



# The eyes have it: A crash course in seeing what matters

Understanding animal eye anatomy and tips on examination  
techniques in general practice

Farzin Sahebjam  
DVM, MVS, AFHEA, PhD

# Today's talk

- Importance of Eye Examinations in Animals
- Basic Anatomy of the Animal Eye
- Methods and Tools Used in Veterinary Eye Examination
- Common treatments in primary care
- Concluding remarks



# Importance of Eye Examinations in Animals





# Why ophthalmology?

## **Insufficient coverage**

Few subjects at the university and less emphasis on education

## **Fear to interfere**

There is a relative fear among general practitioners to approach eye issues

## **Sudden onset, an emergency case!**

Patients usually visit clinics when the condition is advanced or severe

## **Many cases remain undiagnosed**

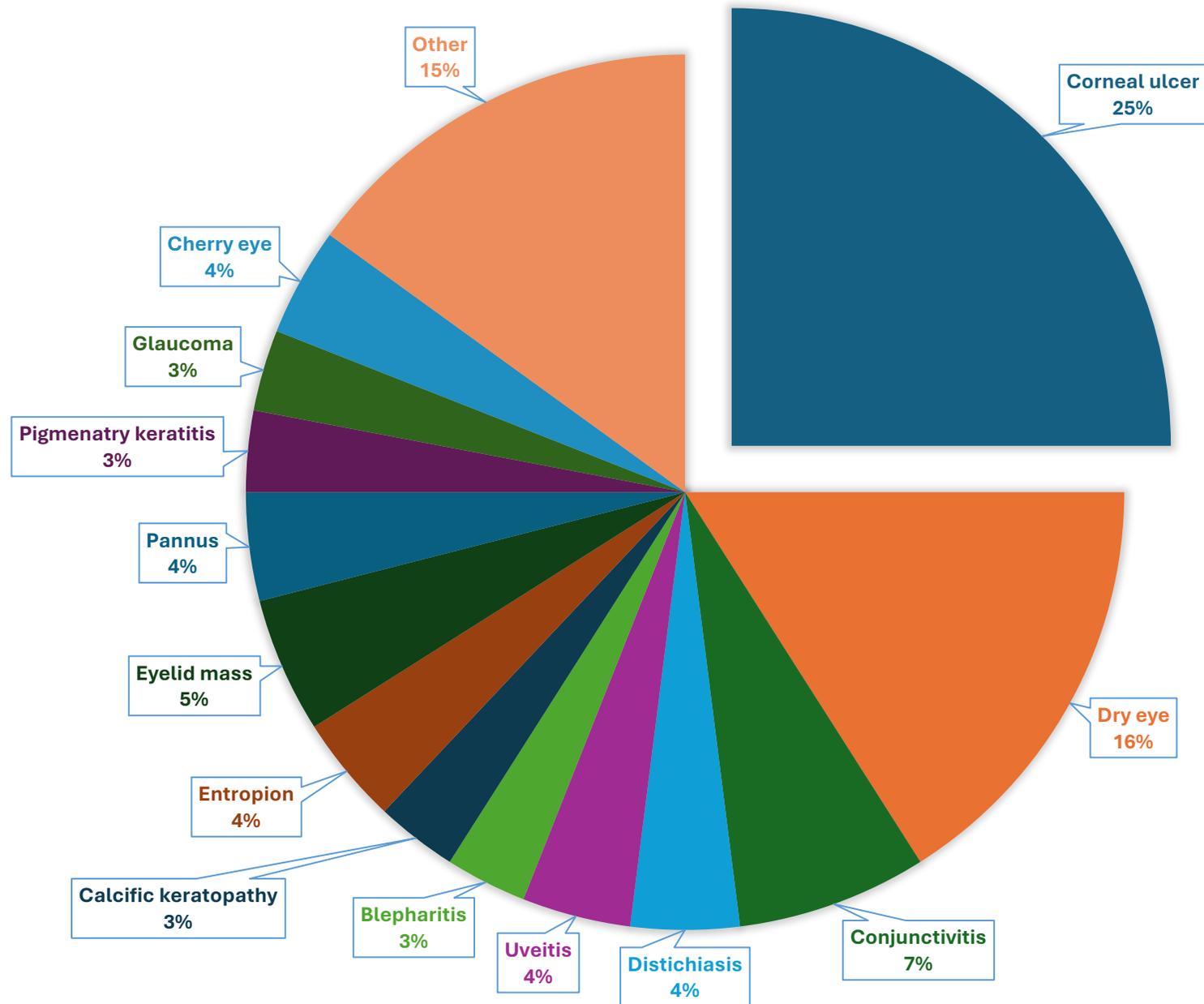
For example, weepy eyes, entropion and extra eyelashes

**Eyes need to be thoroughly examined during annual health checks**



EYE CASES WITH VARIOUS CONDITIONS VISITED THE CLINIC IN A YEAR (2024-2025) N=150

# Ophthalmic cases in general practice: my experience





# Ophthalmic cases in general practice: my experience

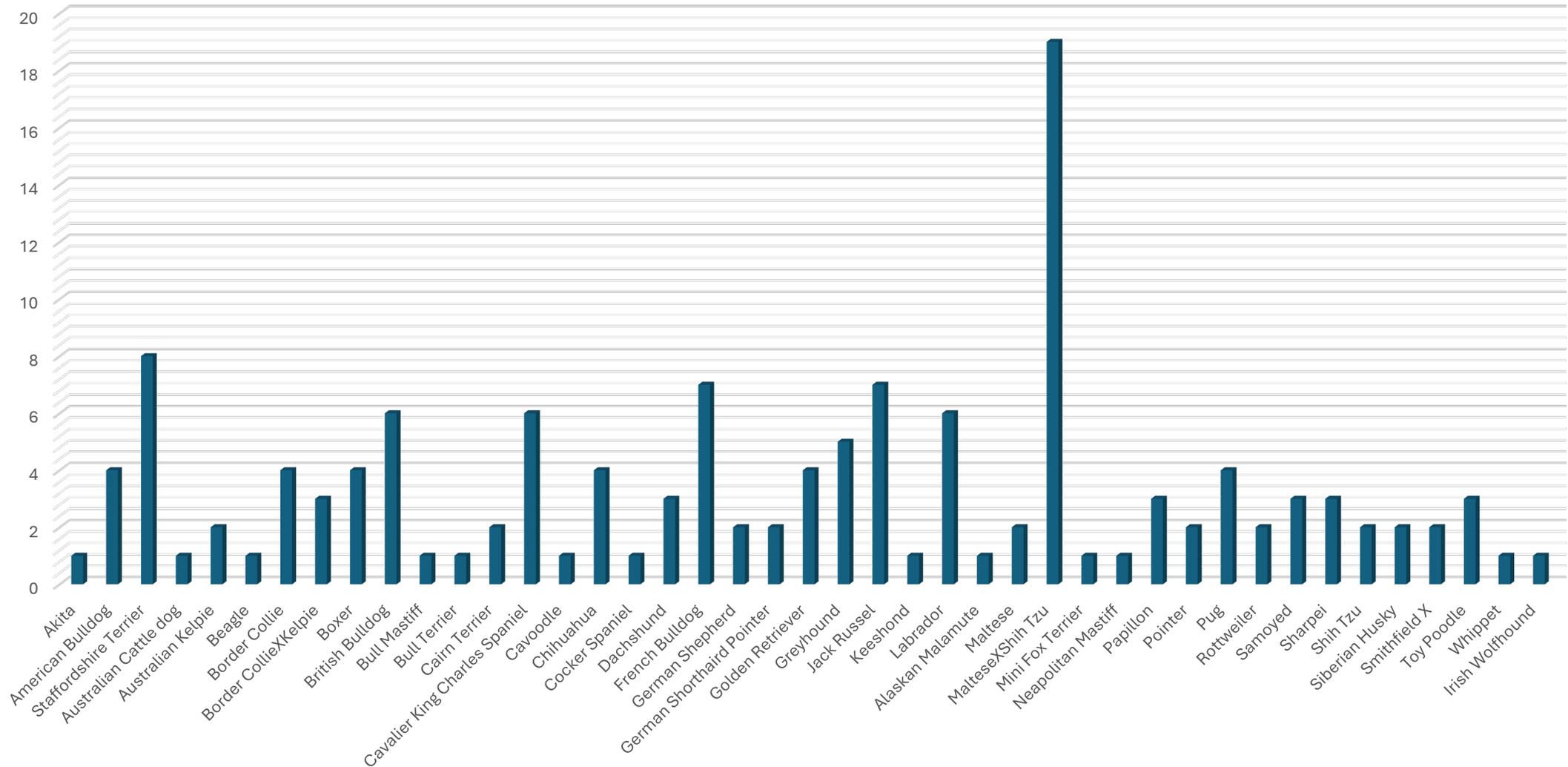
• **Top 12 Eye cases with various conditions visited the clinic in a year (2024-2025) n=150**

- **Corneal ulcer**
- **Dry eye**
- **Conjunctivitis**
- **Distichiasis**
- **Eyelid mass**
- **Uveitis**
- **Entropion**
- **Pannus**
- **Cherry eye**
- **Glaucoma**
- **Blepharitis**
- **Calcific keratopathy**



# Ophthalmic cases in general practice: my experience

Most dog breeds visited for eye problems 2024-2025 – n=150



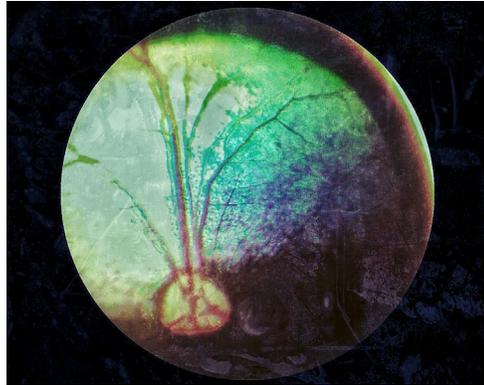
## Ophthalmic cases in general practice: my experience



Top five dog breeds visited for eye problems mid 2024-2025

- 1) Maltese Shih Tzu cross
- 2) Staffies
- 3) Frenchies
- 4) Jack Russell
- 5) British Bulldog





# Prevalence in general practice

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## Prevalence of Disorders Recorded in Dogs Attending Primary-Care Veterinary Practices in England

Dan G. O'Neill<sup>1\*</sup>, David B. Church<sup>2</sup>, Paul D. McGreevy<sup>3</sup>, Peter C. Thomson<sup>3</sup>, Dave C. Brodbelt<sup>1</sup>

<sup>1</sup>Veterinary Epidemiology, Economics and Public Health, Royal Veterinary College, London, United Kingdom, <sup>2</sup>Small Animal Medicine and Surgery Group, Royal Veterinary College, London, United Kingdom, <sup>3</sup>Faculty of Veterinary Science, University of Sydney, Sydney, New South Wales, Australia

### Abstract

Purebred dog health is thought to be compromised by an increasing occurrence of inherited diseases but inadequate prevalence data on common disorders have hampered efforts to prioritise health reforms. Analysis of primary veterinary practice clinical data has been proposed for reliable estimation of disorder prevalence in dogs. Electronic patient record (EPR) data were collected on 148,741 dogs attending 93 clinics across central and south-eastern England. Analysis in detail of a random sample of EPRs relating to 3,884 dogs from 89 clinics identified the most frequently recorded disorders as otitis externa (prevalence 10.2%, 95% CI: 9.1–11.3), periodontal disease (9.3%, 95% CI: 8.3–10.3) and anal sac impaction (7.1%, 95%

O'Neill et al. 2014

Mid-level disorder	Overall			Purebred		Crossbred		P-value
	No.	Prev <sup>a</sup> %	95% CI <sup>b</sup>	Prev <sup>a</sup> %	95% CI <sup>b</sup>	Prev <sup>a</sup> %	95% CI <sup>b</sup>	
Enteropathic	692	17.8	16.0–19.6	17.7	15.8–19.7	18.3	15.4–21.2	1.000
Dermatological	602	15.5	13.9–17.1	16.5	14.6–18.4	11.9	10.0–13.9	<b>0.004</b>
Musculoskeletal	457	11.8	10.6–12.9	11.2	9.8–12.6	14.1	11.8–16.3	0.130
Aural	426	11.0	9.8–12.2	12.0	10.7–13.3	7.2	5.3–9.0	<b>0.001</b>
Ophthalmological	406	10.5	9.1–11.8	11.1	9.7–12.6	7.9	6.1–9.7	<b>0.032</b>
Claw/nail	400	10.3	9.1–11.5	10.1	8.8–11.5	10.9	9.0–12.9	1.000
Dental	386	9.9	8.8–11.1	10.0	8.8–11.2	9.8	7.9–11.7	1.000
Neoplastic	367	9.5	8.2–10.7	9.6	8.2–10.9	9.2	7.2–11.1	1.000
Traumatic injury (not incl. bites)	351	9.0	8.0–10.1	9.1	7.8–10.3	8.9	6.6–11.2	1.000
Anal sac	337	8.7	7.5–9.8	8.6	7.3–9.9	9.0	7.1–11.0	1.000
Obesity	238	6.1	5.2–7.1	6.7	5.6–7.9	3.9	2.3–5.5	<b>0.009</b>
Mass lesion	235	6.1	5.2–6.9	6.4	5.3–7.4	4.9	3.4–6.4	0.726
Behavioural	233	6.0	5.3–6.85	5.8	4.9–6.7	6.9	5.1–8.7	1.000
Upper respiratory tract	223	5.7	4.9–6.5	5.6	4.6–6.6	6.4	4.6–8.2	1.000
Cardiac	219	5.6	4.8–6.5	5.9	5.0–6.7	4.9	3.1–6.7	1.000
Parasitic	172	4.4	3.8–5.1	4.2	3.5–5.0	5.3	3.7–6.8	1.000
Congenital	171	4.4	3.7–5.1	4.6	3.7–5.4	3.9	2.6–5.2	1.000
Bite injury	148	3.8	3.0–4.6	3.7	2.9–4.6	4.1	2.8–5.5	1.000
Urinary	126	3.2	2.7–3.8	3.4	2.7–4.1	2.8	1.6–3.9	1.000
Brain	122	3.1	2.5–3.7	3.2	2.6–3.8	3.1	1.9–4.4	1.000

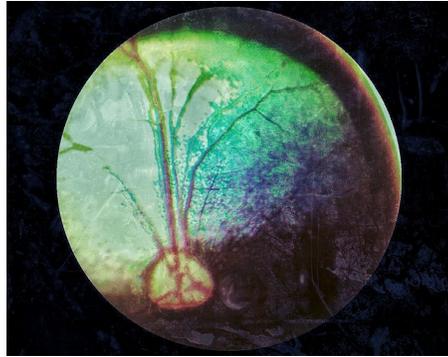
P-values (Holm-adjusted) represent comparison between purebreds and crossbreds.

