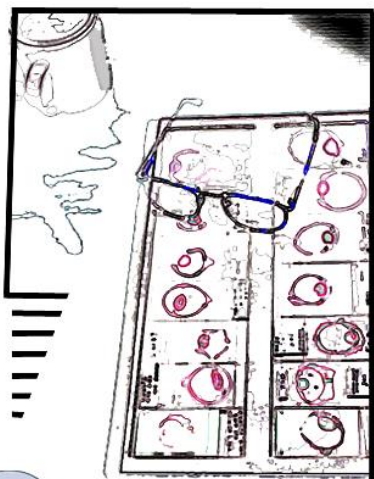




Arhinencephaly  
Synophthalmos  
Bovine

## Congenital and Developmental Eye Disease

Dick Dubielzig



**COPLOW**

Comparative Ocular Pathology Laboratory of Wisconsin

School of Veterinary Medicine University of Wisconsin-Madison



SCHOOL OF  
**VETERINARY MEDICINE**  
University of Wisconsin-Madison

*Advancing animal and human health with science and compassion*

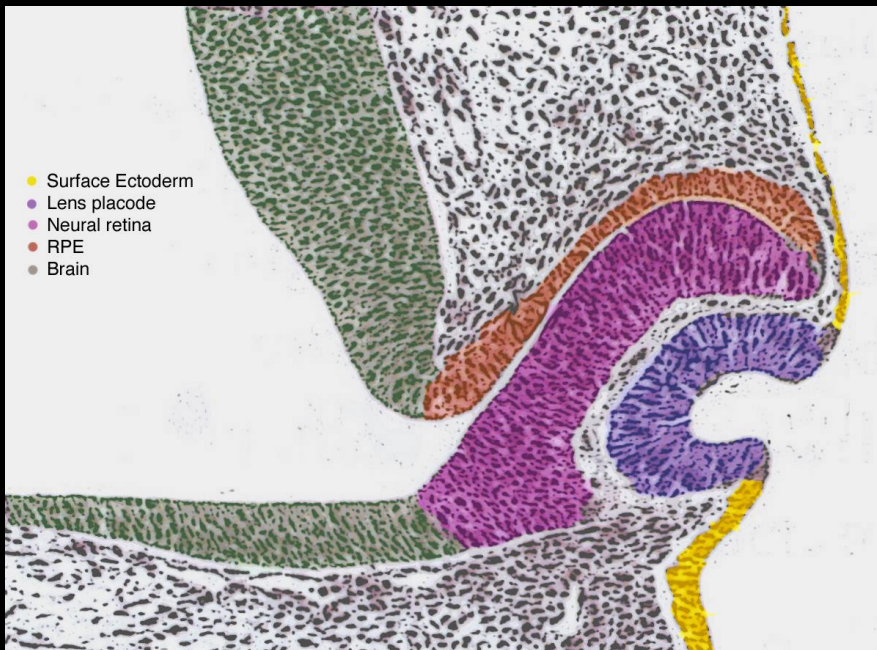
# Congenital diseases are seldom submitted to a pathology service

- 2% of cases in the COPLOW collection
- Tends to be cases severe enough to warrant enucleation or euthanasia

Dr Koji Tanaka



Optic vesicle bulges out from the neural tube making contact with the surface ectoderm thus stimulating the local ectoderm to form the lens placode

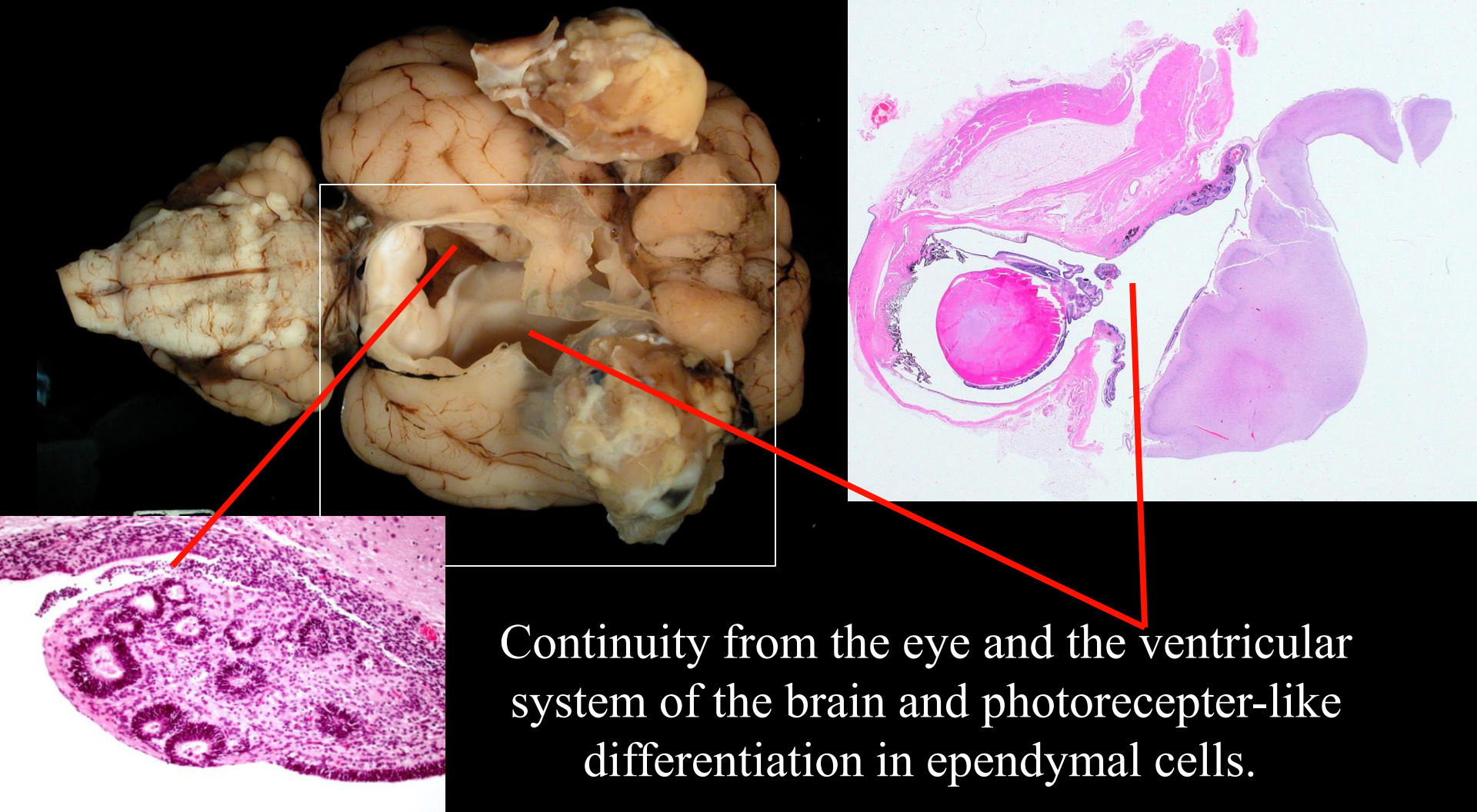


Invagination of the optic vesicle to form the optic cup

Lens placode invaginates to form the lens vesicle which separates from the surface

# Sheep

## Failure of Complete Invagination of the Optic Vesicle to form the Optic Cup



Continuity from the eye and the ventricular system of the brain and photoreceptor-like differentiation in ependymal cells.

# Separation of the Lens Vesicle to form the Anterior and Posterior Chambers



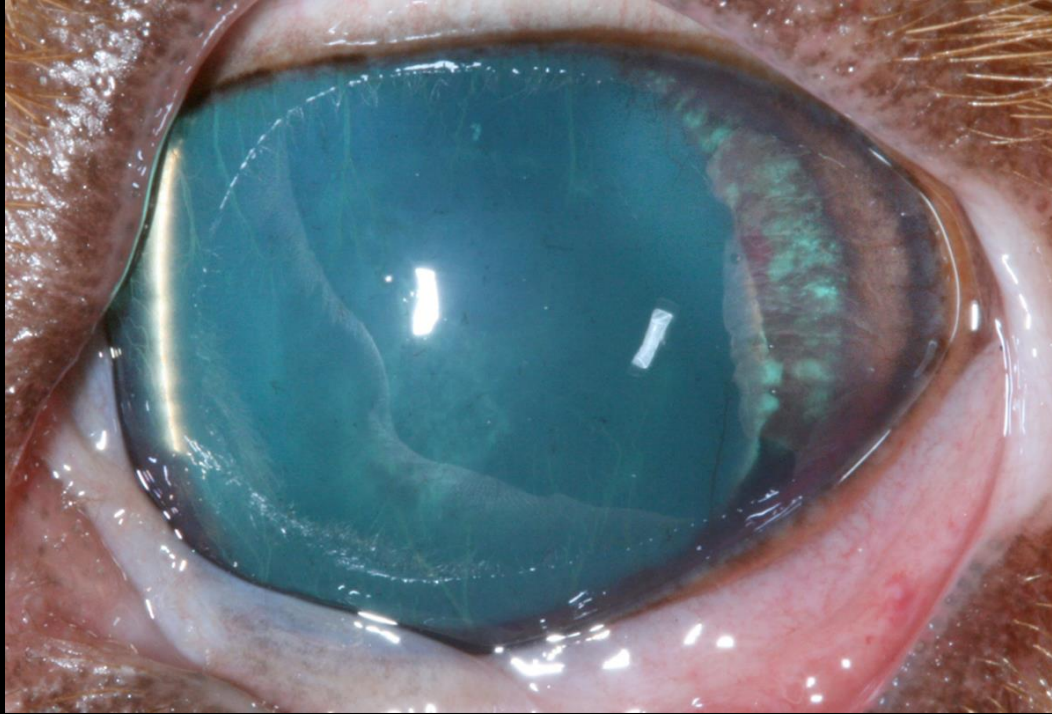
The developing lens is still intimately surrounded by mesenchyme which will eventually disappear making the lens and anterior uveal tissue separate from the chambers of the eye



