



Uveal Non-Melanocytic neoplasia

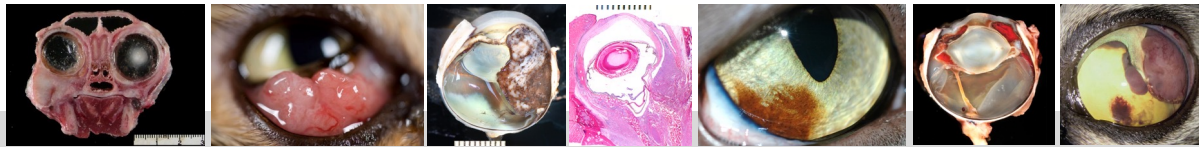
Leandro Teixeira DVM, MSc, DACVP

Associate Professor of Anatomic Pathology

Richard R. Dubielzig Professor of Comparative Ocular Pathology

Director of the Comparative Ocular Pathology Laboratory of Wisconsin - COPLOW

University of Wisconsin-Madison School of Veterinary Medicine



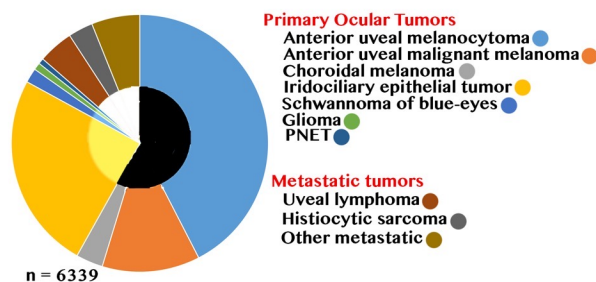
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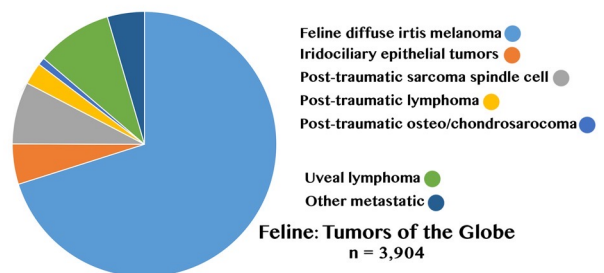
Uveal tumors in Dogs and cats

COPLOW numbers

Most common ocular tumors in dogs



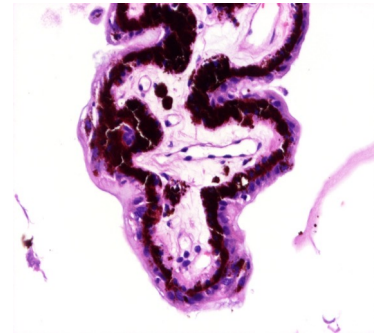
Most common ocular tumors in cats



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Iridociliary Epithelial Tumors

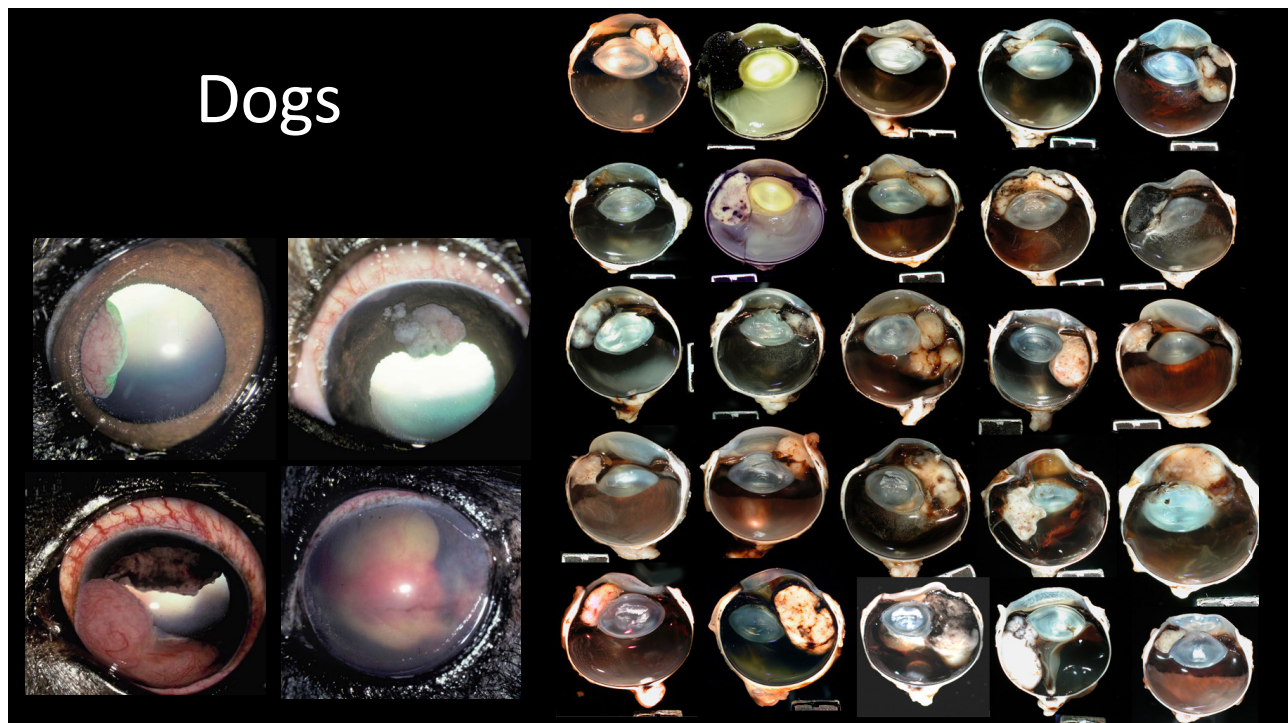
- 2nd most common primary intraocular neoplasm in dogs and cats
 - Also described in multiple species
- Origin → Pigmented or non-pigmented CB or iris epithelium
- Adenoma
 - Uveo-invasive or Non uveo-invasive
- Adenocarcinoma (scleral invasion)
 - Both benign biologic behavior
- Pleomorphic adenocarcinoma



Dubielzig RR, Steinberg H, Garvin H, Deehr A.J, Fischer B. (1998)
Iridociliary epithelial tumors in 100 dogs and 17 cats: a morphological study.
Vet. Ophthalmol. 1: 223-231.

3

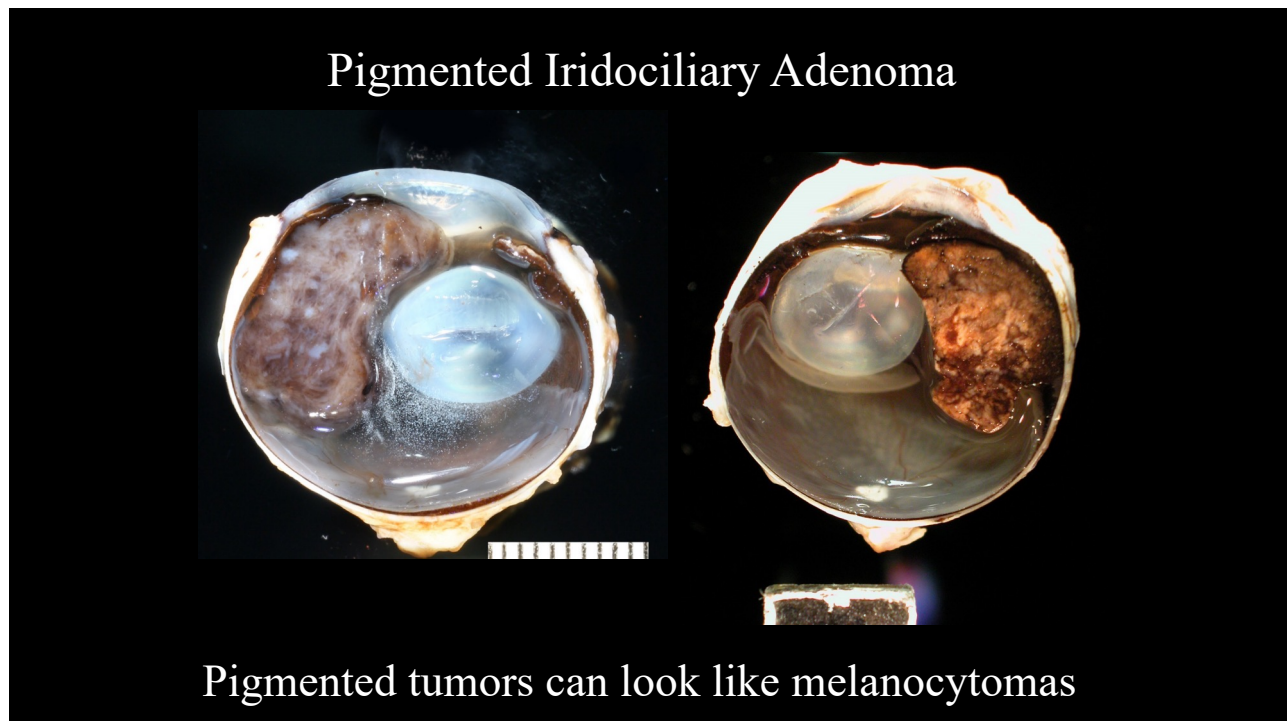
Dogs



4



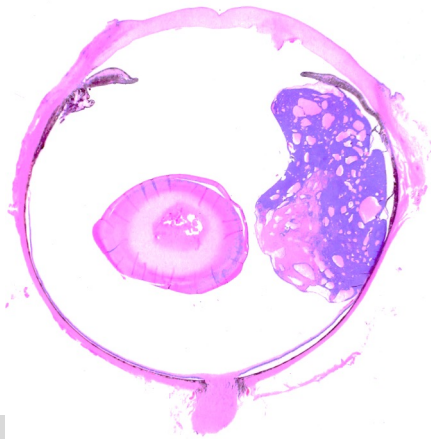
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Iridociliary Epithelial Tumors

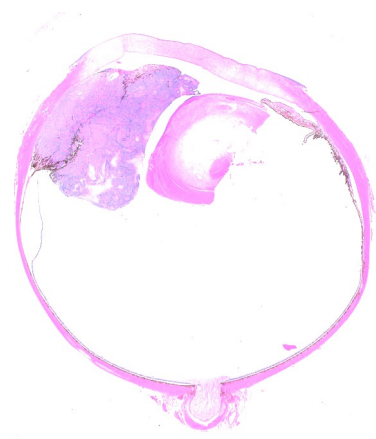
Non-invasive Adenoma



Uveo-invasive Adenoma

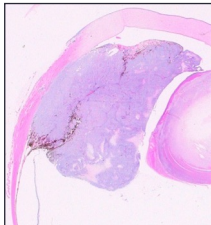


Carcinoma

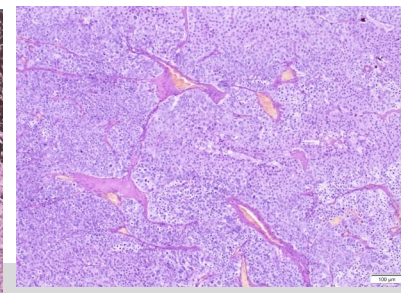
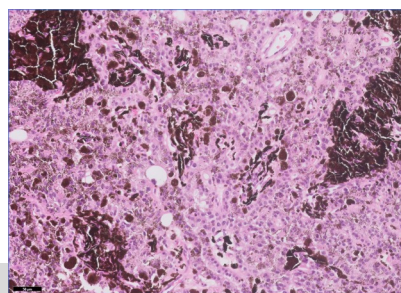
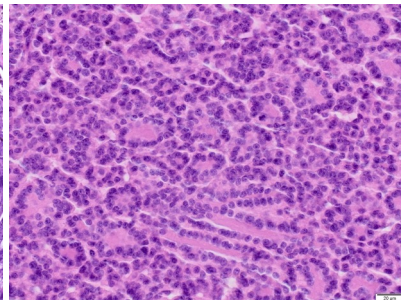
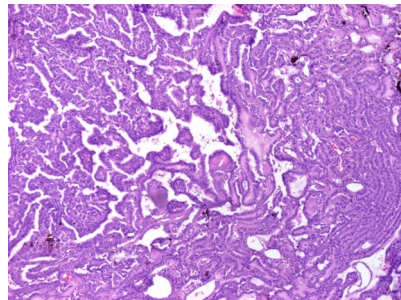


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Iridociliary Epithelial Tumors

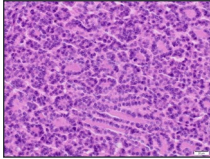
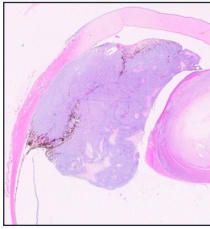


Ribbons, trabeculae,
cords, papillae, acini

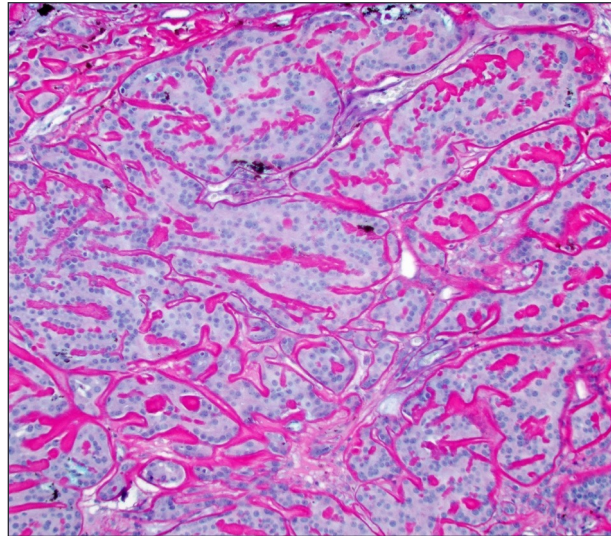


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Iridociliary Epithelial Tumors



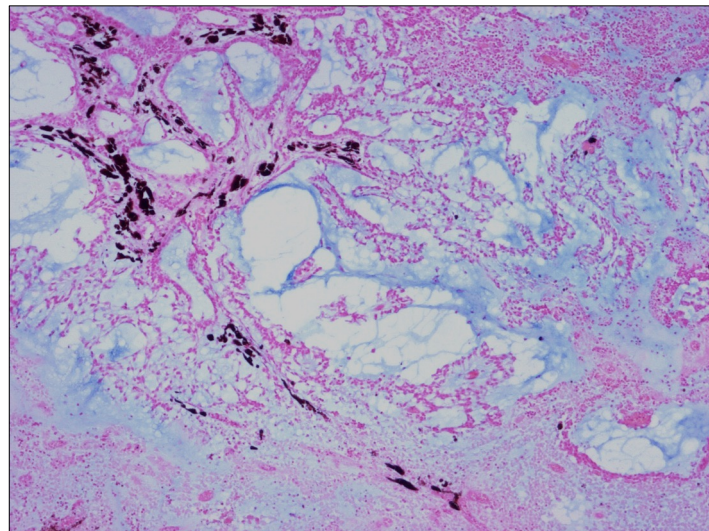
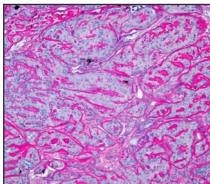
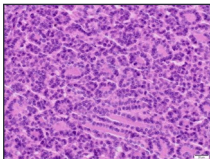
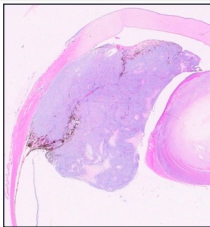
60% thick PAS-positive membranes



Alcian blue/PAS

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Iridociliary Epithelial Tumors

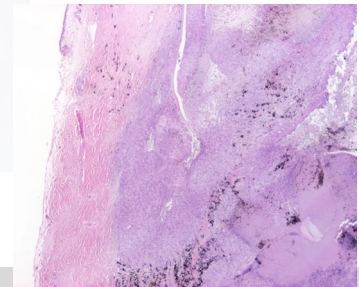
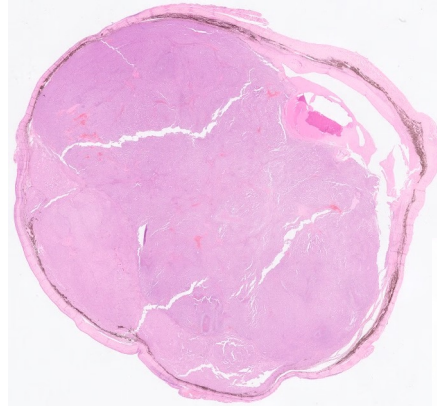
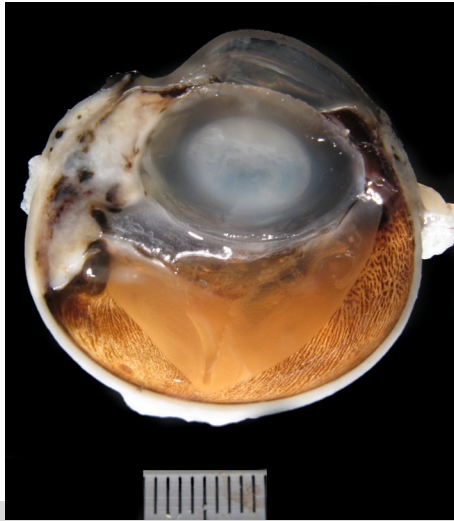


