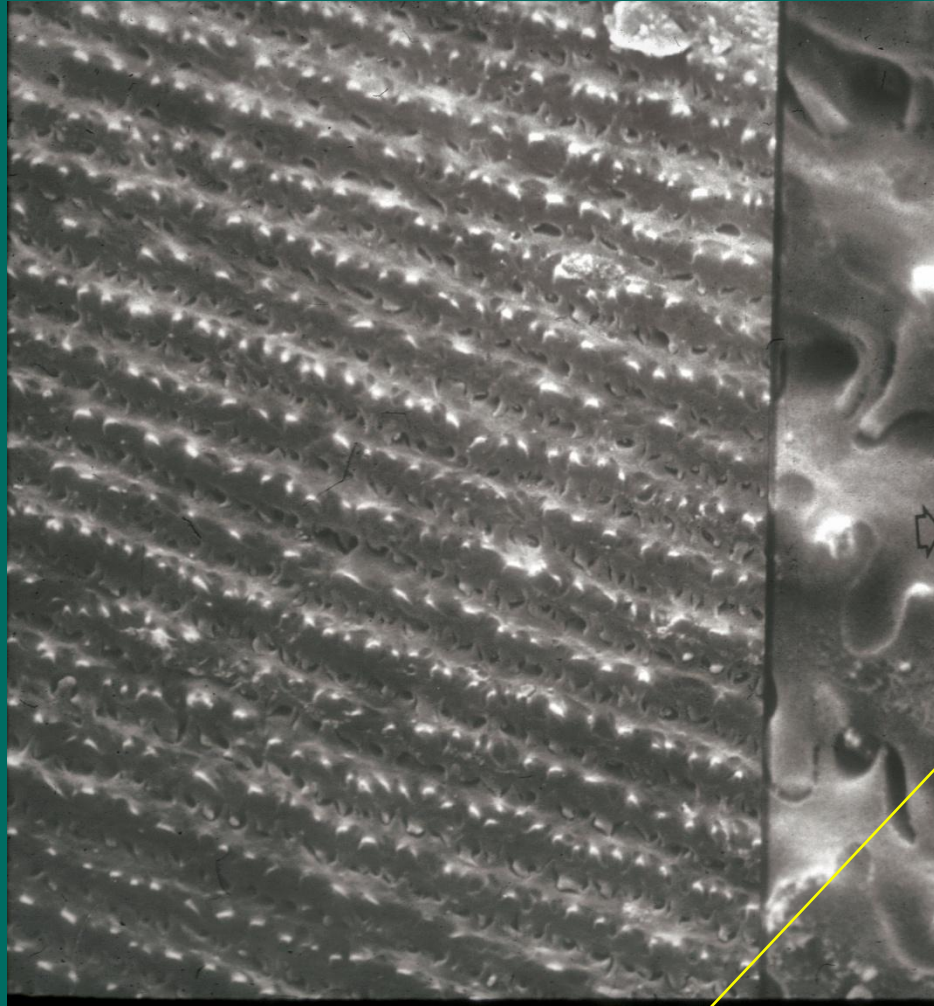
Cortex

Epithelium

Capsule

Nucleus

The Lens

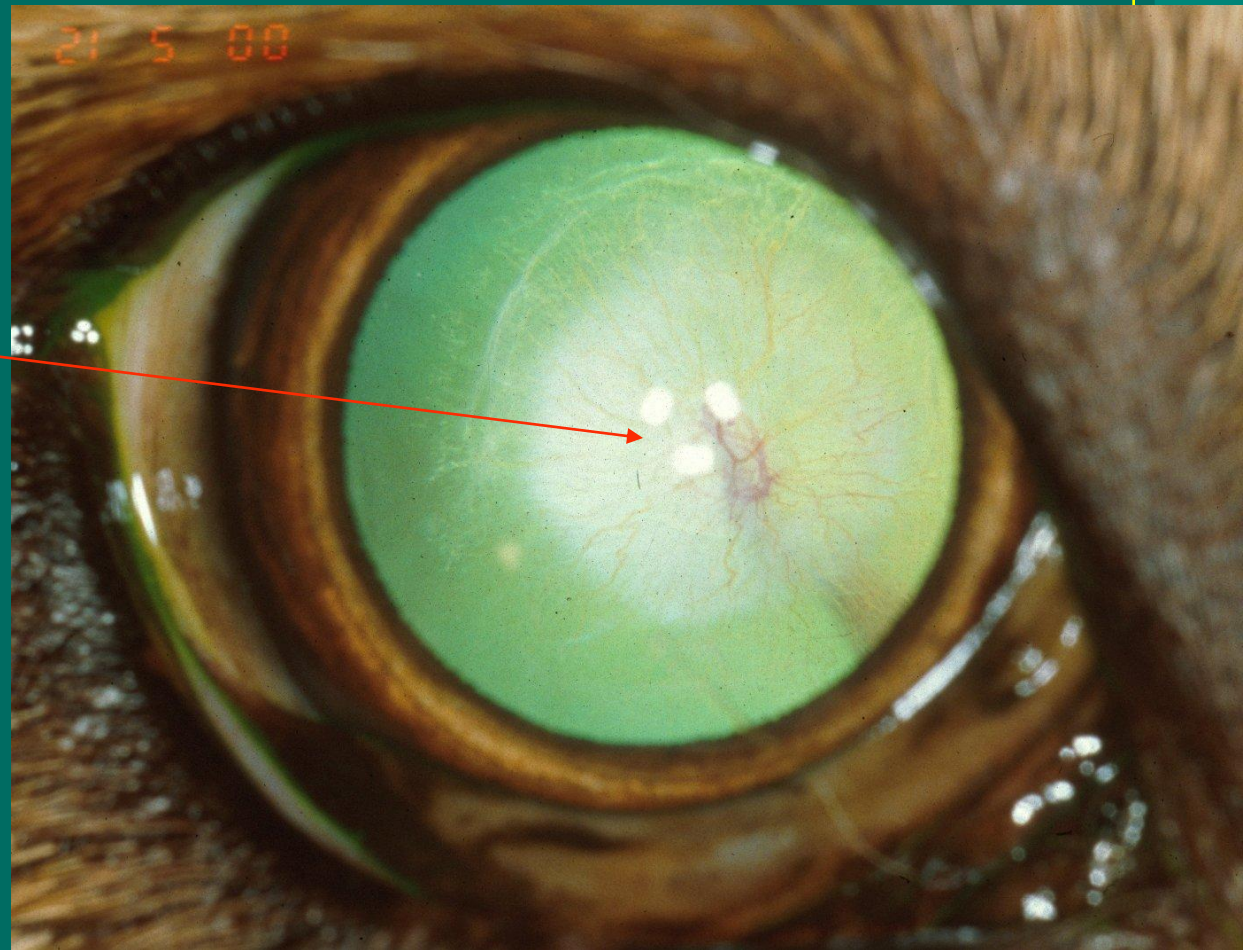


■ Lens fibers are connected.

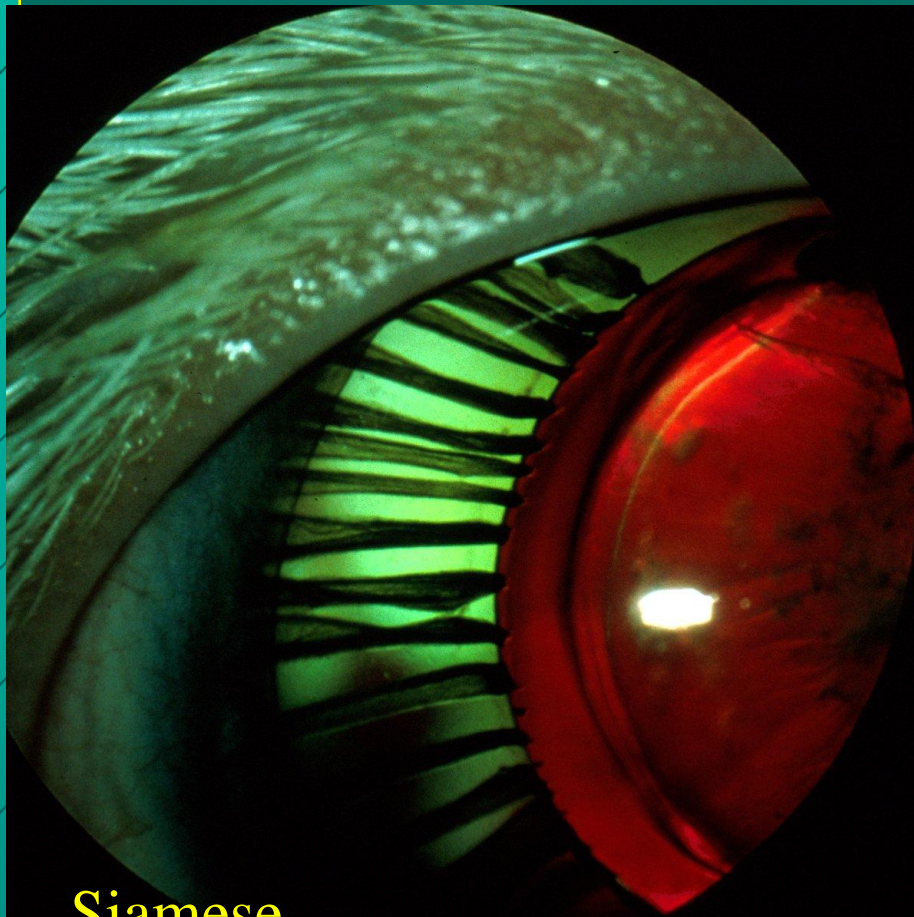
cataract

Persistent Hyperplastic Primary Vitreous

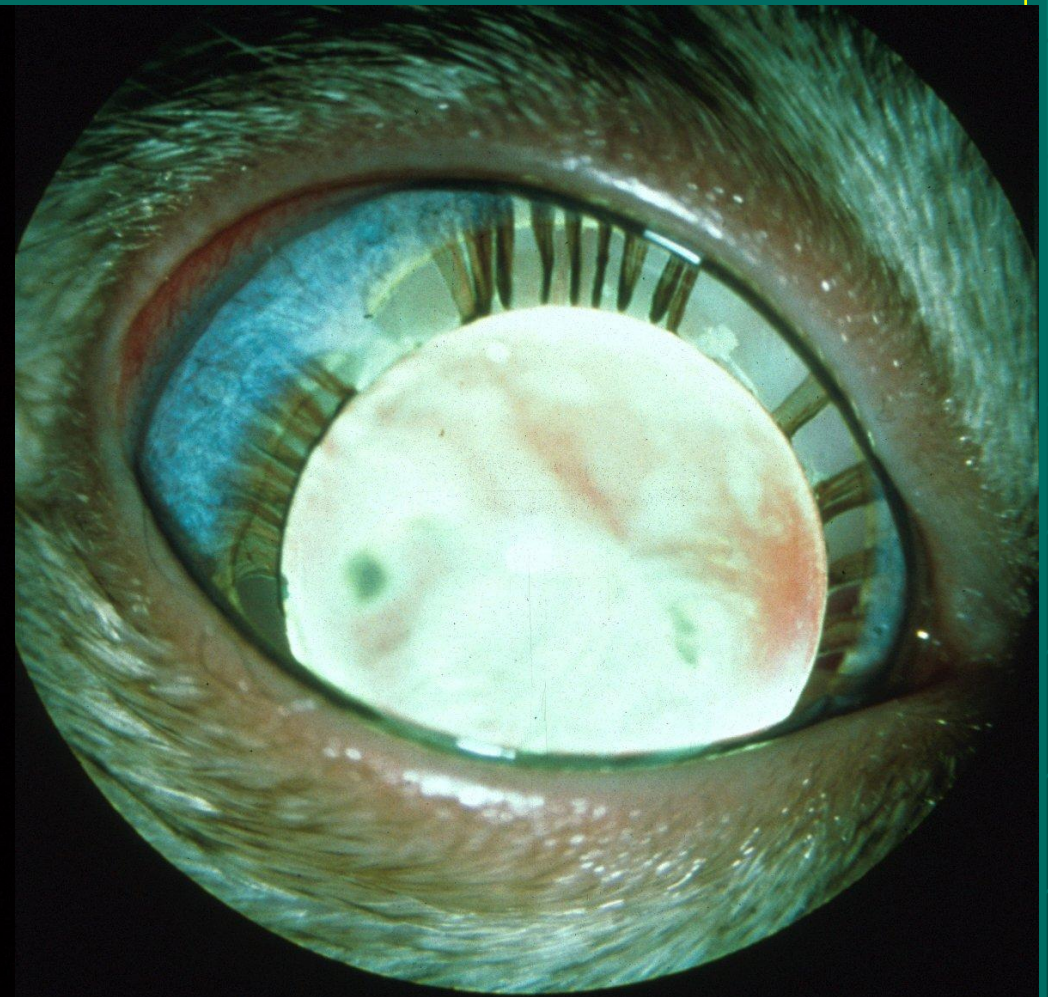
1. Persistence of the hyaloid vasculature
2. Mittendorf's dot: hyaloid artery attached to lens. Severe cases have fibrovascular plaque and cataract.
3. Hereditary in Dobermans and Staffordshire terriers.



Microphakia



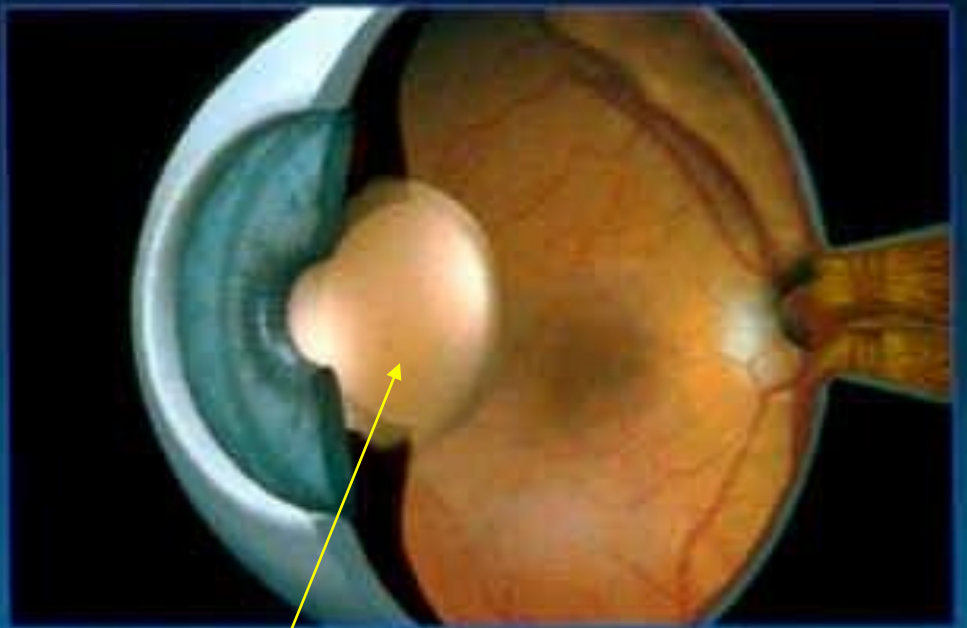
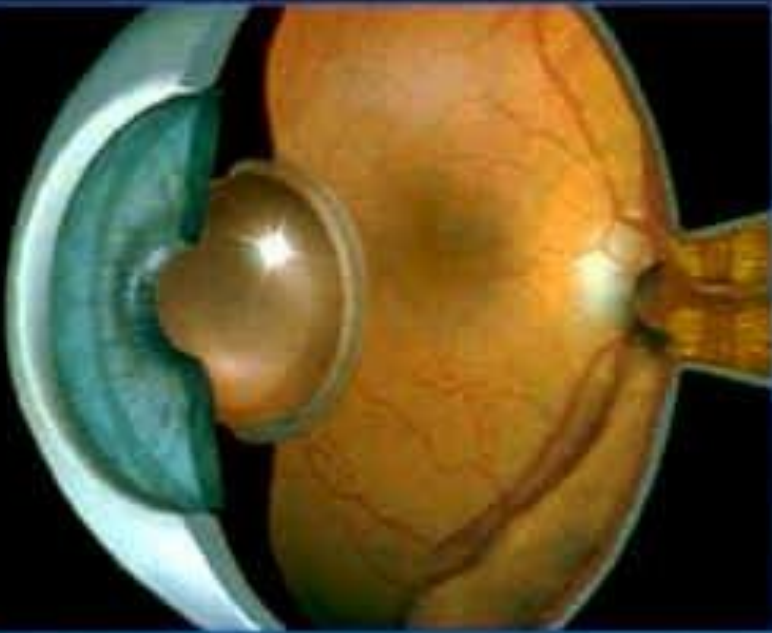
Siamese



CATARACTS

- Opacity of the lens or capsule.
 - Macromolecular increases in lens protein size occur prior to cataract development
- Lens fibers are disrupted.
- Congenital cataracts - present at birth
- Developmental or early onset
- Senile: lens opacities in dogs over 6 years of age.
- Nuclear sclerosis is a normal lenticular alteration in most dogs over 6 years.