<sup>a</sup>Prev prevalence.

<sup>b</sup>95% CI 95% confidence interval.

doi:10.1371/journal.pone.0090501.t004

5<sup>th</sup> most visited  
10.5% prevalence



## Prevalence in general practice

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O'Neill et al. 2014

Disorder	Overall			Purebred		Crossbred		P-value
	No.	Prev <sup>a</sup> %	95% CI <sup>b</sup>	Prev <sup>a</sup> %	95% CI <sup>b</sup>	Prev <sup>a</sup> %	95% CI <sup>b</sup>	
Otitis externa	396	10.2	9.1–11.3	11.2	10.0–12.4	6.5	4.7–8.3	<b>0.001</b>
Periodontal disease	361	9.3	8.3–10.3	9.4	8.2–10.5	9.2	7.4–11.0	1.000
Anal sac impaction	277	7.1	6.1–8.1	7.1	6.0–8.1	7.5	5.7–9.4	1.000
Overgrown nails	276	7.1	6.1–8.2	6.9	5.8–8.0	8.0	6.1–9.9	1.000
Degenerative joint disease	256	6.6	5.7–7.5	6.4	5.3–7.4	7.5	5.7–9.4	1.000
Diarrhoea	249	6.4	5.5–7.4	6.8	5.6–8.0	4.9	3.4–6.4	0.255
Obesity	238	6.1	5.2–7.1	6.7	5.6–7.9	3.9	2.3–5.5	<b>0.006</b>
Traumatic injury	214	5.5	4.7–6.4	5.5	4.4–6.5	5.7	3.6–7.7	1.000
Conjunctivitis	192	4.9	4.1–5.8	5.2	4.2–6.2	4.1	2.8–5.5	1.000
Vomiting	159	4.1	3.3–4.9	4.0	3.1–4.9	4.5	3.0–6.0	1.000
Heart murmur	153	3.9	3.3–4.5	4.1	3.5–4.7	3.4	2.1–4.7	1.000
Lipoma	137	3.5	2.8–4.2	3.5	2.7–4.2	3.8	2.7–4.9	1.000
Dermatitis	134	3.5	2.8–4.1	3.5	2.8–4.3	3.1	1.9–4.4	1.000
Skin hypersensitivity	113	2.9	2.3–3.5	3.2	2.5–3.9	1.8	0.9–2.6	0.116
Skin mass	110	2.8	2.3–3.4	3.2	2.6–3.8	1.5	0.6–2.4	<b>0.033</b>
Claw injury	103	2.7	2.1–3.2	2.6	2.0–3.2	2.6	1.5–3.8	1.000
Behavioural	99	2.6	2.1–3.0	2.6	2.1–3.1	2.4	1.4–3.4	1.000
Gastroenteritis	99	2.6	2.0–3.1	2.4	1.9–2.9	3.1	2.0–4.3	1.000
Dog bite injury	97	2.5	1.9–3.1	2.4	1.7–3.1	2.9	1.8–4.0	1.000
Laceration	92	2.4	1.8–2.9	2.5	1.8–3.1	2.0	1.1–2.9	0.446

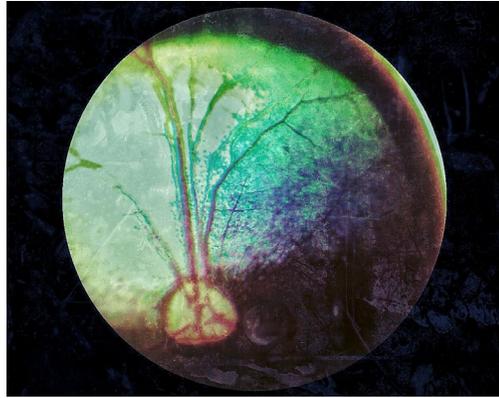
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4.9% prevalence



## Prevalence in general practice

pISSN 1598-298X / eISSN 2384-0749  
*J Vet Clin* 32(3) : 235-238 (2015)  
<http://dx.doi.org/10.17555/jvc.2015.06.32.3.235>



### Epidemiological and Clinical Features of Canine Ophthalmic Diseases in Seoul from 2009 to 2013

Joon-Young Kim, Kyung-hee Kim\*, David L. Williams\*\*, Won-chang Lee\* and Soon-wuk Jeong<sup>†1</sup>

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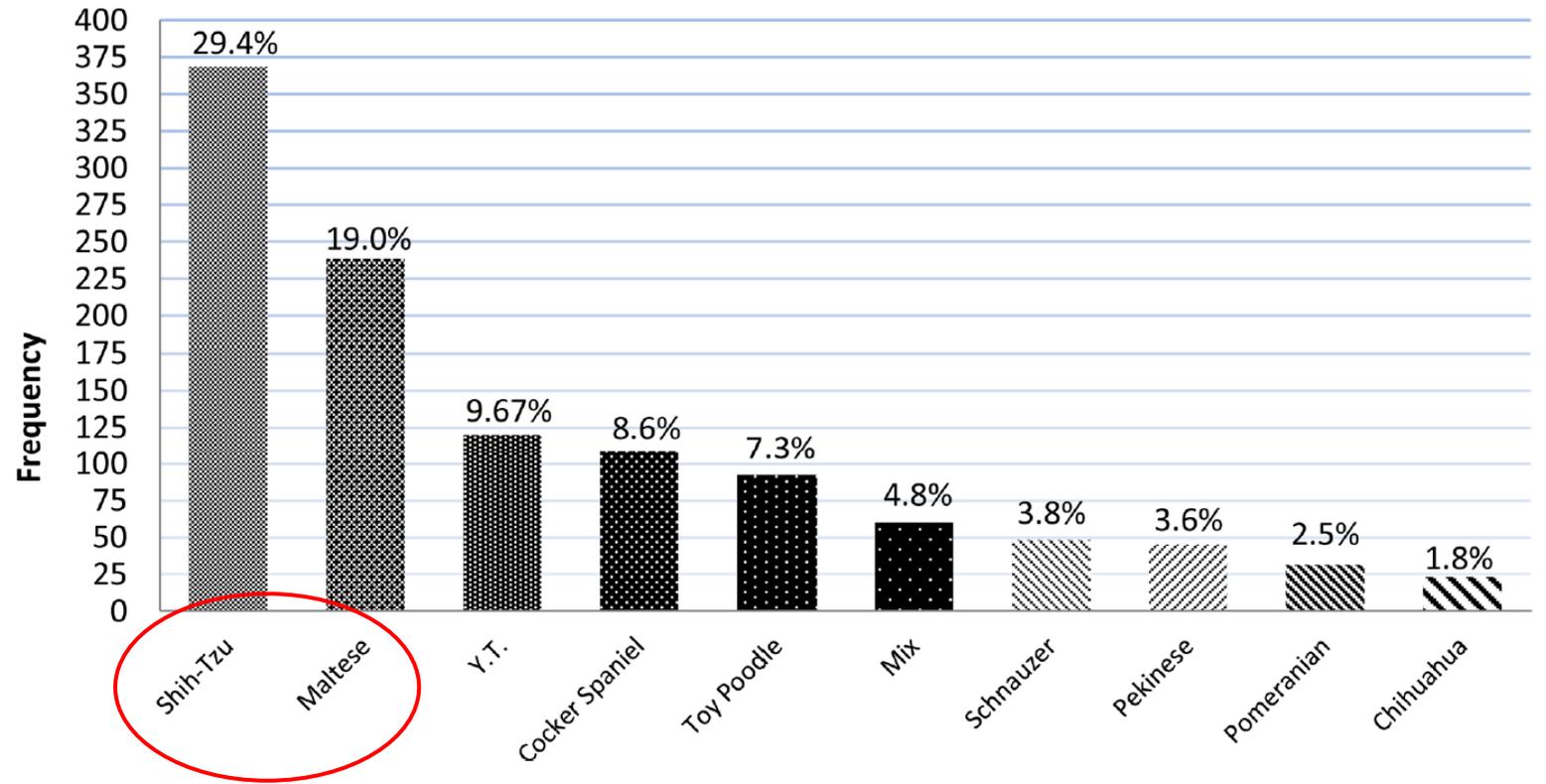
*\*College of Veterinary Medicine, Konkuk University, Seoul 143-701, Korea*

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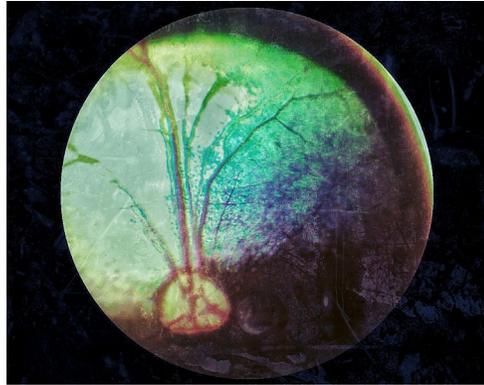
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Kim et al. 2015



**Fig 3.** The breed distribution of ophthalmic patients.



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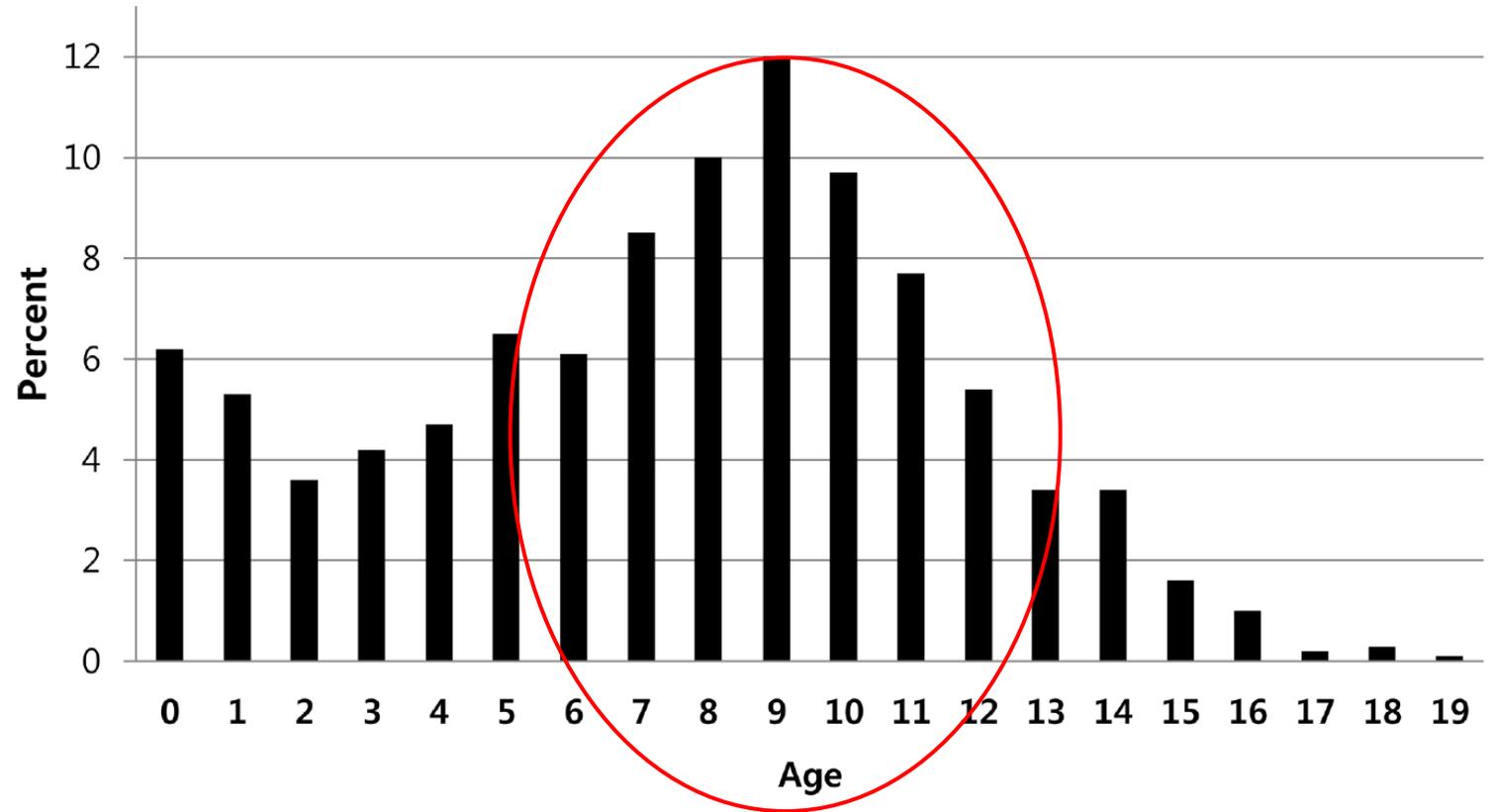
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Kim et al. 2015