50% hyaluronic acid (Alcian blue +)

Alcian blue/PAS

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Iridociliary Carcinoma



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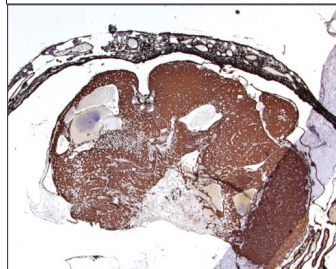
Iridociliary Epithelial Tumors

IHC

- Vimentin, NSE +
- S100 variable
- Pancytokeratin (AE1/AE3):
 - Benign tumors —
 - Increasing reaction w/ invasiveness

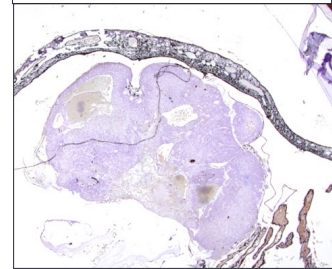
Adenoma

Vimentin



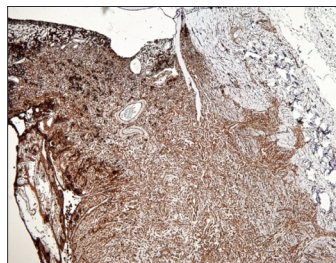
100% positive

Pancytokeratina

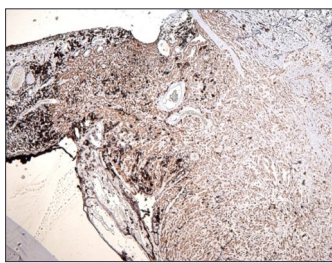


5% positive

Carcinoma



100% positive



57% positive

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Pleomorphic Iridociliary Adenocarcinoma

Definition

- The most malignant tumor of the iridociliary epithelium in dogs
 - Aggressively invasive, can extend extra ocularly and invade the orbit
 - Has metastatic potential
- Human equivalent = Pleomorphic adenocarcinoma of the ciliary epithelium

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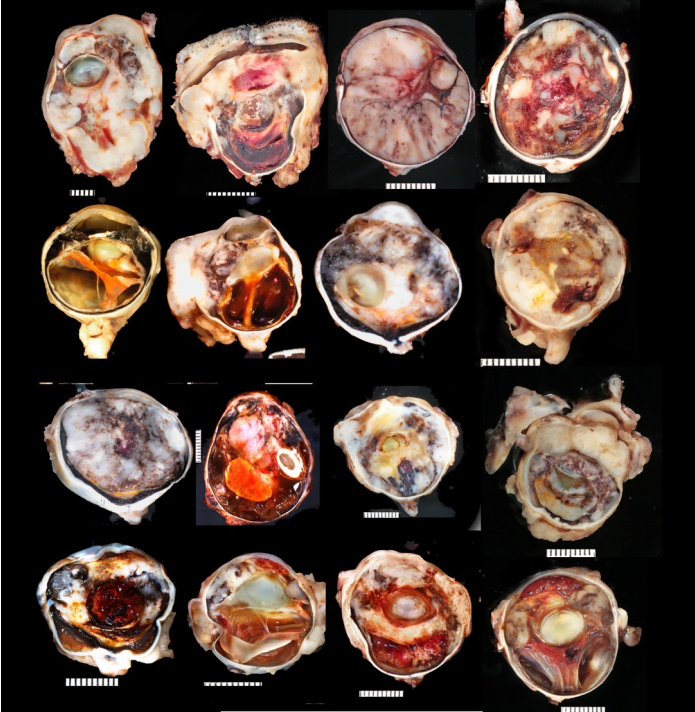
Pleomorphic Iridociliary Adenocarcinoma

Clinical presentation

- All cases - eyes with a long history of ocular disease +/- trauma.
- 33% cases → intravitreal gentamicin injection.
 - Range of 2 months to 2 years between injection and enucleation.
- 20% of cases → known history of trauma.
 - Range of 3 months to many years between trauma and enucleation.

Duke, Strong, Bentley, Dubielzig (2013). Canine ocular tumors following ciliary body ablation with intravitreal gentamicin. *Vet Opth.* 16:159–162.
Zarfoss MK, Dubielzig RR. (2007) Metastatic iridociliary adenocarcinoma in a Labrador retriever. *Vet. Pathol.* 44: 672-676.

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 School of
Veterinary Medicine
UNIVERSITY OF WISCONSIN, MADISON

Pleomorphic Iridociliary Adenocarcinoma

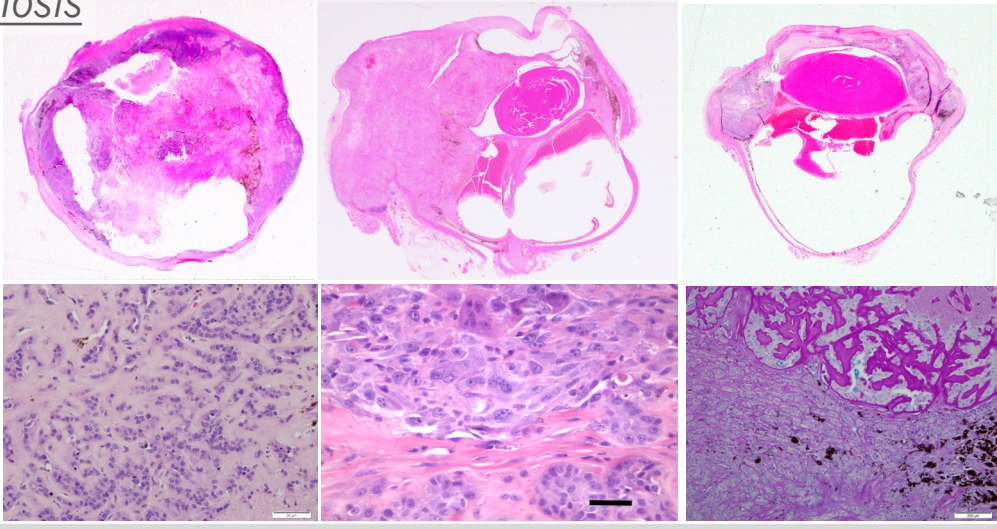
- Variably extensive solid to cystic, tan uveal mass
- Cataract
- Corneal disease
- Intraocular hemorrhage
- Retinal detachment

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Pleomorphic Iridociliary Adenocarcinoma

Diagnosis

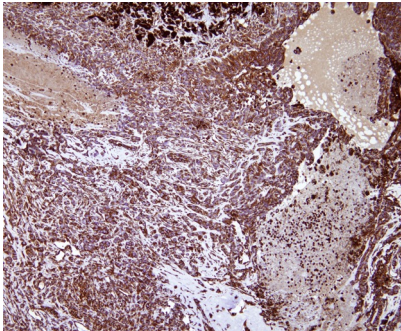


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Pleomorphic Iridociliary Adenocarcinoma

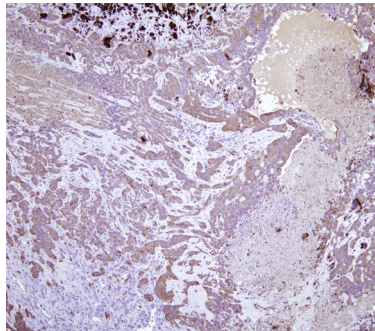
IHC

Vimentin



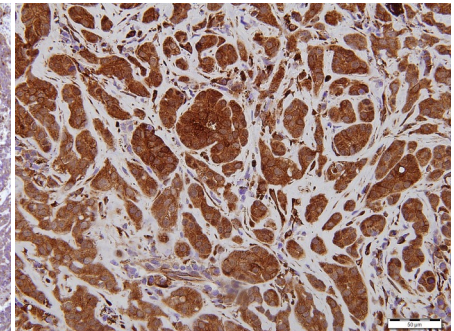
100% positive (n = 16)

Pancytokeratin



75% positive (n = 16)

Neuron Specific Enolase



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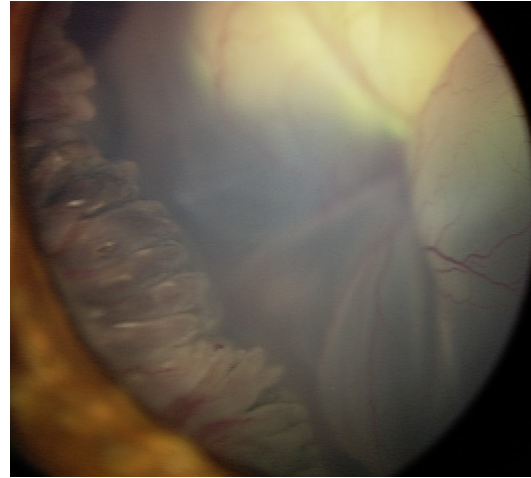
Intraocular Primitive Neuroectodermal Tumors

- PNET in general:
 - Primitive neuroectodermal tumors
 - Neuroblastoma, ependimoblastoma, retinoblastomas, medulloepithelioma
- Eye:
 - PNET: peripheral retina / CB
 - Medulloepitheliomas: CB (dog) or ON (horse) >>> retina

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Medulloepithelioma

- PNET
- Shared features with iridociliary tumors
- Rare in dogs, horses >>> others
- Not always young dogs

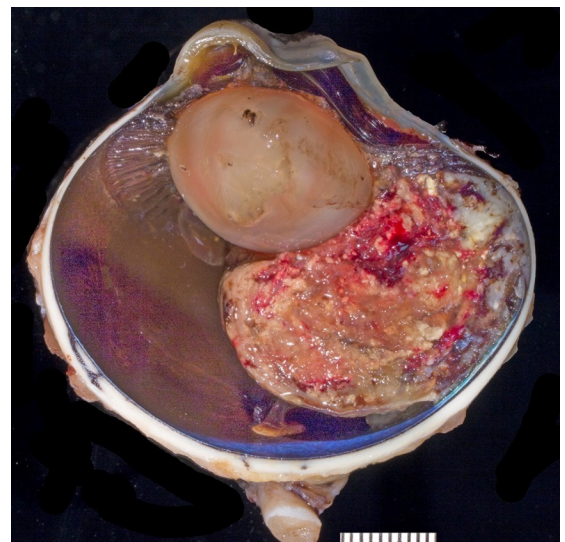


Courtesy Dr. Davidson

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Medulloepithelioma Gross

- CB: filling PC
- Can infiltrate retina
- Light tan
- Solid or papillary

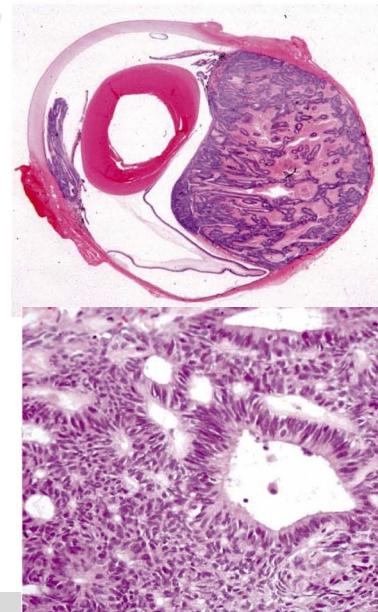


Courtesy of COPLOW

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Medulloepithelioma - Histopathology

- Necrosis w/ survival around blood vessels
- Rosettes/pseudorosettes
- Teratoid: muscle, bone, cartilage, neuropil
- **IHC:**
 - TERT +ive
 - Vimentin and cytokeratin: limited +ivity
- **Prognosis:**
 - Good with enucleation and clean margins
 - Mets are very infrequent

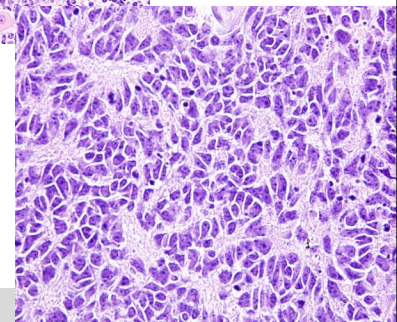
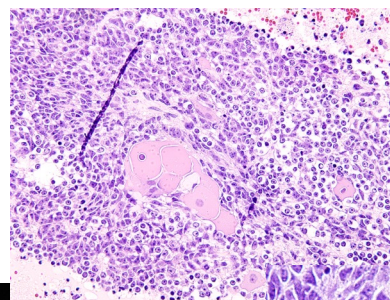
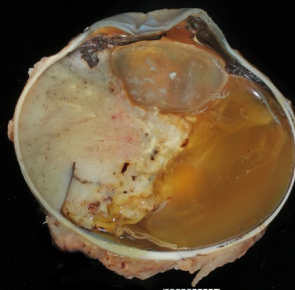
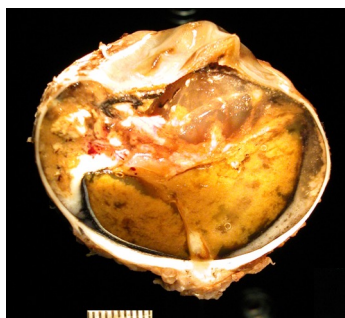


Dubielzig *et al.*, Veterinary Ocular Pathology; A Comparative Review, 2010.

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PNET - Horse

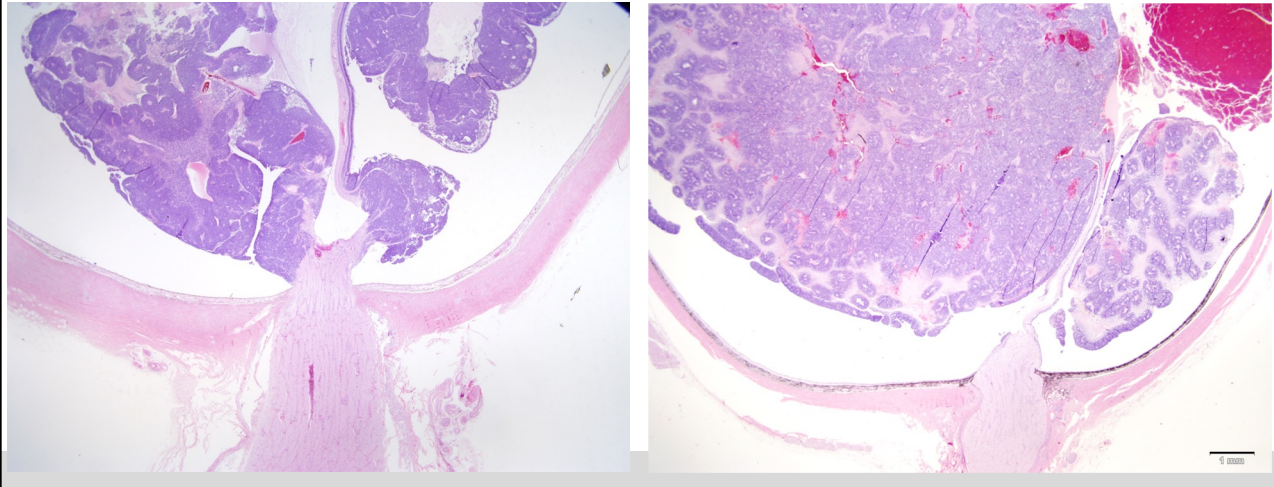
The ages are mixed with a few young horses



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Retinoblastoma?

