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**SCAPSL**

Society of Companion Animal Practitioners of Sri Lanka

## Doing a Great Fundic Exam (As easy as "Fundic Mathematics")



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## Financial Disclosure Statement

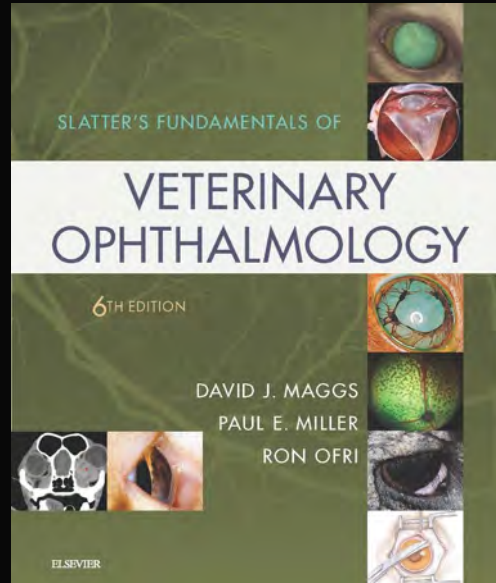
I have in the past acted, or currently act, as a consultant to, received grants from, or been paid honoraria by the following organizations:

- Aratana Therapeutic
- Bayer
- Dan Scott and Associates
- Elsevier
- I-med Pharma
- Keragenix Inc.
- Merck Animal Health
- Merial
- Nestle Purina
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- Okapi Science
- Optyx Inc.
- Pharmacia and Upjohn
- Preclinical Research Services Inc.
- Ralston Purina
- Royal Canin
- Sentrax
- The Eye Vet (India)
- Vetoquinol
- Winn Feline Foundation

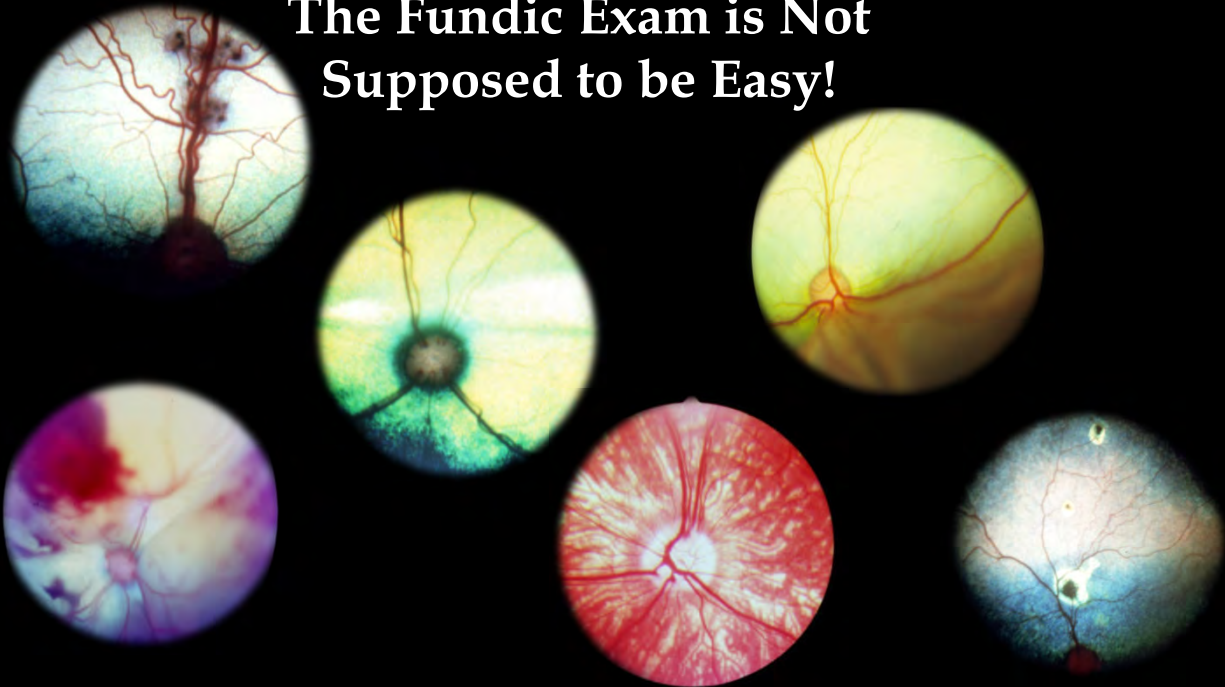
**However, no organization determines the content  
of my lectures**