**Fig 1.** The distribution of ophthalmic patients according to age.



# Prevalence in general practice



Article

## Epidemiological Studies on Eye Diseases in Centers for Stray Dogs in Northwestern Romania

Elena Bonea <sup>1,2</sup>, Cornel Dionisie Igna <sup>1,\*</sup>, Monica Ocnean <sup>3,\*</sup>, Bianca Cornelia Lungu <sup>1,\*</sup> and Ioan Hutu <sup>1</sup>

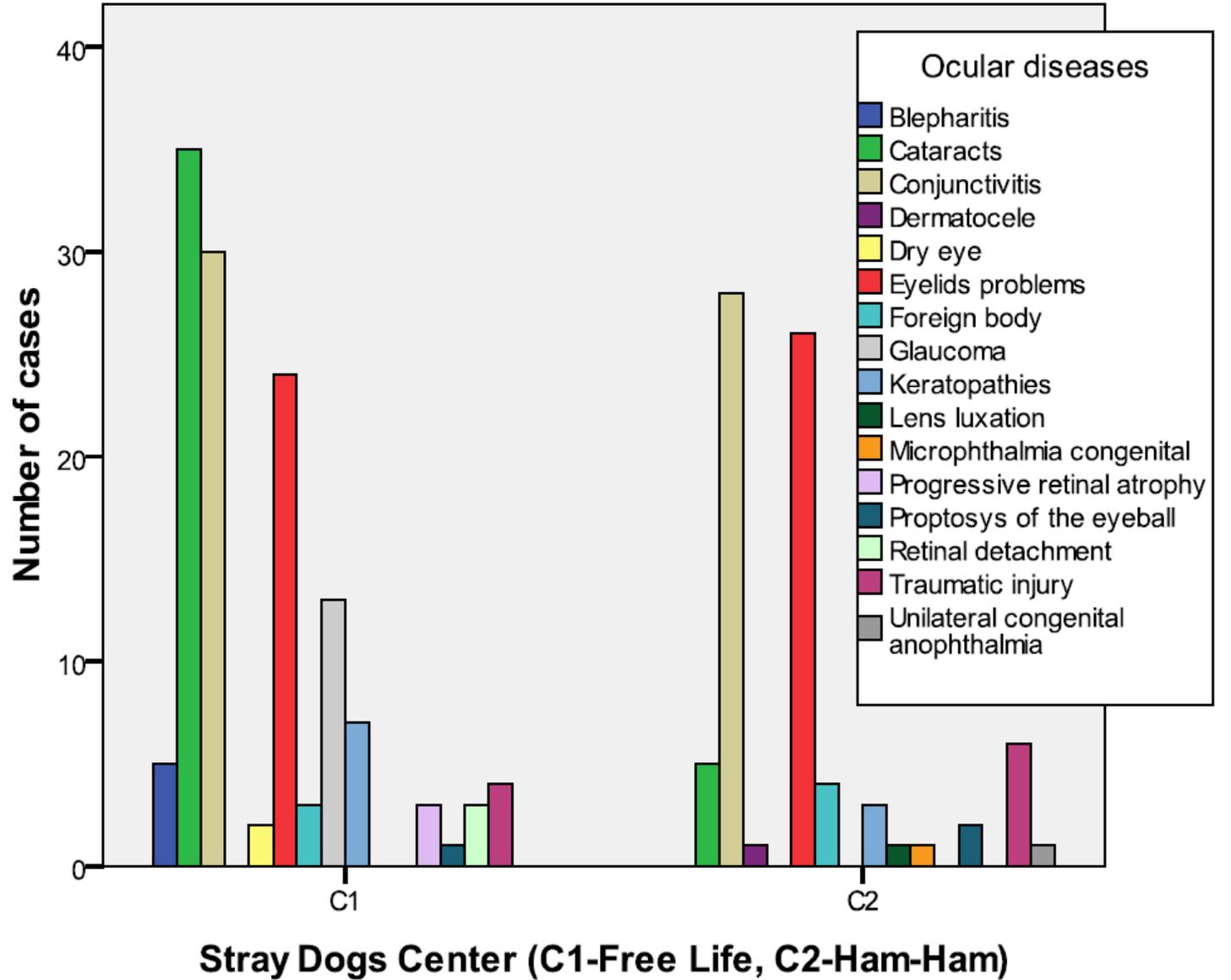
<sup>1</sup> Horia Cernescu Research Unit—Faculty of Veterinary Medicine, University of Life Sciences “Regele Mihai I”, Calea Aradului 119, 300645 Timisoara, Romania; elena.bonea@fmv.ro (E.B.); cornelign@usv.ro (C.D.I.); ioan.hutu@fmv.ro (I.H.)

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Bonea et al. 2025



16th EDITION

# The BLUE BOOK

2024

Ocular disorders  
presumed to be  
inherited in  
purebred dogs

GENETICS COMMITTEE OF THE AMERICAN COLLEGE  
OF VETERINARY OPHTHALMOLOGISTS

## Breed Predisposition

**This is IMPORTANT!**

**Unless the eye has suffered trauma, the cause is likely to be breed related. Particularly in Dogs (not so much the case in cats)**

**Eg. PRA – Poodles, Labrador, Labradoodle, Cocker spaniel, Australian cattle dogs**

**Lens luxation – Terriers**

**Glaucoma – Poodle, Golden Retriever, Maltese, Cocker spaniel**

**Resources:**

**“Blue Book” Published by ACVO**

**“Slatter’s fundamentals of veterinary ophthalmology”**

**CVE / Animal Eye Care Breed Predisposition List**

[www.cve.edu.au/Common/Uploaded files/ CT/Breed-Predisposition-to-Eye-Disease.pdf](http://www.cve.edu.au/Common/Uploaded files/ CT/Breed-Predisposition-to-Eye-Disease.pdf)

## AUSTRALIAN CATTLE DOG

(Queensland Heeler or Blue Heeler)

	DISORDER	INHERITANCE	REFERENCE	BREEDING ADVICE	GENETIC MUTATIONS DESCRIBED
A.	Glaucoma	Not defined	2	NO	
B.	Persistent pupillary membranes - iris to iris	Not defined	1	Breeder option	
C.	Cataract	Not defined	1,7	NO	
D.	Y-suture tip opacity	Not defined	1	Breeder option	
E.	Lens luxation	Autosomal recessive	3-5	NO	Mutation in the <i>ADAMTS17</i> gene
F.	Retinal atrophy				
	- generalized	Not defined	1	NO	
	-PRA- <i>PRCD</i>	Autosomal recessive	6, 9	NO	Mutation in the <i>prcd</i> gene
	- IRD- <i>PCARE</i>	Autosomal recessive	8	NO	Mutation in the <i>C2orf71</i> gene

## The Blue Book

An example: genetic issues more prevalent in Australian cattle dogs



# Basic Anatomy of the Animal Eye





# Role of Vision in Animal Health and Behavior

## Navigation

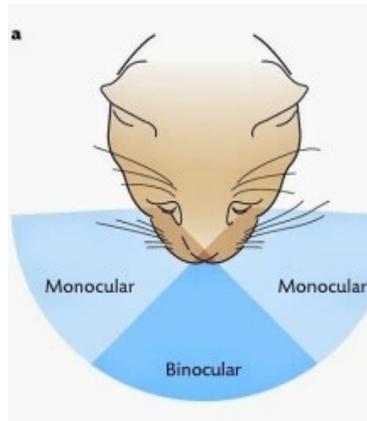
Vision enables animals to effectively navigate their surroundings and avoid dangers.

## Feeding

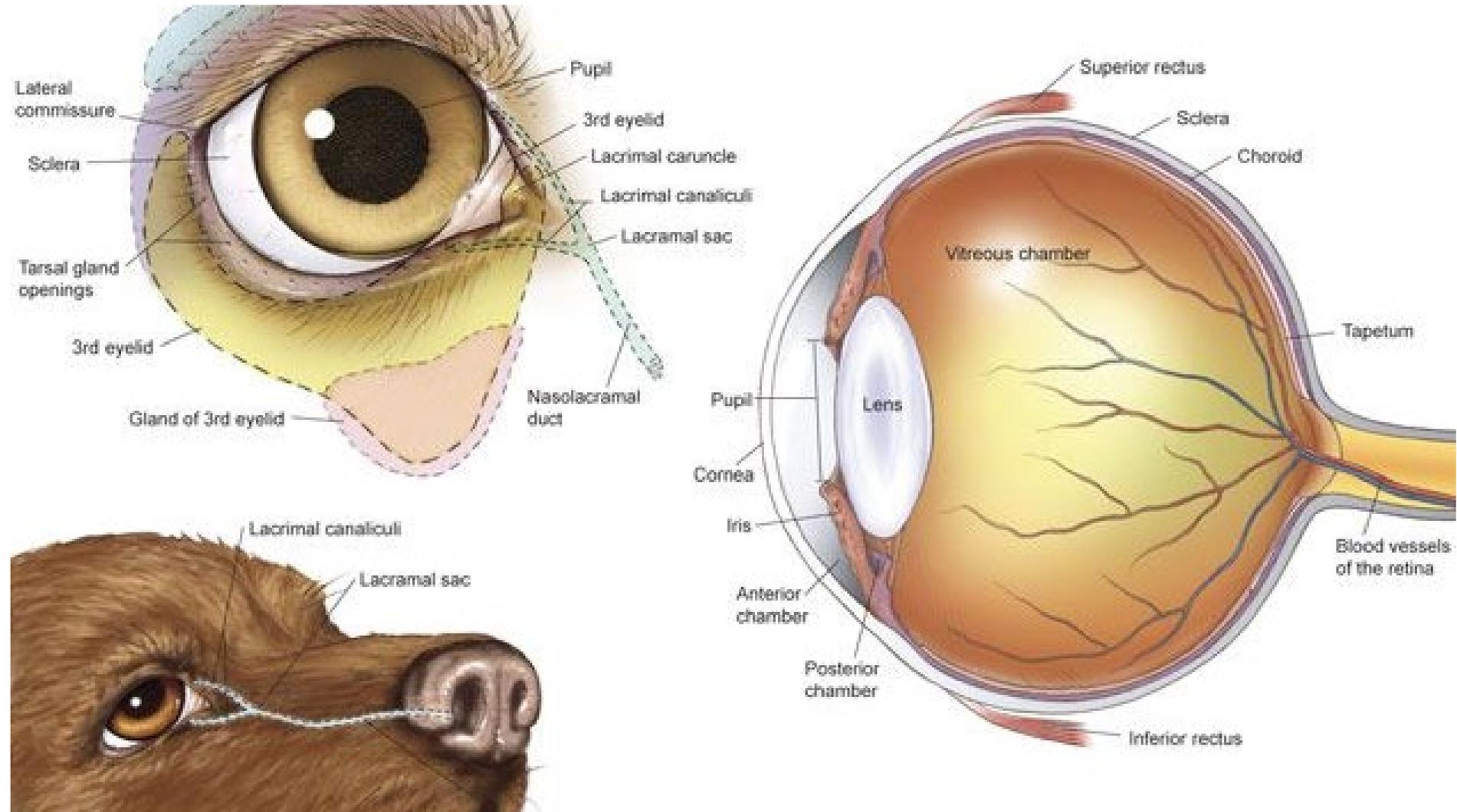
Animals rely on vision to locate and identify food sources in their environment.

## Communication

Visual signals are vital for animal communication and social interactions.