Sparse reports, some arguable
Tumors with neural differentiation (PNET)...
... but do not meet all the criteria



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Retinoblastoma in dogs

Primary primitive neuroectodermal tumors of the retina and ciliary body in dogs

Daniel P. Regan,* Richard R. Dubielzig,† Caroline J. Zeiss,‡ Brad Charles,* Sarah S. Hoy§ and E. J. Ehrhart*

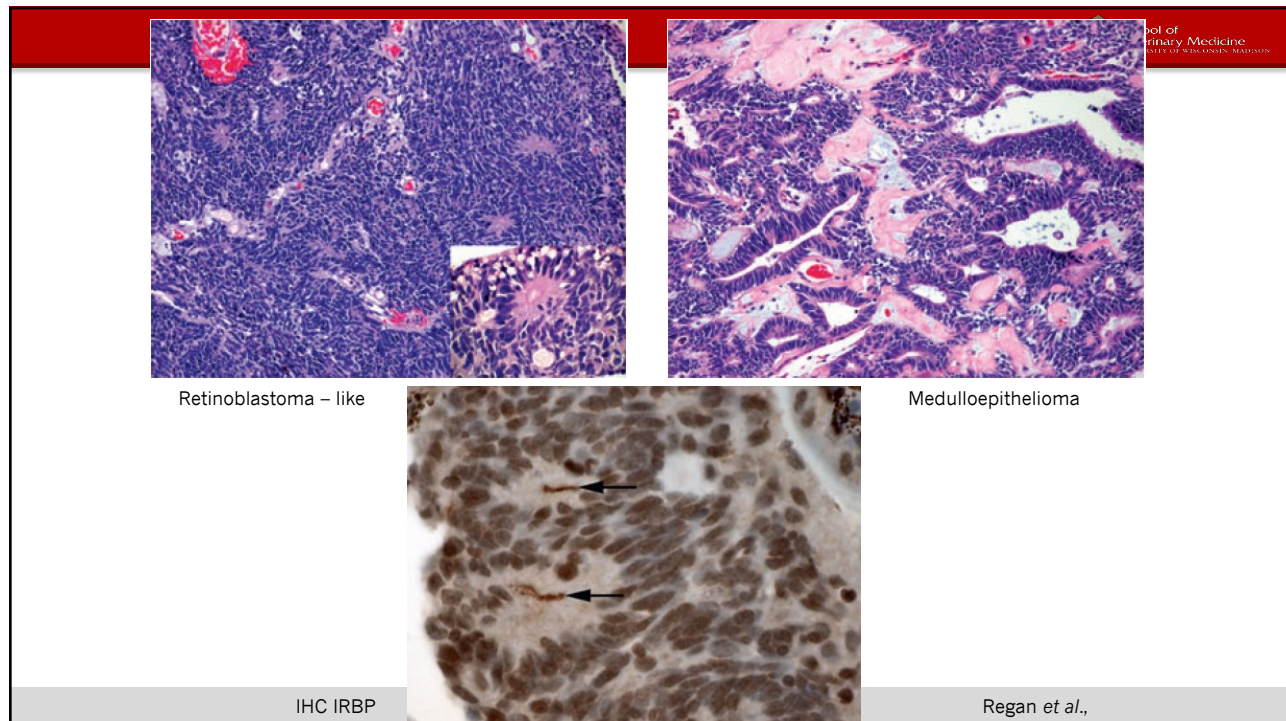
Table 1. Case signalment and immunophenotyping

Case no.	Age	Sex	Breed	% Necrosis	Calcification	Immunoreactivity					Diagnosis
						GFAP ^a	Syn ^b	Opsin	S-Ag ^c	IRBP ^d	
1	2 years	MI	Rottweiler	10–25	No	–	+	–	–	++	Retinoblastoma-like tumor
2	10 months	FI	Beagle	<10	No	–	++	–	–	+	Retinoblastoma-like tumor
3	1 year	FI	Malamute	<10	No	+	+++	+	++	++	Retinoblastoma-like tumor
4	1 year	MI	Mixed	<10	No	+	++	–	–	++	Retinoblastoma-like tumor
5	9 years	FS	Chow	<10	No	–	–	–	–	–	Medulloepithelioma
6	9 years	MC	Aus. Shep mix	<10	No	–	++	–	–	–	Medulloepithelioma
7	11 years	MC	Labrador mix	>75	Yes	–	+	–	–	–	Medulloepithelioma
8	7.4 years	MC	Terrier mix	>75	No	–	–	–	–	–	Medulloepithelioma

- Retinoblastoma-like:
 - Fleurettes / rosettes (1 layer)

- Medulloepithelioma
 - Pseudorosettes

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Uveal Schwannoma of the Blue-eyed dogs

Formerly, Spindle-cell tumor of blue-eyed dogs
197 cases

Definition

- PNSTs arise from Schwann cells, perineurial cells, and intraneural fibroblasts
- Blue-eyed / partially blue-eyed (heterochromia)
 - Siberian huskies, Border Collies, Catahoula hound
- More than half of the submissions have intractable glaucoma but are not suspected as neoplastic



Zarfoss MK, Klauss G, Newkirk K, Kiupel M, Jones Y, Colitz CMH, Dubielzig RR.
(2007) Uveal spindle cell tumor of blue-eyed dogs: an immunohistochemical study. *Vet Pathol.* 44: 276.

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Uveal Schwannoma of the Blue-eyed dogs

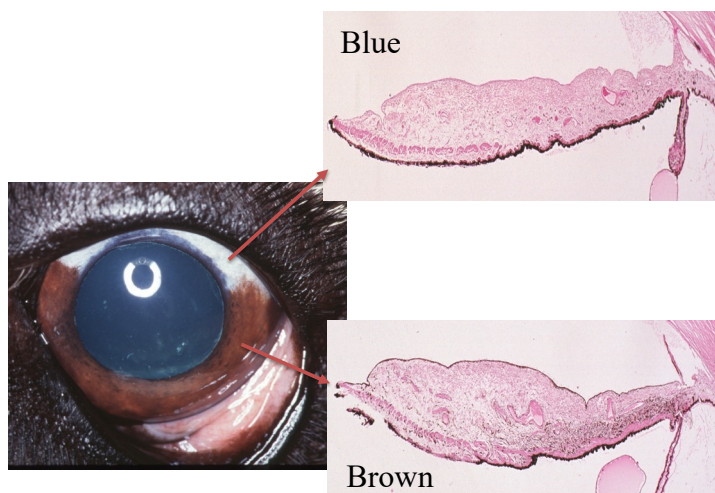
Breed Predisposition

- Siberian Husky (42 cases)
- Australian Shepherd (9 cases)
- Catahoula Leopard dog (5 cases)
- Other breeds with blue or partly-blue eye

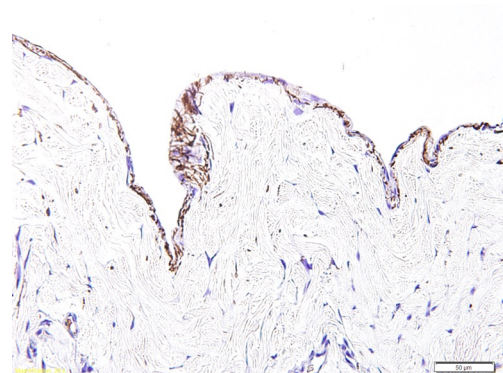


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The blue-eye histology



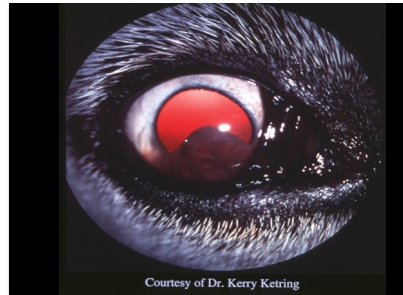
Distribution of GFAP+ Cells in the Uvea of Blue-eyed Dogs



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Uveal Schwannoma of the Blue-eyed dogs

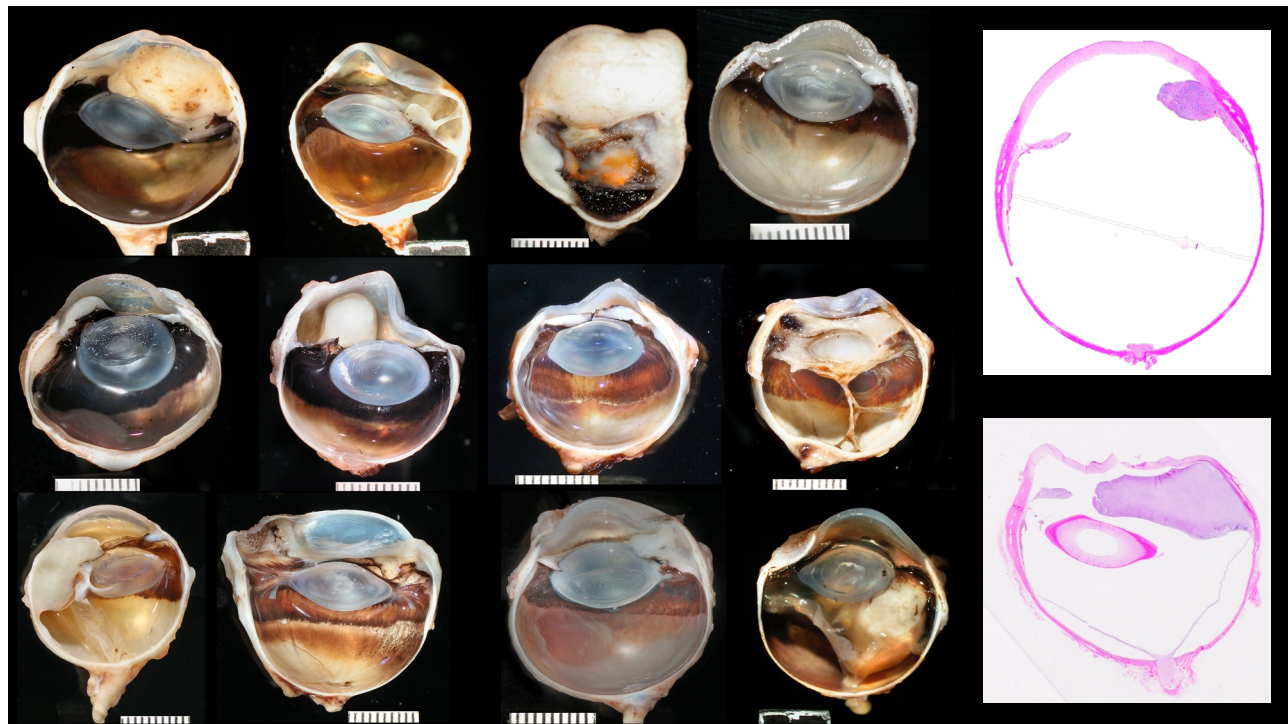
- Not always identifiable tumor
- History of chronic unresponsive glaucoma or uveitis
- Be suspicious on a blue-eyed dog!!



Courtesy of Dr. Kerry Ketting



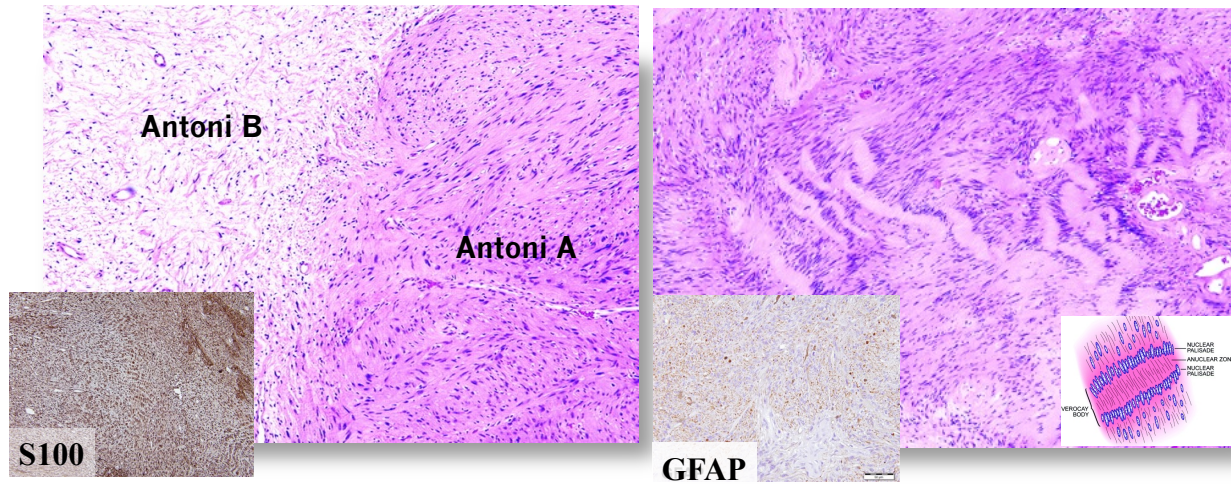
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Uveal Schwannoma of the Blue-eyed dogs

Diagnosis



Advancing animal and human health with science and compassion

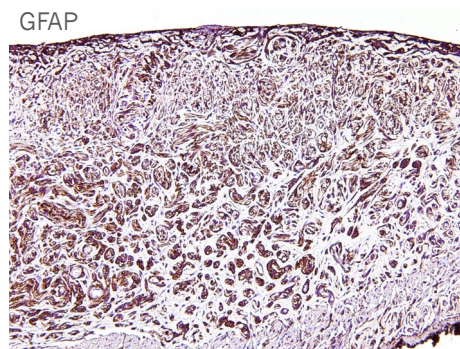
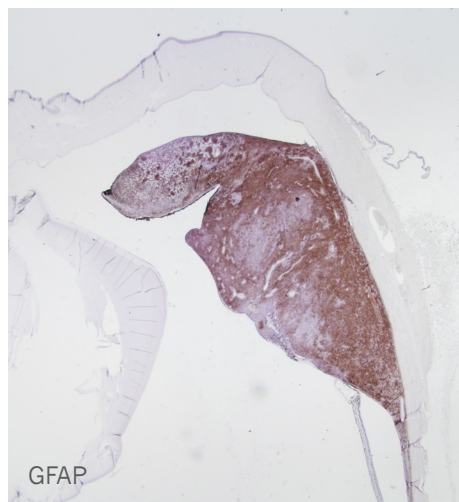
31

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Uveal Schwannoma of the Blue-eyed dogs

IHC

GFAP +
S100 +
Vimentin +



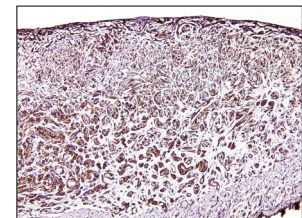
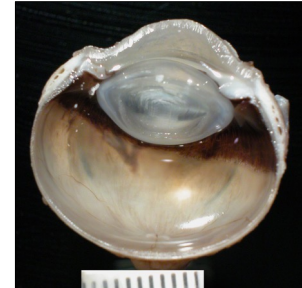
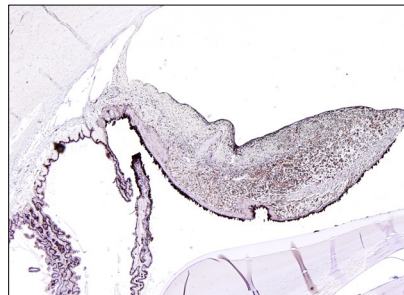
Immunoreactive Schwann cells
of non-myelinating nerve fibers

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Uveal Schwannoma of the Blue-eyed dogs

- Tumors often not identified clinically



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Uveal Schwannoma of the Blue-eyed dogs

Prognosis

Veterinary Ophthalmology (2013) 16, Supplement 1, 141–144

DOI:10.1111/vop.12022

CASE REPORT

Metastatic uveal schwannoma of blue-eyed dogs

Felicia D. Duke,* Denise K. Brudenall,† Erin M. Scott,* Leandro B. C. Teixeira* and Richard R. Dubielzig*

- Invasive: recurrence w/in orbit / scleral shell
- Mets rarely reported:
- Lungs, liver, mesenteric LN
- Path features linked to malignancy? (scleral invasion?)

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Feline post-traumatic ocular sarcoma (PTOS)

Definition

Tumor of lens epithelium origin that originates after lens capsule rupture and extra-capsular proliferation of lens epithelial cells

- Epithelial to mesenchymal transformation (EMT)
 - Suggestion of lens epithelial origin:
 - Peri-lenticular distribution
 - Basement membranes recapitulating lens capsule
 - Expression of IHC markers SMA and crystallins.



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Feline post-traumatic ocular sarcoma (PTOS)

Definition

- 2nd most common primary intraocular tumor in cats
- Malignant tumor of lens epithelial-origin
- Common features:
 - History of trauma
 - Lens capsule rupture
- Time between trauma and enucleation
 - Average time is 6.35 years
 - Range is 1 to 17 years

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Feline post-traumatic ocular sarcoma (PTOS)

Tumors of Lens Epithelial-Origin

- Recognized in
 - Cats (Dubielzig 1984; Zeiss 2003),
 - Rabbits (Dickinson 2013);
 - Dogs (Teixeira 2016)
- Absent in humans (Albert 2015)
- Feline ocular post-traumatic sarcoma (FOPS)
 - History of trauma, lens capsule rupture

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The Significance of the Discordant Occurrence of Lens Tumors in Humans versus Other Species

Daniel M. Albert, MD, MS,^{1,2} Paul O. Phelps, MD,^{1,2} Krishna R. Surapaneni, MD,^{1,2} Bradley A. Thuro, MD,^{1,2} Heather A.D. Potter, MD,^{1,2} Akihiro Ikeda, PhD,^{2,3} Leandro B.C. Teixeira, DVM, MS,^{2,4} Richard R. Dubielzig, DVM⁴

Purpose: The purpose of this study was to determine in which species and under what conditions lens tumors occur.