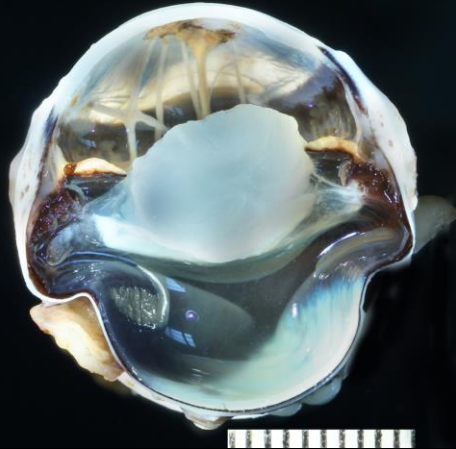
Dr Koji Tanaka

# Aniridia

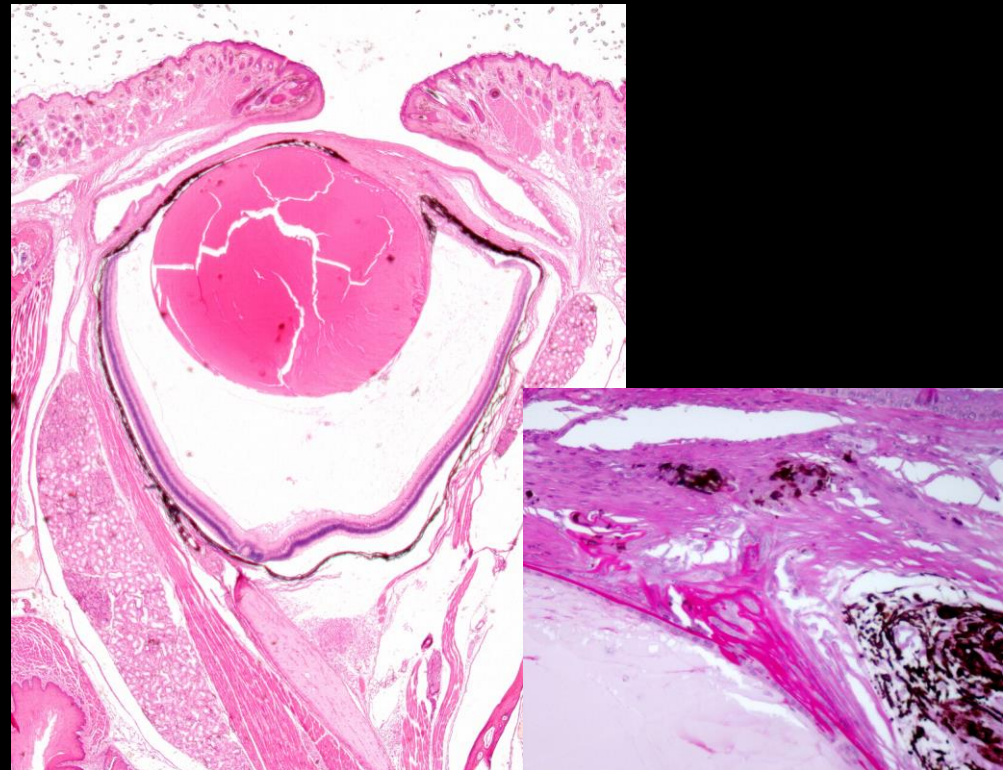
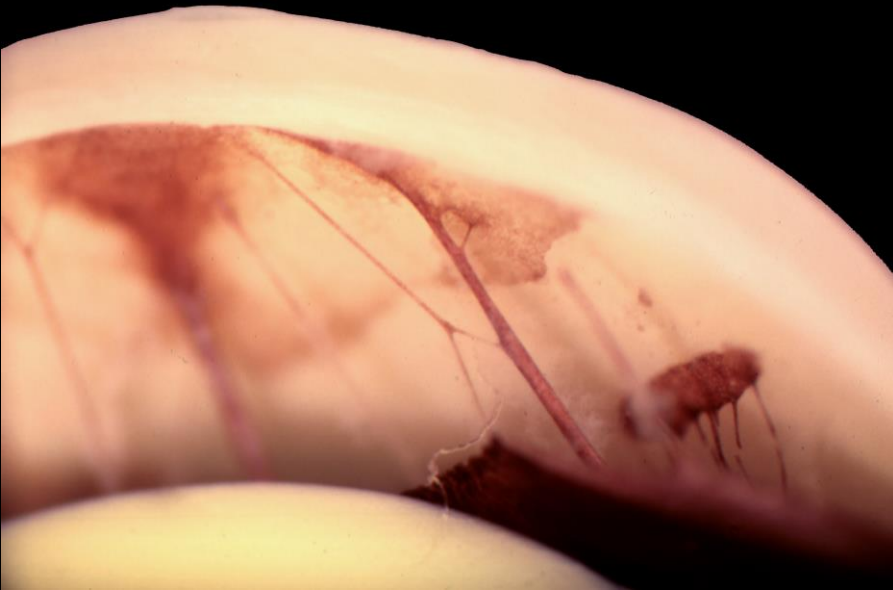
*Alpaca*



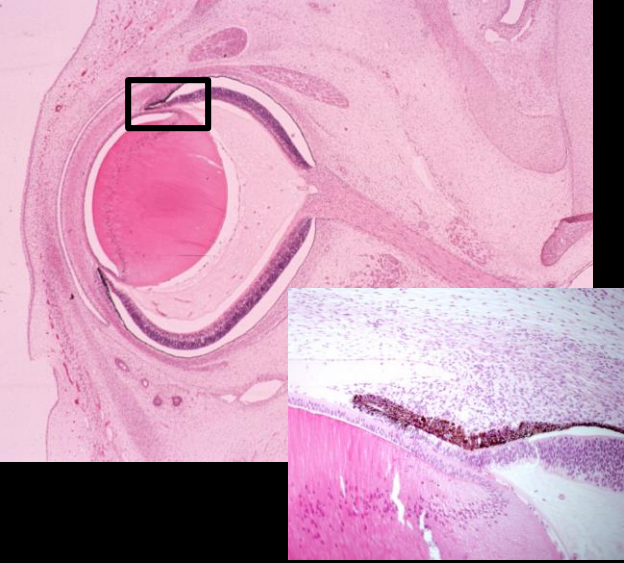
# Anterior Chamber Cleavage Syndrome or Anterior Segment Dysgenesis



Peter's Anomaly Canine



Mouse: Anterior segment dysgenesis



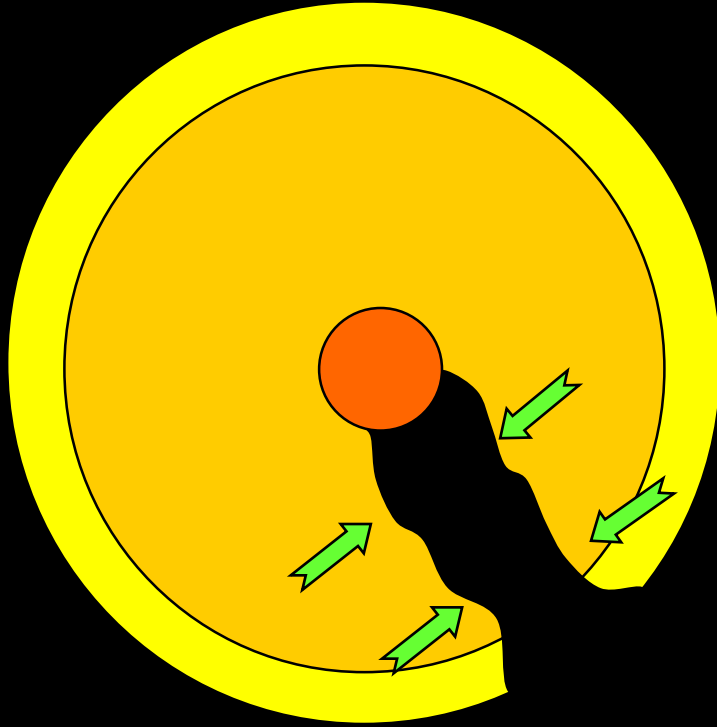
Sprouting of the neuroepithelium from the margins of the optic cup to form the ciliary and iridal epithelium



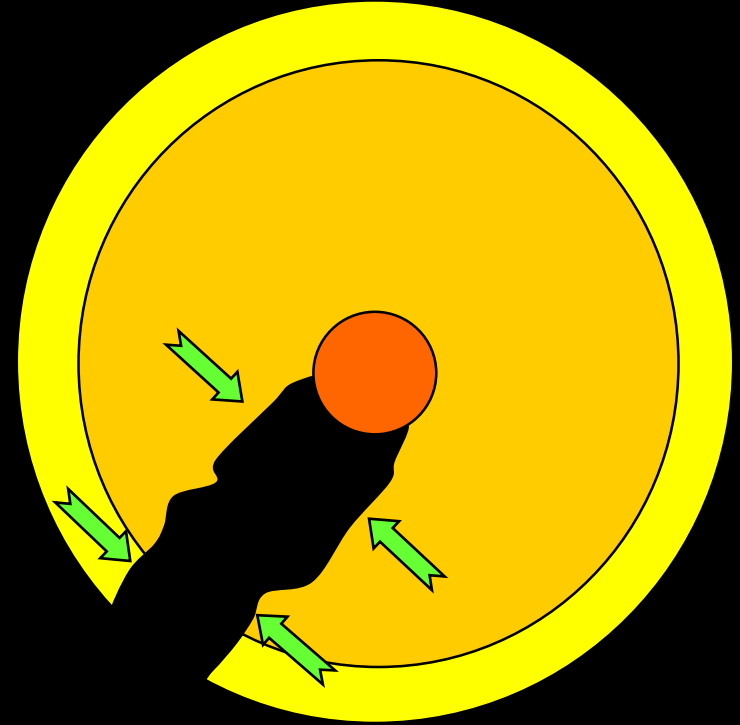
Invasion of mesoderm and vessels to form the primary vitreous