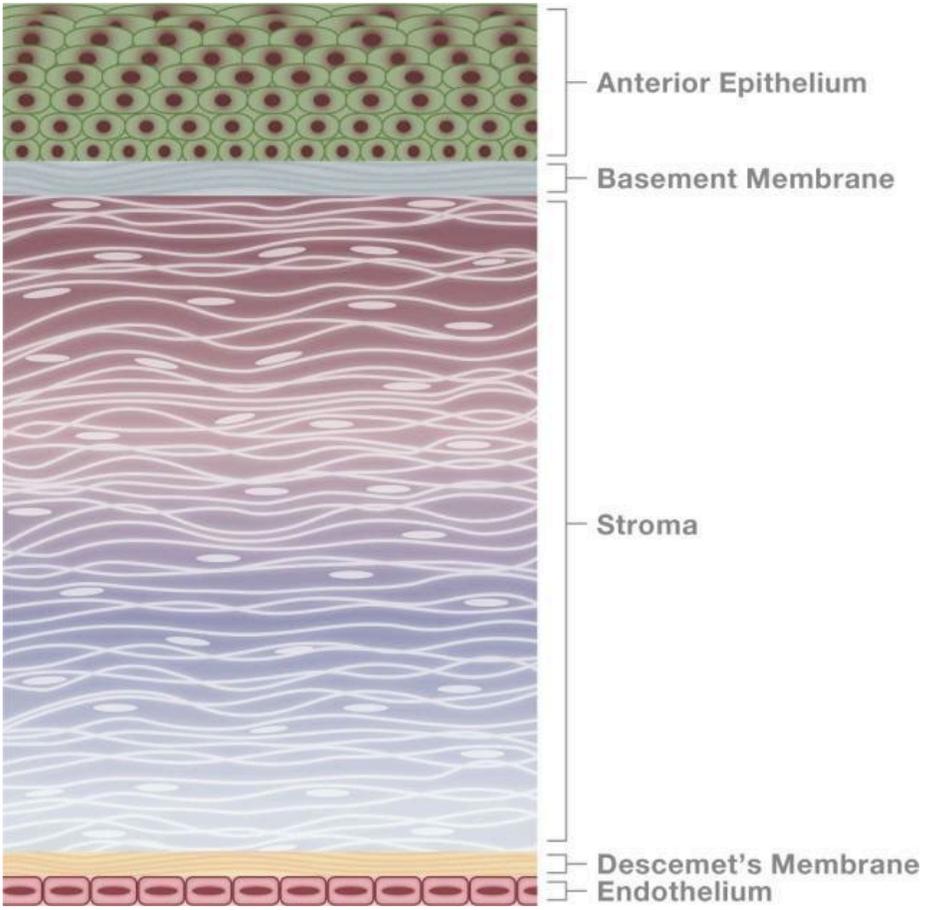


# Key structures of the eye

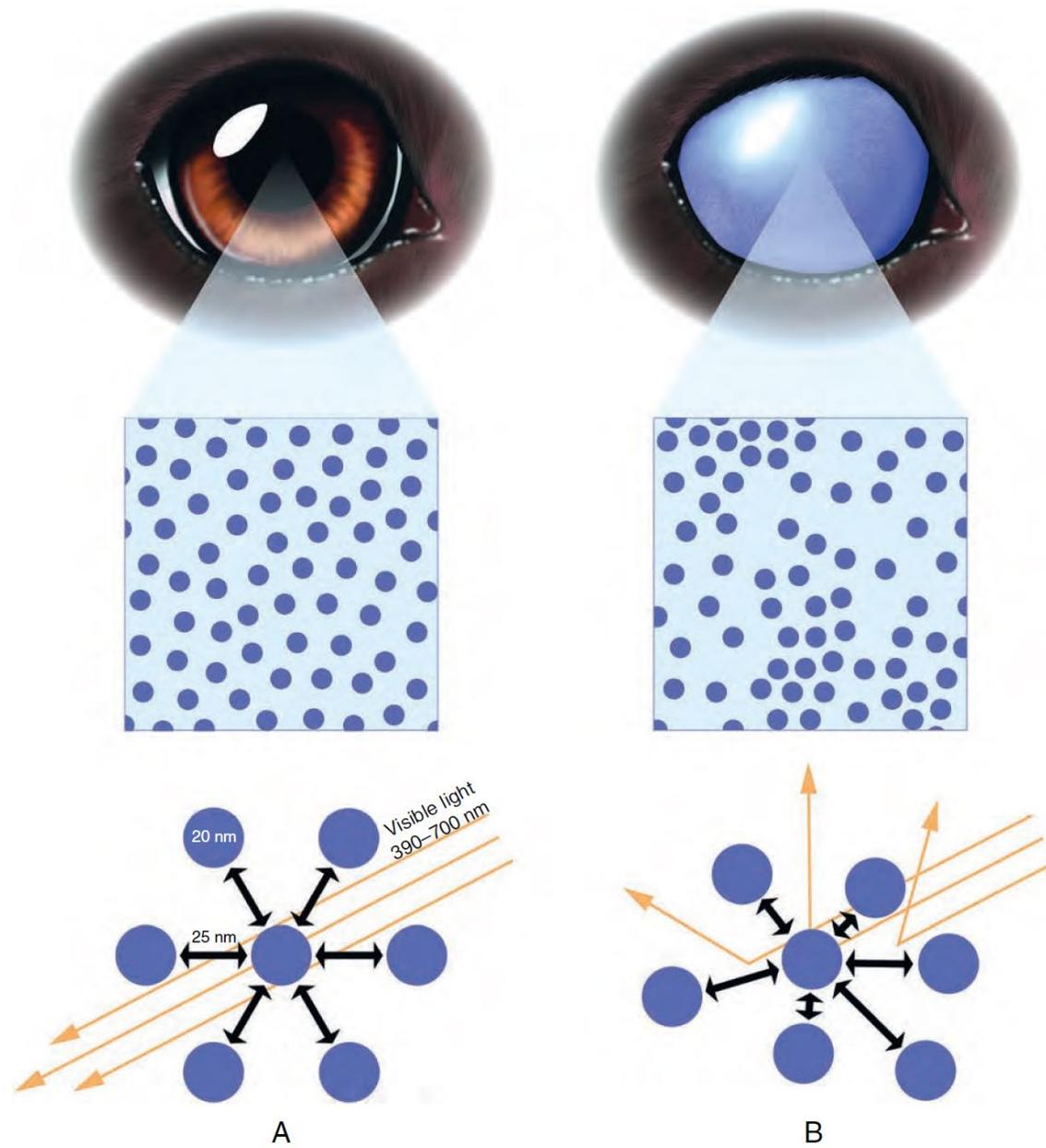




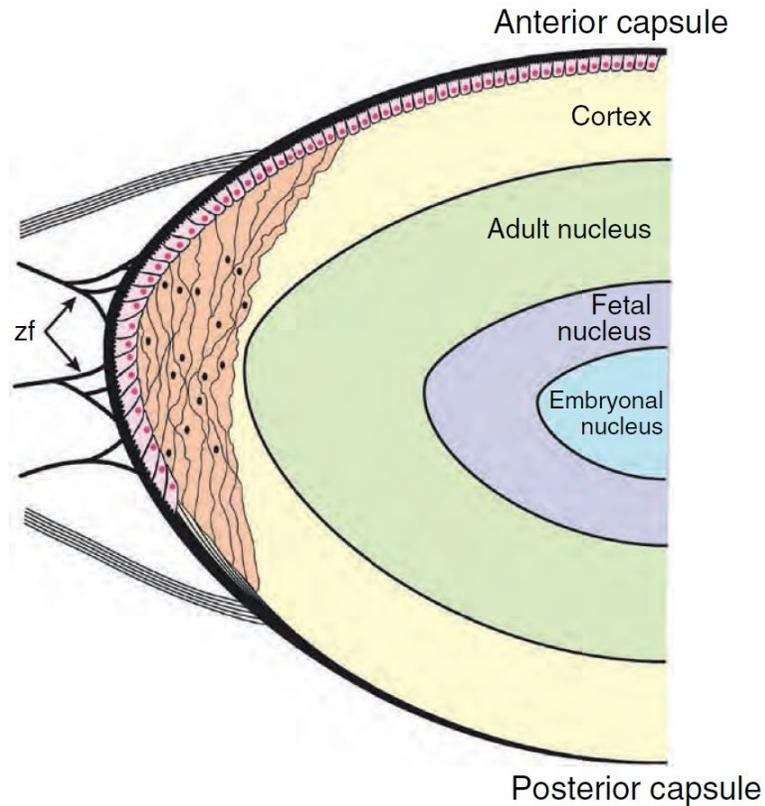
# Cornea



- Nerve richness: Most sensitive tissue in the body! (Yang et al. 2018)
- Protection
- Avascularity
- Transparency, Light transmission and refraction
  
- Common conditions:
- Corneal ulcers
- Corneal oedema
- Traumatic/Perforations
- Deposits (calcium, lipid)



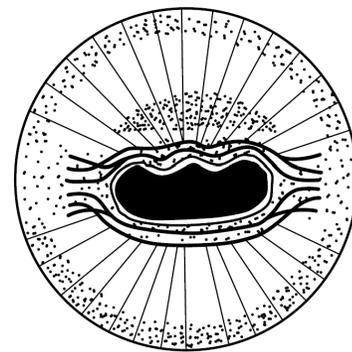
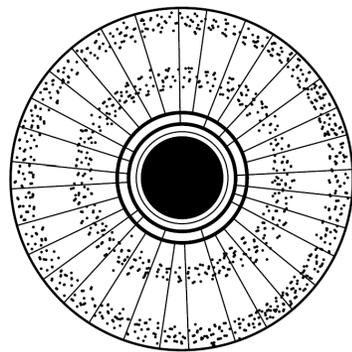
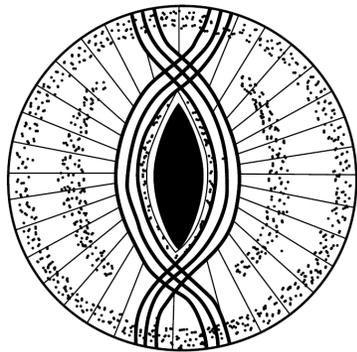
# Lens



- Transparent, avascular structure that focuses light onto the retina.
- Suspended within the eye by zonules arising from the ciliary body epithelium
- Lens growth continues throughout life by adding new layers of fibre cells from an anterior epithelium, under a surrounding capsule.
- Lens is located inside the lens capsule

# Iris and pupil

- Controls the amount of light entering the eye by adjusting the pupil's size.
- The iris is a diaphragm that extends centrally from the ciliary body to cover the anterior surface of the lens, except for a central opening, the pupil.
- It divides the anterior ocular compartment into anterior and posterior.



F/32



F/22



F/16



F/11



F/8



F/5.6



F/4



F/2.8



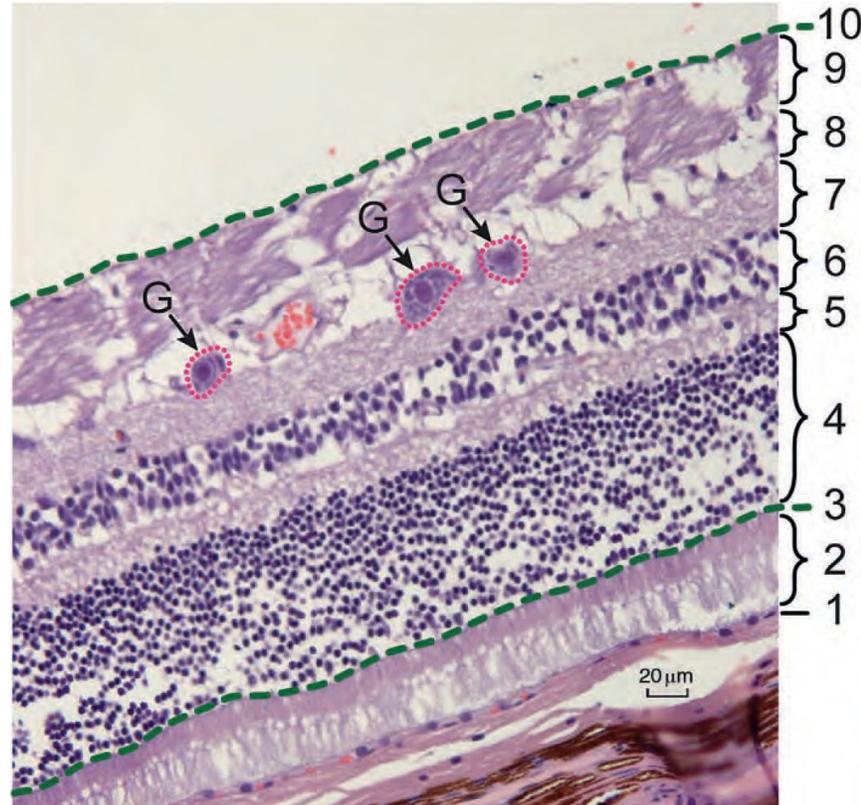
F/2



F/1.4

shutterstock.com · 2512027523

# Retina



- The “negative film” at the back of the eye receives light and sends it to the occipital lobe via the optic nerve.
- 1) RPE
- 2) photoreceptor layer (rod and cone layer)
- 3) outer limiting membrane
- 4) outer nuclear layer
- 5) outer plexiform layer
- 6) inner nuclear layer
- 7) inner plexiform layer
- 8) ganglion cell layer
- 9) nerve fiber layer, and
- 10) inner limiting membrane.