Design: A review of databases of available human and veterinary ocular pathologic material and the previously reported literature.

Participants: Approximately 18 000 patients who had ocular surgical specimens submitted and studied at the University of Wisconsin School of Medicine and Public Health between 1920 and 2014 and 45 000 ocular veterinary cases from the Comparative Ocular Pathology Laboratory of Wisconsin between 1983 and 2014.

Methods: Material in 2 major archived collections at the University of Wisconsin medical and veterinary schools were studied for occurrence of lens tumors. Tumor was defined as a new growth of tissue characterized by progressive, uncontrolled proliferation of cells. In addition, cases presented at 3 major eye pathologic societies (Verhoeff-Zimmerman Ophthalmic Pathology Society, Eastern Ophthalmic Pathology Society, and The Armed Forces Institute of Pathology Ophthalmic Alumni Society) from 1975 through 2014 were reviewed. Finally, a careful search of the literature was carried out. Approval from the institutional review board to carry out this study was obtained.

Main Outcome Measures: The presence of tumors of the lens.

Results: The database search and literature review failed to find an example of a lens tumor in humans. In contrast, examples of naturally occurring lens tumors were found in cats, dogs, rabbits, and birds. In the veterinary school database, 4.5% of feline intraocular and adnexal neoplasms (234/5153) were designated as feline ocular posttraumatic sarcoma, a tumor previously demonstrated to be of lens epithelial origin. Similar tumors were seen in rabbit eyes, a bird, and in a dog. All 4 species with lens tumors had a history of either ocular trauma or protracted uveitis. The literature search also revealed cases where lens tumors were induced in zebrafish, rainbow trout, hamsters, and mice by carcinogenic agents (methylcholanthrene, thioacetamide), oncogenic viruses (SV40, HPV-16), and genetic manipulation.

Conclusions: Our results suggest that lens tumors do not occur in humans. In contrast, after lens capsule rupture, a lens tumor can occur in other species. We hypothesize that a genetic mechanism exists that prevents lens tumors in humans. *Ophthalmology* 2015;■:1–6 © 2015 by the American Academy of Ophthalmology.

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Feline post-traumatic ocular sarcoma (PTOS)

Spindle cell variant (70%)

- Lens epithelium origin

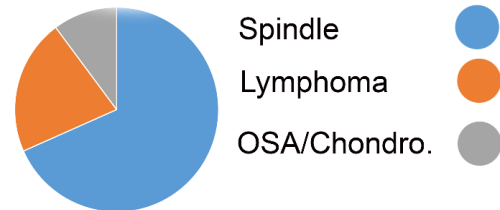
Post-traumatic lymphoma (Round cell variant) (24%)

- Lymphoma

Osteosarcoma/Chondrosarcoma (6%)

- Unknown cell of origin

Feline Ocular Post-traumatic Sarcoma

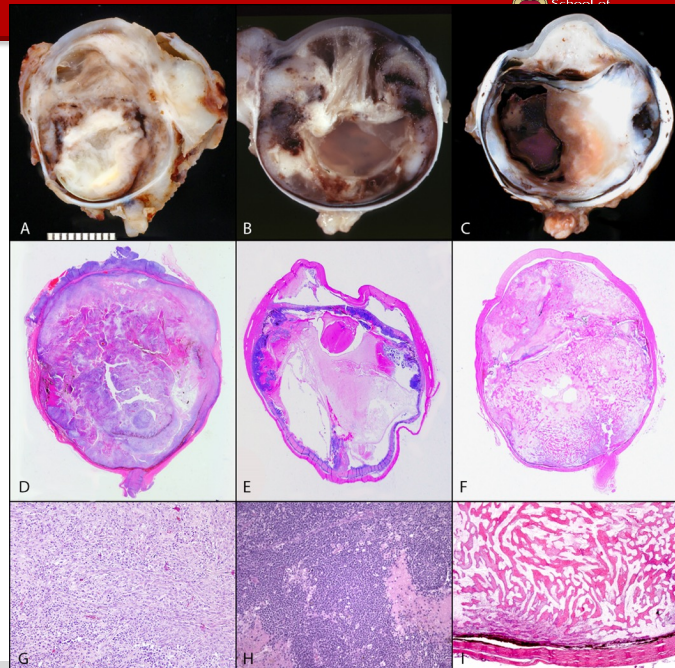


1. Dubielzig RR. (2002) Feline Post-Traumatic Ocular Sarcoma: A Review of 110 Cases. ACVP, New Orleans.

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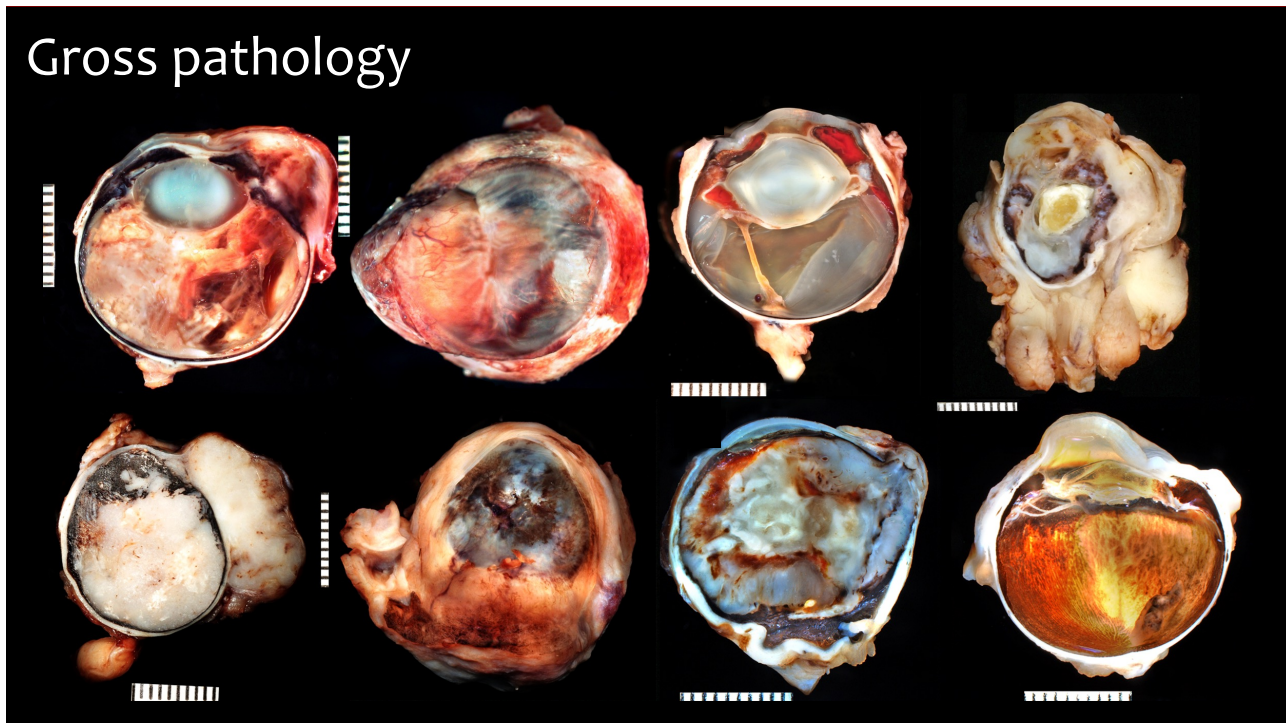
Feline Post-Traumatic Sarcoma

- Distribution
 - Lines the chambers of the eye, fills the globe, extends through the sclera, and can invade the optic nerve, into the brain
 - May reoccur in orbit after enucleation
 - Distant metastasis possible



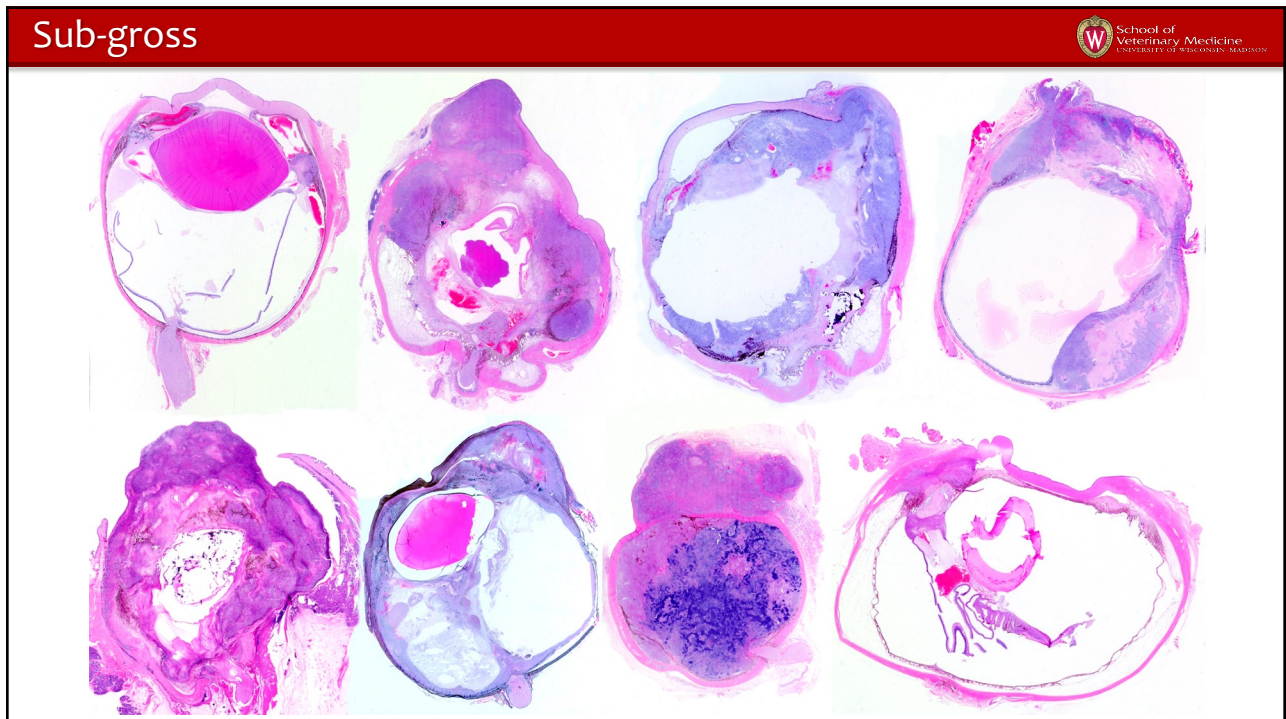
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Gross pathology



41

Sub-gross



42

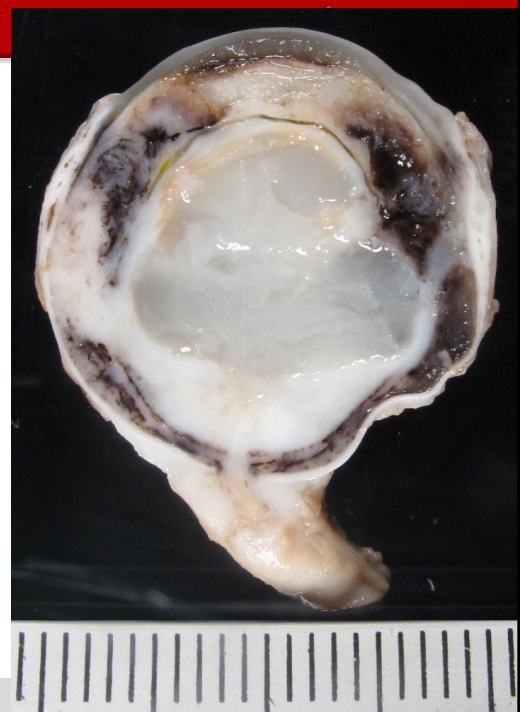
Feline Ocular Post-traumatic Sarcoma Clinical Images



43

PTS – Spindle cell variant

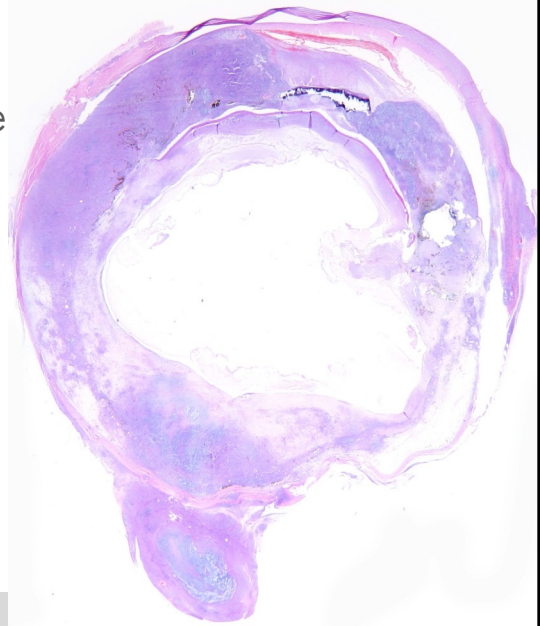
- Most common variant, 70% of cases
- Thought to originate from LEC
- Gross:
 - Cells lining the inner surface of the globe
 - Progressively filling the globe
 - Solid, firm, light tan mass



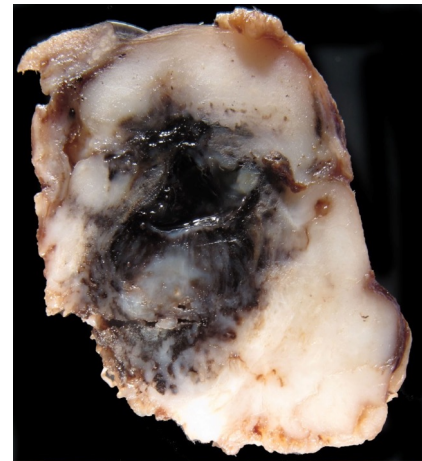
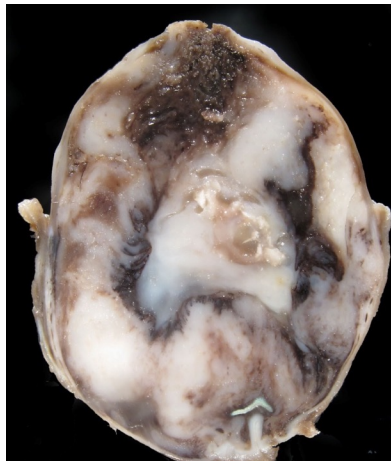
44

PTS – Spindle cell variant

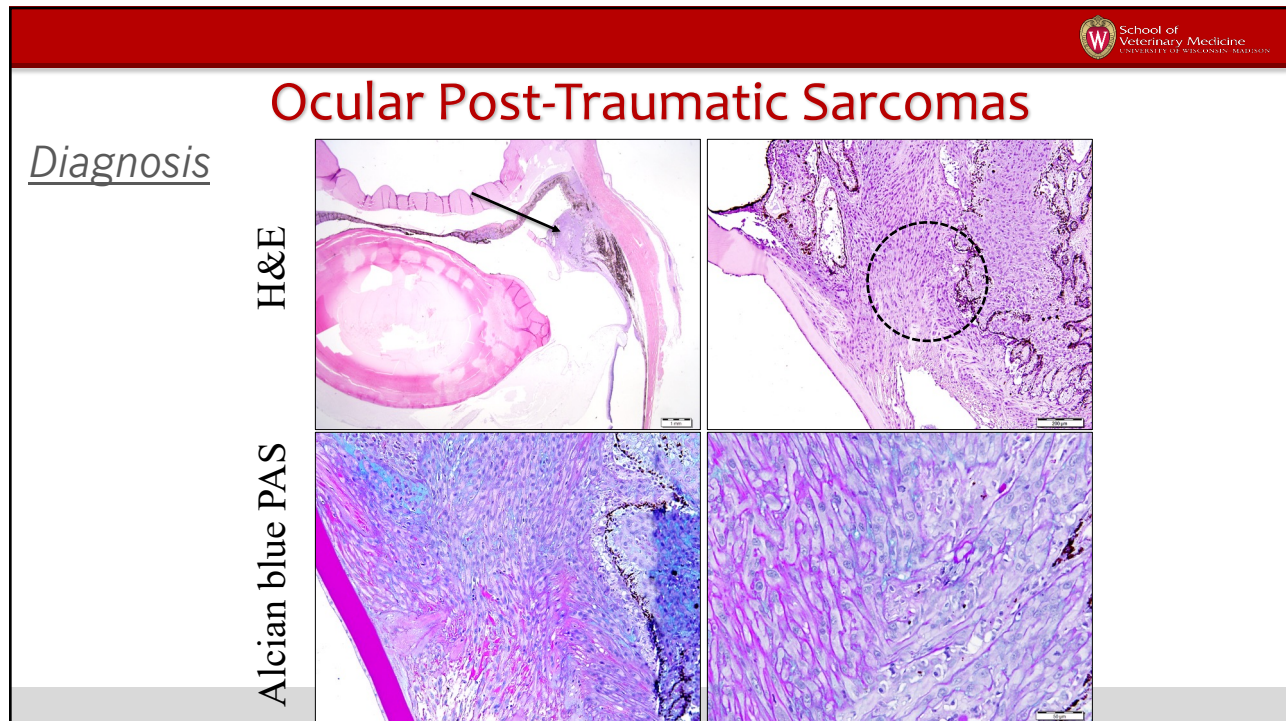
- Neoplastic cells line inner aspect of eye
 - Starting at lens equator/anterior vitreous
- Evolve to destroy intraocular structures
- Fibrosarcoma to anaplastic sarcoma
- Lens capsule rupture
- PAS-positive membranes