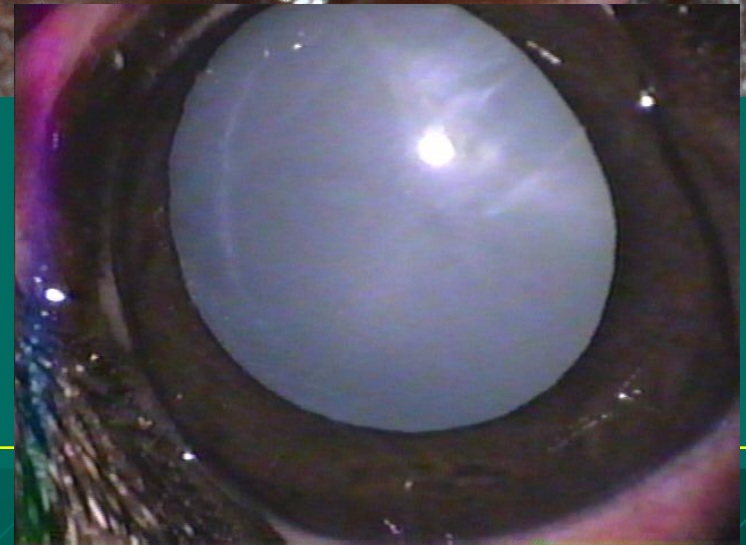
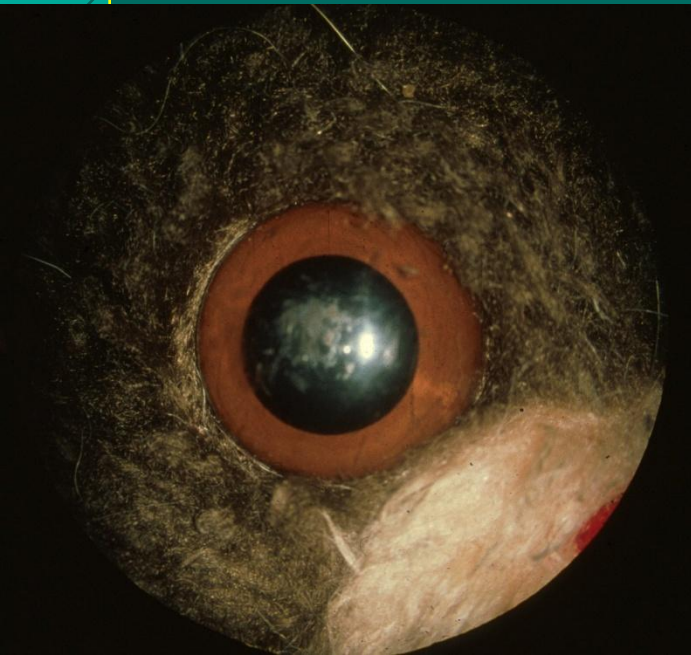
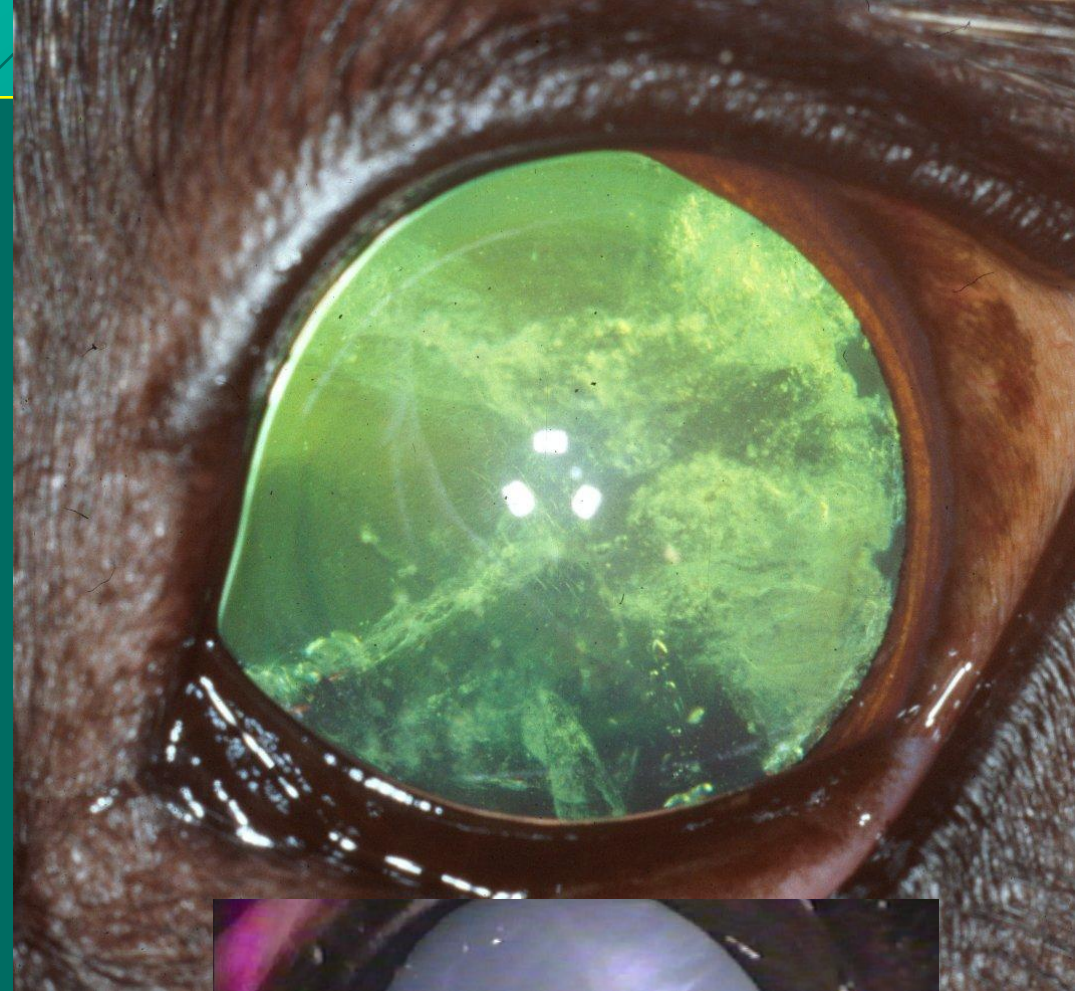
Cloudy



Cataracts scatter light and dull colors

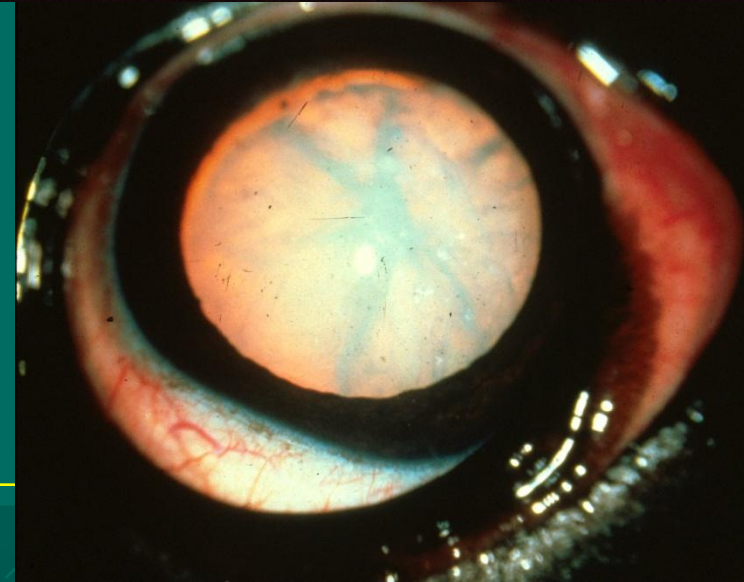
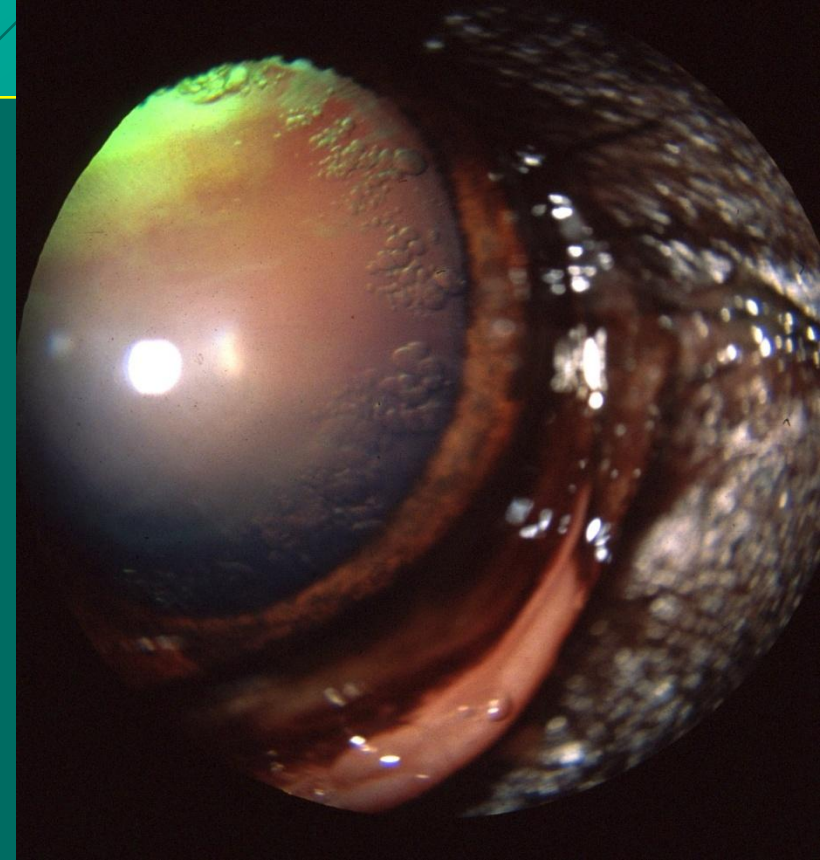
Cataract classification by location in the lens:

- a. Capsular: Anterior or Posterior
- b. Subcapsular
- c. Cortical
- d. Nuclear and perinuclear - milk replacer. Imply early onset as nucleus is oldest part of lens.

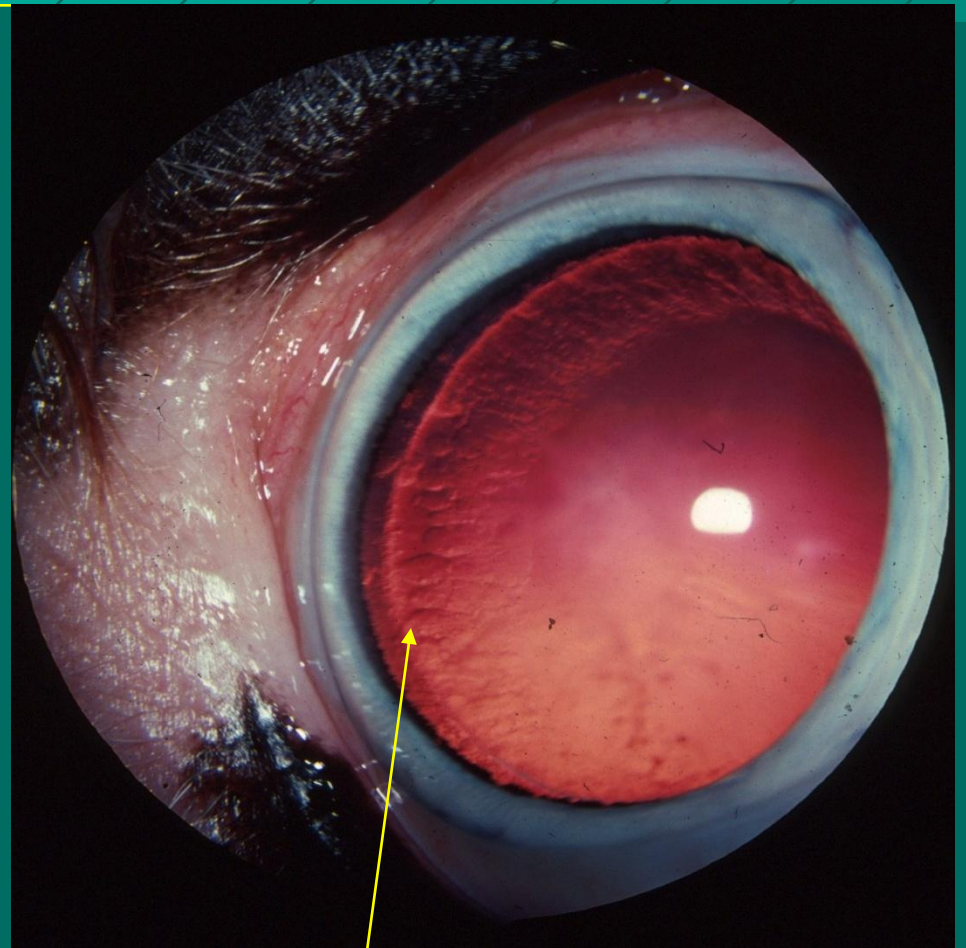
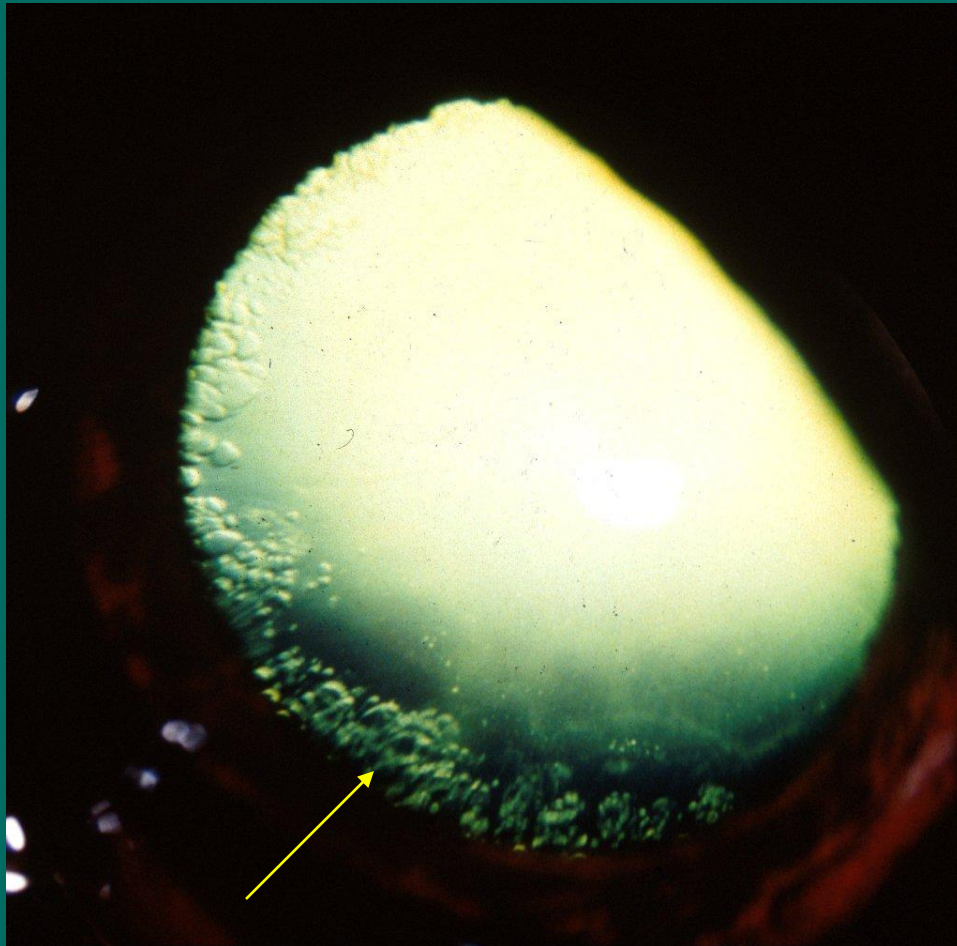