# Methods and Tools Used in Veterinary Eye Examination





# History taking



[This Photo](#) by Unknown Author is licensed under [CC BY](#)

- **Onset, Duration, Seasonality**
- **Existing disease**
- **Breed/cross breed**
- **Squinting or eye rubbing**
- **Discharge**
- **Red eye or blue eye**
- **Cloudy**
- **Visual**
- **Current medications**



# Distance examination



- **Navigation, gait (obstacle course)**
- **Head tilt**
- **Symmetry vs asymmetry**
- **Signs of trauma**
- **Eye position**
- **Enophthalmos vs exophthalmos**
- **Discharge, blepharospasm**
- **Eye itself (blue? Red? Cloudy?)**



Image by Farzin Sahebjam

**Safety for the vet, vet nurse and animal +/- muzzle**  
**Animal remains calm**  
**Stability improves the ease of clinical exam and accuracy**



# Primary exams



<https://veteriankey.com/basic-diagnostic-techniques/>

- **Eye position / Nystagmus (considered normal in Asian cat breeds eg Birman Siamese, Himalayan)**
- **Menace CN2, CN7**
- **Palpebral CN5, CN7**
- **PLR (Pupillary light reflex) CN2. CN3**
- **Dazzle CN2,CN7**
- **Transillumination (lens opacity, tapetal reflection)**

# Shirmer Tear Test (STT)

- Graduated strips are easier to use
- Try not to touch the paper where tear reading is performed
- You may or may not bend the tip before placement
- Measurements in mm/min OR 15mm/?sec
- Normal value is normally >15mm/min in dogs
- Normal value is normally >10mm/min in cats
- Always do both eyes regardless of which one is affected



Image by Farzin Sahebjam



# Shirmer Tear Test (STT)

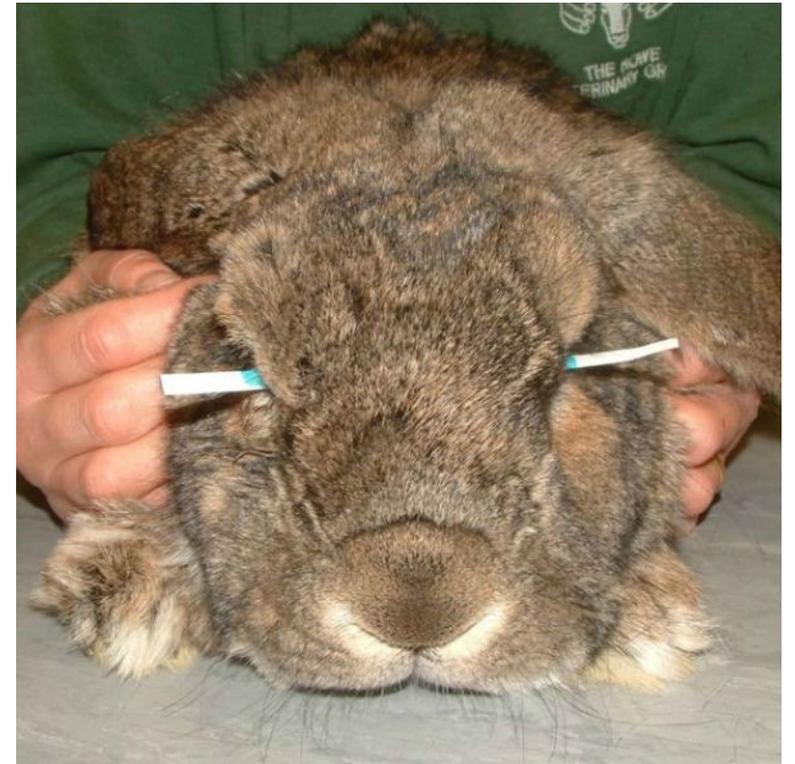
All species need STT



Image by Farzin Sahebjam



Williams & Sullivan 2010



Vetlexicon website

# Tonometry



Image by Farzin Sahebjam

- **Tonometers measure intraocular pressure, a critical factor in diagnosing glaucoma or uveitis in animals. Unit is mmHg. Normal values are <25mmHg.**
- **Common devices:**
  - **1- Tonopen**
  - **2- Tonovet (TV)**
  - **3- Tonovet Plus (TVP)**
- **Various modes: Cat, Dog, Horse, Rabbit**
- **Tonovet Plus: There is a green indicator light – lights up when the probe is being held at the correct angle**
- **6 measurements and final average**

# Tonometry

- **TONOVET Plus rebound tonometer generates IOP readings that are accurate and reproducible with low interobserver variability** (Kiland et al. 2023).

 **HHS Public Access**  
Author manuscript  
*Vet Ophthalmol.* Author manuscript; available in PMC 2024 September 01.

Published in final edited form as:

*Vet Ophthalmol.* 2023 September ; 26(5): 414–421. doi:10.1111/vop.13123.

## Comparison of the TONOVET Plus®, TonoVet®, and Tono-Pen Vet™ tonometers in normal cats and cats with glaucoma

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**Tonovet Plus**



**Tonovet**

# Tonometry

This study showed significantly higher IOP values measured by the TonoVet Plus® tonometer in dogs and sheep. (Kovalcuka et al. 2024)

Veterinary World, EISSN: 2231-0916  
Available at [www.veterinaryworld.org/Vol.17/February-2024/17.pdf](http://www.veterinaryworld.org/Vol.17/February-2024/17.pdf)

RESEARCH ARTICLE  
Open Access

## Comparison of Tonovet® and Tonovet plus® tonometers for measuring intraocular pressure in dogs, cats, horses, cattle, and sheep

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**doi:** [www.doi.org/10.14202/vetworld.2024.384-388](https://www.doi.org/10.14202/vetworld.2024.384-388) **How to cite this article:** Kovalcuka L, Mālniece A, and Vanaga J (2024) Comparison of Tonovet® and Tonovet plus® tonometers for measuring intraocular pressure in dogs, cats, horses, cattle, and sheep, *Veterinary World*, 17(2): 384–388.

### Abstract

**Background and Aim:** Reference ranges for intraocular pressure (IOP) in healthy animals are device-specific; therefore, it is strongly recommended to use appropriate reference values according to the device. Therefore, our aim was to compare IOP readings made by TonoVet® and TonoVet Plus® in healthy dogs, cats, sheep, cattle, and horses. We compared IOP values measured by TonoVet® and TonoVet Plus® tonometers in clinically normal eyes of dogs, cats, horses, cattle, and sheep.

**Materials and Methods:** Five groups comprising 20 animals each of dogs (various breeds, 9 months–10 years old, 14 females, 6 males), cats (various breeds, 6 months–12 years old, 8 females, 12 males), horses (various breeds, 5–12 years old, 12 females, 8 males), cattle (Holstein, 1, 7 lactation, female), and sheep (Latvian Darkhead ewes, 1, 8 years old) were



Tonovet Plus



# Tonometry



Image by Farzin Sahebjam



Image by Farzin Sahebjam

# Fluorescein stain test

Detection of corneal ulcer

Tear quality

Jones test

Rinse well to avoid accumulations in facets



Image by Farzin Sahebjam

# Slit lamp examination

Slit lamps provide magnified views of the eye's anterior segment to identify abnormalities or injuries.

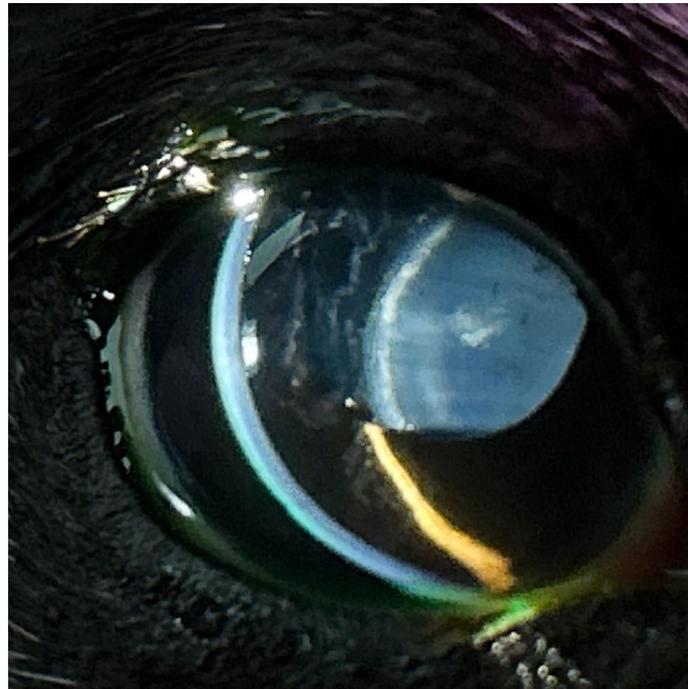


Image by Farzin Sahebjam

# Slit lamp examination



Image by Farzin Sahebjam



**Kowa SL-19**



Popular brands: Kowa, Keeler

Magnification (10X and 16X) for Kowa SL-19

Circular, small (dot), and slit lights

White and blue light

Dimming option



# Fundoscopy

**Indirect – using a light source and a lens**

**Direct – using ophthalmoscopes e.g. panoptic**

**Optic nerve head, vessels, retina, reflection of tapetum, any lesions or haemorrhages**





# Optical Diopter

- An optical diopter is a unit that measures a lens's **focusing power**



# Example: Most commonly used ones

## Diopter 40



More zoomed out image  
More area coverage  
Great when pupils are small  
Not so great for details

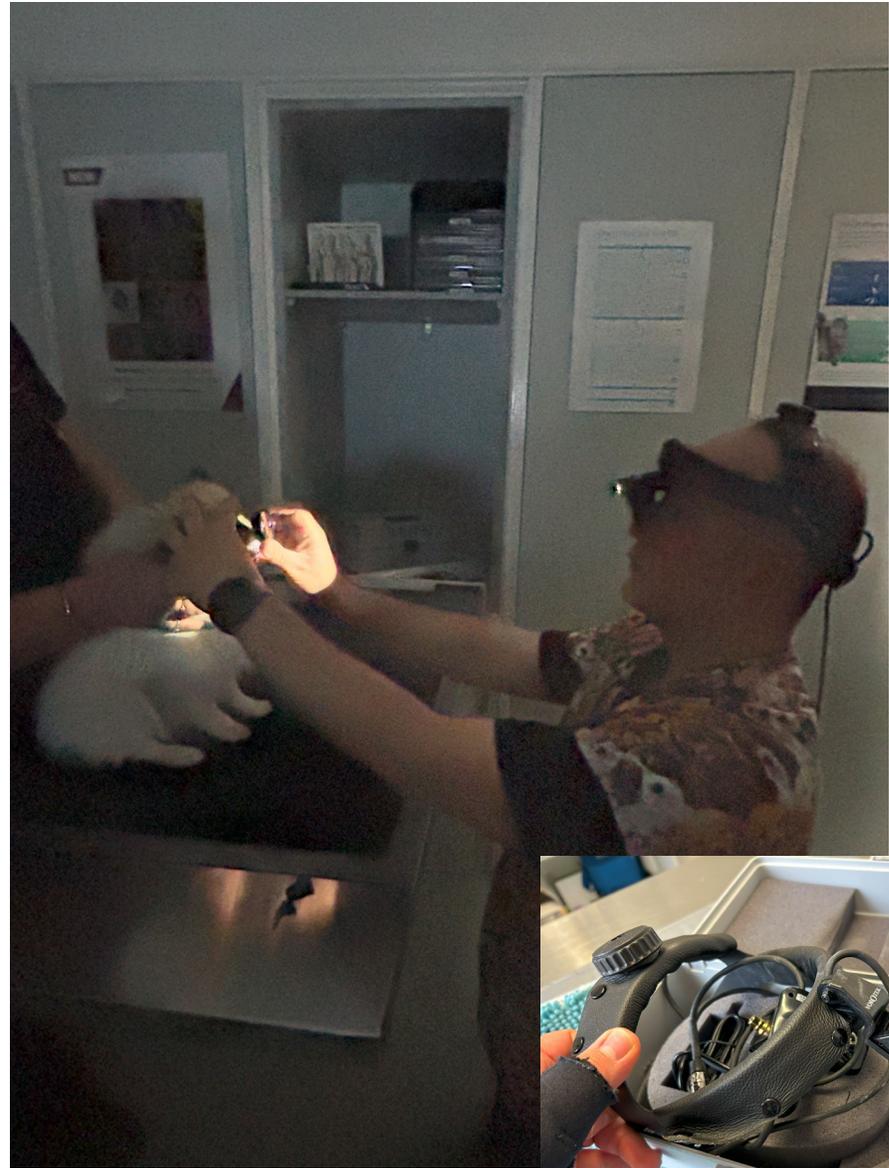
## Diopter 22



More zoomed in image  
Less area coverage  
Great when pupils are bigger  
Much better for details