R

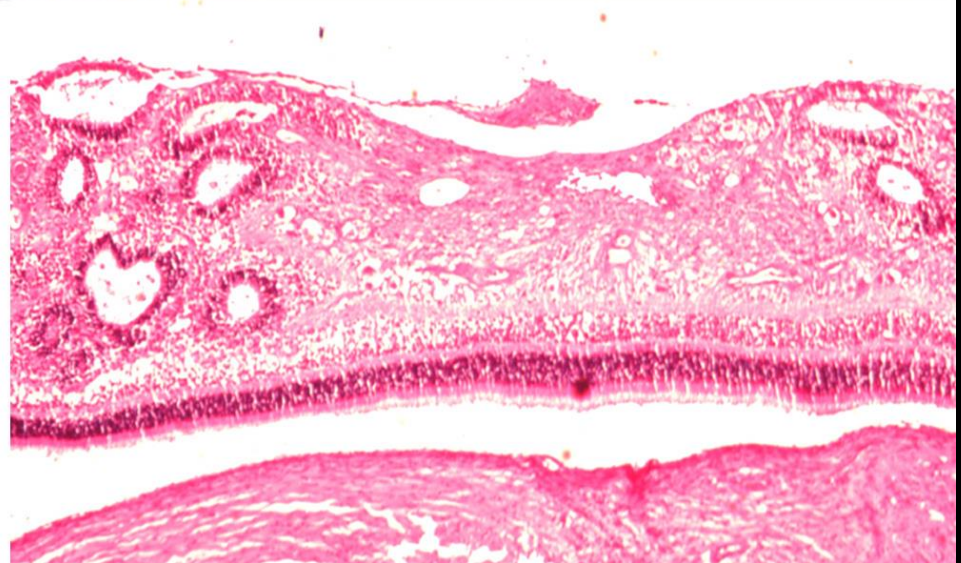
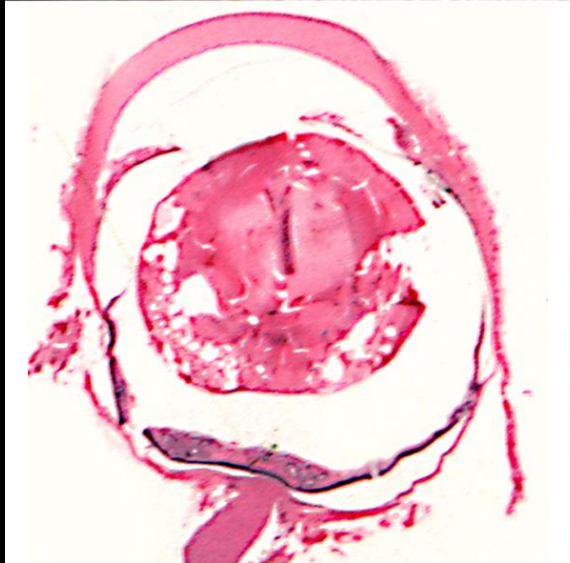


L

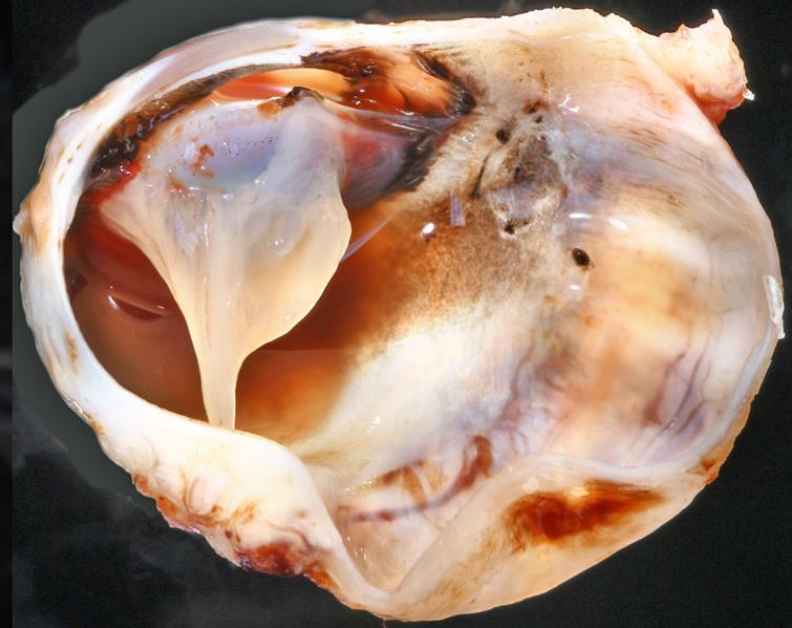
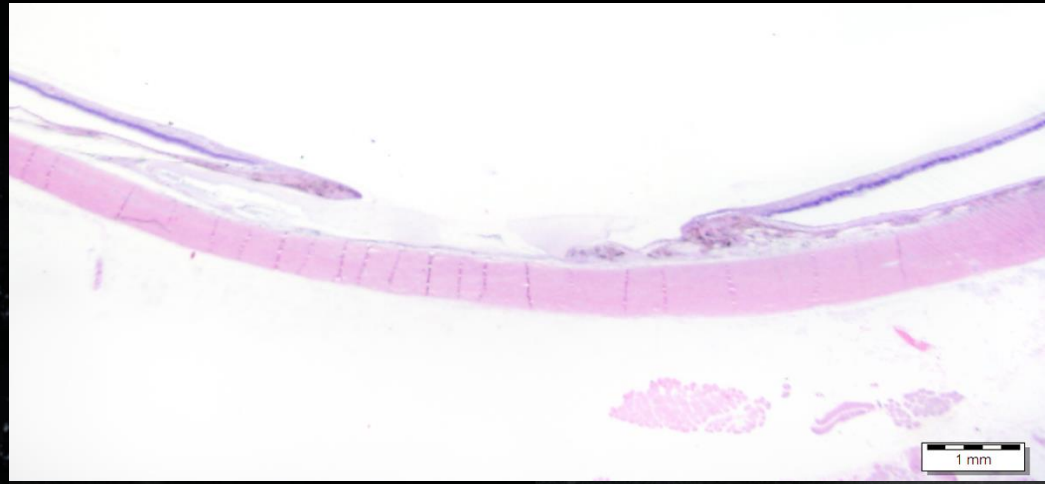
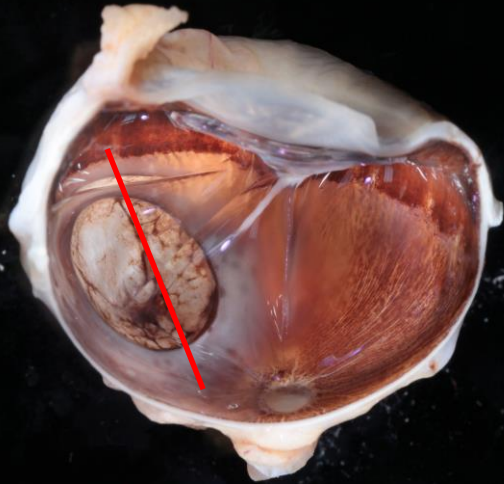


Closure of the optic fissure separating the vasculature of the primary vitreous and the mesenchyme outside the optic cup and establishing the formation of a continuous inner neuroretina and an outer retinal epithelium