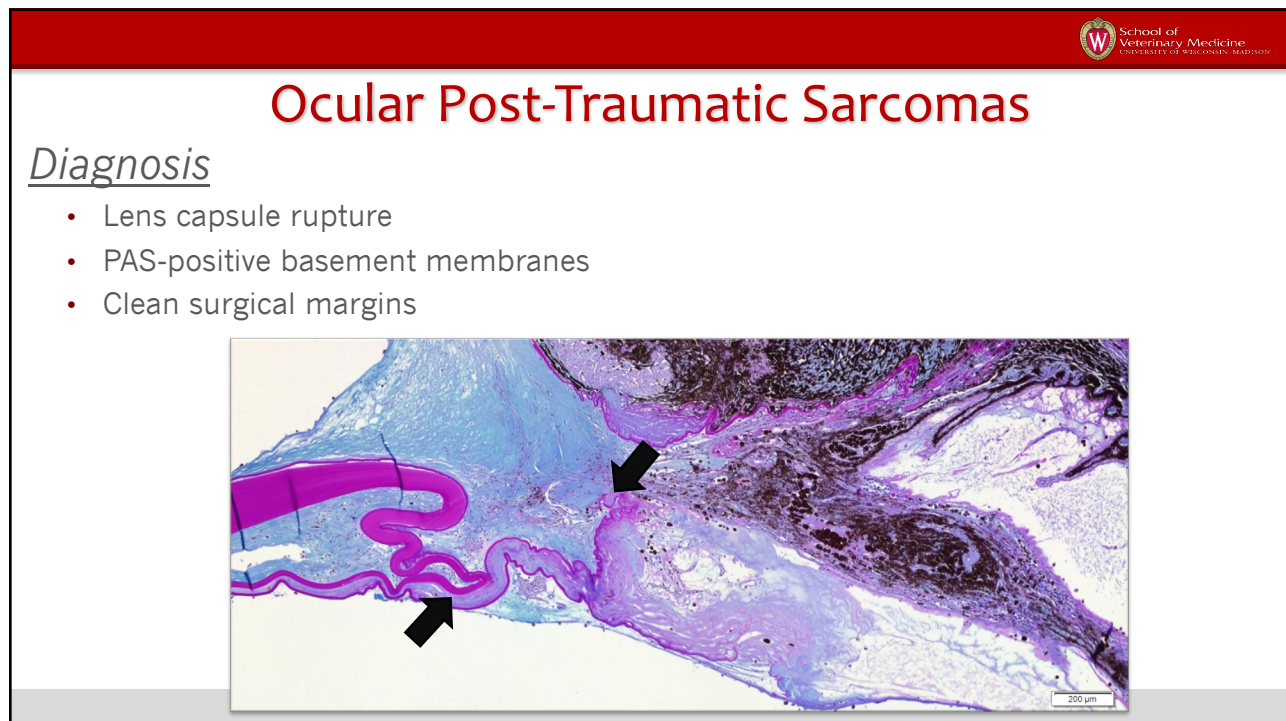
45



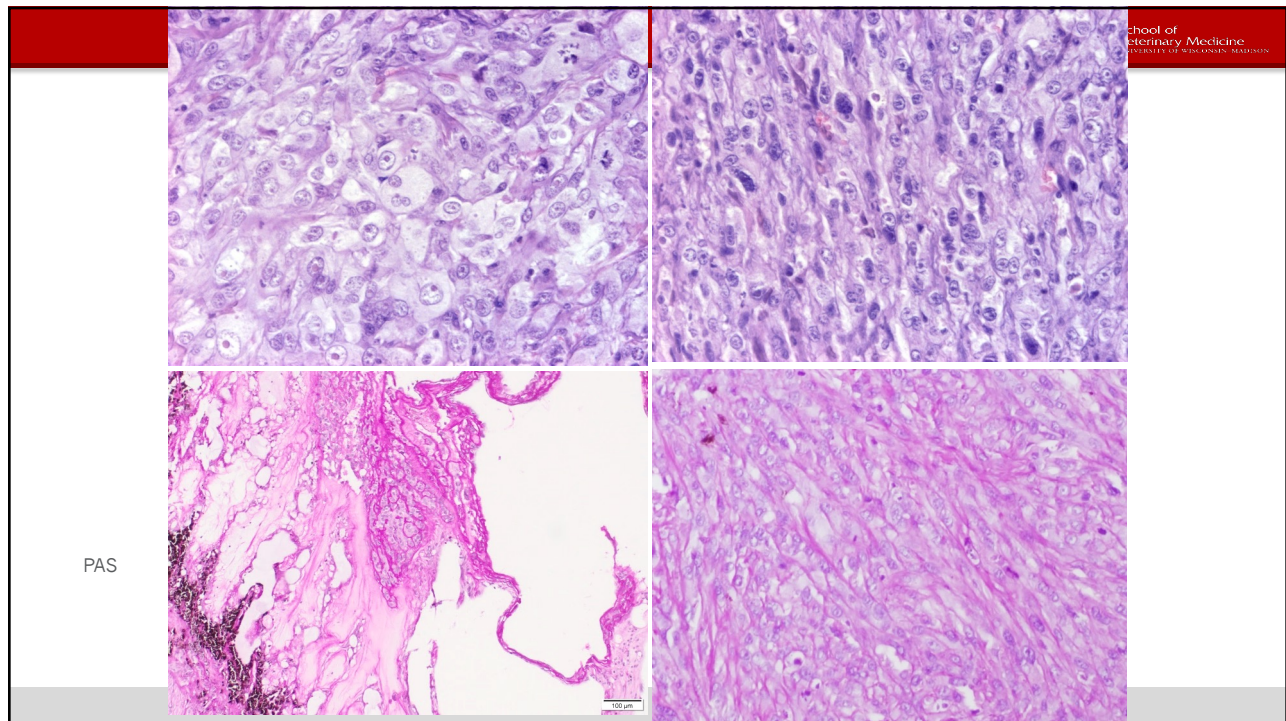
46



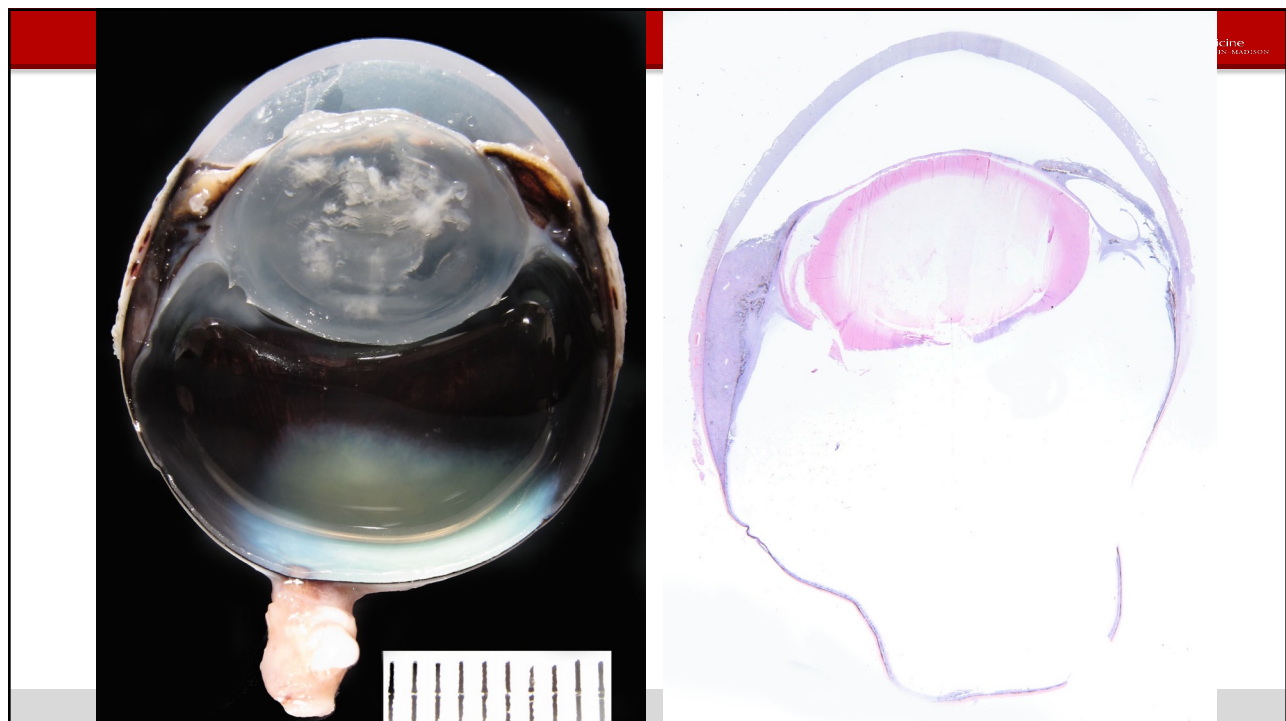
47



48

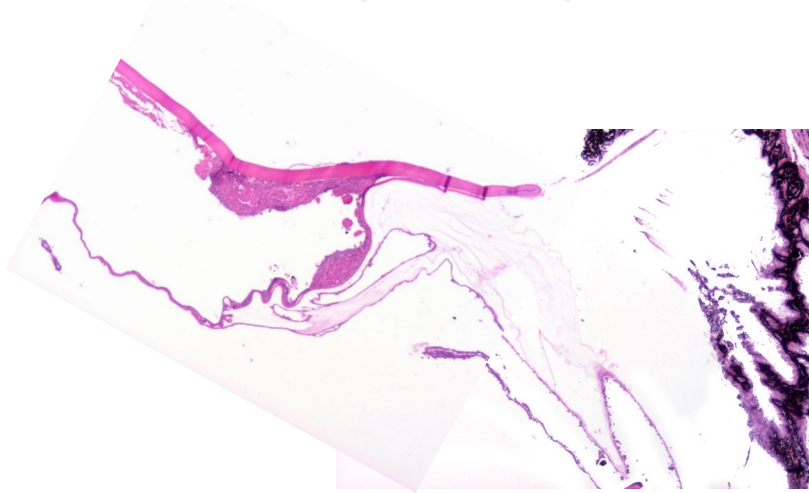


49



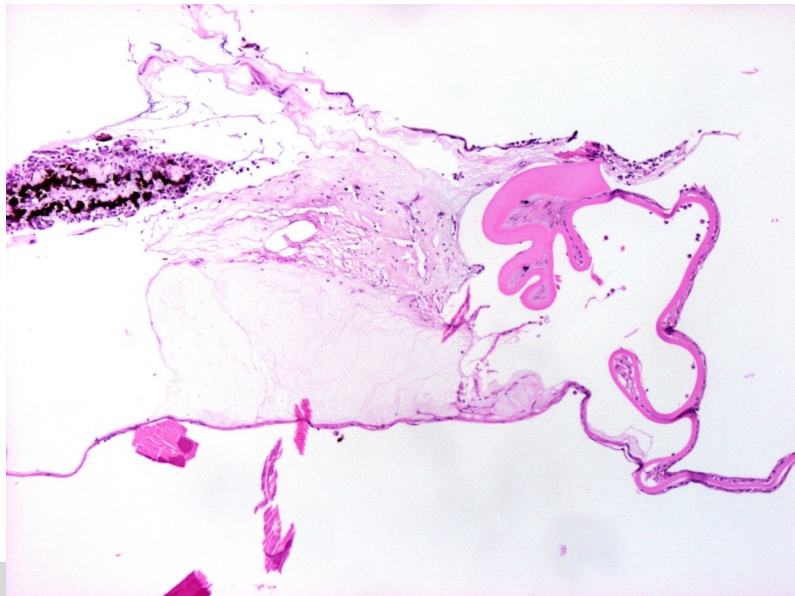
50

Lens capsule rupture



51

Lens capsule rupture



52

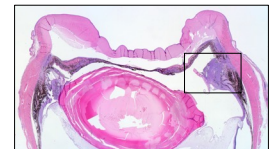
PTS – Spindle cell variant

- Vimentin +
- SMA + (20%)
- Cytokeratin (15%)
- Alpha A crystallin (30%)
- Collagen type IV in PAS-positive mb