Image by Farzin Sahebjam



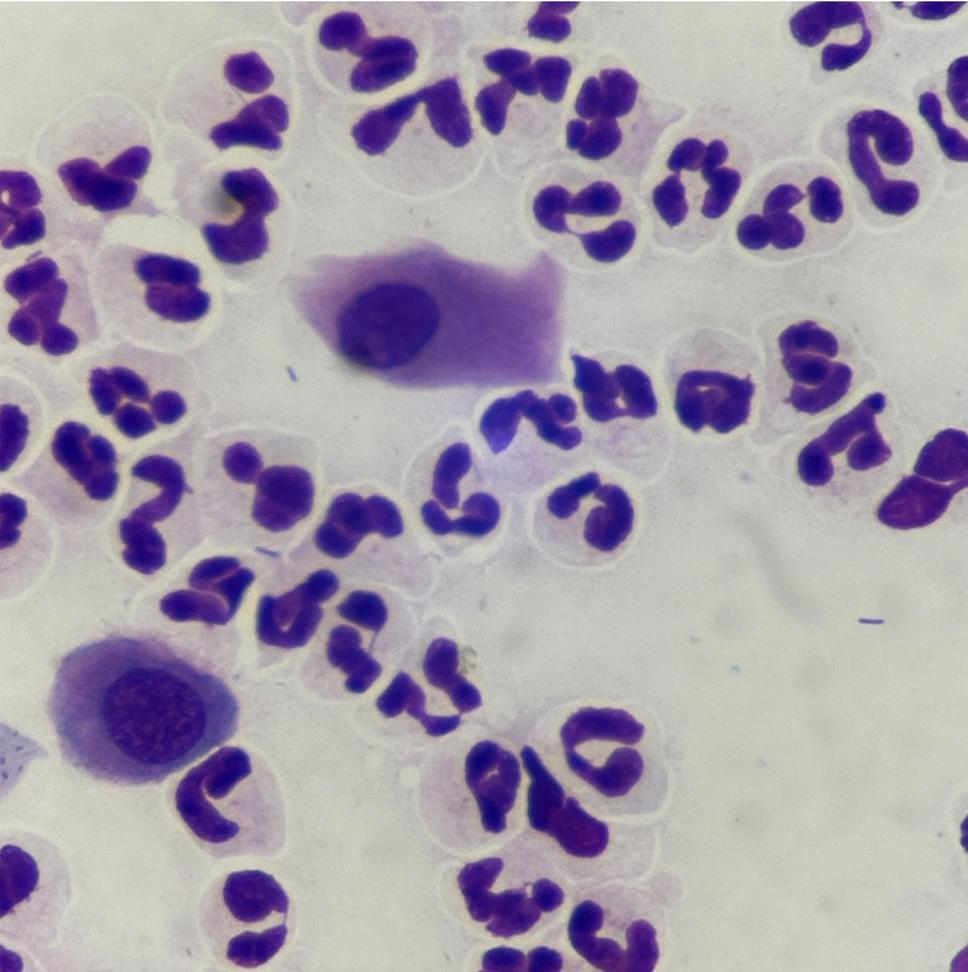


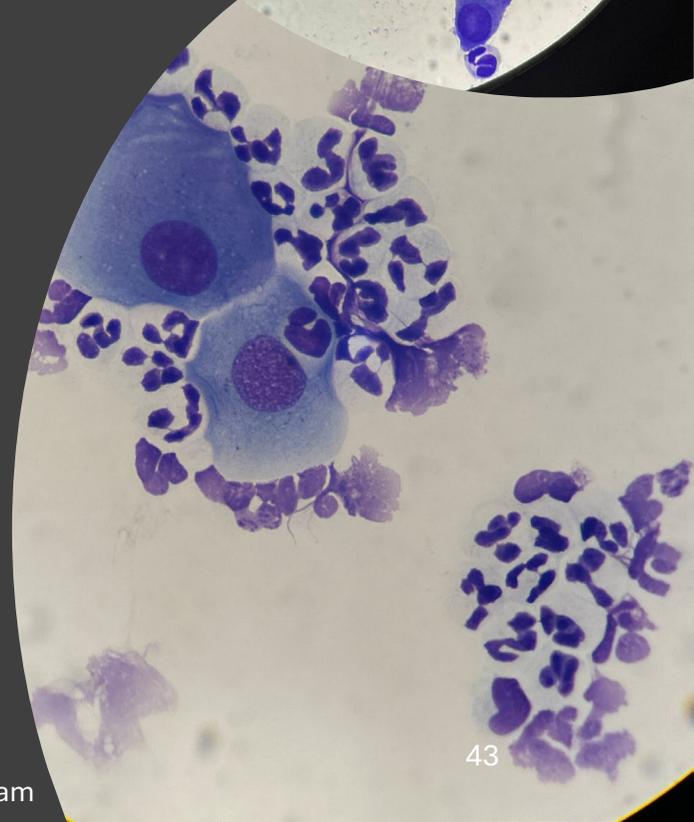
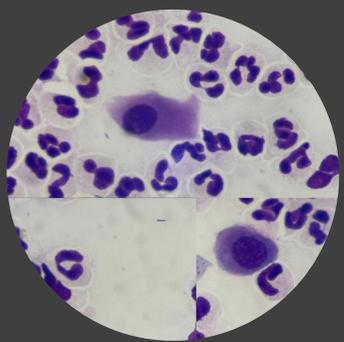
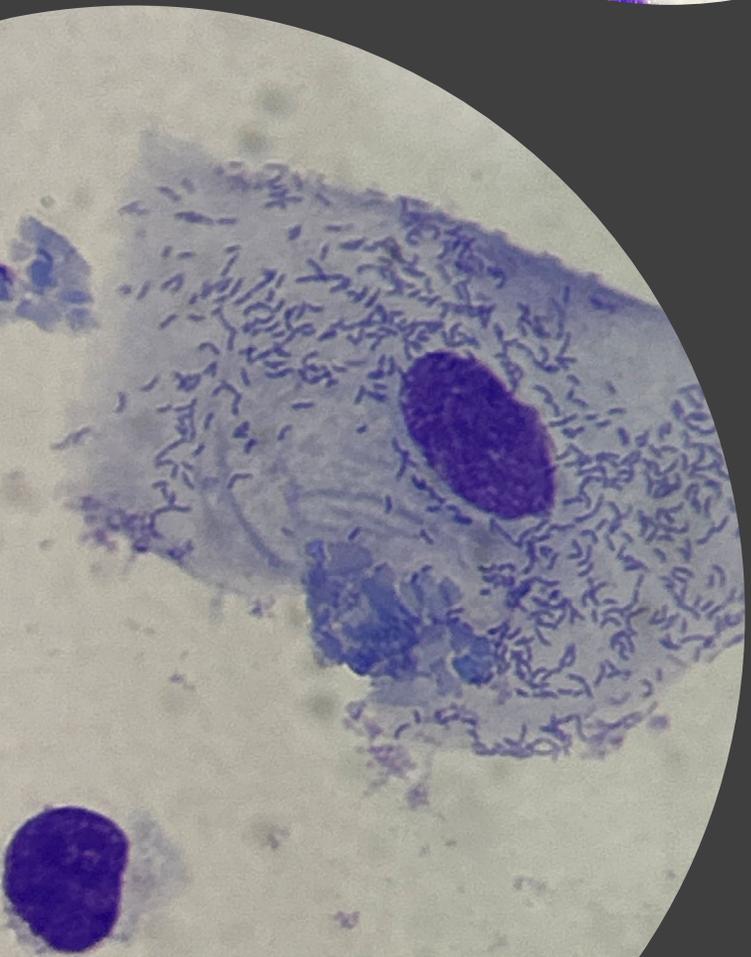
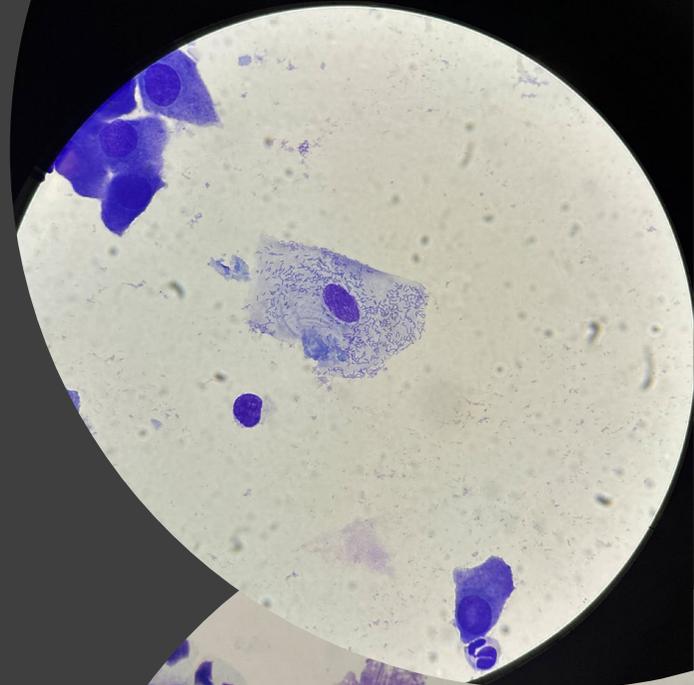
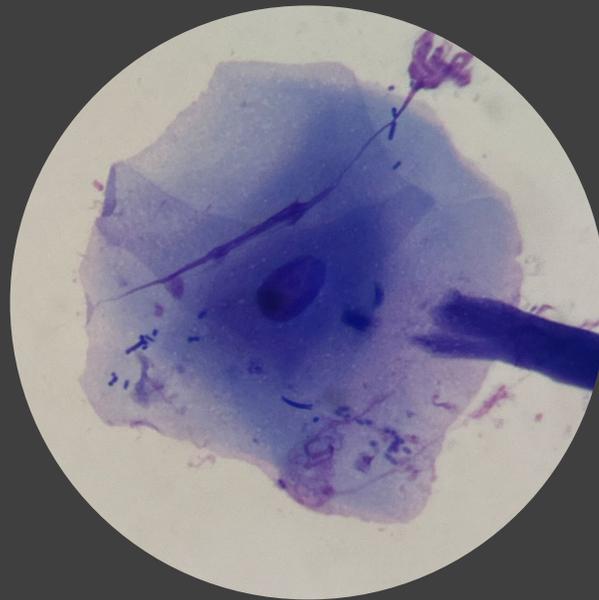
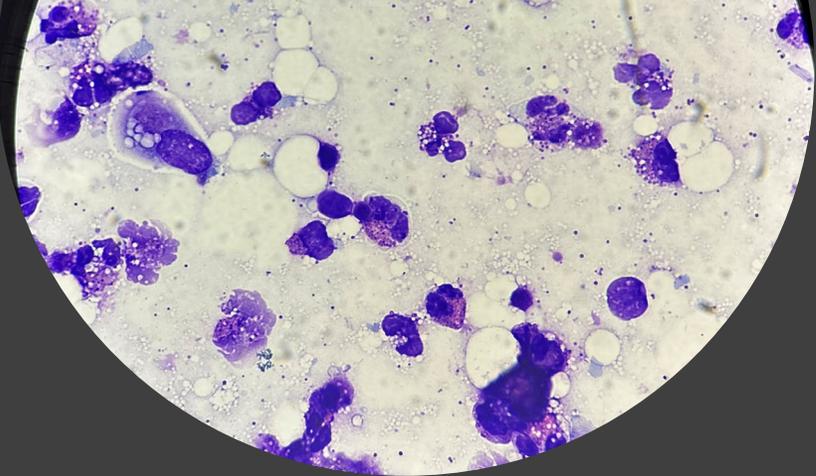
Image by Farzin Sahebjam

# Corneal/conjunctival cytology

Using cotton tipped swab, finer swabs, back of scalpel blade, Kimura spatula

Diff-Quik





# Corneal/conjunctival cytology examples



# Ultrasonography



Image by Farzin Sahebjam

**Creates detailed cross-sectional images of the eye's internal structures.**

**Anatomical structures e.g. cornea, lens and posterior chamber**

**Detection of retinal detachment, changes in the posterior chamber anatomy, intraorbital or retroorbital masses and optic nerve**

# Common treatments in primary care





# Topical medications



**Antibiotics** (Tricin, chlorsig, Ocuflor, gentamycin, tobramycin)

**Steroid eye drops/ointments** (Maxidex, Pred forte, Siguent Hycor)

**NSAID eye drops** (Acular, Voltaren, Ilevro)

**Glaucoma medications** (Carbonic anhydrase inhibitors, prostaglandin  $F_{2\alpha}$  agonists)

**Dry eye medications** (Cyclosporine, tacrolimus)

**Mydriatics/Cycloplegics** (tropicamide, atropine)

**Topical anaesthetics** (Alcine, oxybuprocaine)

**Artificial tears/eye lubricant drops/gels/creams**

**In house drops:** Serum/plasma, EDTA, Hypertonic saline





# Systemic Medications

**NSAIDs** (Meloxicam, Carprofen, Previcox)

**Corticosteroids** (Prednisolone)

**Antibiotics** (Amoxyclav, doxycycline, clindamycin)

**Antifungals** (Azole drugs)

**Antivirals** (Famciclovir)

# Surgeries/procedures



- Eyelid mass removal
- Eyelid laceration repair
- Cherry eye
- Entropion & Ectropion correction surgeries
- Hydropulsion
- Grid keratotomy/Diamond burr debridement
- Tarsorrhaphy/360-degree conjunctival flap/TE flap
- Enucleation
- Pracentesis



# Other methods to support eye cases



- **Calming medications for anxiety**

Trazodone

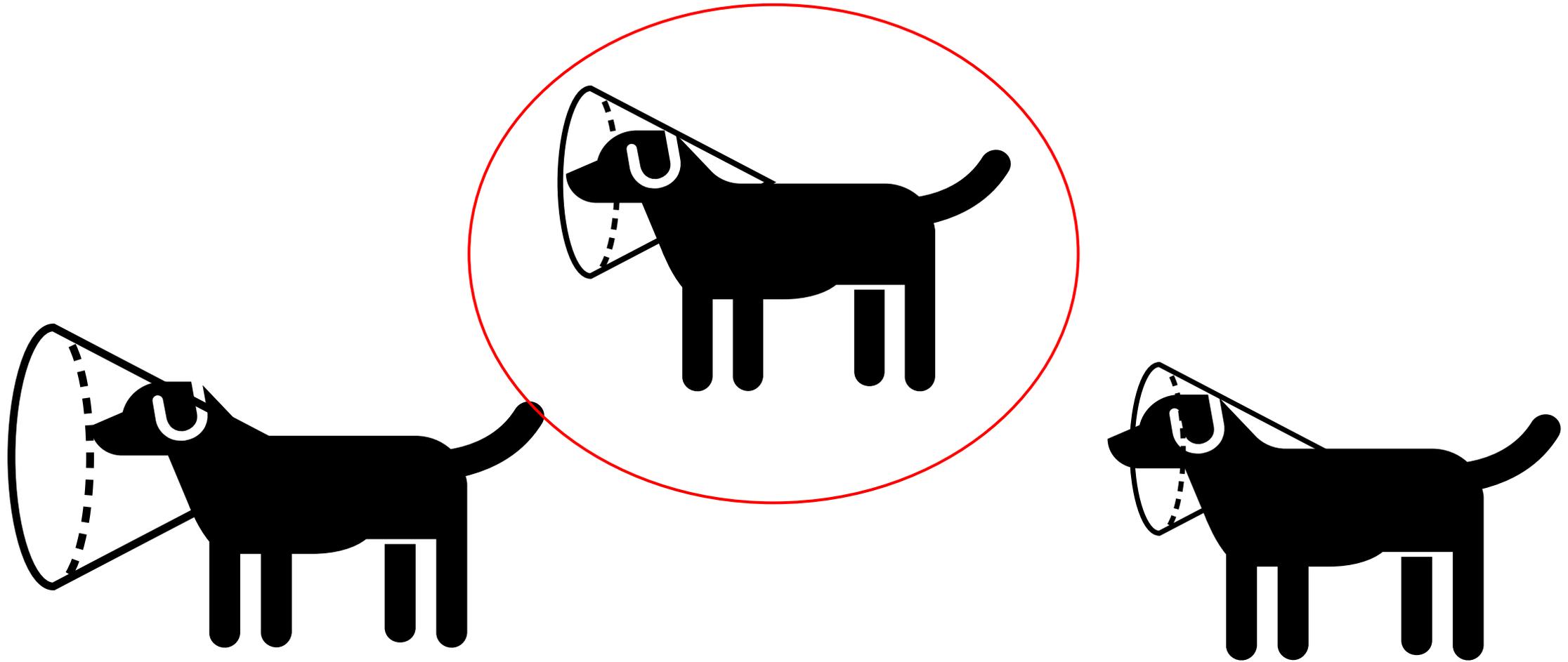
Gabapentin

Combinations such as chill pills

- **Contact lenses**
- **E-collars**



# E-collar size



Some tips to enhance  
your eye examination



# Fear free certification

**Fear Free**  
Leaders in Animal Wellbeing

About ▾ Certifications ▾ Education & Resources ▾ Shelters ▾ Pet Parents ▾ Sign up

Veterinary Professional Certification Programs

## Putting the treat into treatment

Individual certification is the first step for any veterinary professional interested in implementing Fear Free principles in practice.