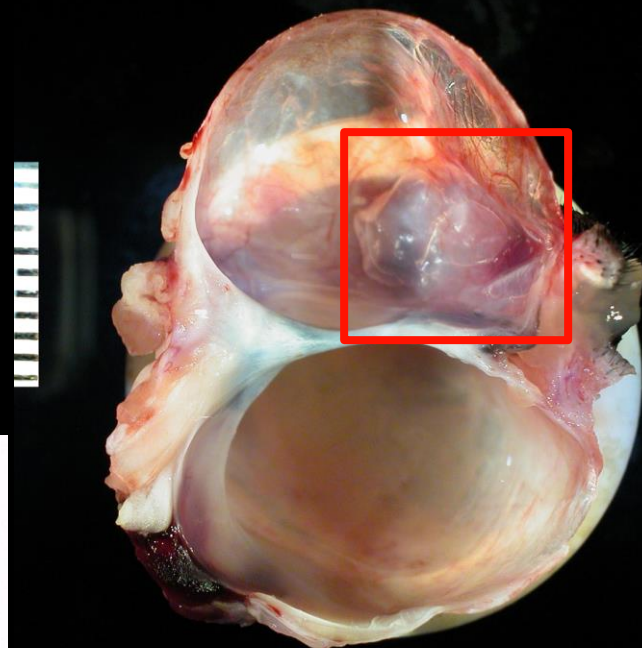
# Merle and white spot coat color



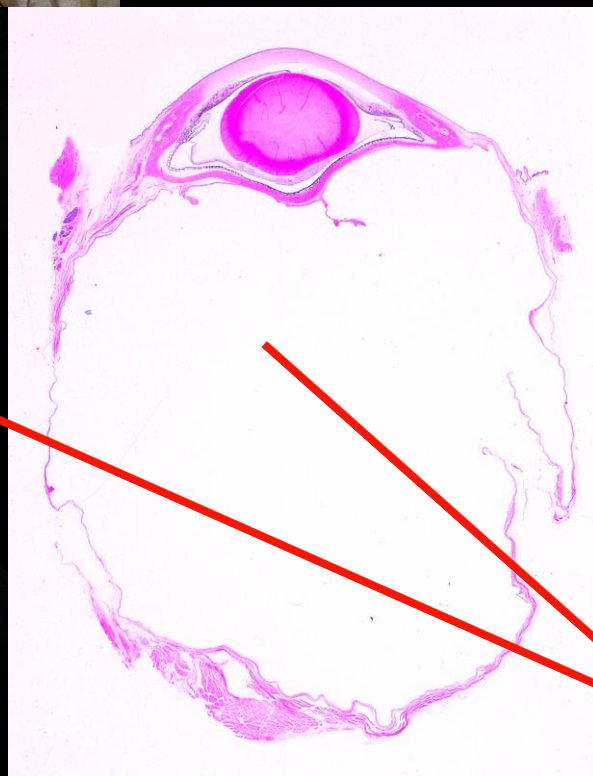
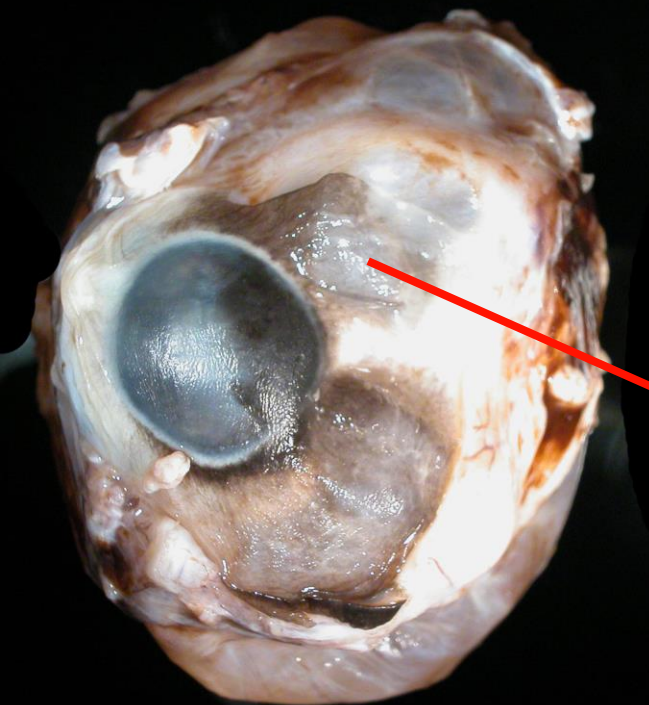
# Classical Coloboma



# Microphthalmos with Cyst



Canine: Tiny eye and big cyst



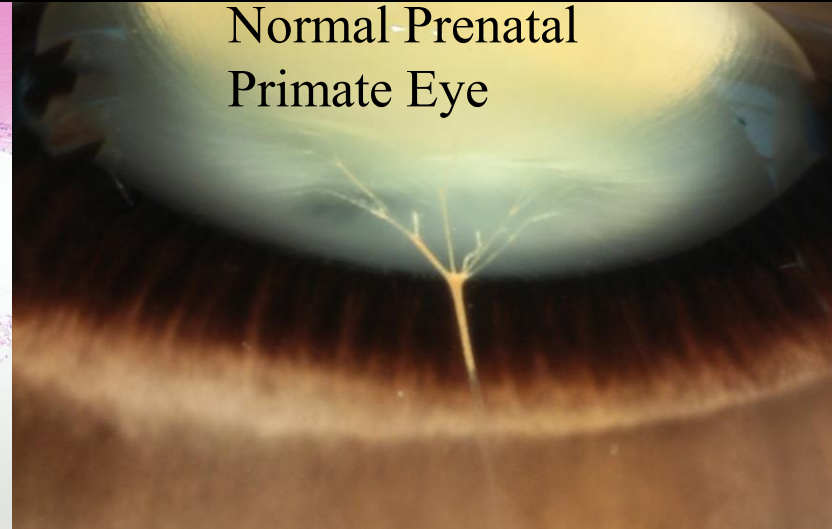
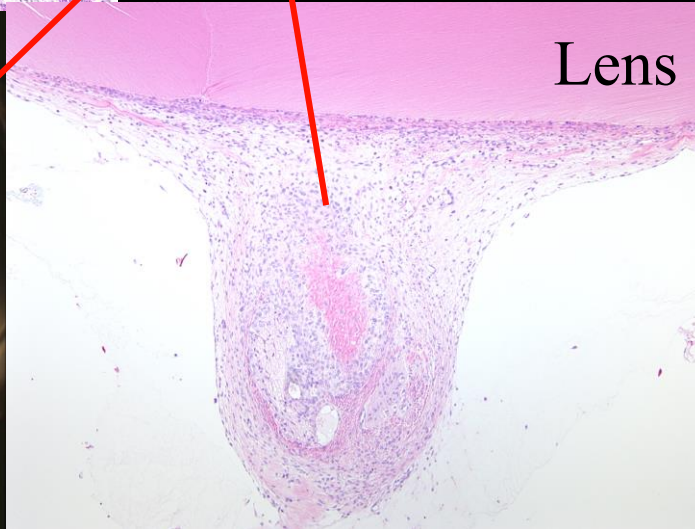
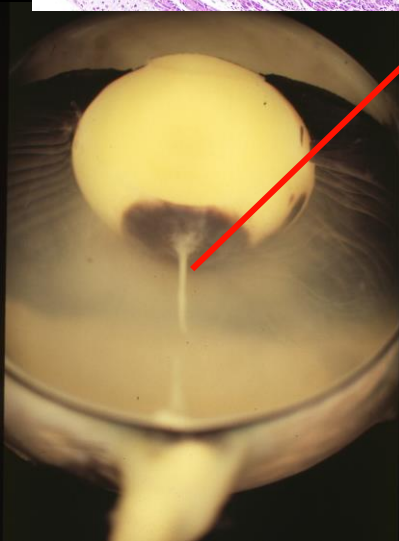
Cyst: Canine

# Replacement of the Primary Vitreous with the Secondary (Adult) Vitreous



Primary vitreous with mesenchymal cells and blood vessels, Mouse

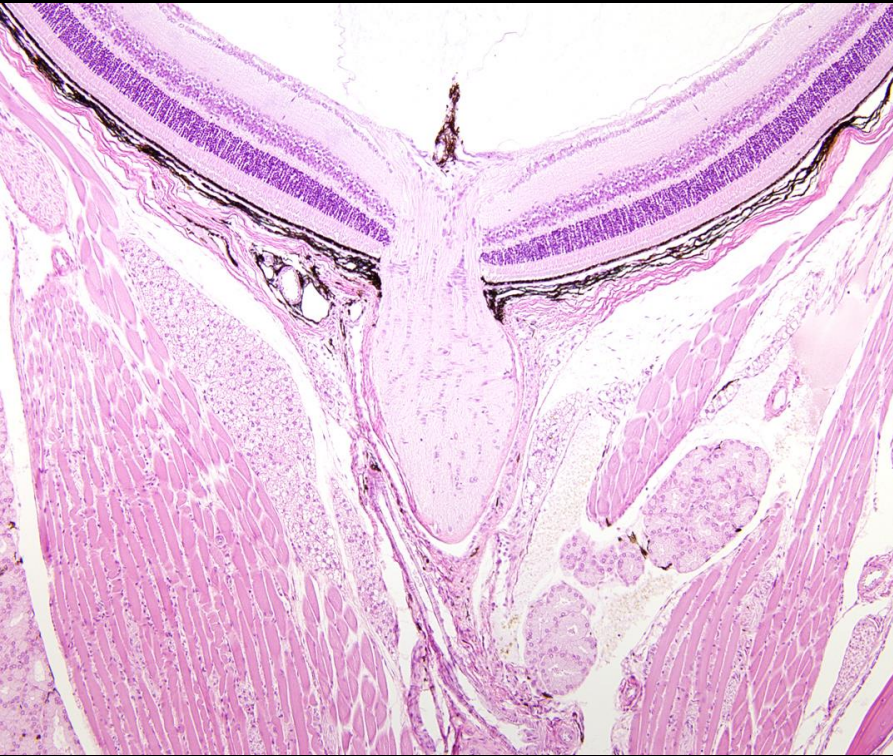
Persistent Primary Hyperplastic Vitreous  
PHPV