53

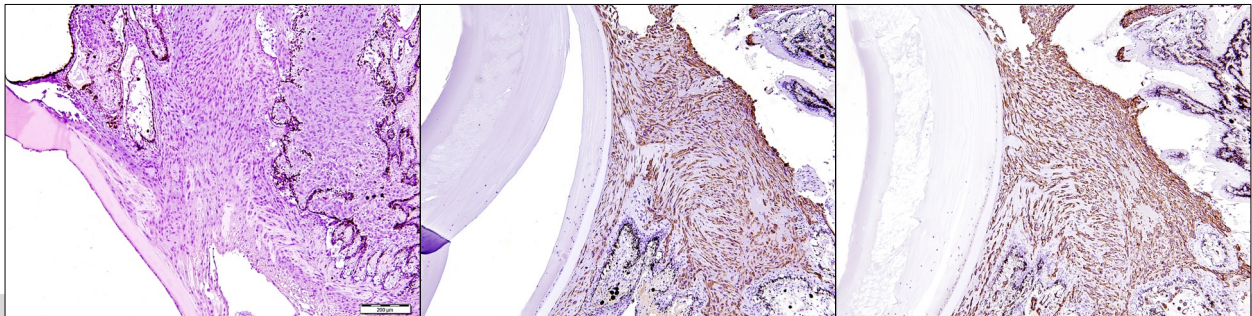
Ocular Post-Traumatic Sarcomas - IHC

- Vimentin +
- SMA +
- Cytokeratin +/-
- Alpha A crystallin +

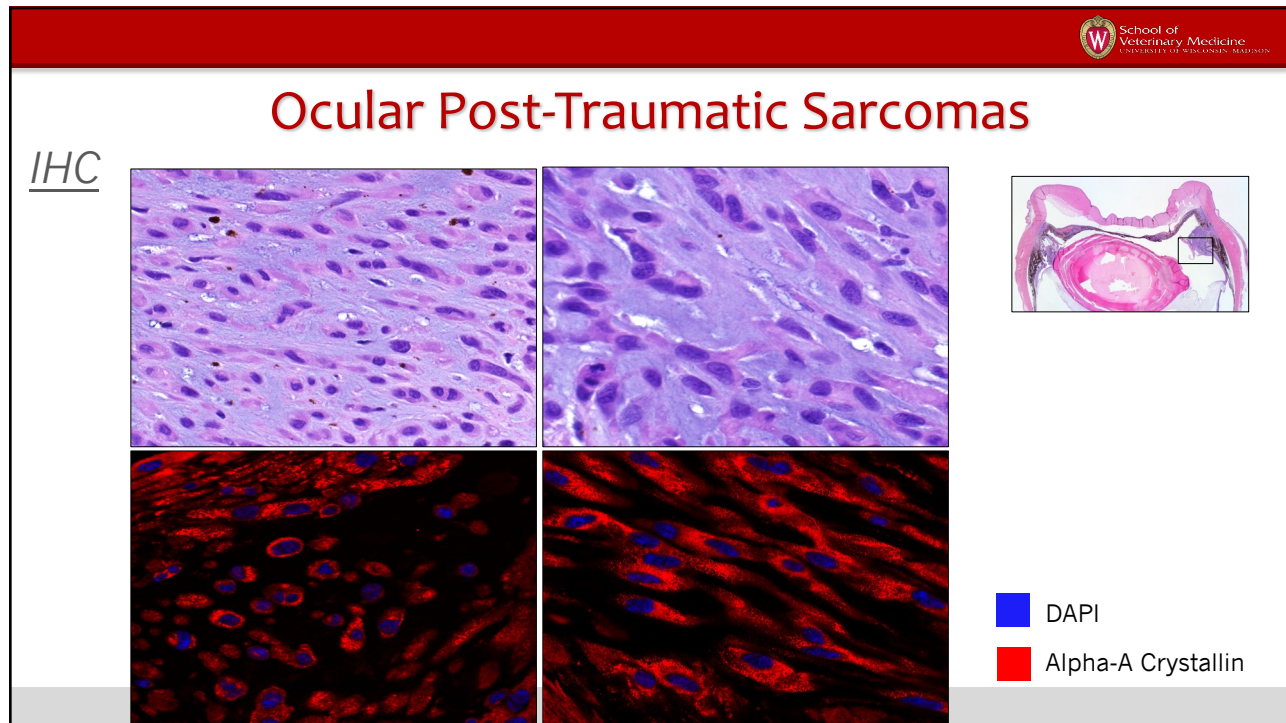


H&E

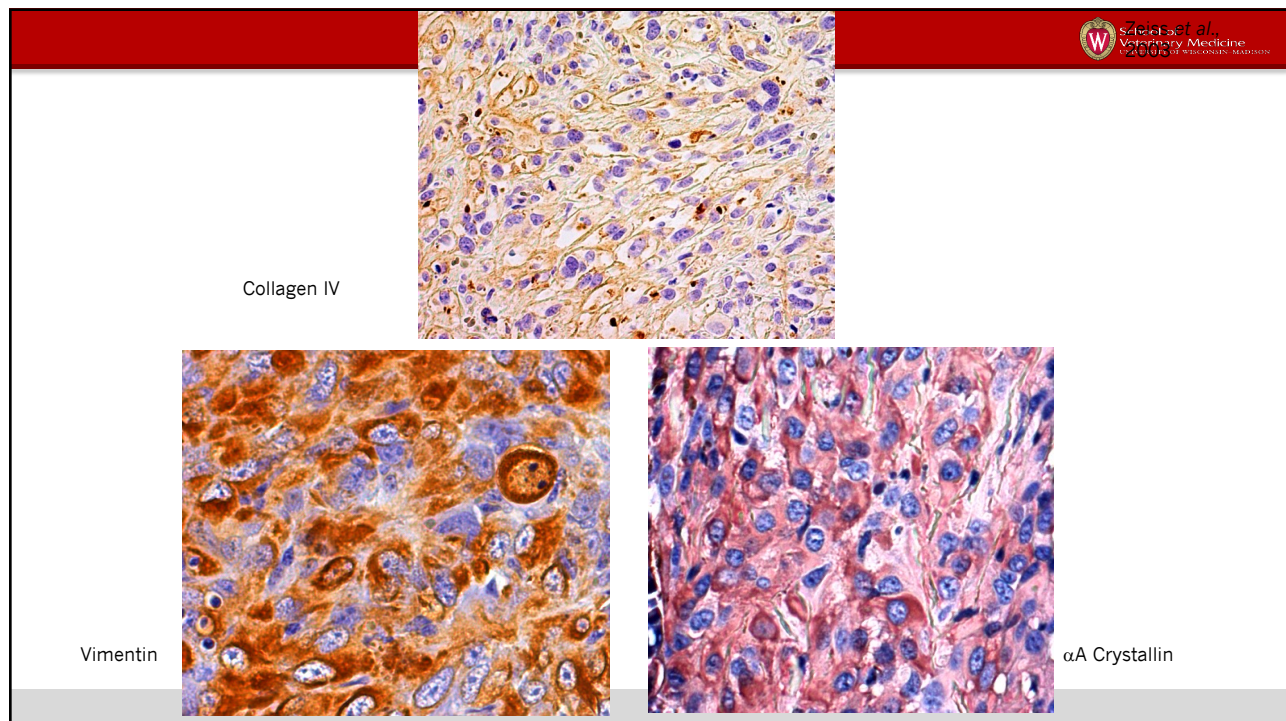
Cytokeratin

 α -Smooth Muscle Actin

54



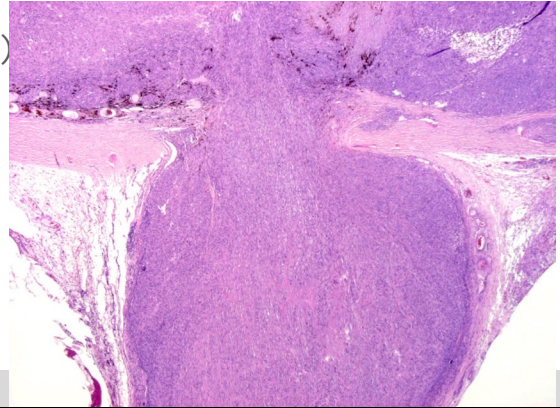
55



56

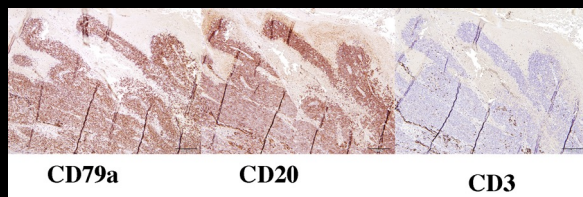
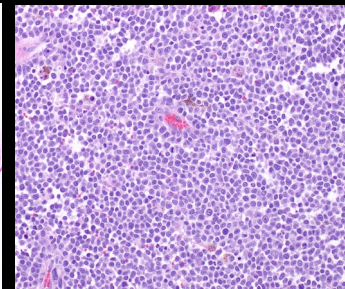
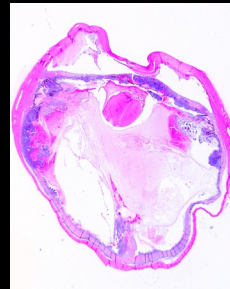
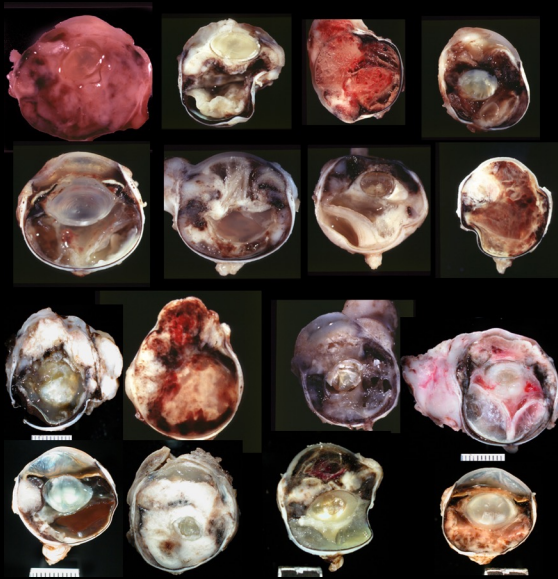
Ocular Post-Traumatic Sarcomas - IHC

- Poor
 - Extension beyond sclera (orbit): recurrences
 - Invasion of ON or peripheral nerves (brain)
- Mets to distant sites



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Feline Ocular Post-traumatic Lymphoma Round Cell Variant FOPTS

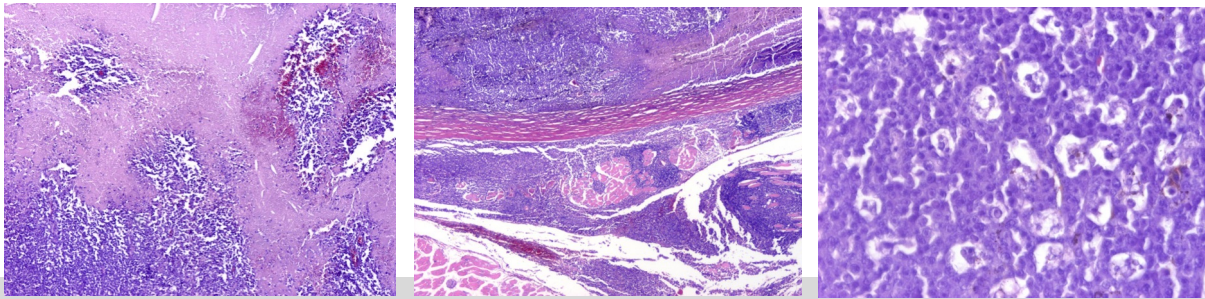


58

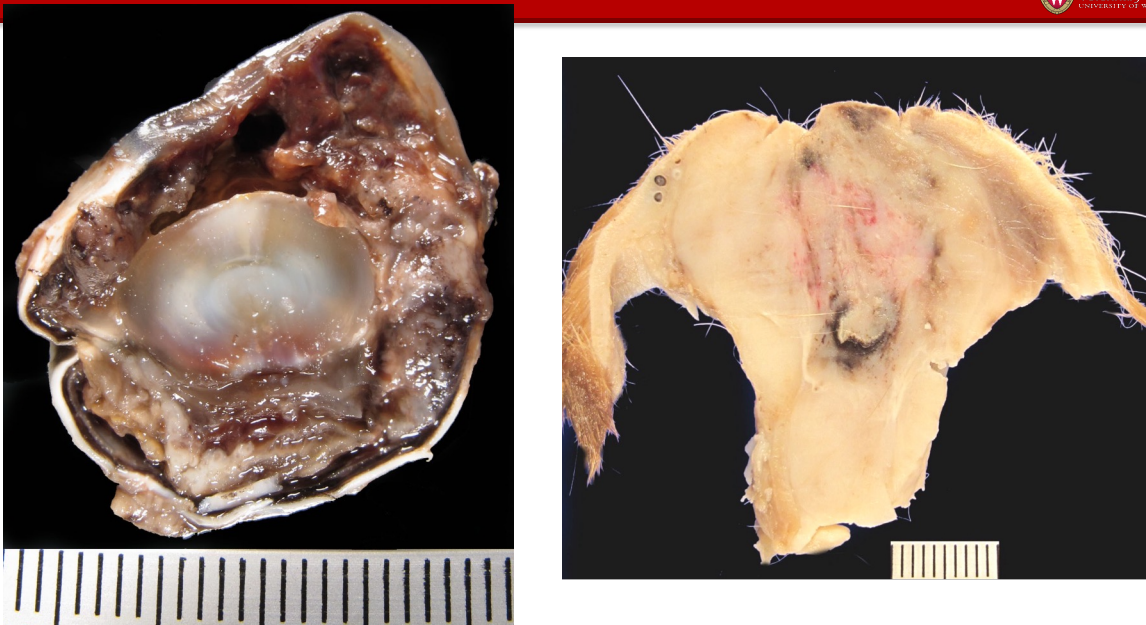
PTS – Round cell variant

Post-traumatic lymphoma - Chronic uveitis-associated lymphoma

- Second-most common variant (24%)
- Grossly:
 - Tendency to fill the globe (> lining the globe)
 - Light tan and soft tumor



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60

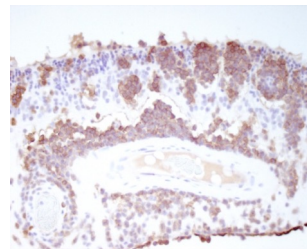
FPTOS – RCV – Histo

- Round cells, solid sheets
- Prominent survival around vessels
 - Extensive coagulation necrosis
- High N:C ratio, prominent mitoses
- Frequent lens capsule rupture, not always
- LP infiltrate

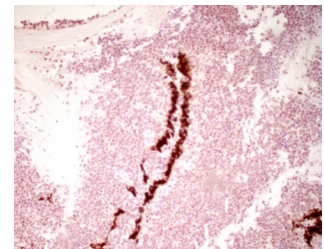
61

FPTOS – RCV – IHC

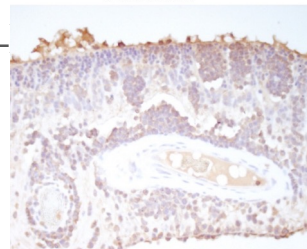
- Variable (CD79+, CD3+ or both)
- Clonality (PARR): B cell origin
- Diffuse large B cell lymphoma (DLBCL)



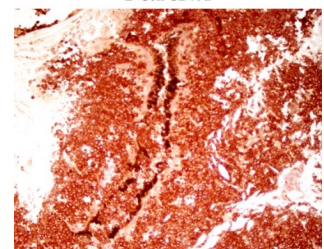
B-Cell DC79a



B-Cell CD79a



T-Cell CD3



T-Cell CD3

Courtesy of Dr. Dubielzig (COPLOW)

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Chronic uveitis-associated lymphoma – DDx

- Different from “classic” lymphoma:
 - Tendency to line/fill the globe
 - Lens capsule rupture
 - Extensive necrosis
 - Extensive retinal involvement
 - History

63

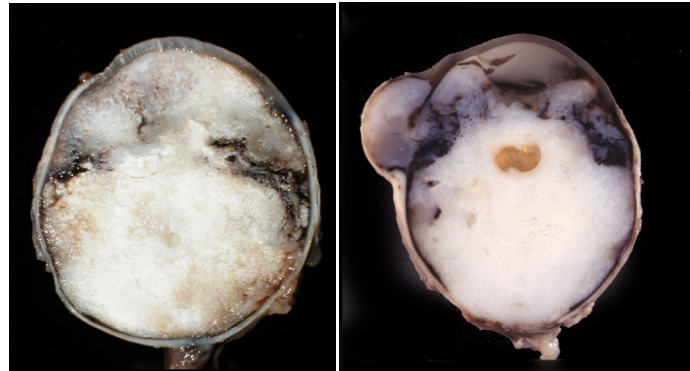
FPTOS – RCV – Prognosis

- Hard to assess, but guarded to poor
- No clear association b/w histo and prognosis
- Local recurrence and systemic spread

64

PTS – OSA/Chondrosarcoma

- Least common variant (6%)
- Origin?
- Gross:
 - Filling the globe → solid



Veterinary Ophthalmology (2017) 1–4

DOI:10.1111/vep.12521

CASE REPORT

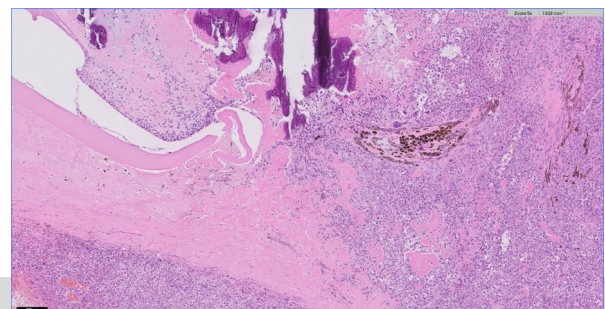
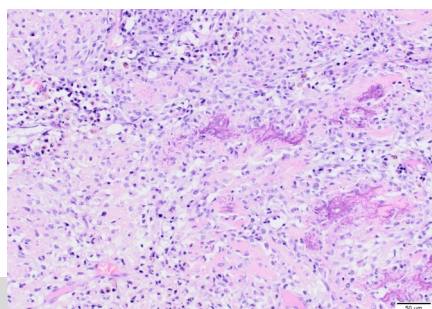
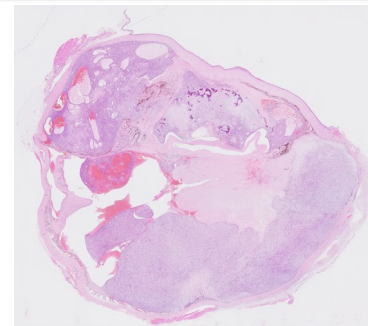
Presumed post-traumatic ocular chondrosarcoma with intrathoracic metastases in a cat

Matheus V. L. Moreira,*  Maria C. de Andrade,* Gustavo O. Fulgêncio,† Ingeborg M. Langohr‡  and Roselene Ecco* 

65

PTS – OSA/Chondrosarcoma

- Osteoid and/or chondroid matrix
- Lens capsule rupture



66

PTS after lens surgery

- 10 eyes:
 - 5 lens luxation: intracapsular
 - 5 cataract: extracapsular
- 10 PTS:
 - 4 SCV-PTS, all extracapsular
 - 4 RCV-PTS, all intracapsular
 - 2 OSA/Chondrosarcoma: 1 intracap, 1 extracap

Outcome of phacoemulsification in 71 cats: A multicenter retrospective study (2006-2017)

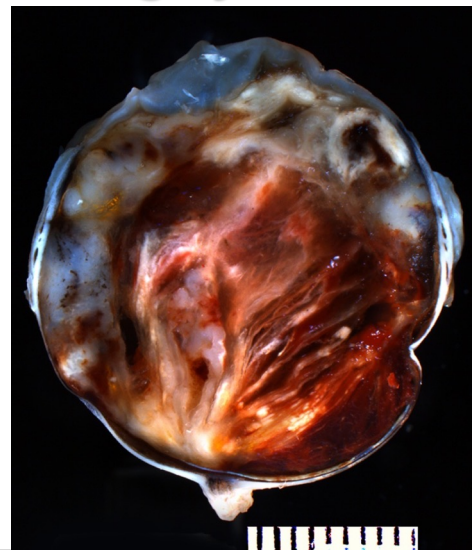
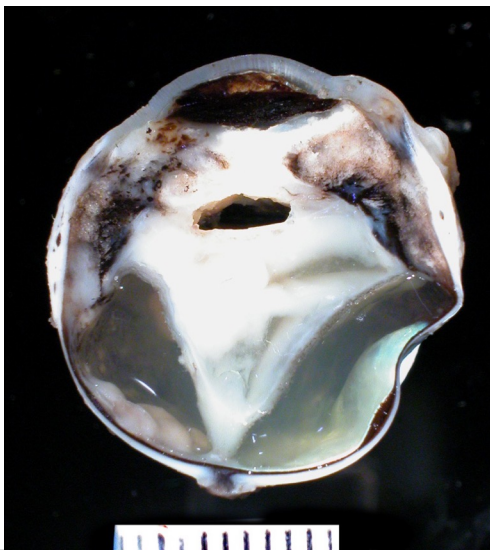
Elena Fenollosa-Romero¹ | Emily Jeanes² | Ines Freitas³ | Andra-Elena Enache⁴ | Rachel Lockhart⁵ | Lorraine Fleming² | Timothy N. L. Knott³ | Charlotte Dawson¹ | Kerry Smith⁵ | Claudia Busse¹

group comparisons. Three eyes in total were enucleated owing to endophthalmitis, post-traumatic ocular sarcoma, and secondary glaucoma.