Diabetes mellitus

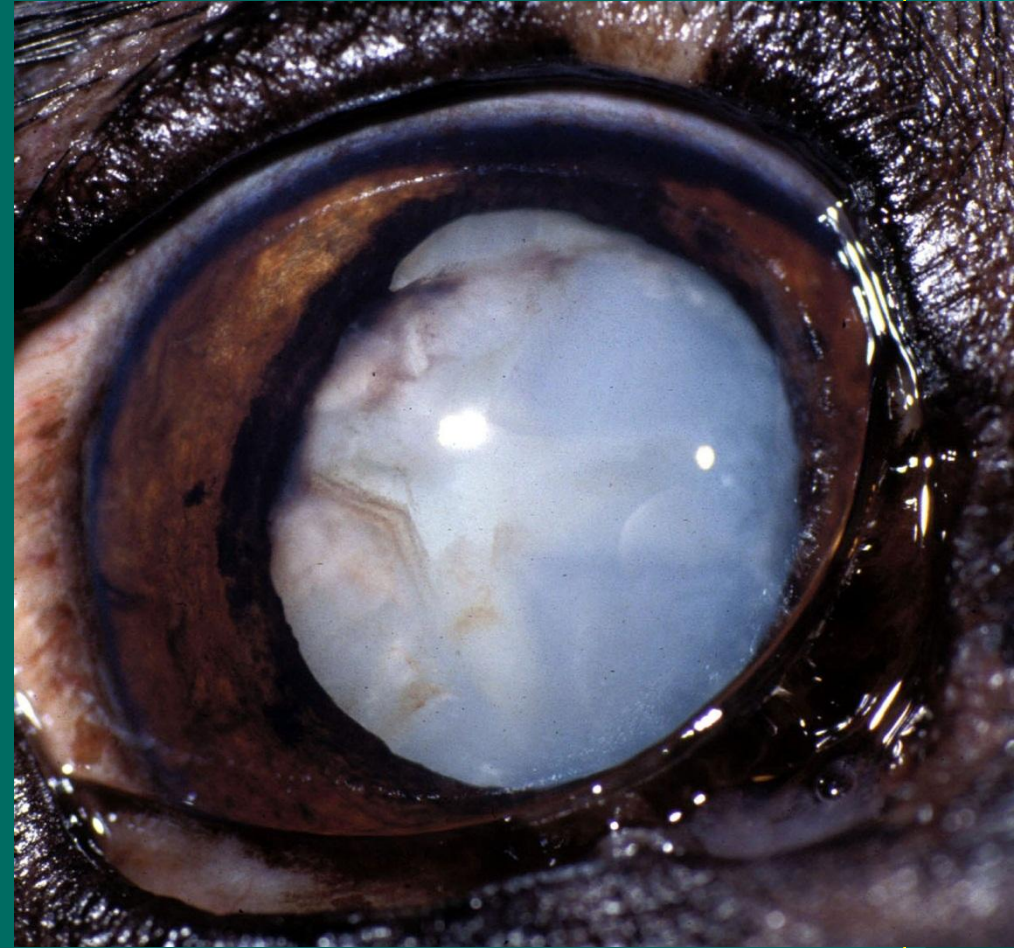
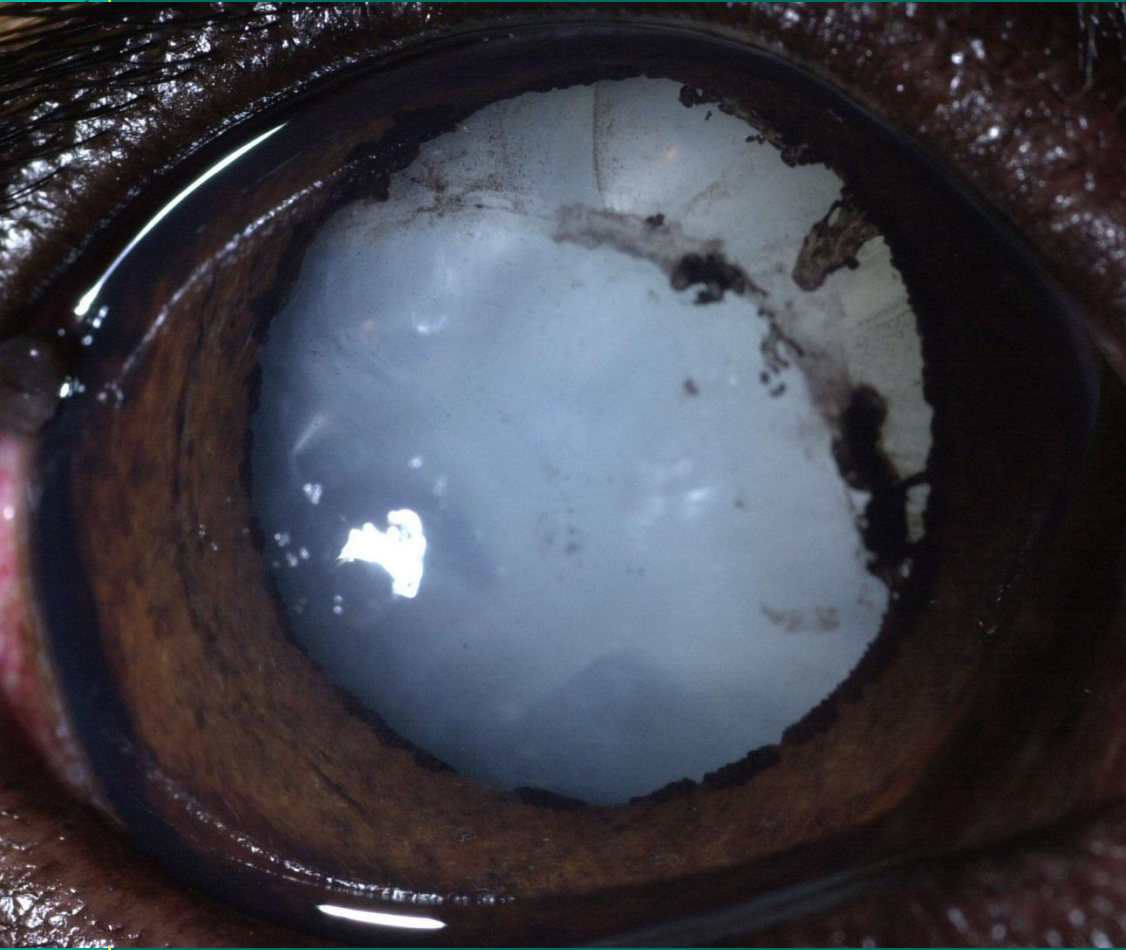
- Glucose is main lens energy source
 - Hexokinase is overwhelmed from too much glucose
 - (converts glucose to G-6-P)
 - Aldose reductase (AR) then metabolizes glucose to sorbitol
 - Up to 33% of glucose is metabolized by the sorbitol pathway in diabetics (normal is 5%)
 - sorbitol dehydrogenase (SD) breaks down sorbitol to fructose normally but SD is overwhelmed in diabetes and sorbitol accumulates in the lens
- sorbitol draws water into the lens causing lens fiber swelling & rupture
- early cataractous changes appear as vacuoles in the equatorial lens cortex in dogs
 - Posterior cortex in cats
- cataracts rapidly progress to maturity
- cataracts develop in dogs>>cats
- 80% of dogs within 16 months of diagnosis.
- Lower aldose reductase activity in older cats despite high AR/SD ratio.
- Less AR activity in cats compared to dogs of all ages



Diabetic cataracts



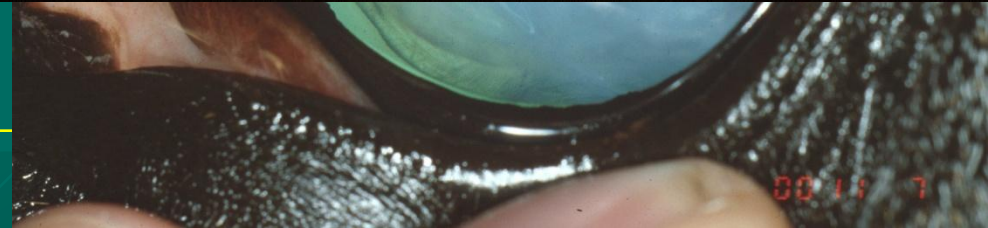
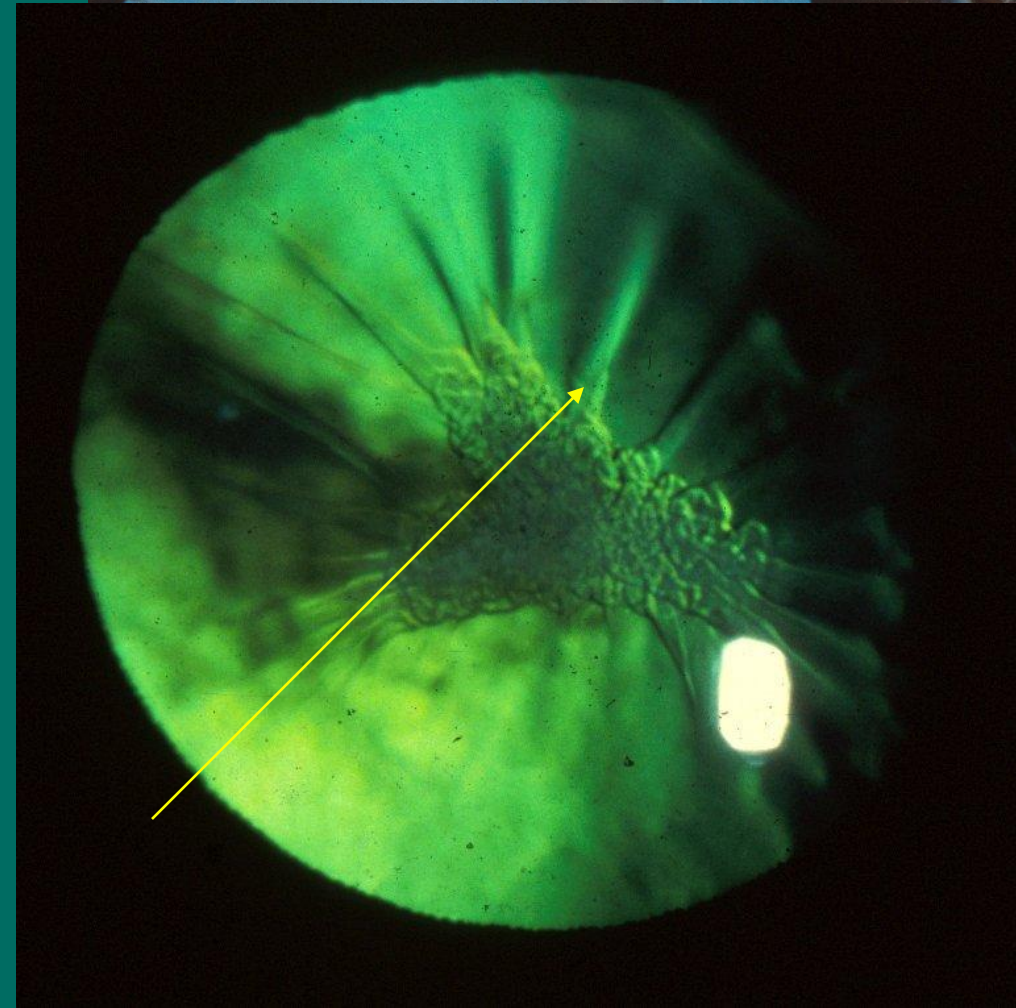
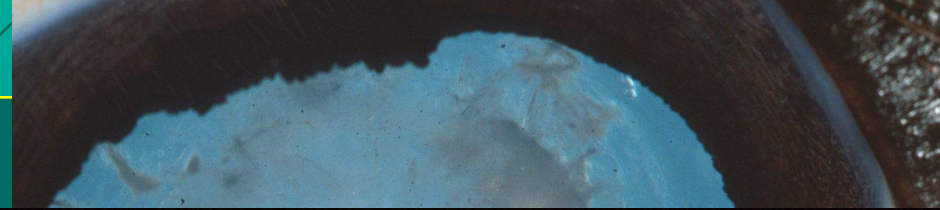
- Equatorial location