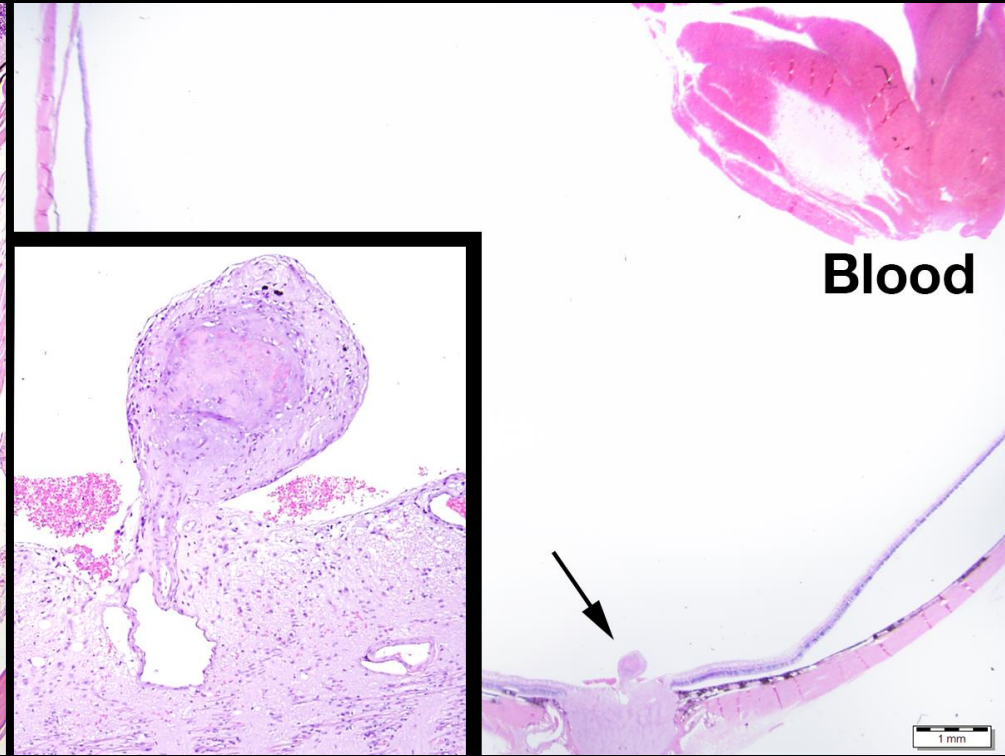
Normal Prenatal  
Primate Eye

# Persistent Fetal Vasculature

## *Bergmeister's Papilla*



Bergmeister's Papilla as an  
Incidental finding in a mouse eye



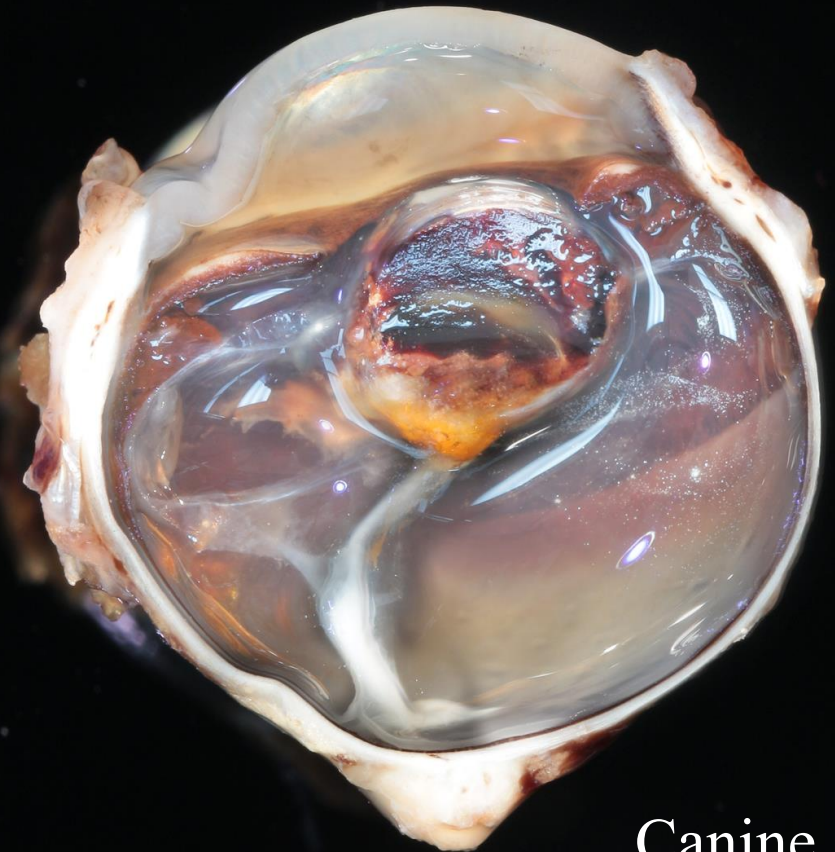
Bergmeister's Papilla in a dog eye with extensive  
vitreal hemorrhage associated with a dilated and  
thrombosed blood vessel

# Replacement of the Primary Vitreous with the Secondary (Adult) Vitreous

Persistent Primary Hyperplastic Vitreous  
PHPV

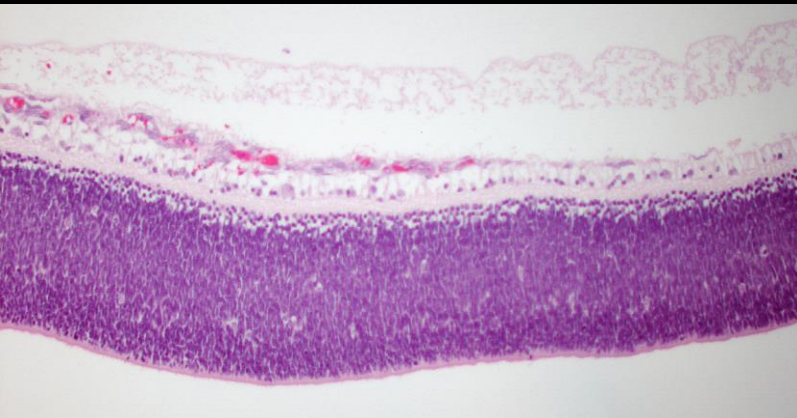


Canine

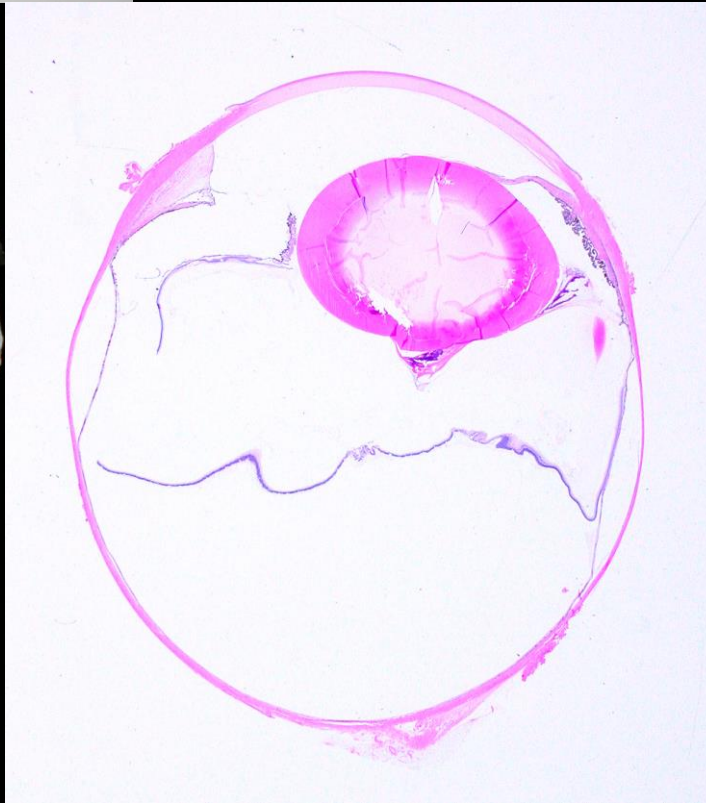
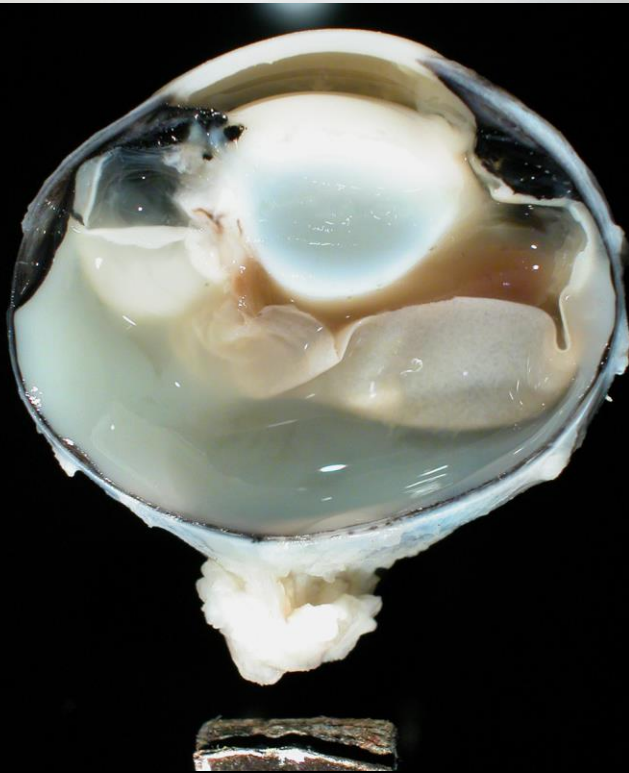


Canine

# Retinal Maturation



Development of a multilayered neuroretina, axons extension into the optic nerve and retinal blood vessels