Naranjo *et al.*, 2011 (ECVO)

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PTS after lens surgery

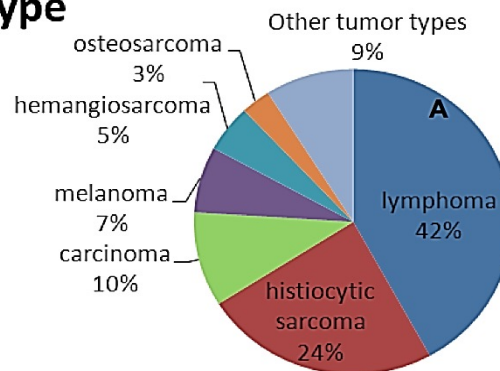


Courtesy of Dr. Dubielzig (COPLow)

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Systemic / Metastatic Tumors to the Canine Eye

Tumor Type



N = 541 cases

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Ocular lymphomas in dogs and cats

Dogs

- One of the most common neoplasms in dogs, 24% of all canine neoplasms¹
- Most common secondary ocular neoplasm in dogs²
 - Ocular involvement - 37% of dogs with multicentric lymphoma
 - Second most common clinical finding in canine lymphoma¹
- WHO staging – Ocular lesion – Stage 5

Cats

- The most common overall neoplasms in cats
- Most common secondary ocular neoplasm in cats
 - Ocular involvement – small % of cats with multicentric lymphoma
 - Second most common clinical finding in canine lymphoma¹
- WHO staging – Ocular lesion – Stage 5

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Presumed solitary ocular lymphoma (PSOL)

Ophthalmologists and pathologists identify cases of ocular lymphoma that presented without any systemic signs at the time of diagnosis

Definition

- Cases diagnosed with intraocular lymphoma in the absence of evidence of systemic involvement

Veterinary Ophthalmology (2018) 21, 2, 167–173

DOI:10.1111/vep.12492

Veterinary Ophthalmology, 2020;23:77–89.

Clinical and pathological classification of canine intraocular lymphoma

Matthew R. Lanza,* Ayla R. Musciano,* Richard D. Dubielzig† and Amy C. Durham*

*Department of Pathobiology, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA, USA; and †Department of Pathobiological Sciences, University of Madison-Wisconsin, Madison, WI, USA

Clinical and histopathological classification of feline intraocular lymphoma

Ayla R. Musciano¹ | Matthew R. Lanza¹ | Richard R. Dubielzig² |

Leandro B. C. Teixeira² | Amy C. Durham¹

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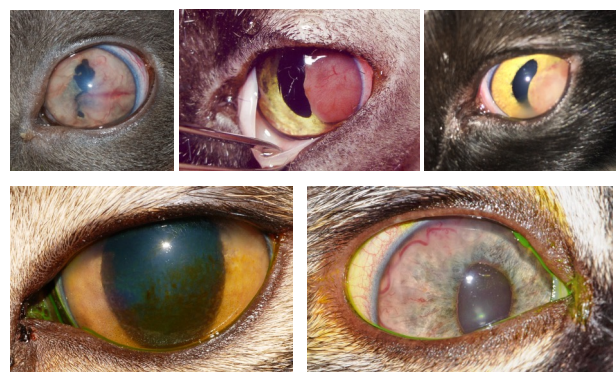
Presumed solitary ocular lymphoma (PSOL)

Clinical presentation

Dogs

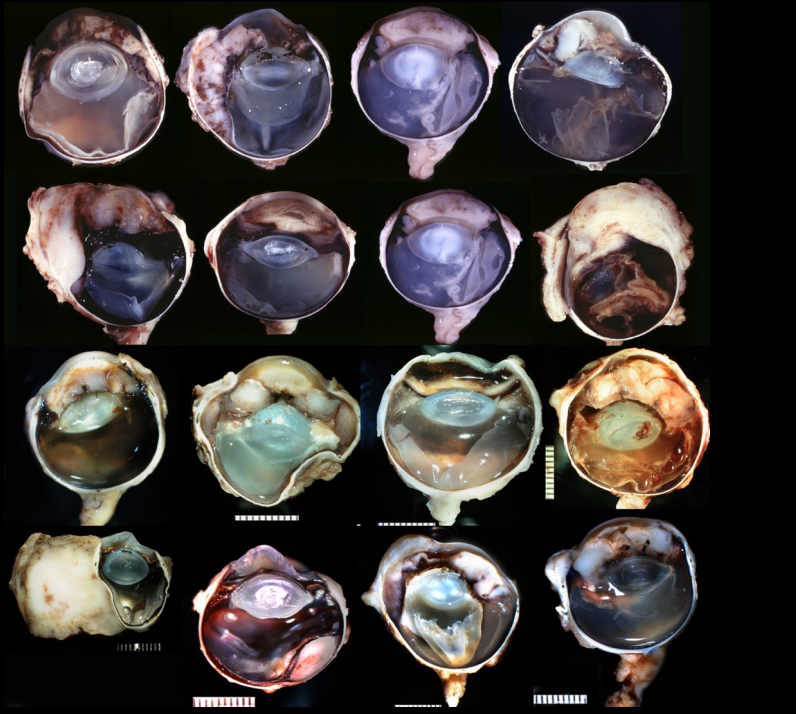


Cats



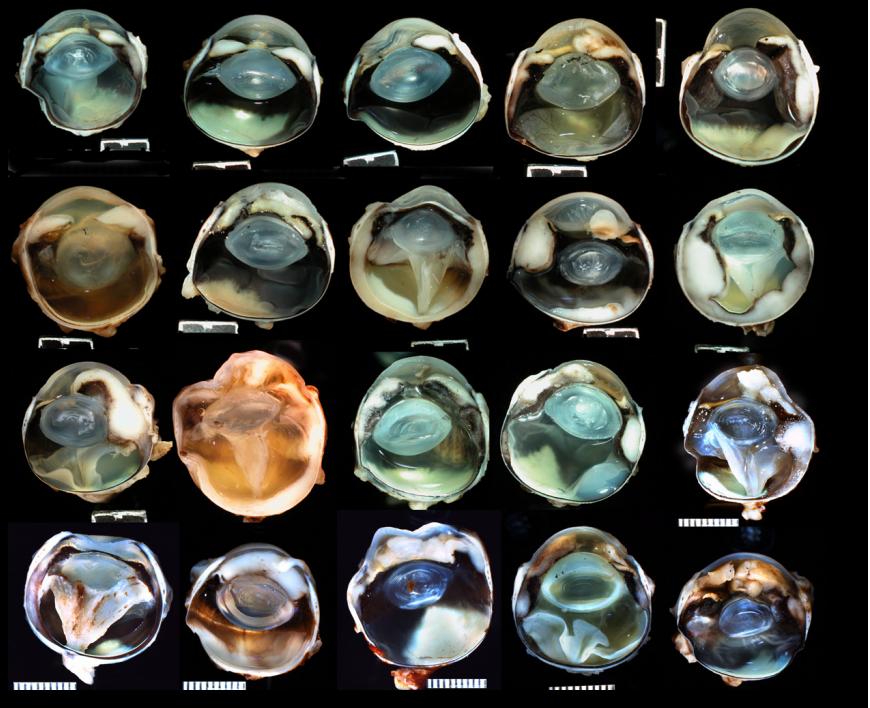
72

Lymphoma dog Gross pathology



73

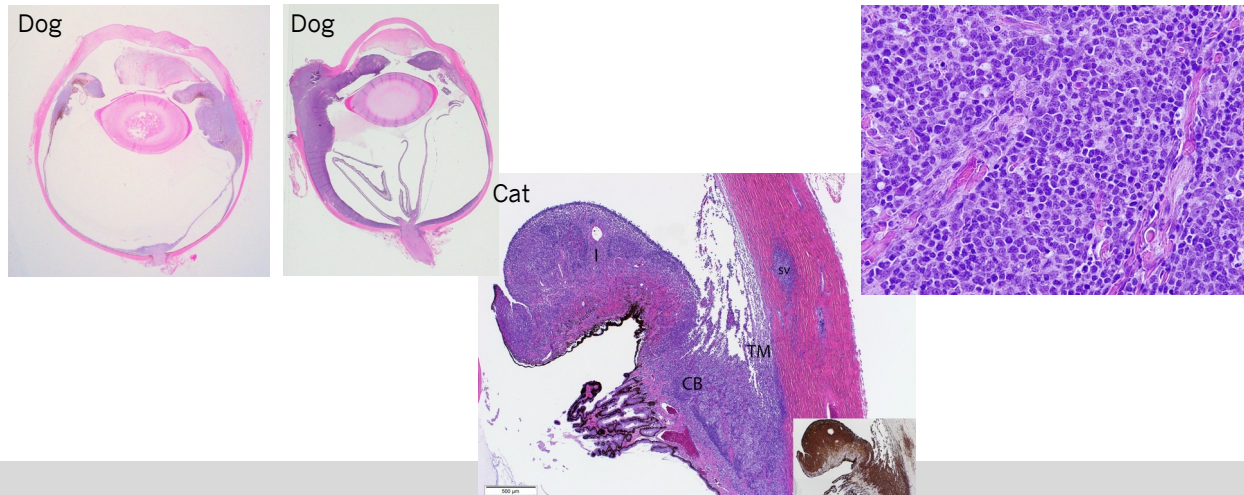
Lymphoma cat Gross pathology



74

Presumed solitary ocular lymphoma (PSOL)

Histopathology



75

Presumed solitary ocular lymphoma (PSOL)

Diagnosing PSOL

- Complete clinical staging of the patient – No systemic disease
 - *No microscopic feature useful to predict systemic involvement*
- Most cases (**61% dog and 64% cats**) classified as PSOL
- PSOLs did not progress postoperatively
- Dogs: Median survival time significantly higher for PSOL cases: 769 vs. 103 days
- Cats: Median survival time significantly higher for PSOL cases: 154 vs. 69 days
- The subtype of lymphoma did not affect survival time

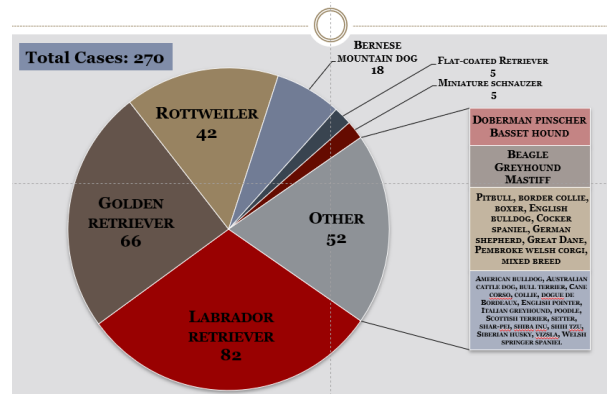
76

Ocular Histiocytic Sarcoma

- Uncommon primary intraocular neoplasm

COPLOW numbers

- 270 cases in the COPLOW collection
- In these cases, ocular disease was the initial presentation
- Strong breed-association

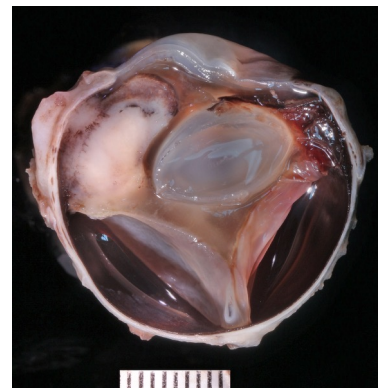


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Histiocytic Sarcoma

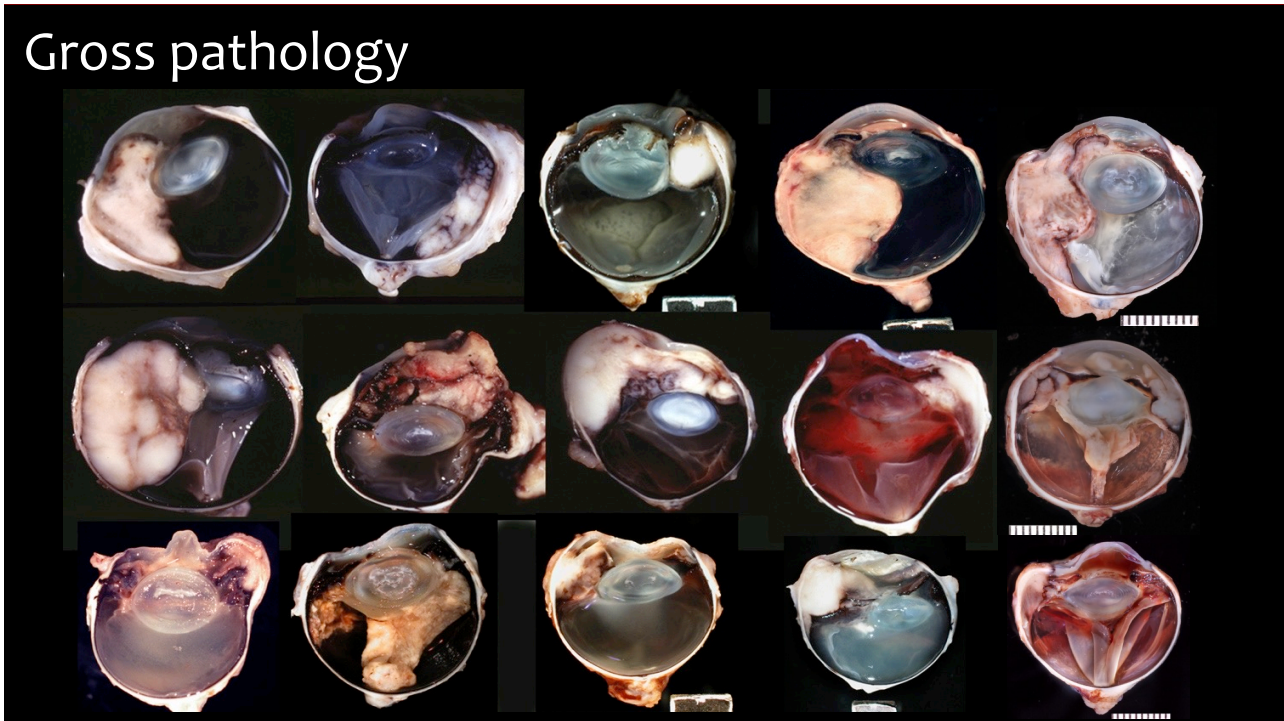
Clinical presentation

- At COPLOW very commonly HS first diagnosed in the eye
 - No systemic signs or
 - Undiagnosed systemic disease
- Ocular involvement is typically unilateral
- Presenting signs:
 - Uveitis,
 - secondary glaucoma and/or
 - Presence of an intraocular mass lesion.