## Disclosures

(*"Shameless Commerce Division"*)



**The Fundic Exam is Not  
Supposed to be Easy!**





**Always dilate the pupil**

- 1 drop tropicamide
- Wait 15 mins
- Dilation lasts about 4-6 hours

**Choose the Right Ophthalmoscope**



## Direct Ophthalmoscopy

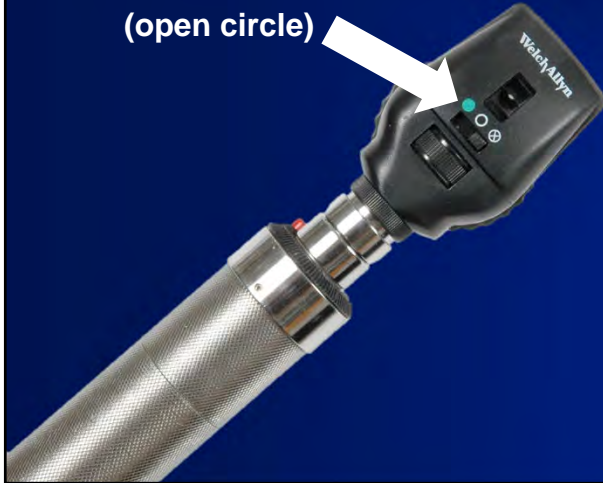


## Direct Ophthalmoscopy



## Direct Ophthalmoscopy

Select no filter  
(open circle)



## Direct Ophthalmoscopy

“Bright  
enough but  
not too  
bright”