Llama  
Optic nerve aplasia

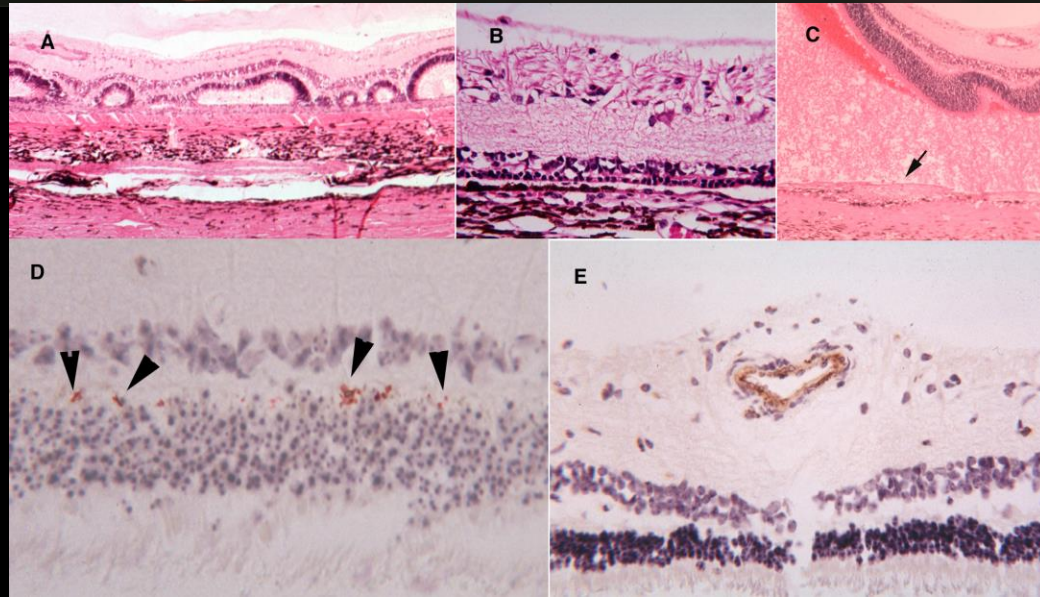
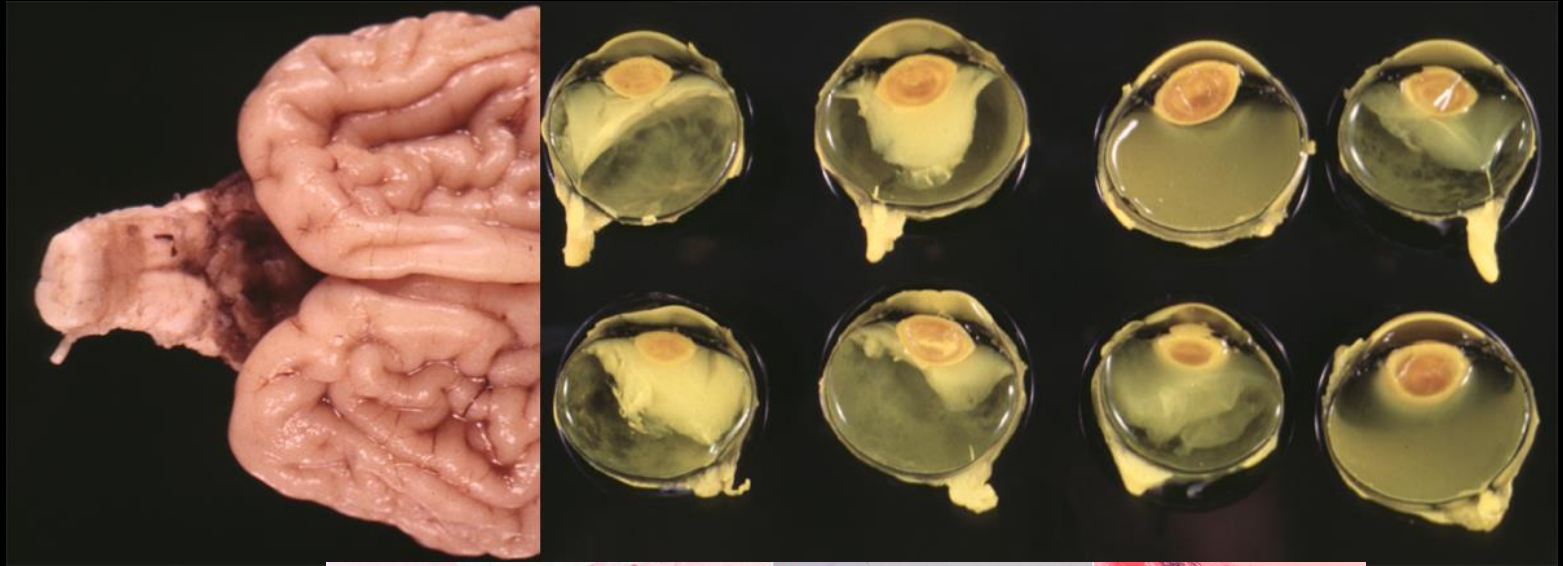


*Veratrum californicum* (Western False Hellebore)  
Ingestion by the pregnant ewe on day 14 of gestation

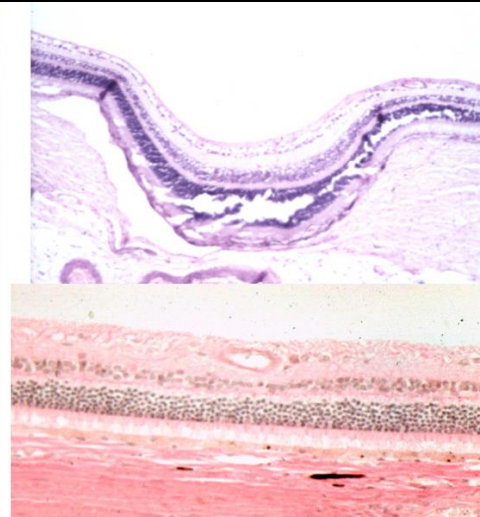
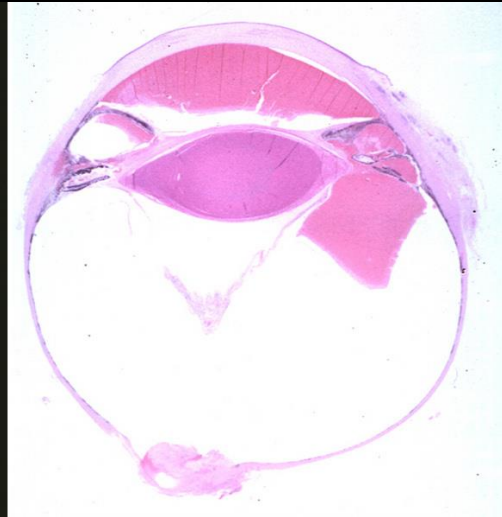
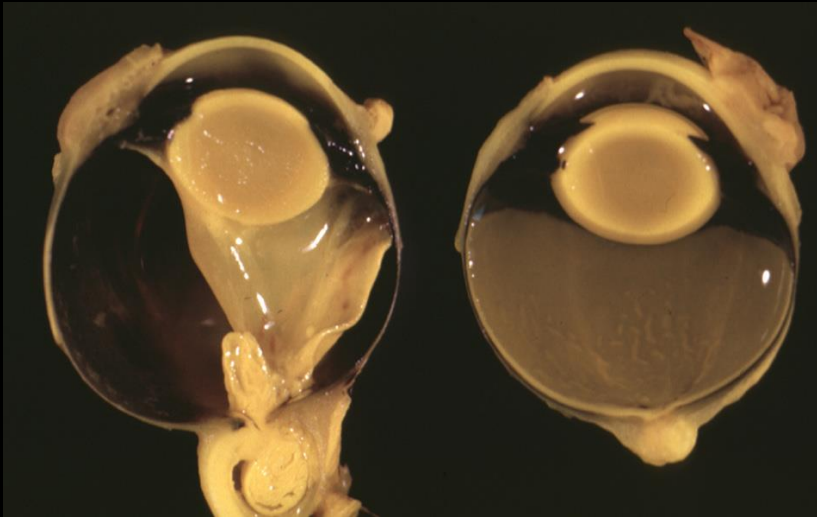
Arhinencephaly/holoprosencephaly



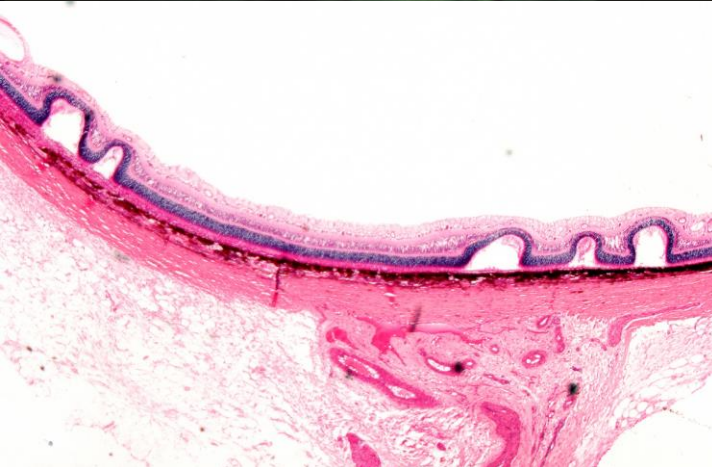
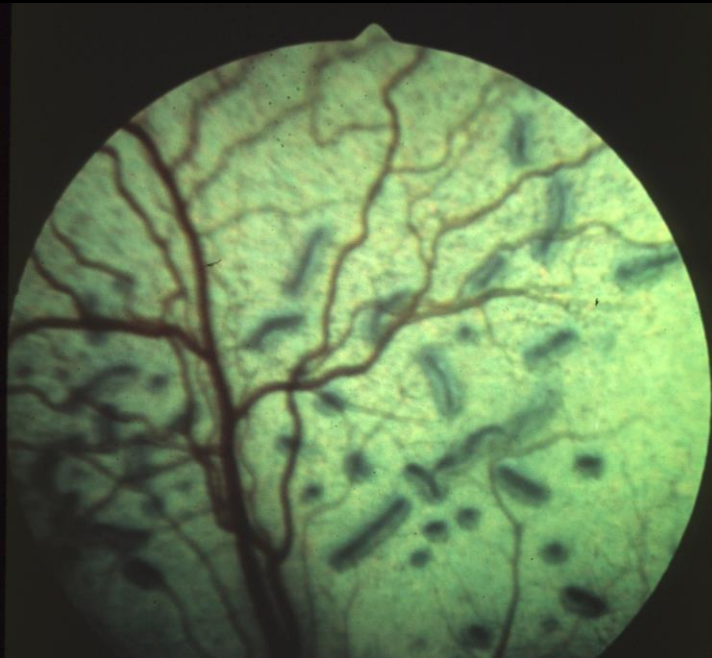
# BVD