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Gross pathology

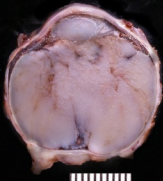


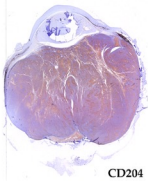
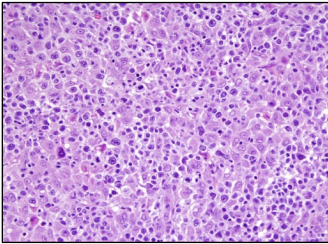
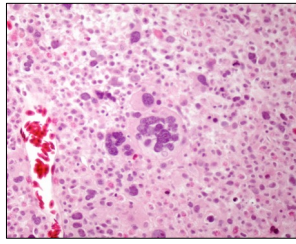
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 School of Veterinary Medicine
UNIVERSITY OF WISCONSIN, MADISON

Histiocytic Sarcoma

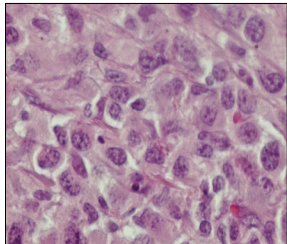
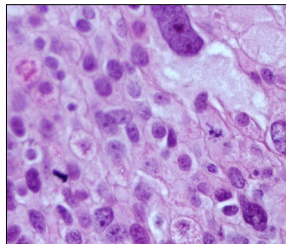
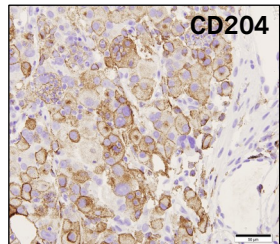
Diagnosis



IHC

- Vimentin +
- CD18 +, CD204+, Iba1+
- Melan A –
- CD3/CD20 –

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Histiocytic Sarcoma

Prognosis

- Histiocytic sarcomas carry a poor prognosis for the patient.
- When first diagnosed in the eye, the systemic disease tends to be already advanced.
- Cases in our database present an average survival after diagnosis of 3 months.
- Project currently underway at COPLOW

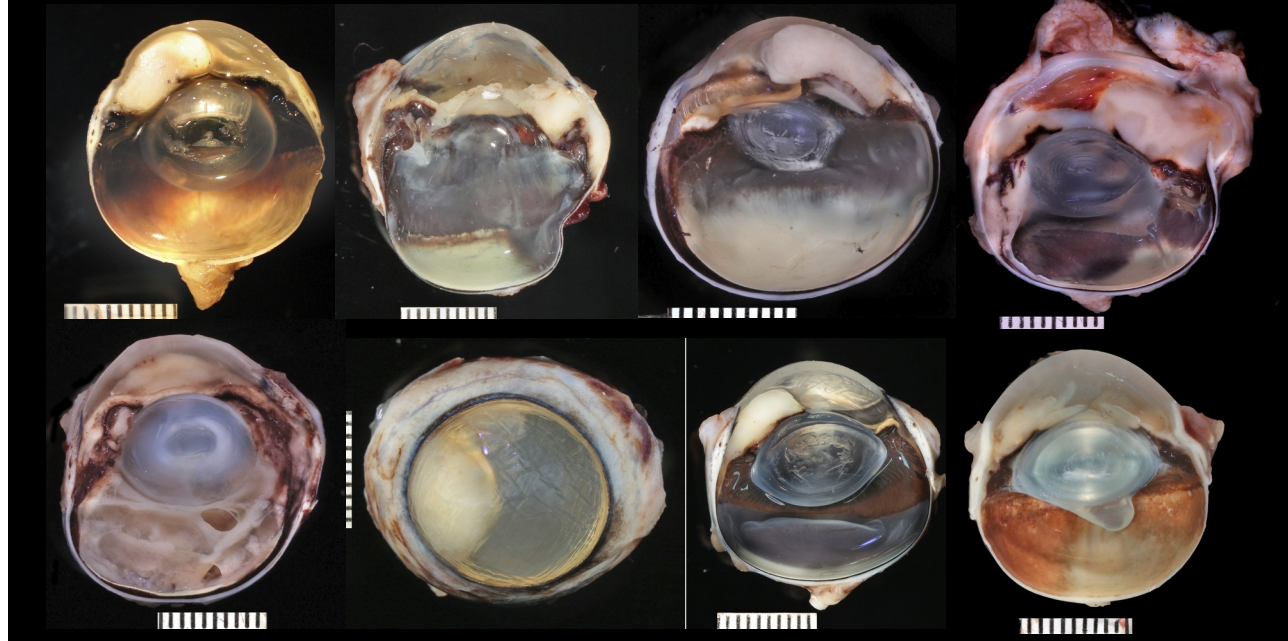
81

Histiocytic Sarcoma in cats

- 18 cases at the database
 - 0.2% of all ocular tumors in cats
- Clinical presentation similar to dogs
 - No systemic signs or
 - Undiagnosed systemic disease
 - Ocular involvement unilateral
 - Presenting signs:
 - Uveitis,
 - secondary glaucoma and/or
 - Presence of an intraocular mass lesion.

82

Gross pathology



83

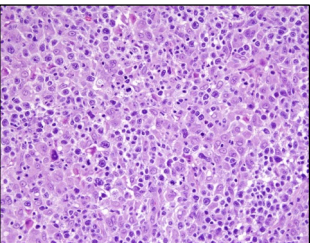
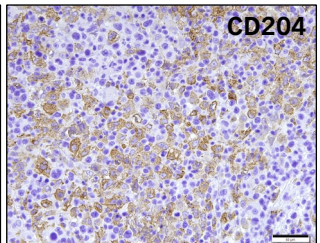


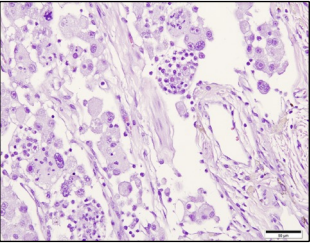
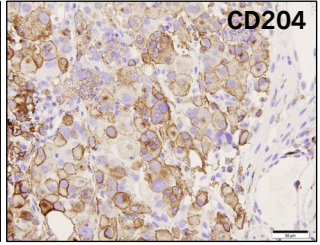
School of
Veterinary Medicine
UNIVERSITY OF WISCONSIN, MADISON

Histiocytic Sarcoma in cats

Prognosis

- The time between enucleation and last known contact (minimal survival time) in the cat cases was longer than in dogs
- No clinical signs at presentation
- No signs of systemic or metastatic disease were reported in the feline patients.
- **Primary Ocular Histiocytic Sarcoma?**
- Project currently underway at COPLOW

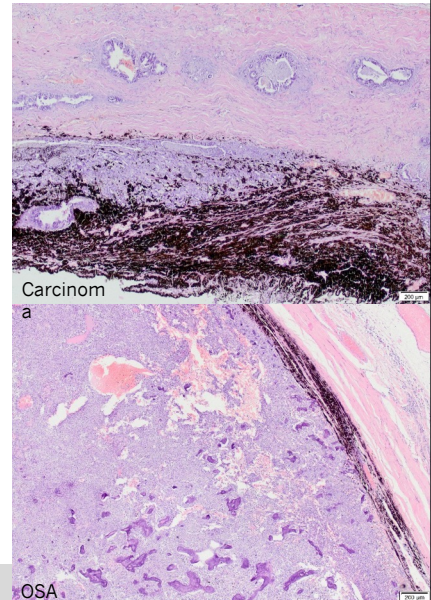



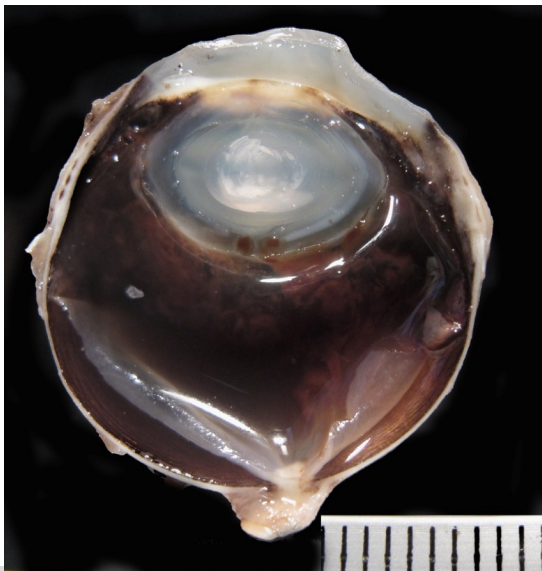
84

Other metastatic tumors to the globe

- Unilat → bilat
- Anterior > posterior uvea
- Neoplastic cells w/in blood vessels
- 2 patterns:
 - Discrete mass
 - Diffuse infiltrates lining the inner aspect of uvea



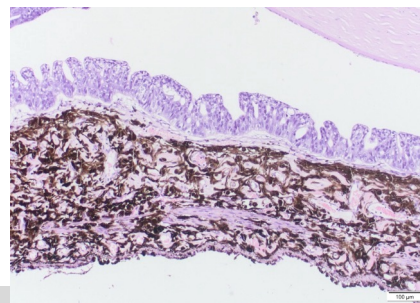
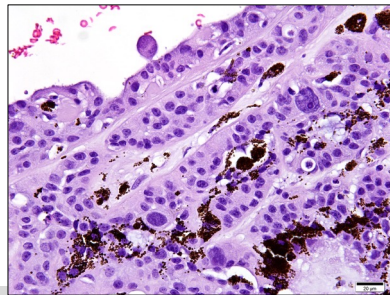
85



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Primary vs. metastatic carcinomas

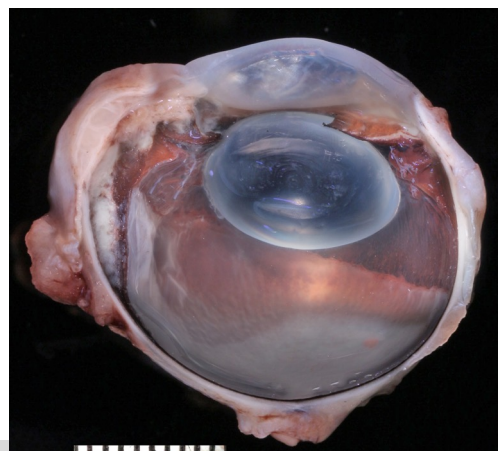
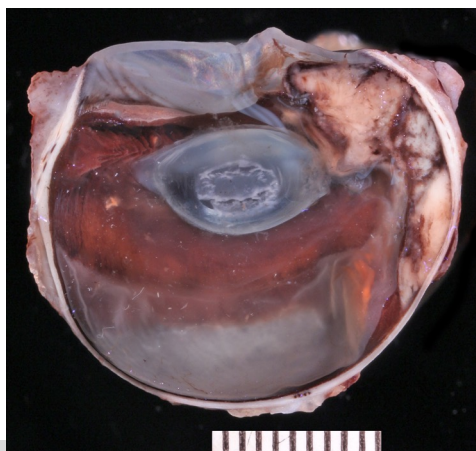
	Primary benign	Primary malignant	Metastatic
Cytokeratin	-	+/-	+
Vimentin	+	+	-



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Primary vs. Systemic tumors

Metastatic vs. Primary Iridociliary Carcinomas



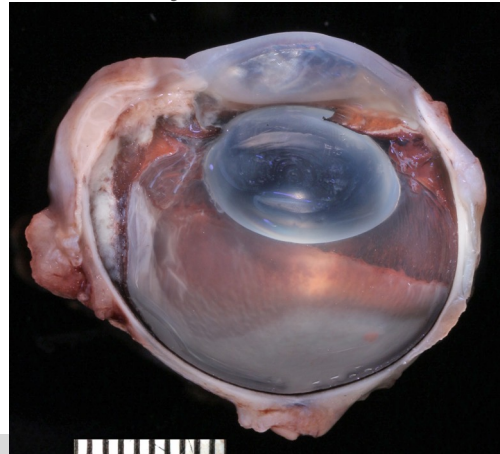
88

Primary vs. Systemic tumors

Metastatic
Mammary carcinoma



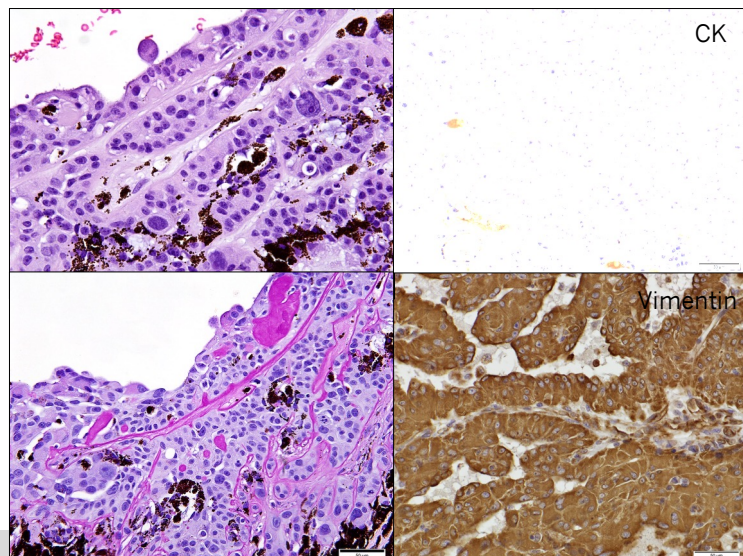
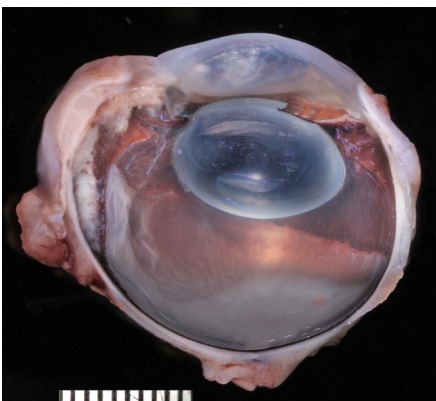
Primary
Iridociliary Carcinomas



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Primary vs. Systemic tumors

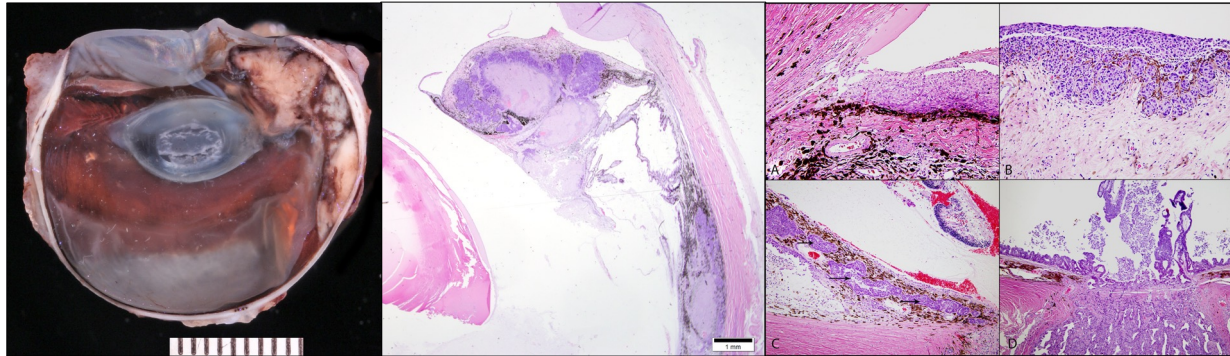
Primary
Iridociliary Carcinomas



90

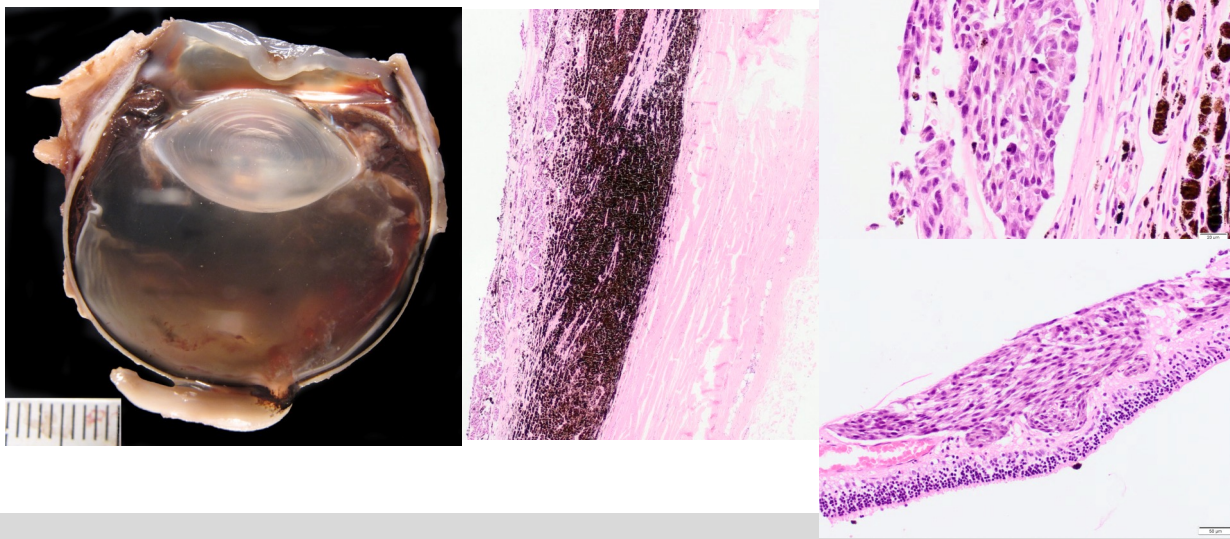
Primary vs. Systemic tumors

Metastatic Mammary carcinoma



91

Metastatic malignant melanoma



92