Spontaneous lens capsule rupture in diabetics

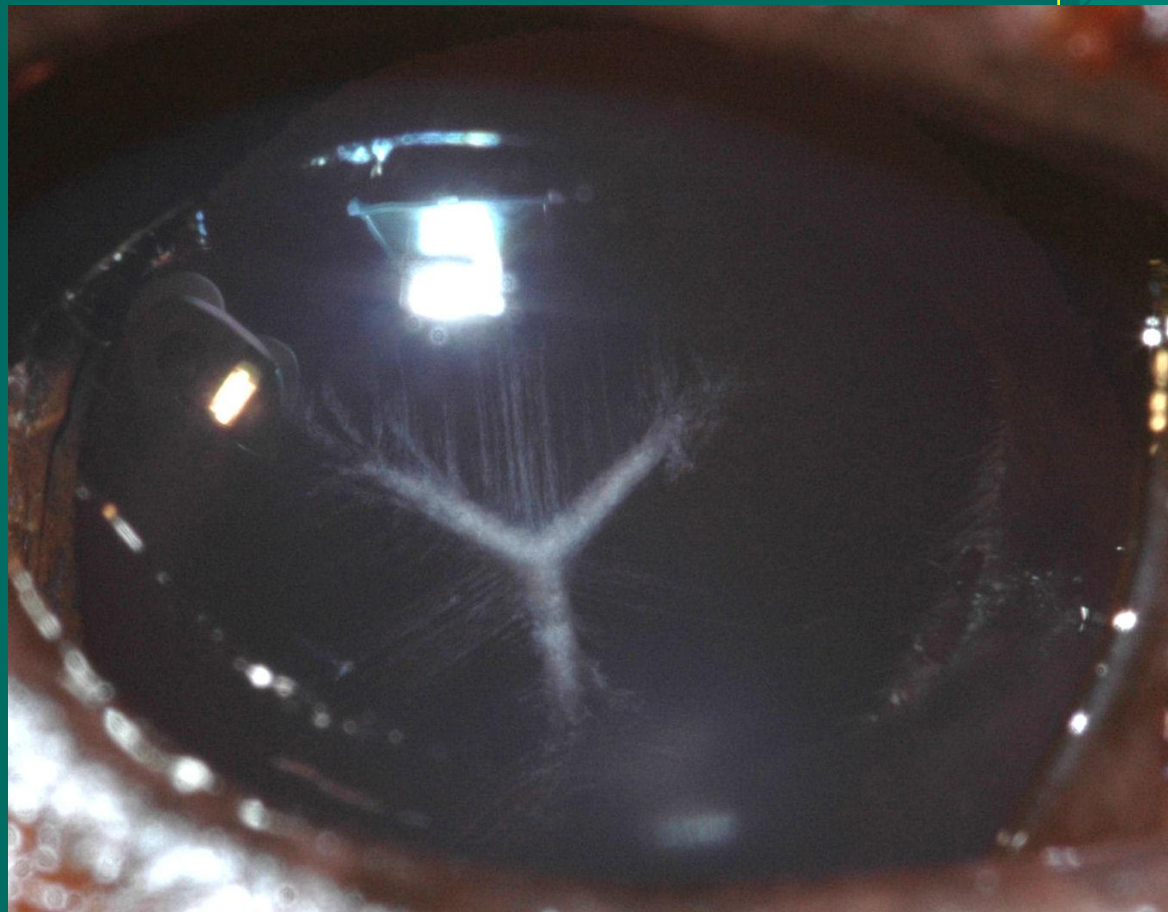
Classification of cataracts by degree of maturation

- a. Incipient: Earliest lens changes; focal
- b. Immature: Fundic reflex still present (usually present peripherally), some vision.
- c. Mature: Lens is totally opaque, no fundic reflex, blind
- d. Hypermature: wrinkling of the anterior lens capsule, due to resorption with decrease in total lens volume



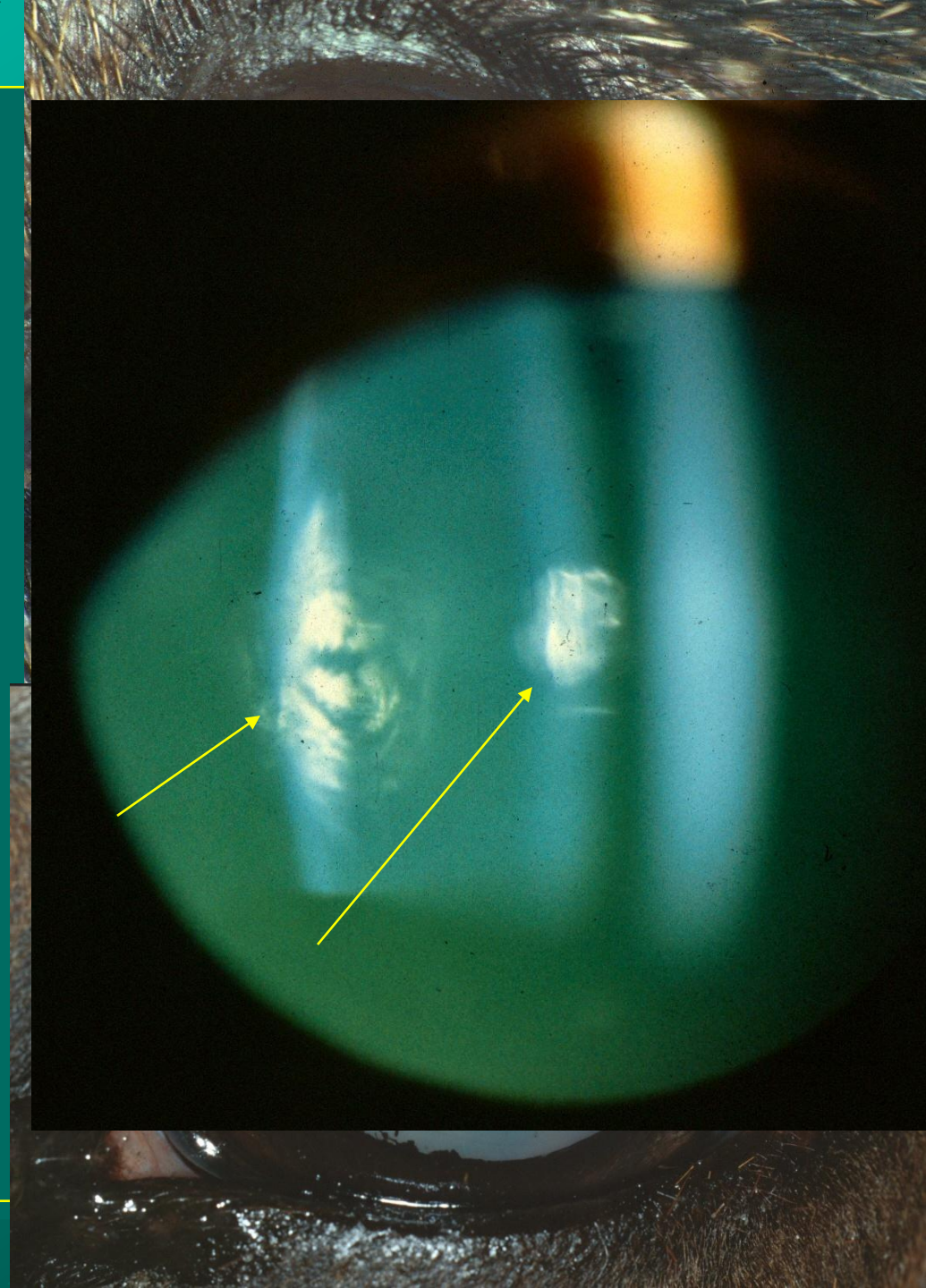


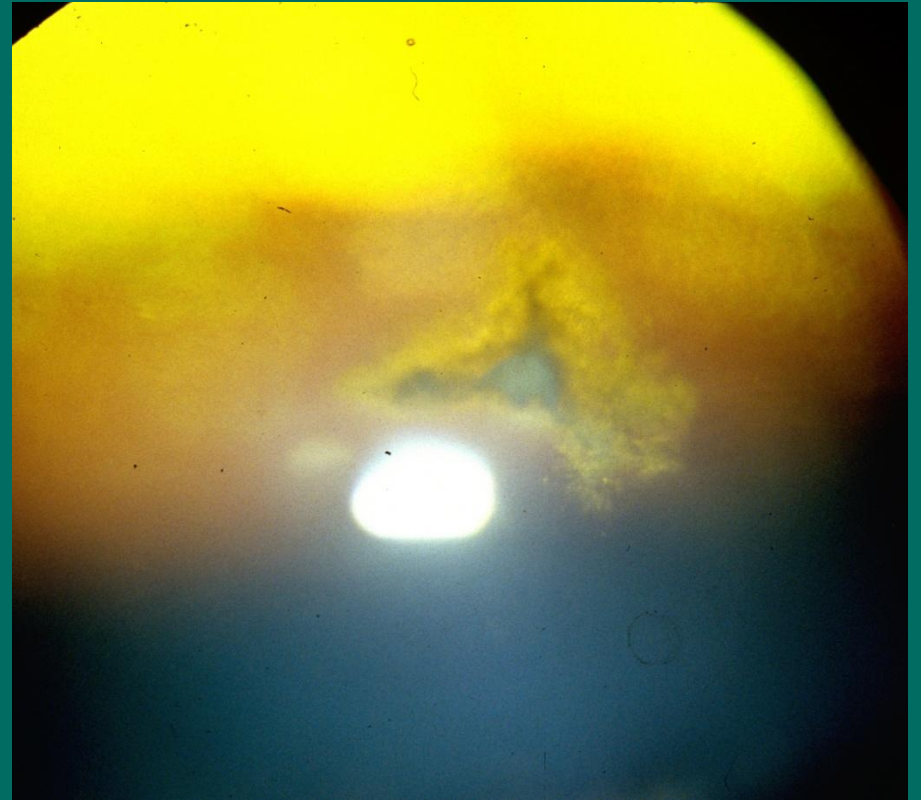
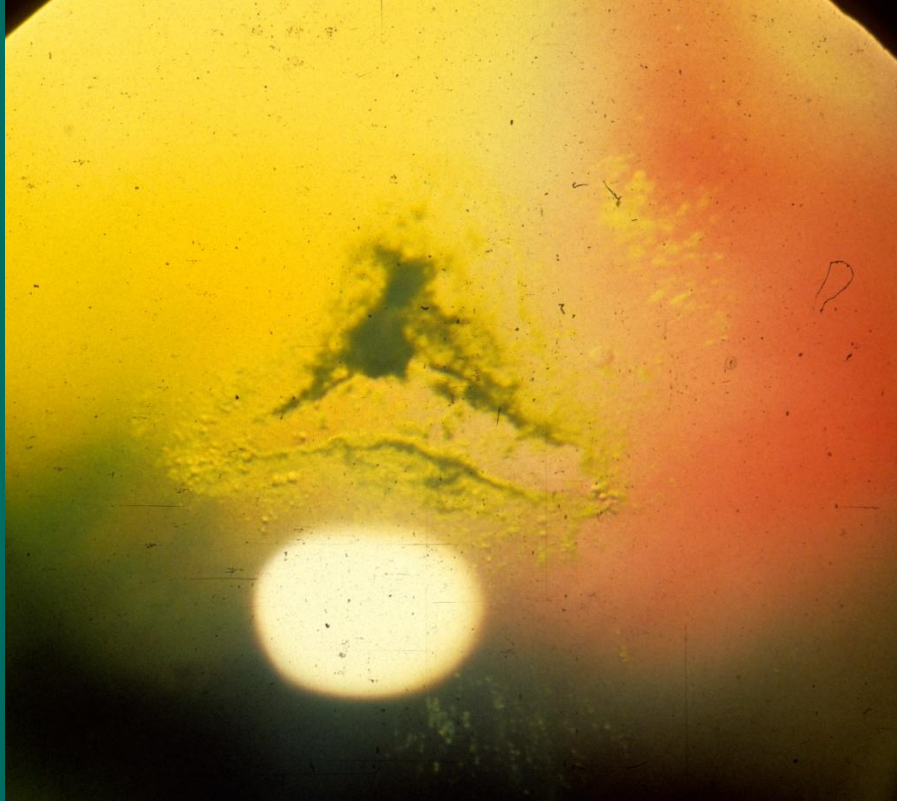
Golden



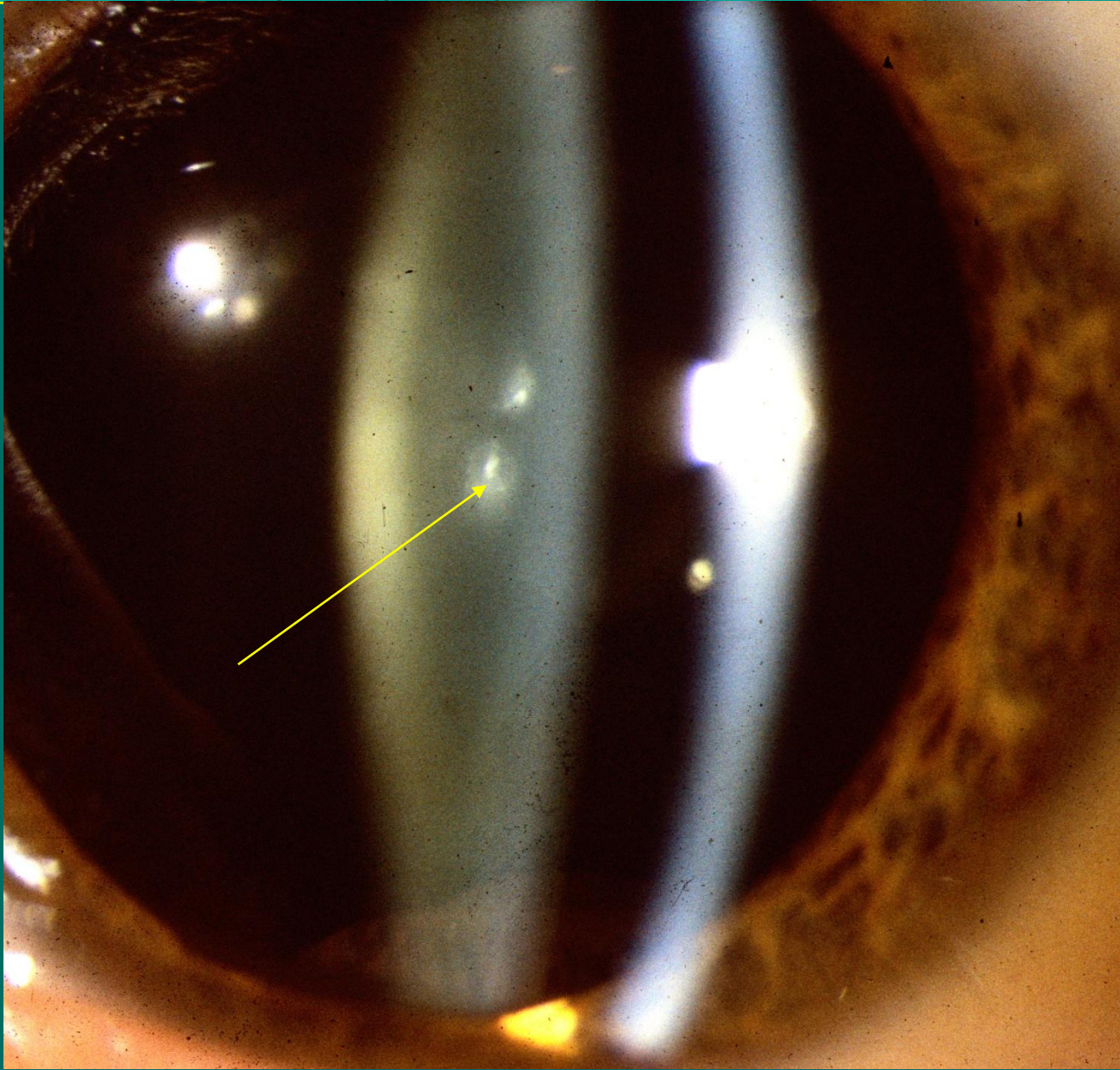
Etiology of Cataracts

1. Inherited: breed-related
2. Trauma
3. Metabolic disorders - Systemic disease
 - a. Diabetes, b. Hypocalcemia
4. Drugs: systemic ketoconazole
5. Nutritional: Arginine deficiency. Milk replacer - commercial and home-made.
6. Secondary to uveitis.
7. Idiopathic
8. PRA. Posterior subcapsular cataracts.