# Collie eye anomaly



# Retinal Dysplasia/Folds

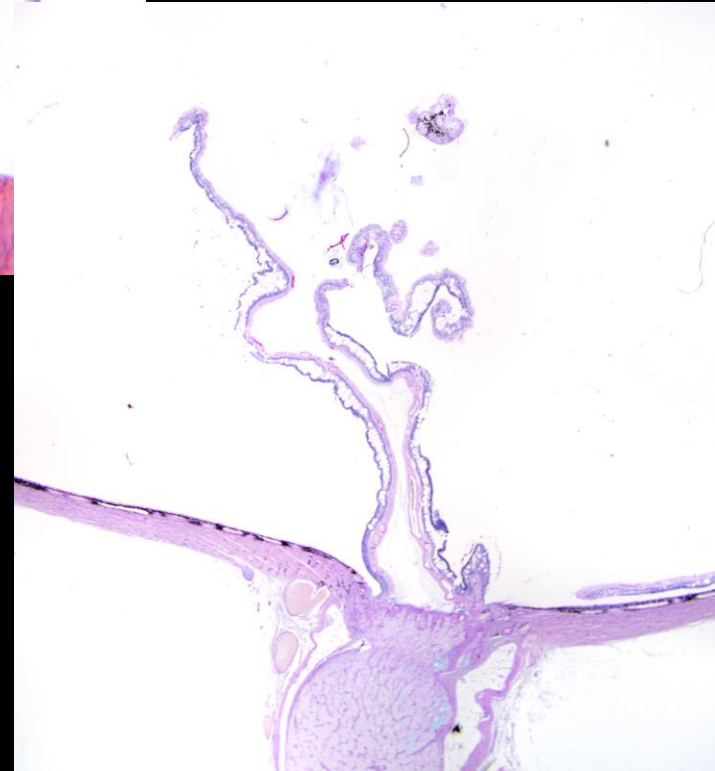
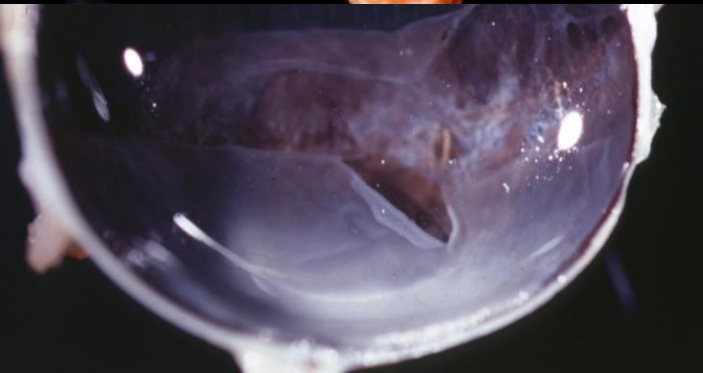
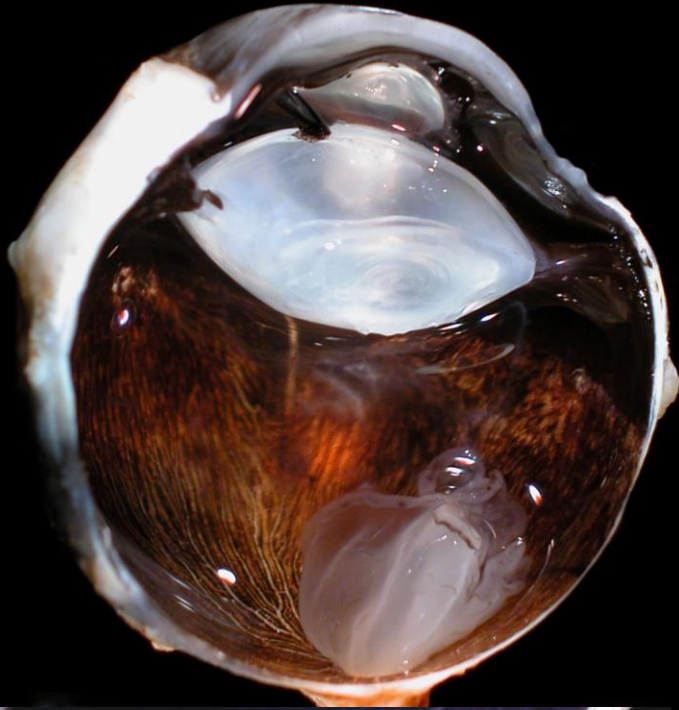


Retinal folds: Canine

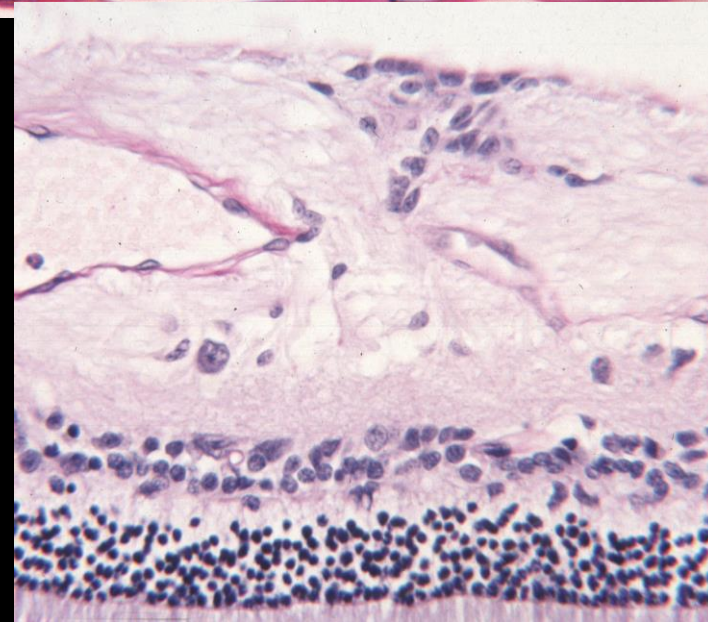
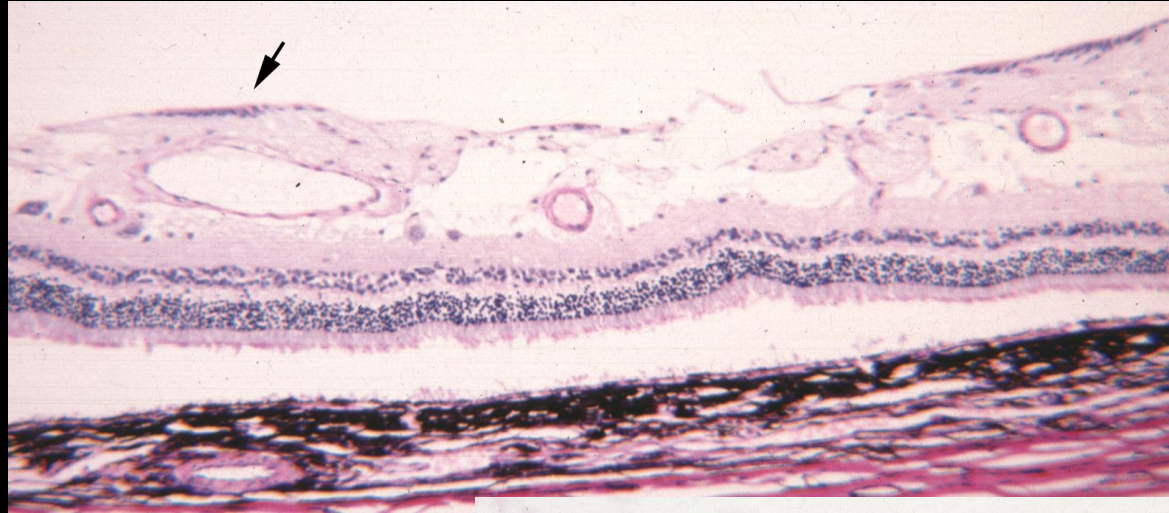
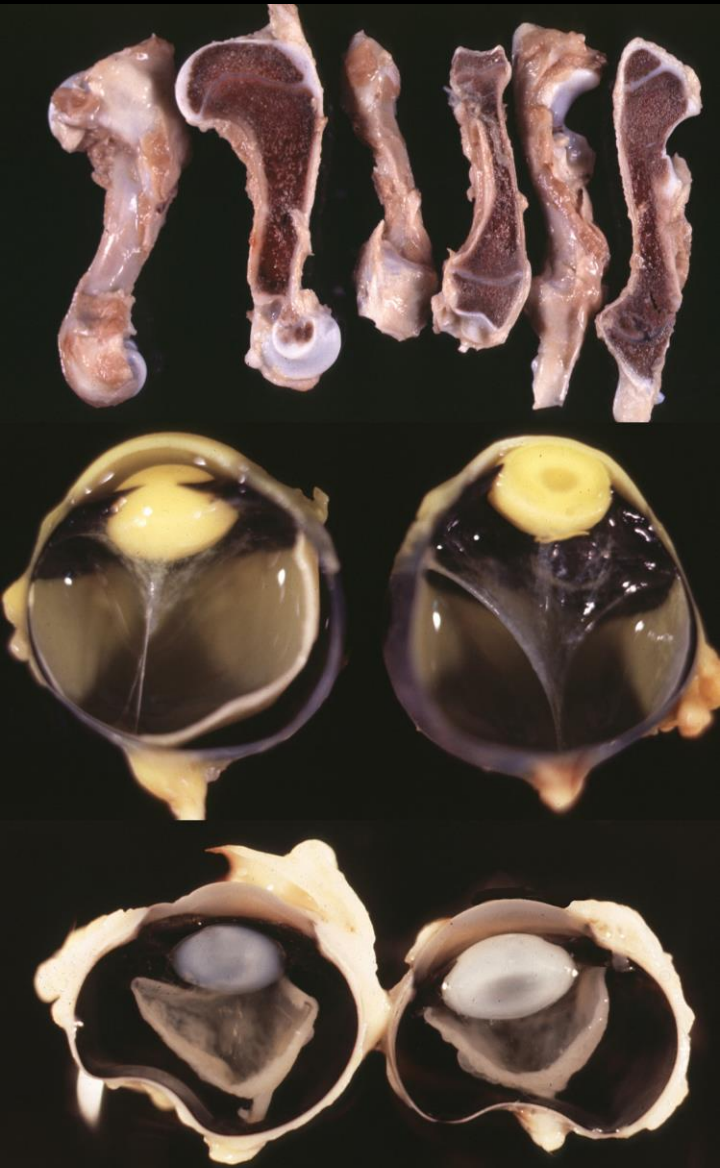