**Fear Free**  
CERTIFIED

About Programs Benefits What People Say Pricing **Get Started**

- Better animal handling
- Better outcome
- Less stress
- More effective
- Good experience for animals

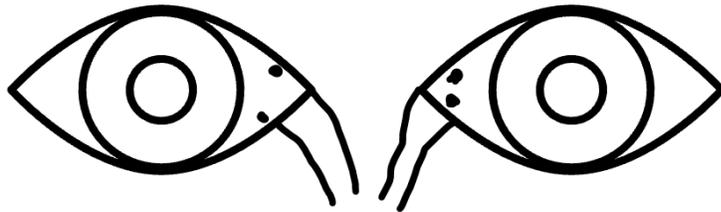
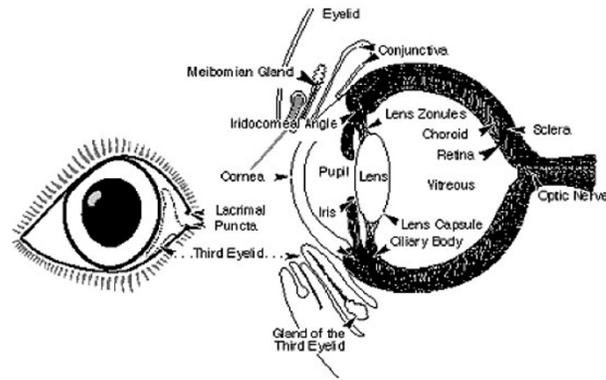


# Positive experience



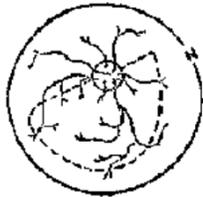
- Treat after medication
- Training to make it a good experience rather than a chore
- Owner needs rest too!

## Eye diagram

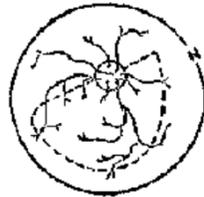


Right eye

Left eye



Fundus



# Eye diagram

Effective description

Better communication

Great piece of information for the owner to take home

# Med charts

<b>Animal Name</b>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>	<i>Sunday</i>
Acular eye drop: ONE drop to RIGHT eye	<input type="checkbox"/>						
Trusopt eye drop: ONE drop to RIGHT eye	<input type="checkbox"/> <input type="checkbox"/>						
Hyloforte eye drop: ONE drop to RIGHT eye	<input type="checkbox"/> <input type="checkbox"/>						
<b>Ivy</b>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>	<i>Sunday</i>
Acular eye drop: ONE drop to RIGHT eye	<input type="checkbox"/>						
Trusopt eye drop: ONE drop to RIGHT eye	<input type="checkbox"/> <input type="checkbox"/>						
Hyloforte eye drop: ONE drop to RIGHT eye	<input type="checkbox"/> <input type="checkbox"/>						
<b>Ivy</b>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>	<i>Sunday</i>
Acular eye drop: ONE drop to RIGHT eye	<input type="checkbox"/>						
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Hyloforte eye drop: ONE drop to RIGHT eye	<input type="checkbox"/> <input type="checkbox"/>						
<b>Ivy</b>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>	<i>Sunday</i>
Acular eye drop: ONE drop to RIGHT eye	<input type="checkbox"/>						
Trusopt eye drop: ONE drop to RIGHT eye	<input type="checkbox"/> <input type="checkbox"/>						
Hyloforte eye drop: ONE drop to RIGHT eye	<input type="checkbox"/> <input type="checkbox"/>						

- Make it easy for clients to follow
- Particularly when eye drops are required more than 2 weeks

**CONTINUE AS PER YOUR MOST RECENT CLIENT SUMMARY - DO NOT STOP**

**MEDICATIONS UNTIL DIRECTED.**



Gelatt, Veterinary Ophthalmology Textbook, page 843

# Photography of the eye

**Great for our own records**

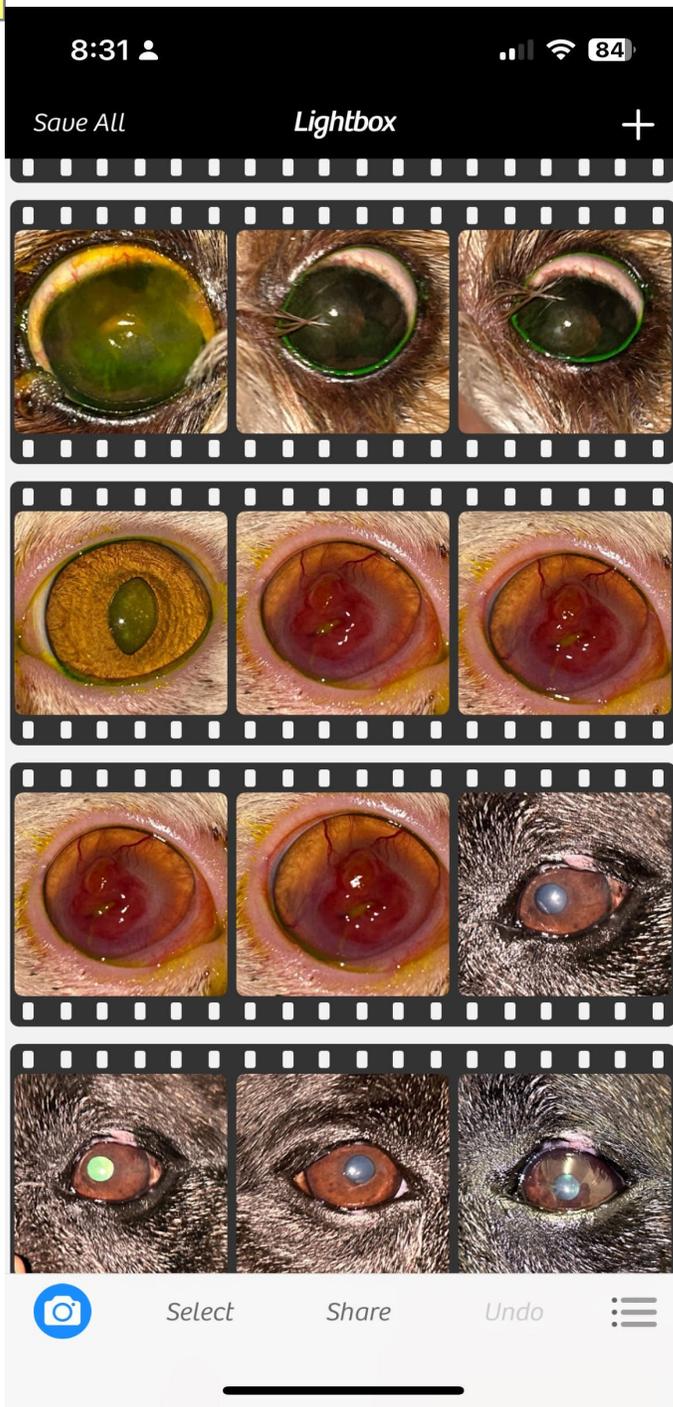
**Great evidence for further analysis later on**

**Better communication with the owners**

**A piece of visual information that we can attach to our report**

**Practice makes perfect!**





# Phone apps

The app I personally use is called Camera+ legacy version



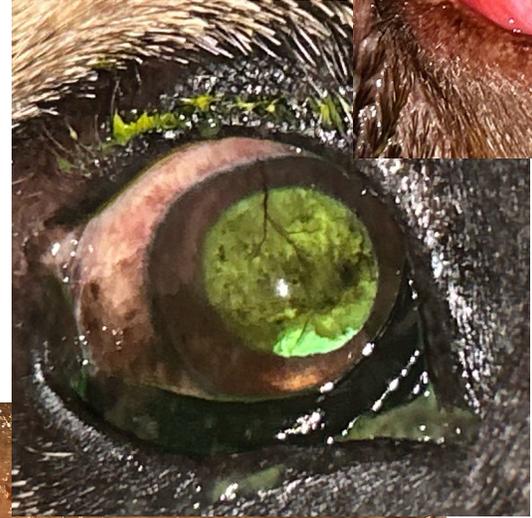
- 1) Increased zooming capabilities
- 2) Capable of keeping torch on while photographing
- 3) Record photos in the app – great archive for the future

An easy way to see some microstructures if we don't have a slitlamp

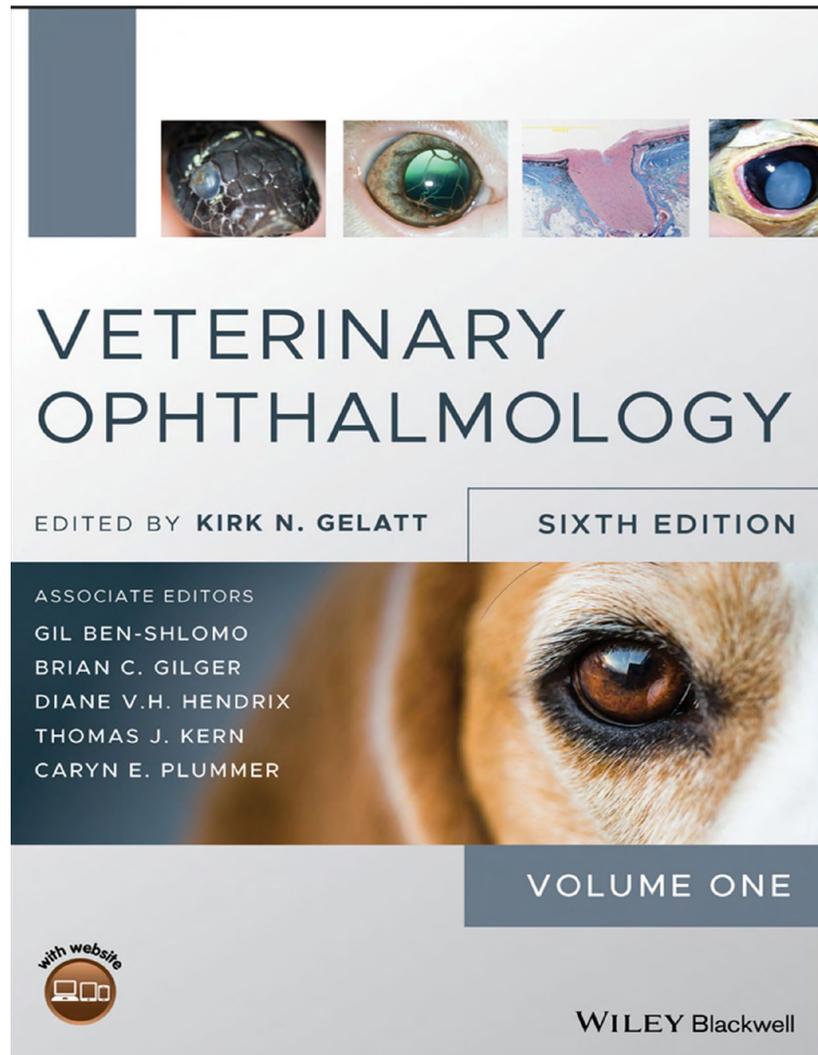


# Photography of the eye

Some examples taken by the Camera+ legacy version



# Gelatt – Veterinary Ophthalmology 6<sup>th</sup> ed.



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## Digital Ophthalmic Photography

Richard J. McMullen, Jr.<sup>1</sup>, Nicholas J. Millichamp<sup>2</sup>, and Christopher G. Pirie<sup>3</sup>

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<sup>3</sup> Department of Small Animal Clinical Sciences, College of Veterinary Medicine, Michigan State University, East Lansing, MI, USA

Photography is an essential part of veterinary ophthalmology, and the digitization of photography has been important in increasing both the quality and the availability of ophthalmic lesion images. Because digital cameras provide their user with instant feedback in terms of image composition, exposure, and definition, it takes relatively little time and effort to be able to capture clear, well-focused, and effectively composed images.

Although many readers are familiar with and may even possess vast archives of slides or printed photographs taken with film cameras, digital photography has superseded the era of film. The relatively low cost of quality digital photographic equipment allows for widespread use of this technique in every situation.

We have made a conscious decision to concentrate solely on digital photography in this chapter. The focus will be on providing guidelines and insights from the contributing authors to minimize the trial-and-error tactics of digital photography often employed by novice photographers. Although there is a plethora of digital photography equipment available, the information provided in this chapter pertaining to camera operation and image capturing techniques uses the digital single lens reflex (DSLR) camera as its basis. For this edition we have also chosen to include a section on smartphone ophthalmic photography. The technologic advances that have been made over the past few years have resulted in smartphone cameras that are both powerful and versatile. Since our phones are never out of arm's reach, they are often the first choice camera in both our private and professional

be evaluated, followed by a brief description of appropriate photographic technique. Discussion of specific techniques commonly used to accurately photograph ocular structures and commonly encountered artifacts will follow. Specific tips and appropriate settings for optimizing image capture will be given, which will allow accurate digital imaging of common lesions within specific ocular tissue. Finally, a summary of currently available hardware and software will be presented.