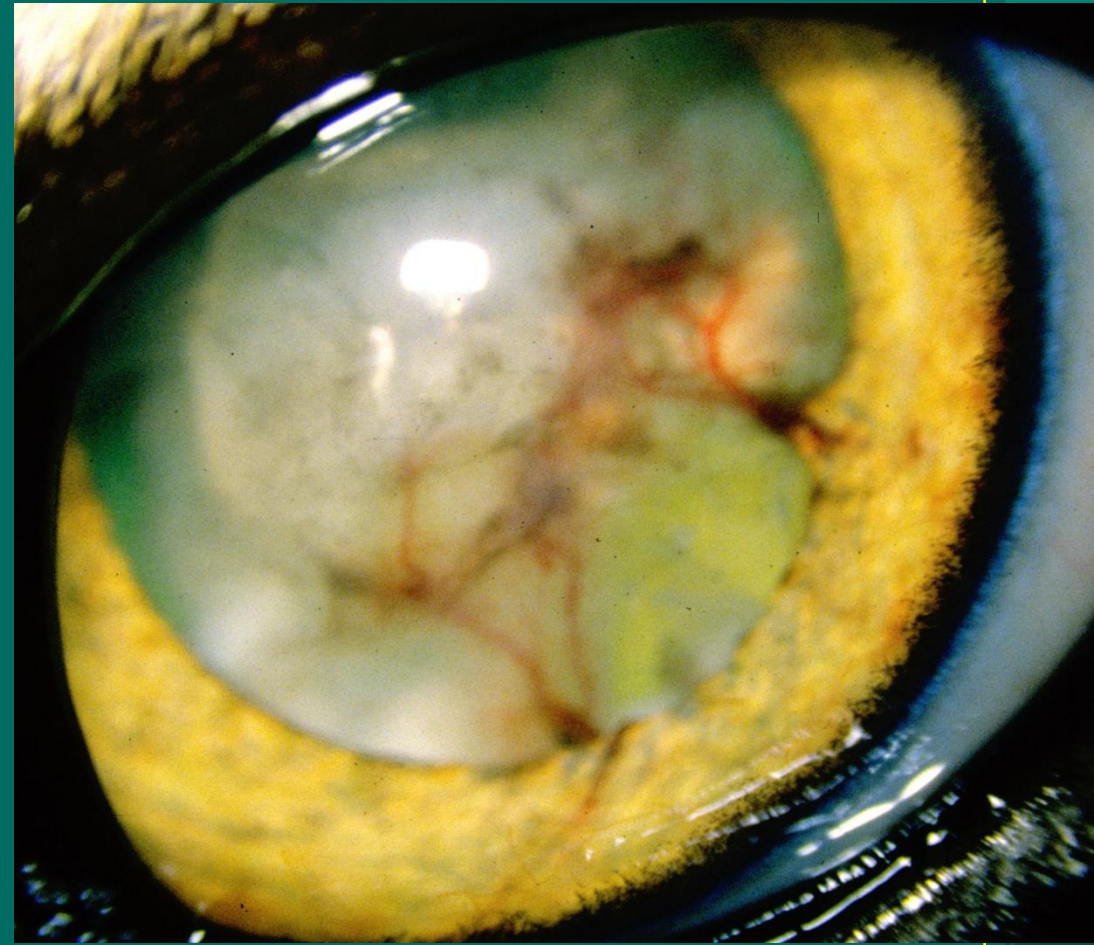
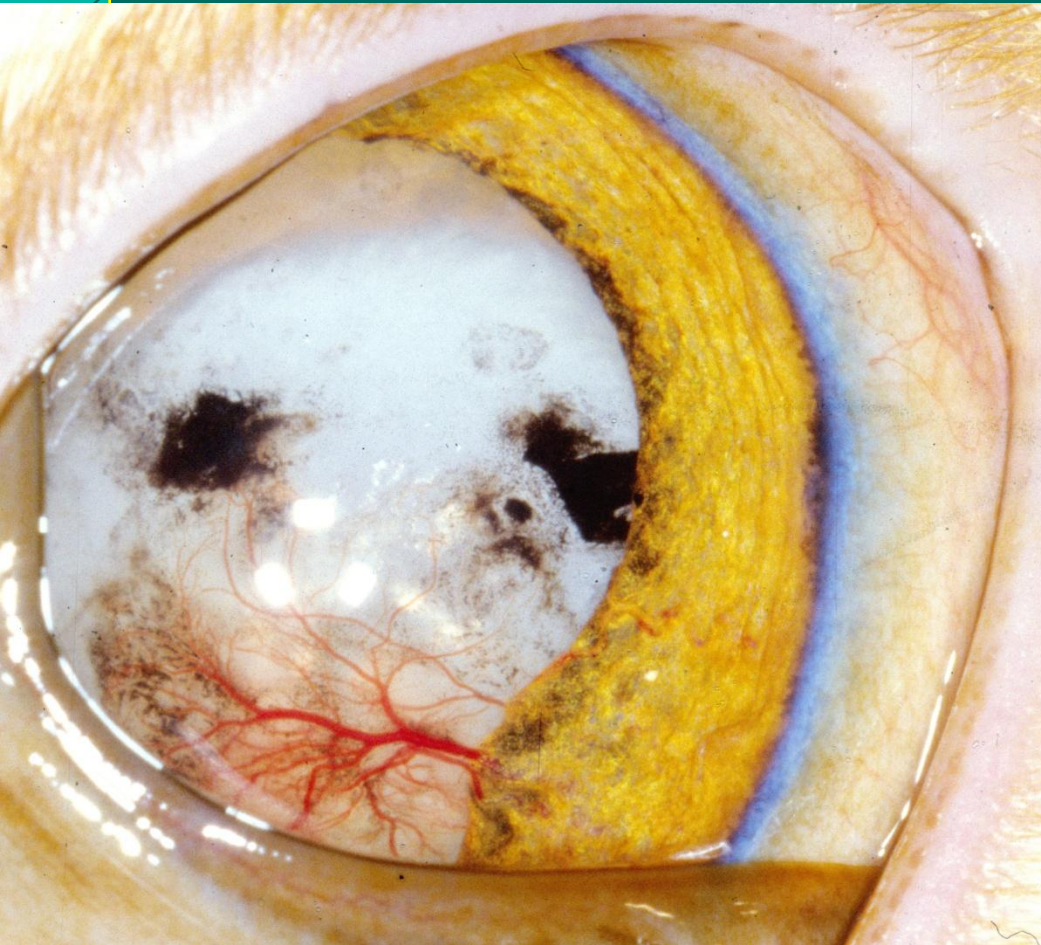




Goldens



Me



Vascular cataracts; lens rupture

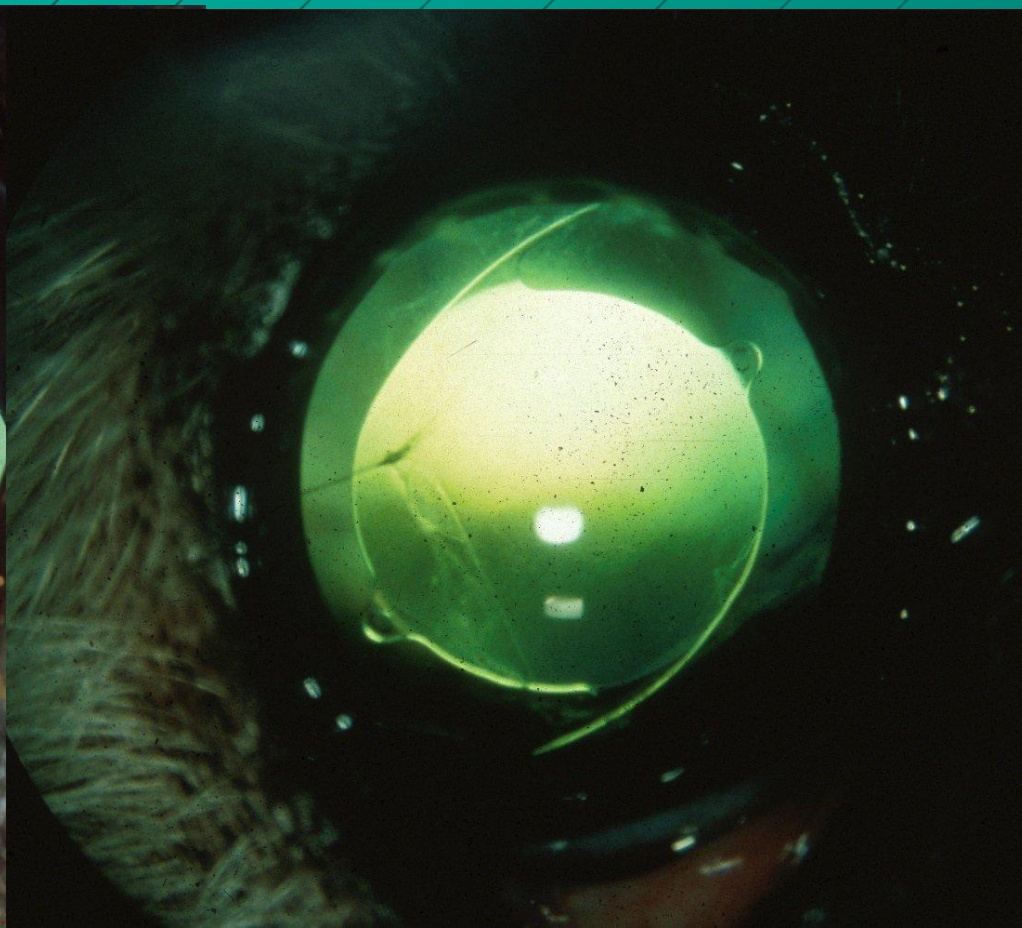
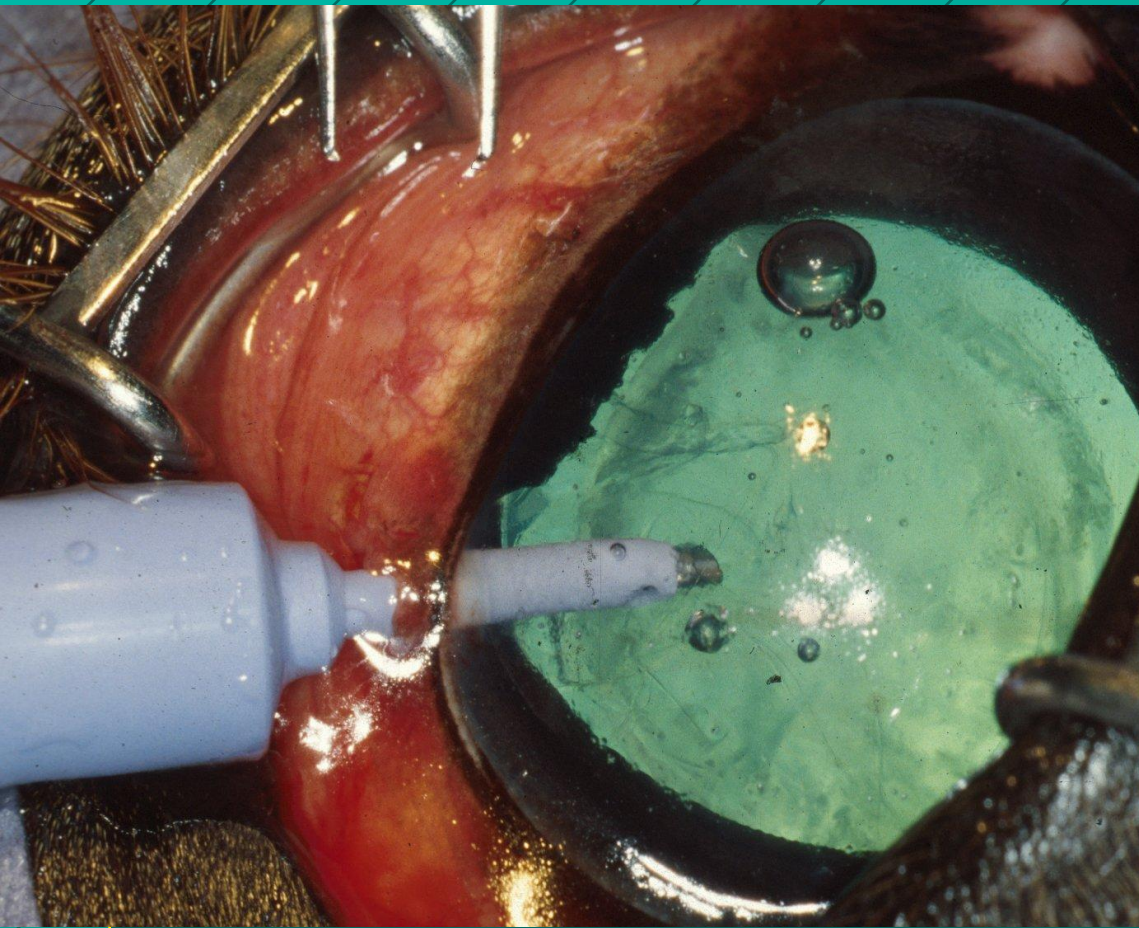
Treatment of cataracts

- Medical: none. Mydriatics may help peripheral vision for a time.