Rodent

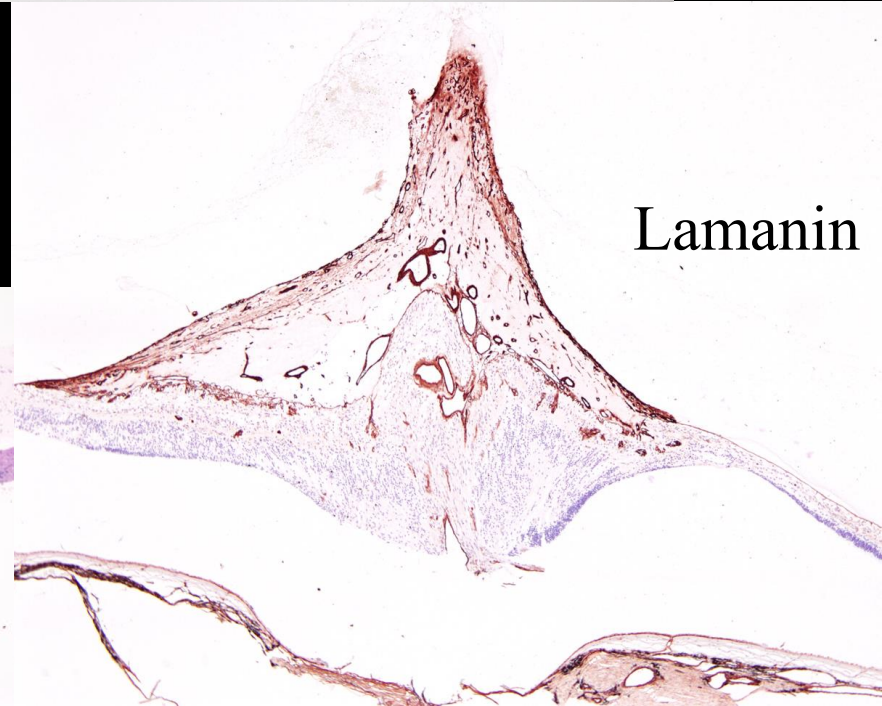
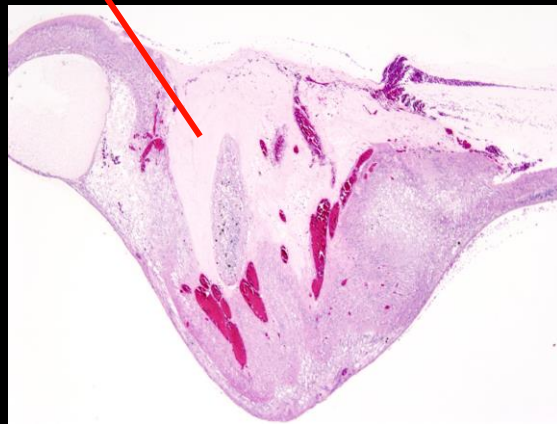
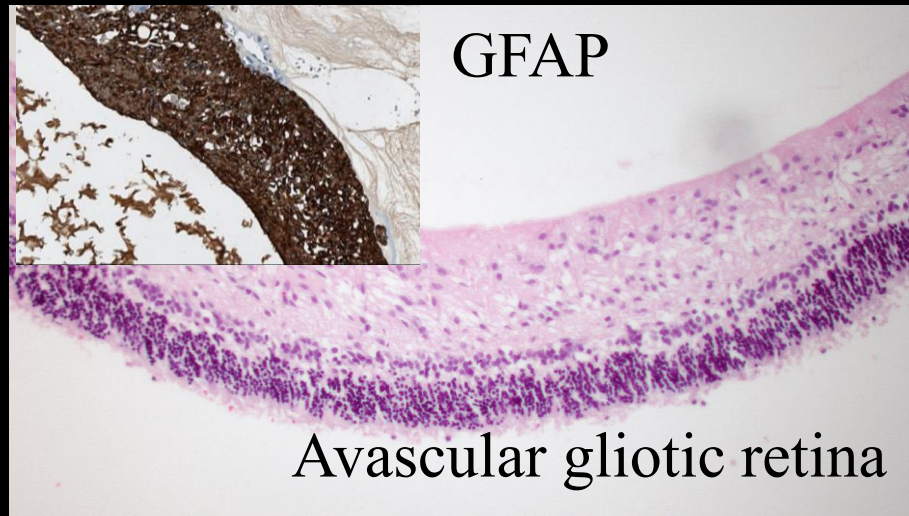
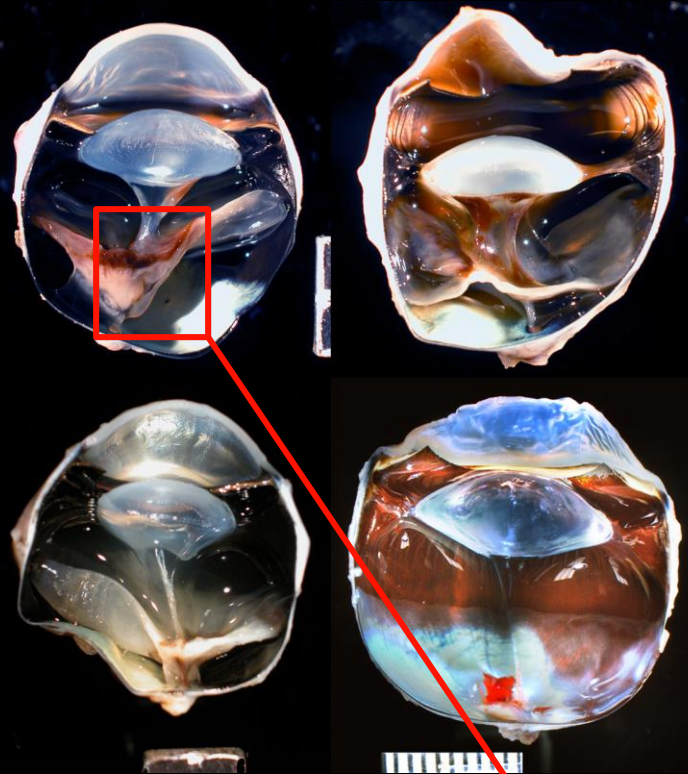
# Shih Tzu Vitreoretinopathy



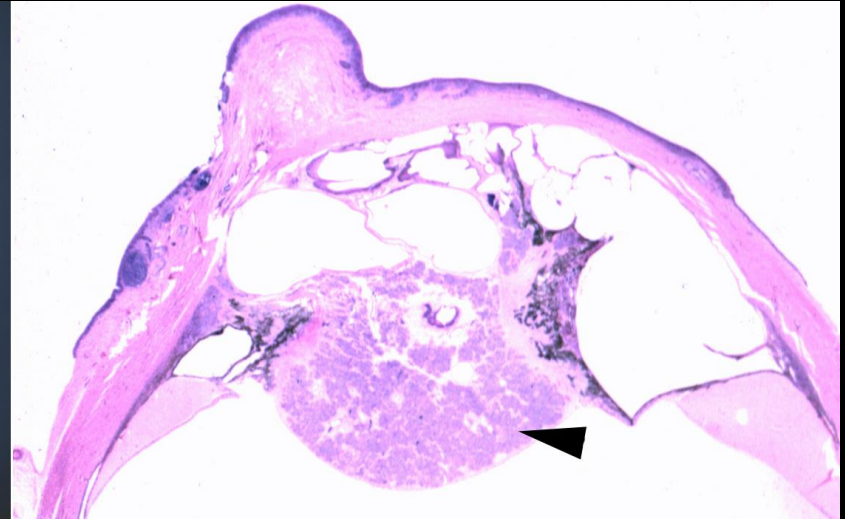
# The Vitreoretinopathies Oculo-skeletal Dysplasia



# Feline Neovascular Vitreoretinopathy



# Microphthalmos in horses





# Microphthalmos in White-tailed Deer