### Photography Basics

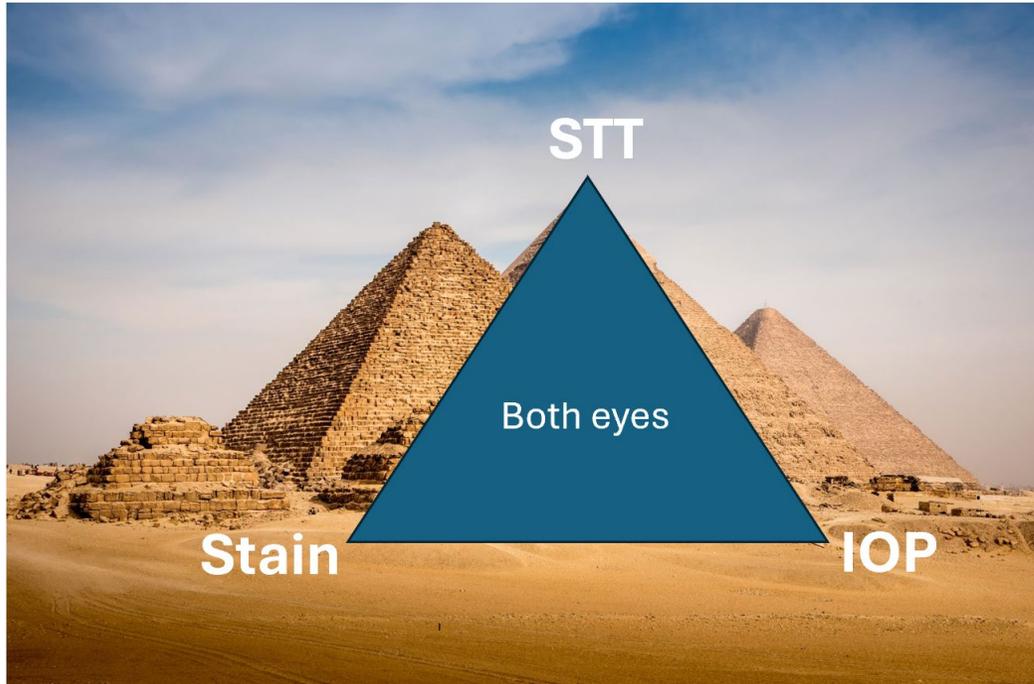
Photography is a discipline requiring both technical skill and an artistic perspective. However, to obtain high-quality images consistently, the photographer must have a sound understanding of the equipment being used and the mechanics behind its operation. This section will focus on several key basic concepts of photography.

### Exposure

Exposure is a fundamental concept in photography. Understanding exposure and knowing the parameters that control it is vital to becoming a better and more consistent photographer. There are several ways of defining exposure (e.g., overexposed vs. underexposed); however, a correct exposure is simply a matter of obtaining an image that is the way you want it to be (Dutton, 2010). To obtain this correct exposure

A black dog, possibly a Labrador Retriever, is the central focus of the image. It is looking directly at the camera with a calm expression, its mouth slightly open and its pink tongue hanging out. The dog's fur is dark and appears to have a soft texture. The background is a solid, deep black, which makes the dog stand out prominently. The lighting is soft, highlighting the dog's face and its eyes, which are a warm, golden-brown color.

Concluding remarks



# Regular Eye Health Monitoring

## Routine Eye Exams

Regular eye exams during veterinary visits enable **early detection** of eye problems in animals.

A distance exam is crucial.

Fundoscopy makes eye exams complete.

Also, take photos and remember the triad.

## High-Risk Animal Monitoring

Monitoring animals at high risk for eye diseases allows timely treatment and improves outcomes.

## Species/breed-Specific Concerns

Attention to species-specific eye health issues ensures appropriate interventions and care.

# Most cases require long-term treatment: control, not cure



This Photo by Unknown Author is licensed under [CC BY](#)

Managing owner expectation 😊



# Referral and Collaboration with Veterinary Specialists

## Referral to Specialists

Severe eye conditions often require referral to veterinary ophthalmologists for specialized care and treatment.

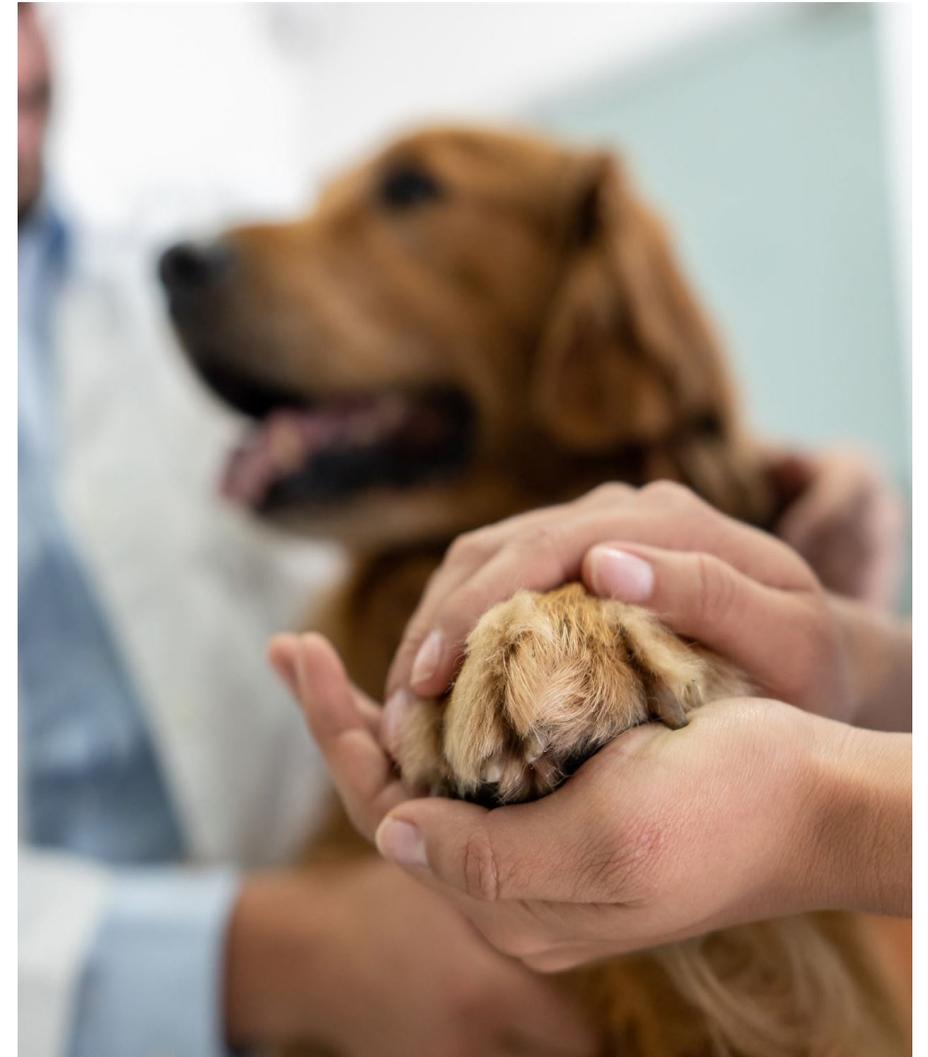
## Collaborative Care Benefits

Collaboration among veterinary professionals ensures comprehensive diagnosis and access to advanced treatment options.

## Examples:

Any time you are unsure of a diagnosis or treatment.

Glaucoma, uveitis, cataracts, lens luxation, retinal detachments, perforations, and penetrating foreign bodies.



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- Lecture series by Centre for Veterinary Education, Sydney University. Speakers: Robin Stanley, David Maggs, Heather Kaese
- Lecture notes from Ophthalmology distance education by Robin Stanley, Centre for Veterinary Education, Sydney University



# Special thanks to





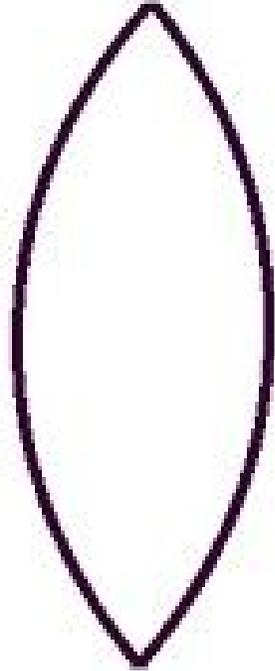
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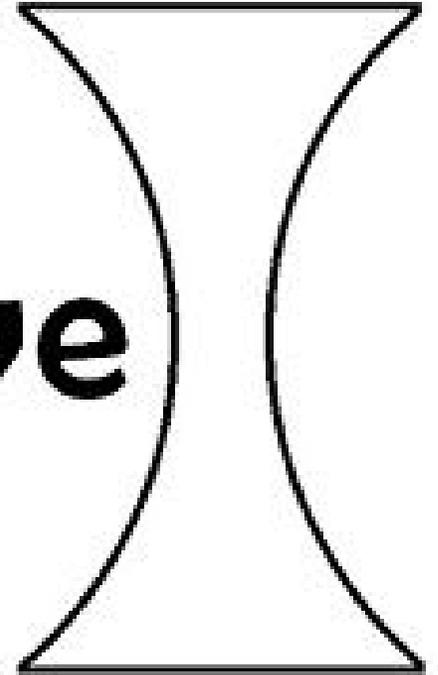
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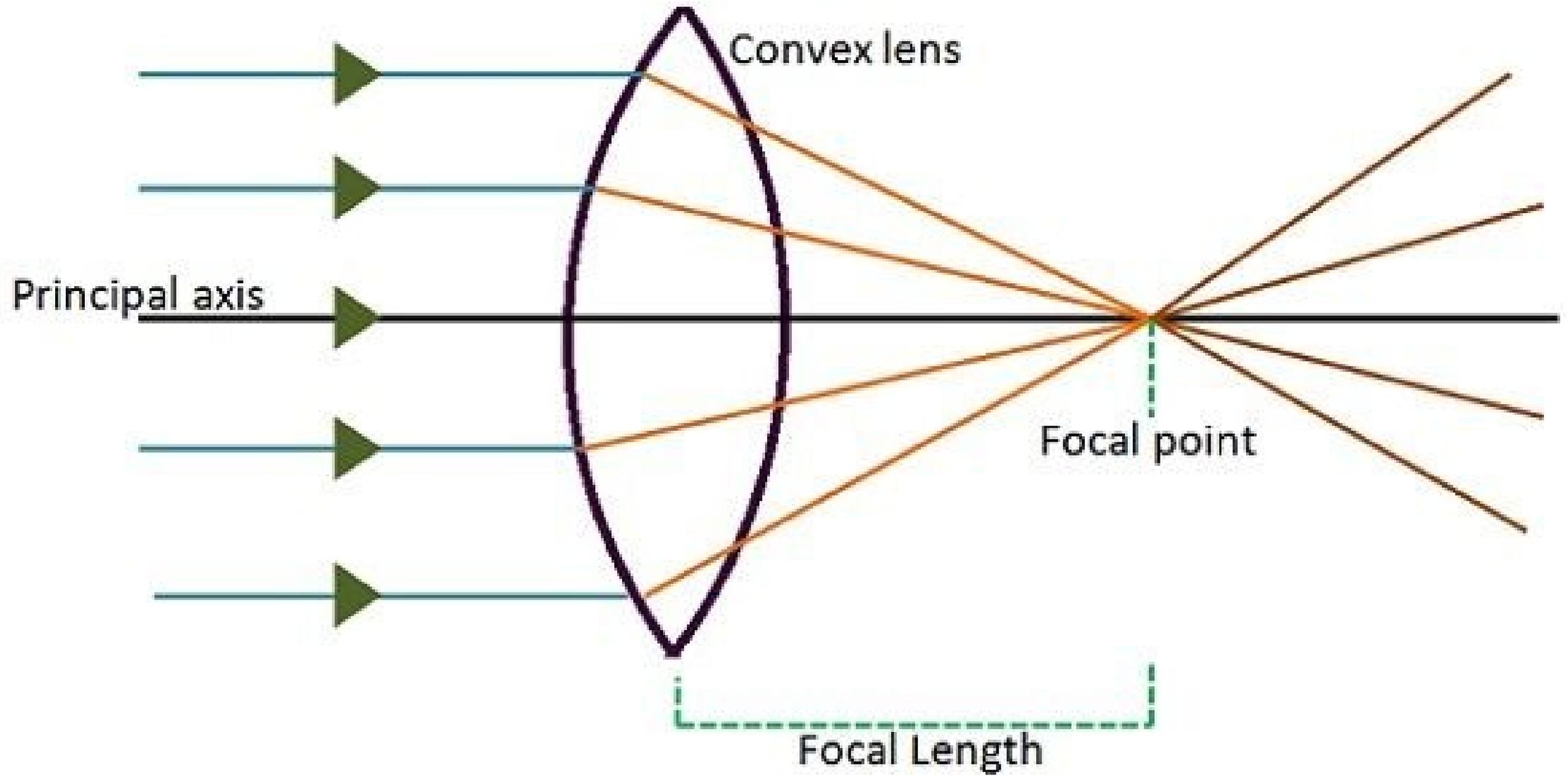


**Convex**



**Concave**





Inverted image



Diopter

Focal length (m)

$$D = 1/f$$



# Photography of the eye

**DLSR or mirrorless camera**

**Macro lens**

**Ring flash**