Surgery

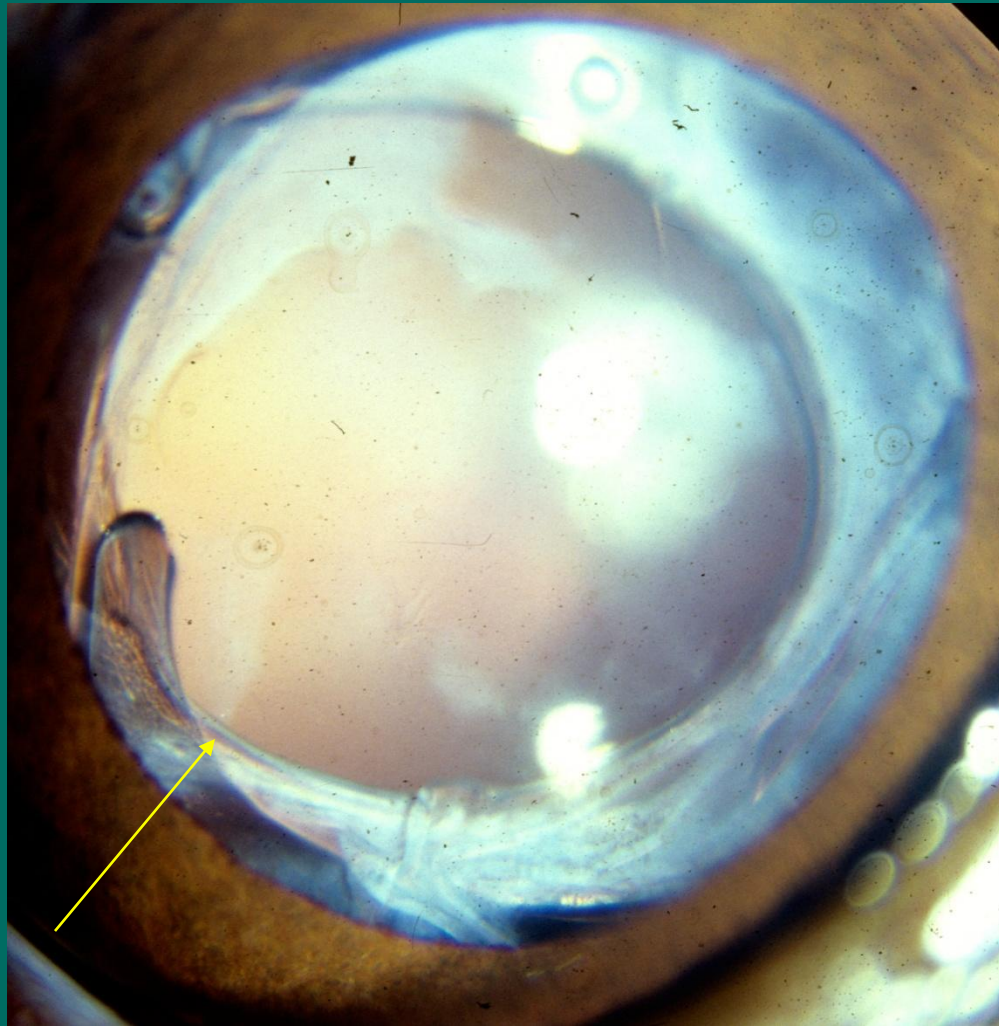
- Extracapsular (ECCE)
- Phacofragmentation.
Ultrasonic vibration breaks up lens (cataract).
 - Intraocular lens (IOL)
- Intracapsular extraction (ICCE): lens luxations



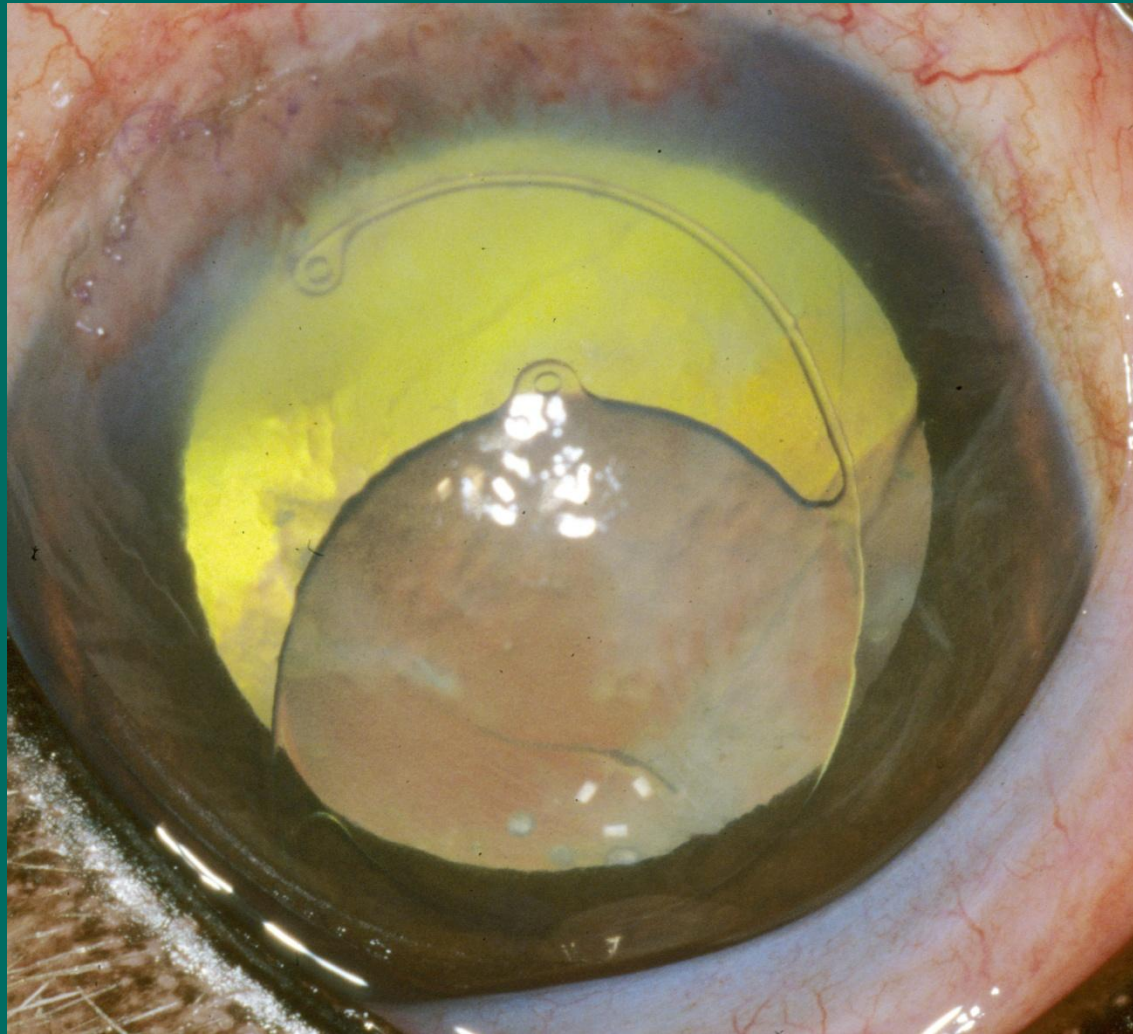


Phaco

Intraocular lens (IOL)

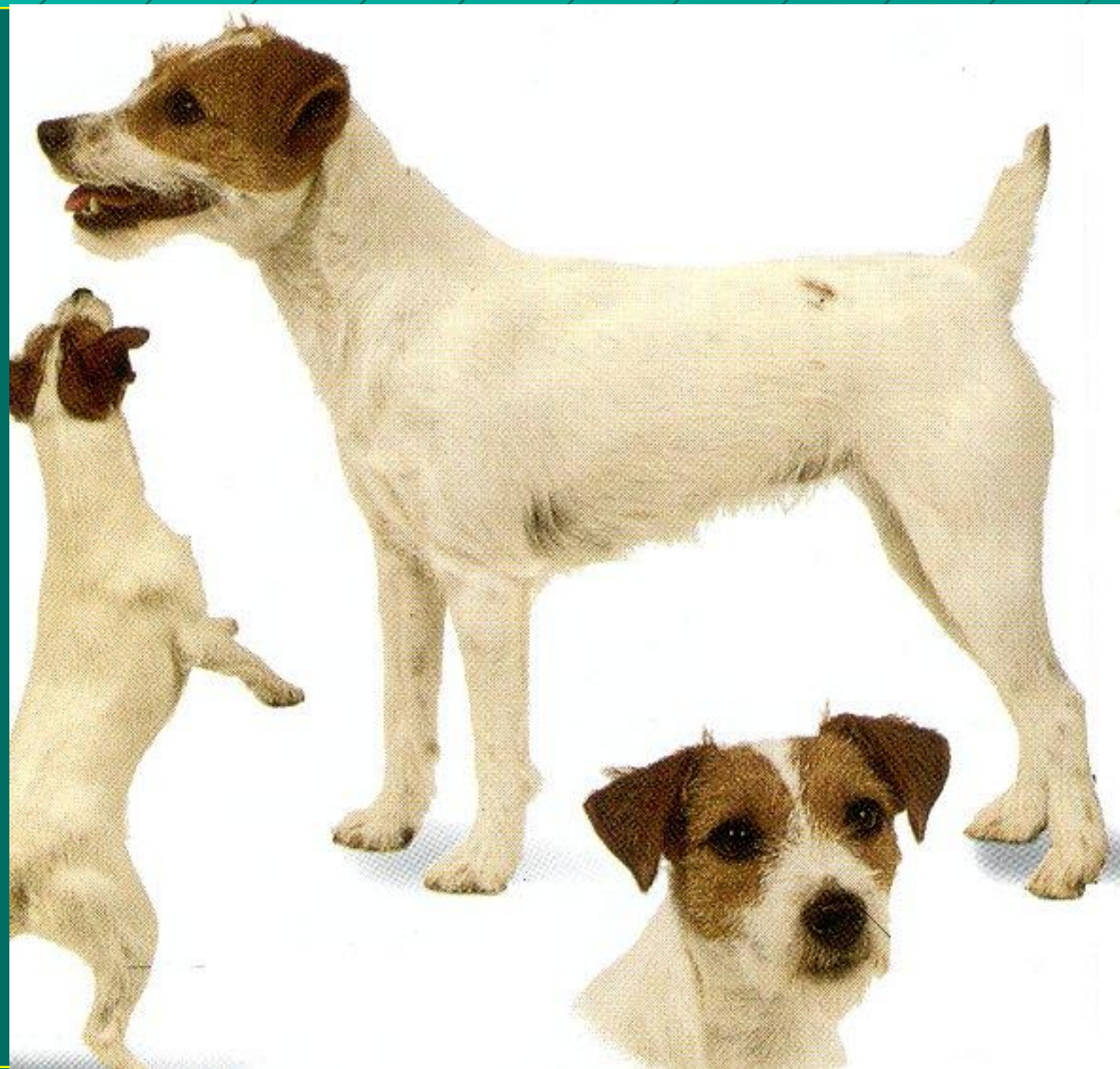


IOL reducing PCO!



IOL decentered

JRT



LENS LUXATION AND SUBLUXATION

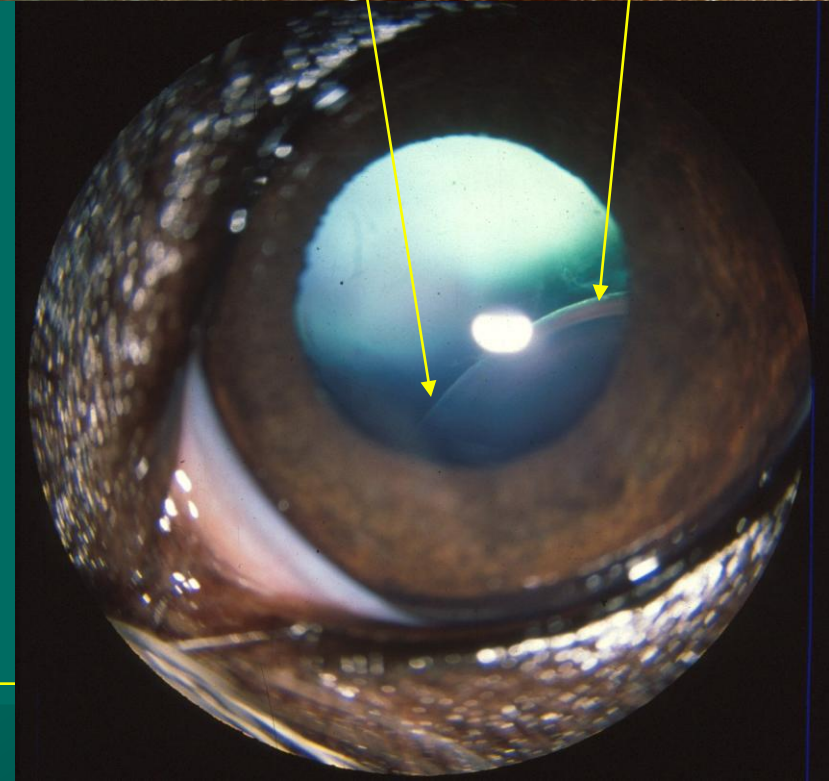
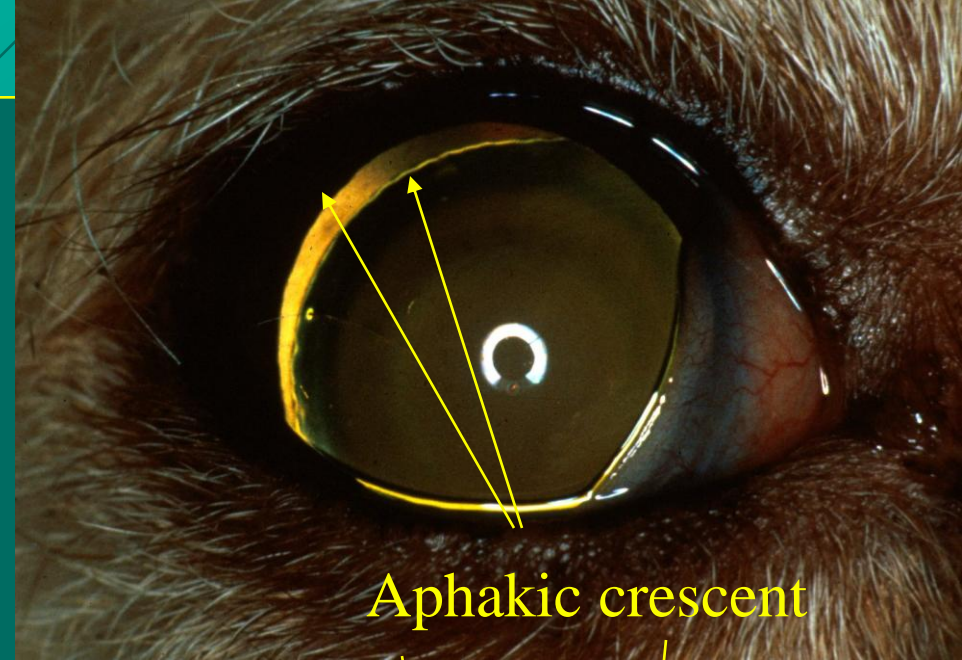
Luxation: Lens is totally free of zonular attachments. Can be anterior or posterior. Primary and secondary

Subluxation: zonules partially broken

Signs: iridodonesis, deep AC, aphakic crescent, glaucoma.

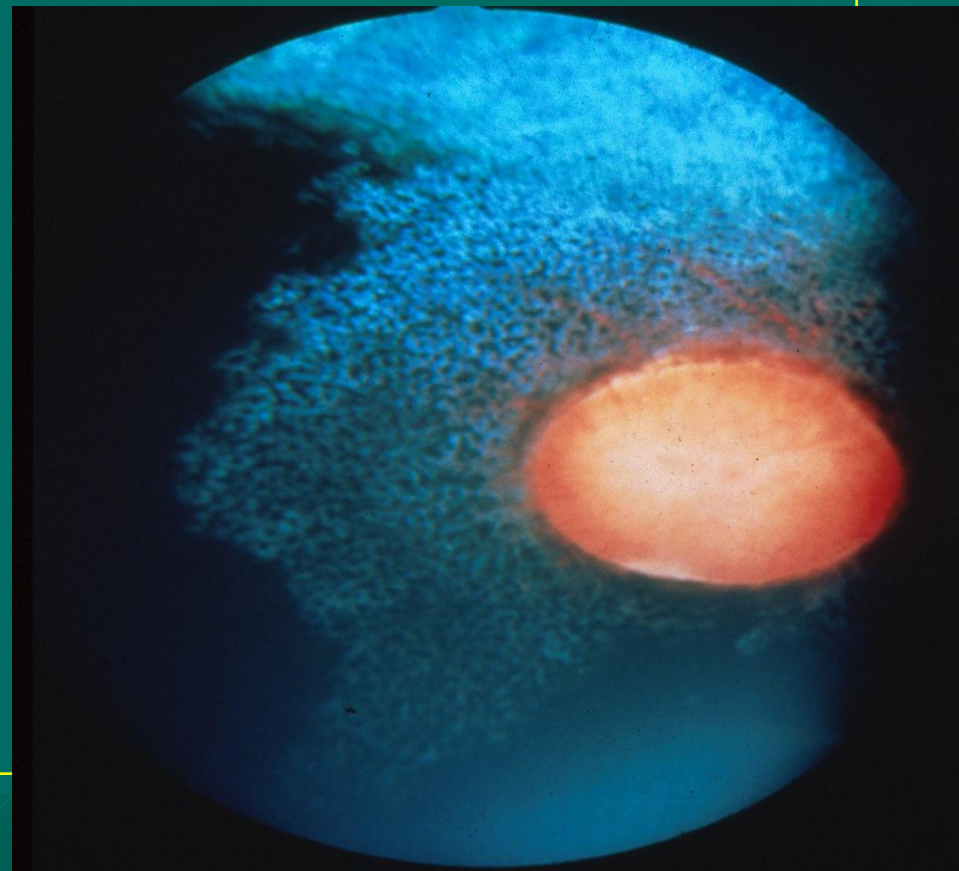
Breed predispositions: Terriers, Cockers

Management depends on the presence of pain and/or sight in the affected eye.



■ “periodic ophthalmia, moon blindness”

- Cavalry horses in ancient Egypt
- “oculus lunaticus”- Vegetius 300AD
- Etiology - autoimmune disease.
 - “Catch-All” term. Group of diseases with same signs
 - Suspected inciting stimulus: Leptospira, Onchocerca, Brucella, Toxoplasma, EHV-1 and -4, Lyme’s, others?
- Diagnosis: It tends to recur!!
Worse in Appaloosas
- 20% OU in non Apps
- 80% OU in Apps
 - a. Painful - tearing, conjunctivitis
 - b. Miotic pupil; hypotony
 - c. Negative fluorescein retention
 - d. Hypopyon, flare, hyphema
 - e. Retinal degeneration, "butterfly lesions“
 - f. “hypertensive” uveitis



Breed and Uveitis

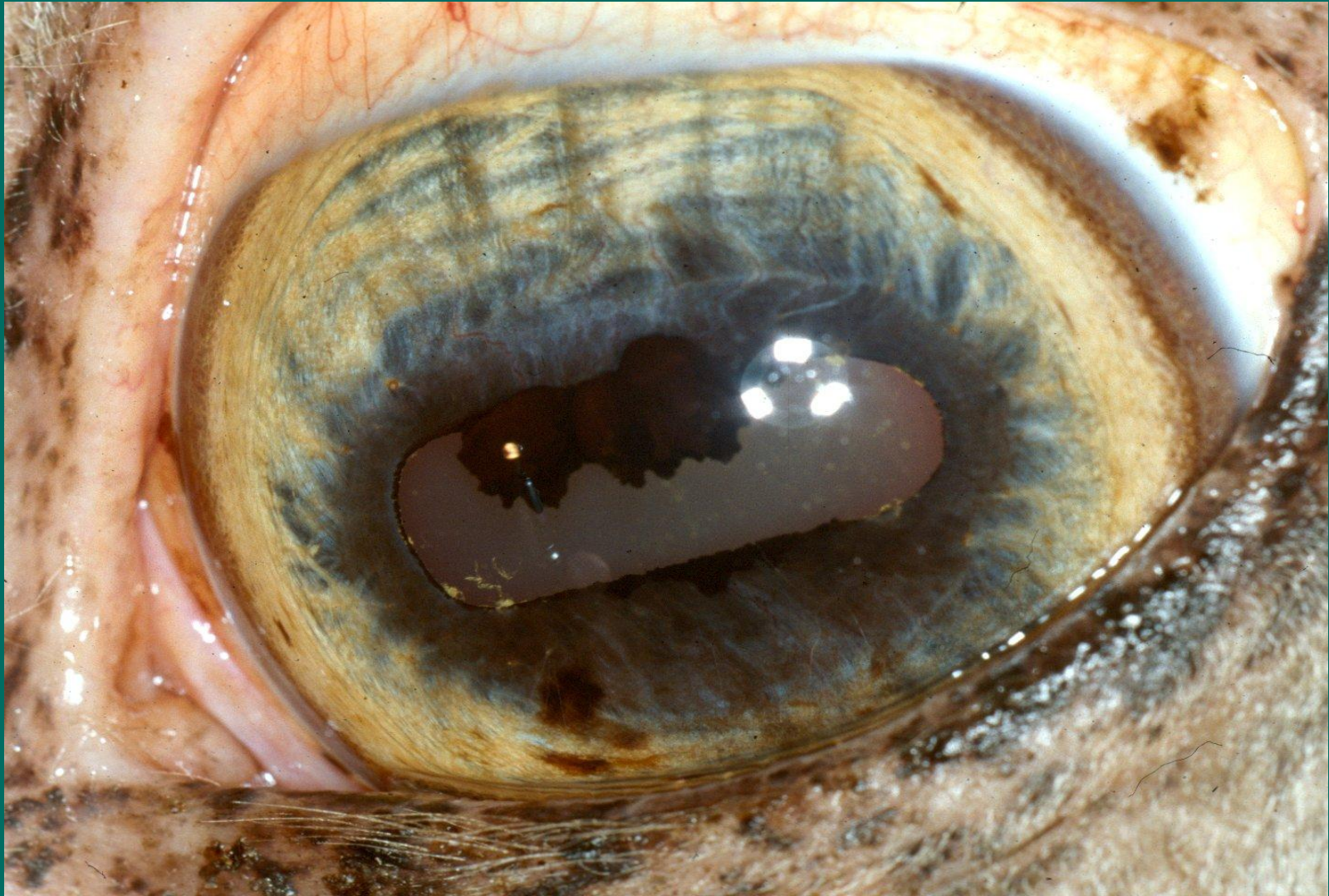


Color pattern more at risk

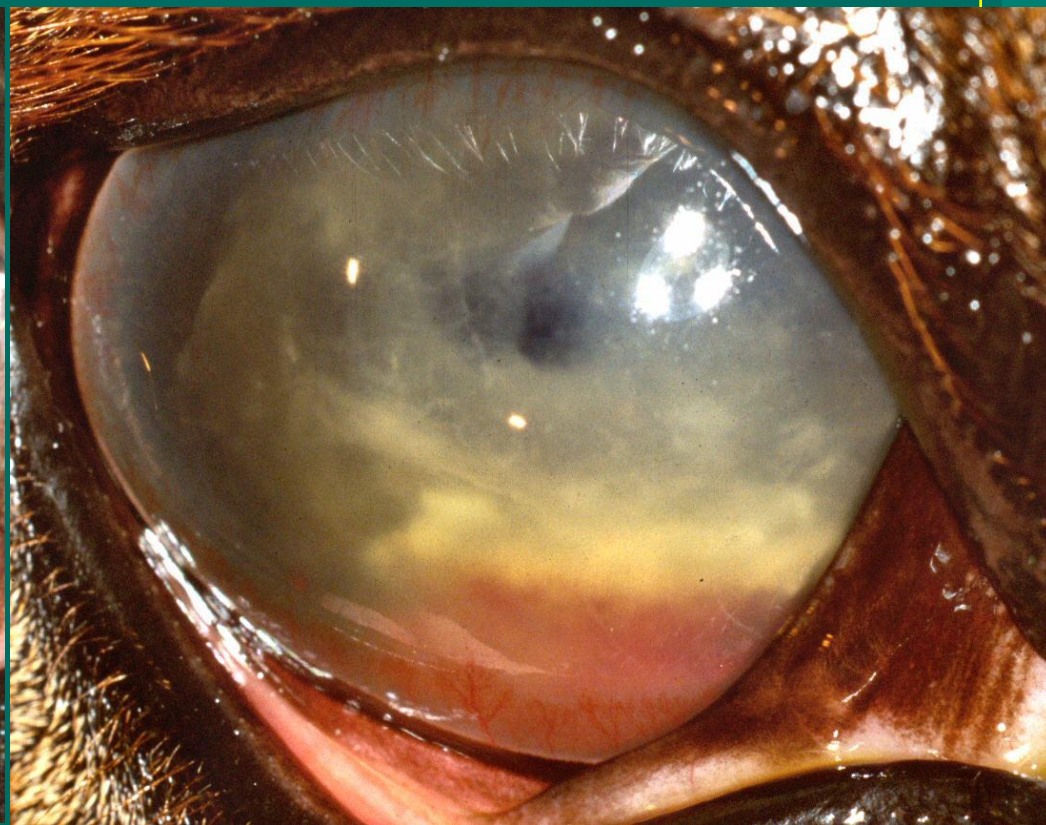
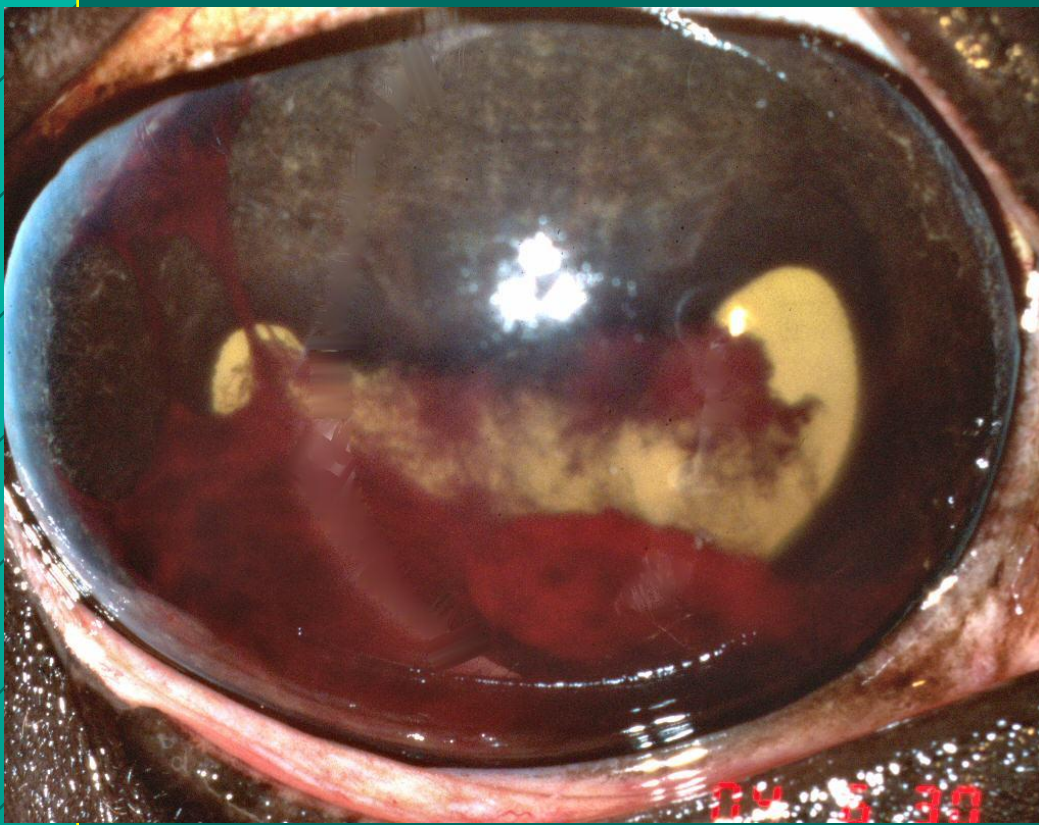


Color pattern less at risk

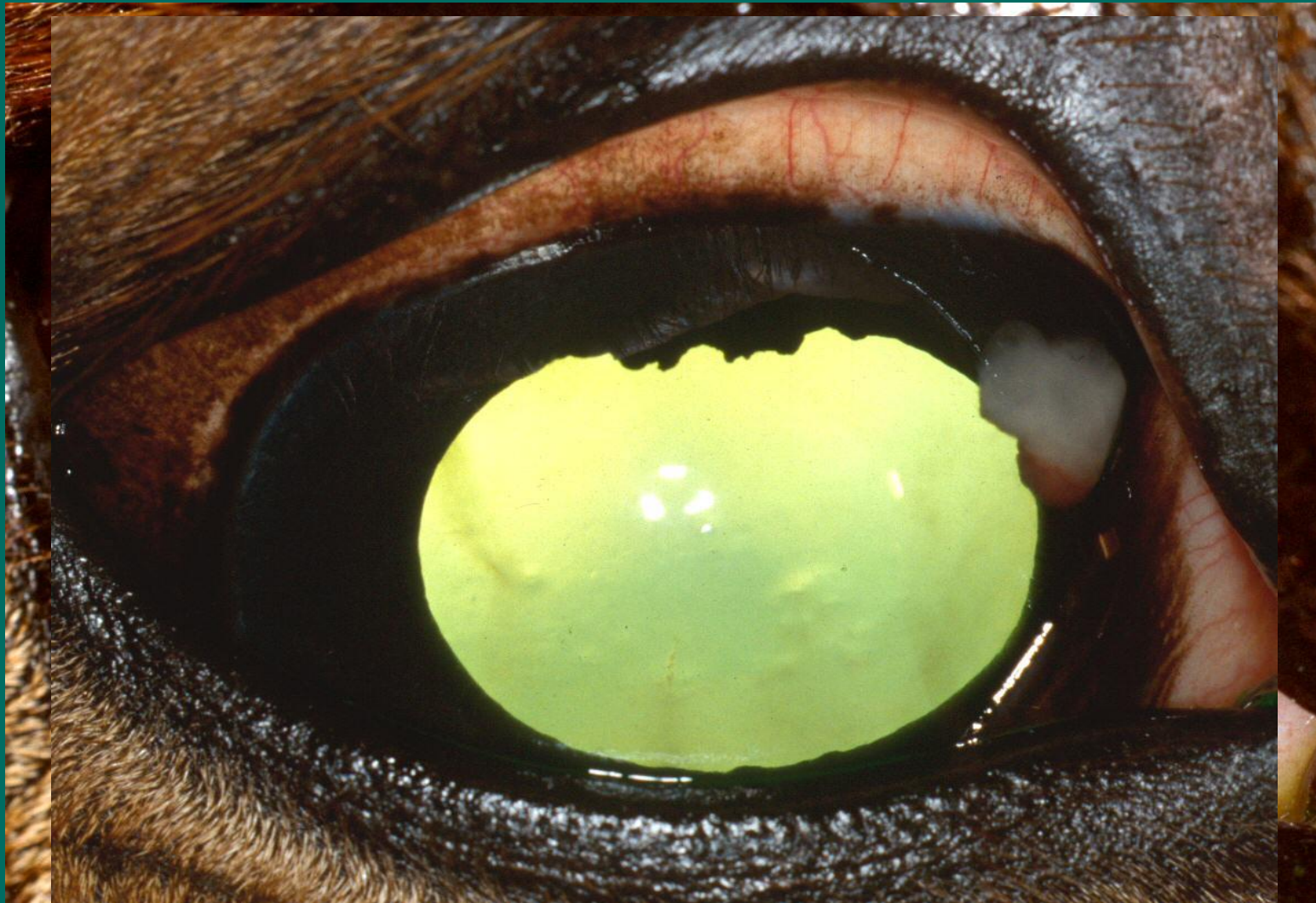
- In Western NY, Appaloosas are 8.3 times more likely to suffer from uveitis than other breeds
- At risk individuals tend to have coat patterns with overall roan or light coats, little pigment around eyelids, sparse manes and tails
- Germany: Warmbloods at risk, ELA genetics theorized.



Iris color changed to brown

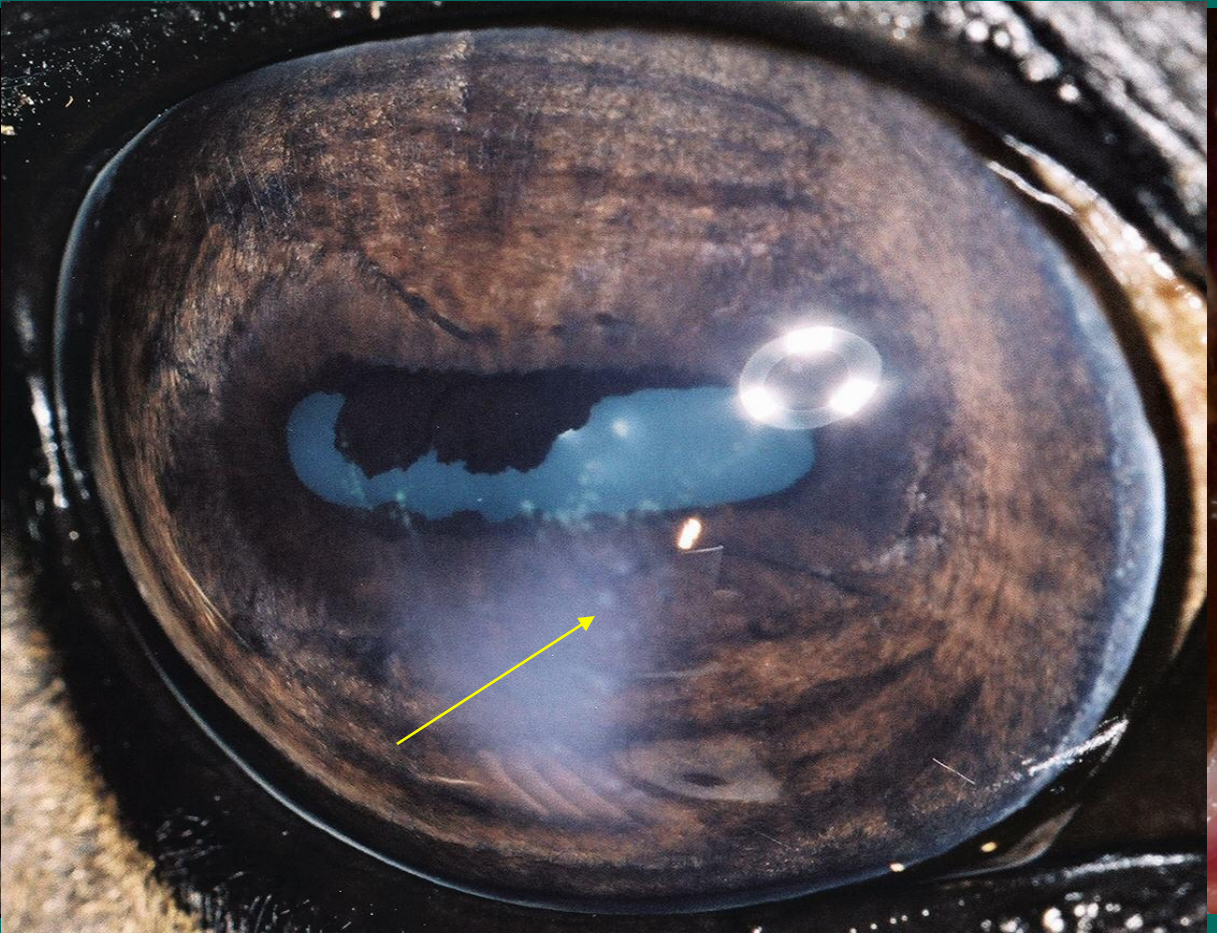
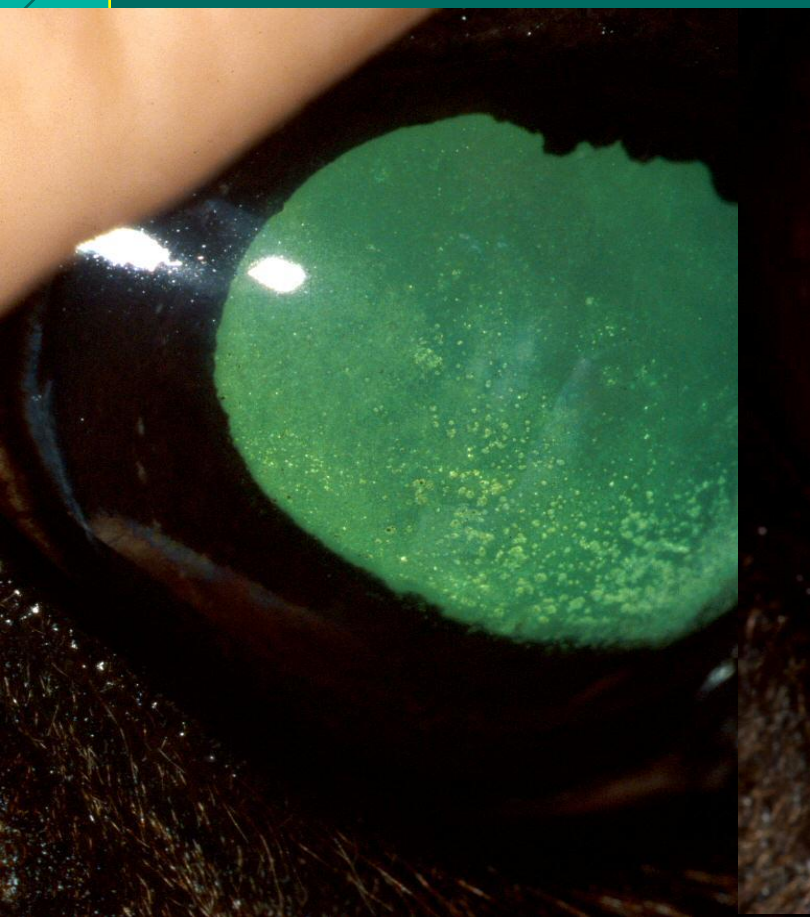


ERU



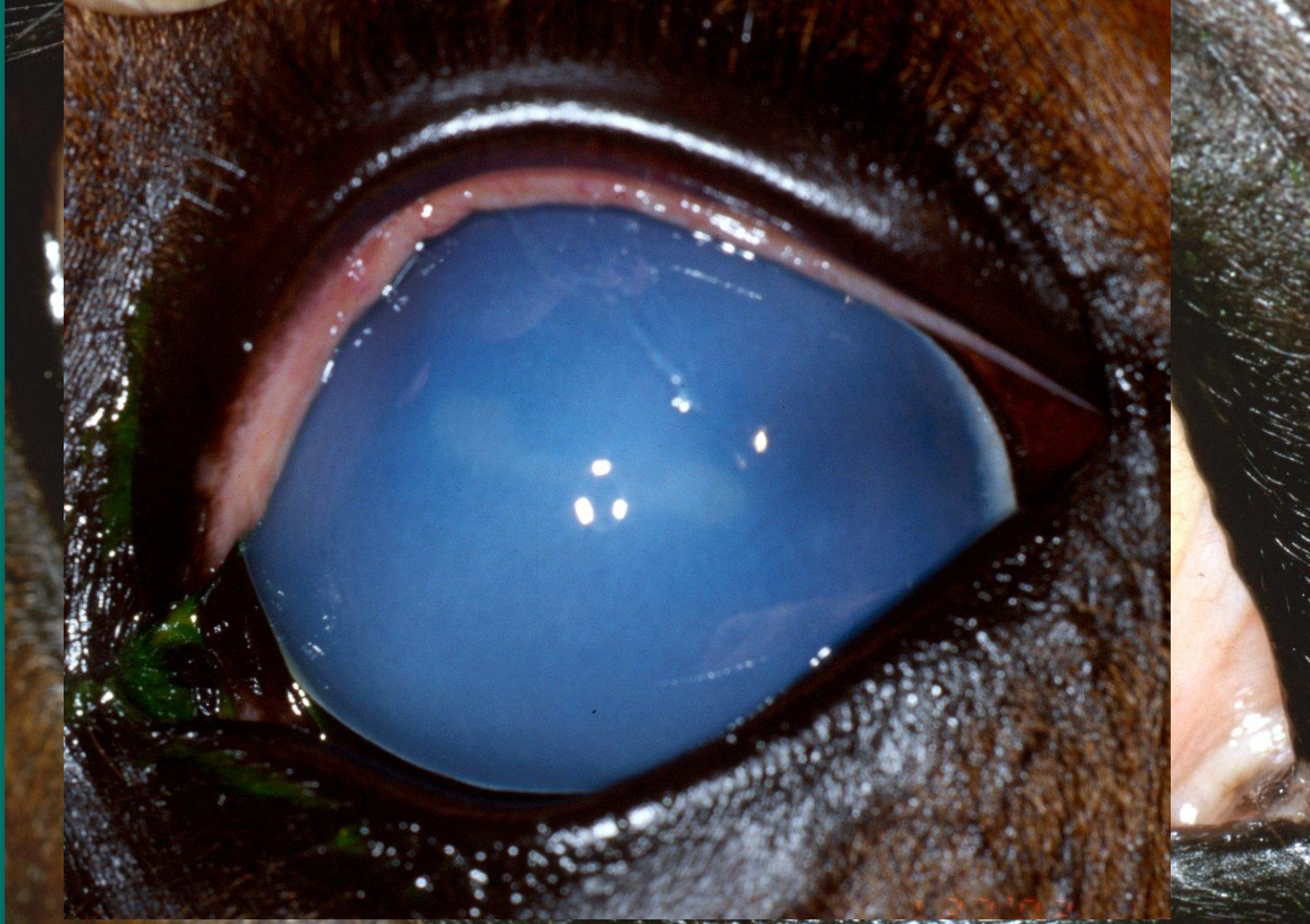
Fibrin is removed by TPA

KPs



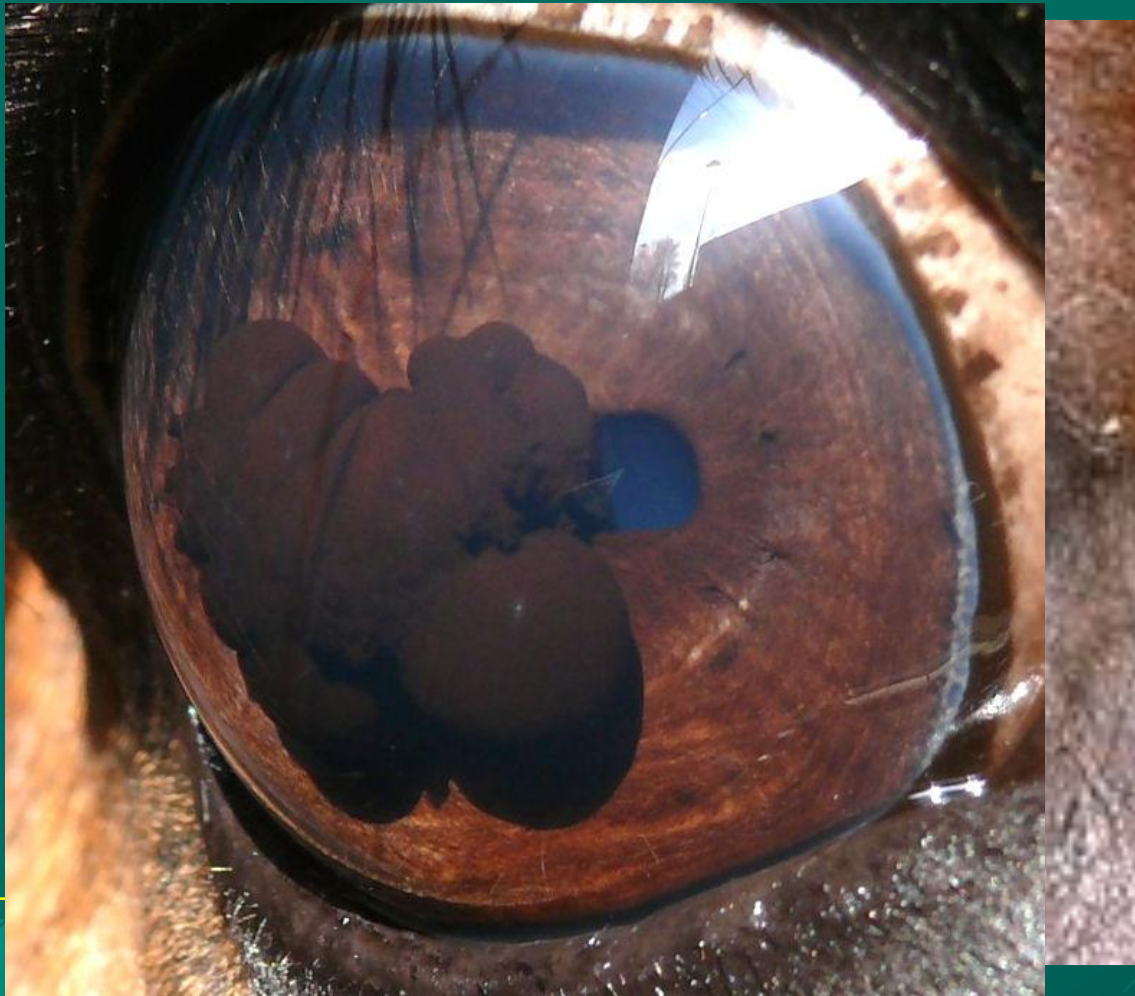


Endotheliitis: precursor of glaucoma??



Equine Recurrent Uveitis (ERU): autoimmune disease

- Enlarged dorsal corpora nigra may interfere with vision if obstructing the pupil.
 - Large corpora nigra and iridal cysts may be successfully deflated with transcorneal ND-YAG laser treatment.



- Iris hypoplasia and iris cysts may mimic one another.
- Iris hypoplasia of heterochromic eyes: the affected region of the iris may balloon into the anterior chamber.
- Iris cysts are hollow and transilluminate with focal light sources.