## Direct Ophthalmoscopy

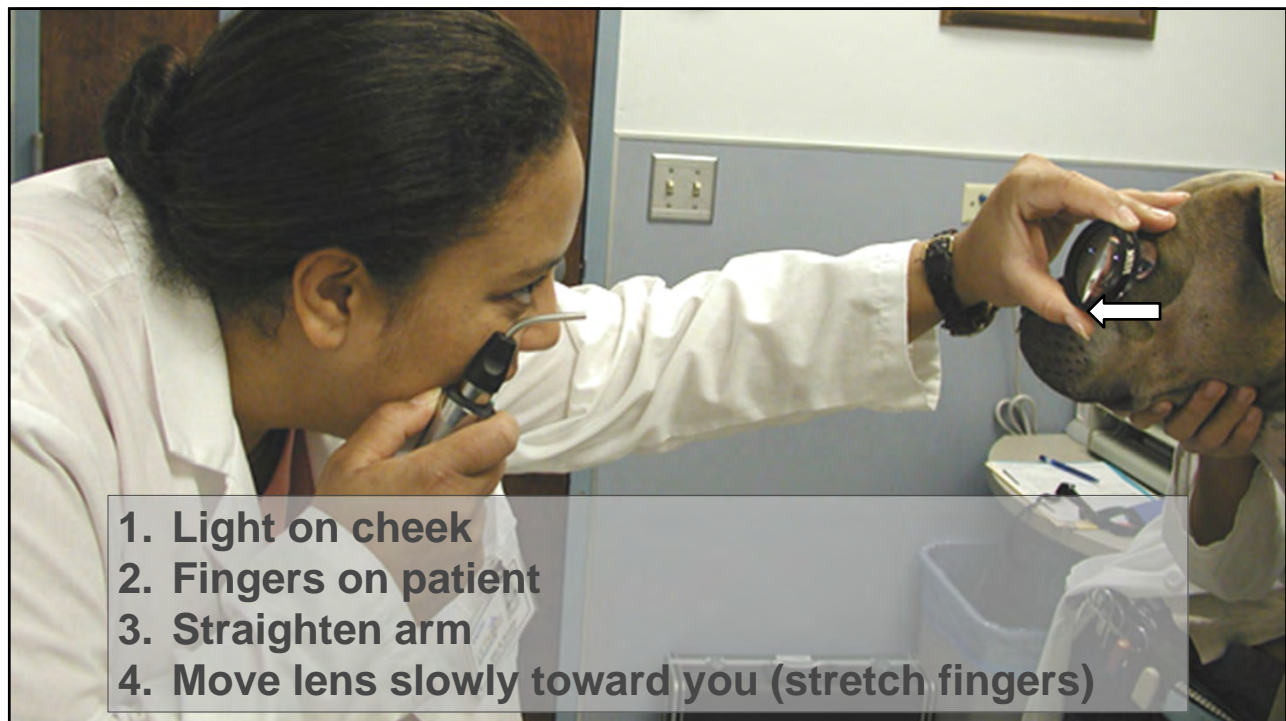


- Upright image
- High magnification
- Small field of view
- Easy to use???
- Close to patient



## Indirect Ophthalmoscopy

- Inverted image
- Low magnification
- Large field of view
- Challenging to use
- Further from patient
- 20D or 2.2 Pan Retinal Volk® lens



## Welch-Allyn Panoptic®

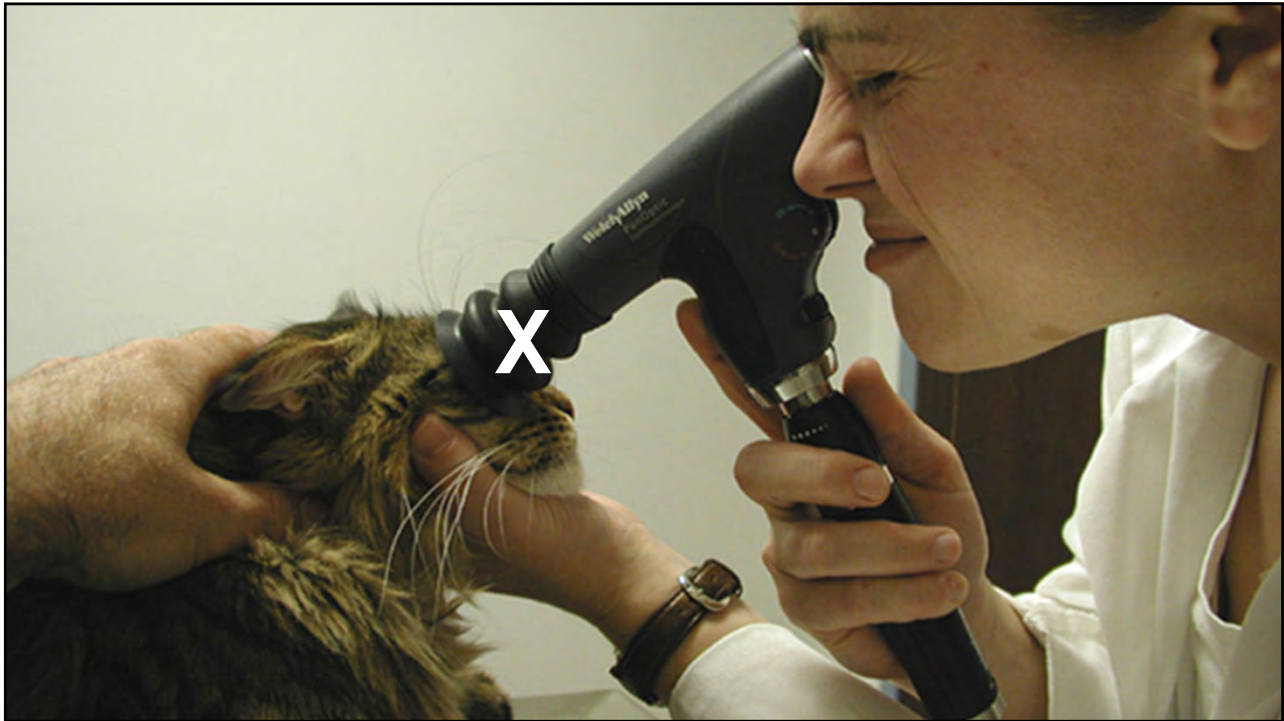


## Welch-Allyn Panoptic®

- Upright image
- Moderate magnification
- Moderate field of view
- Easy to use
- Some distance from patient

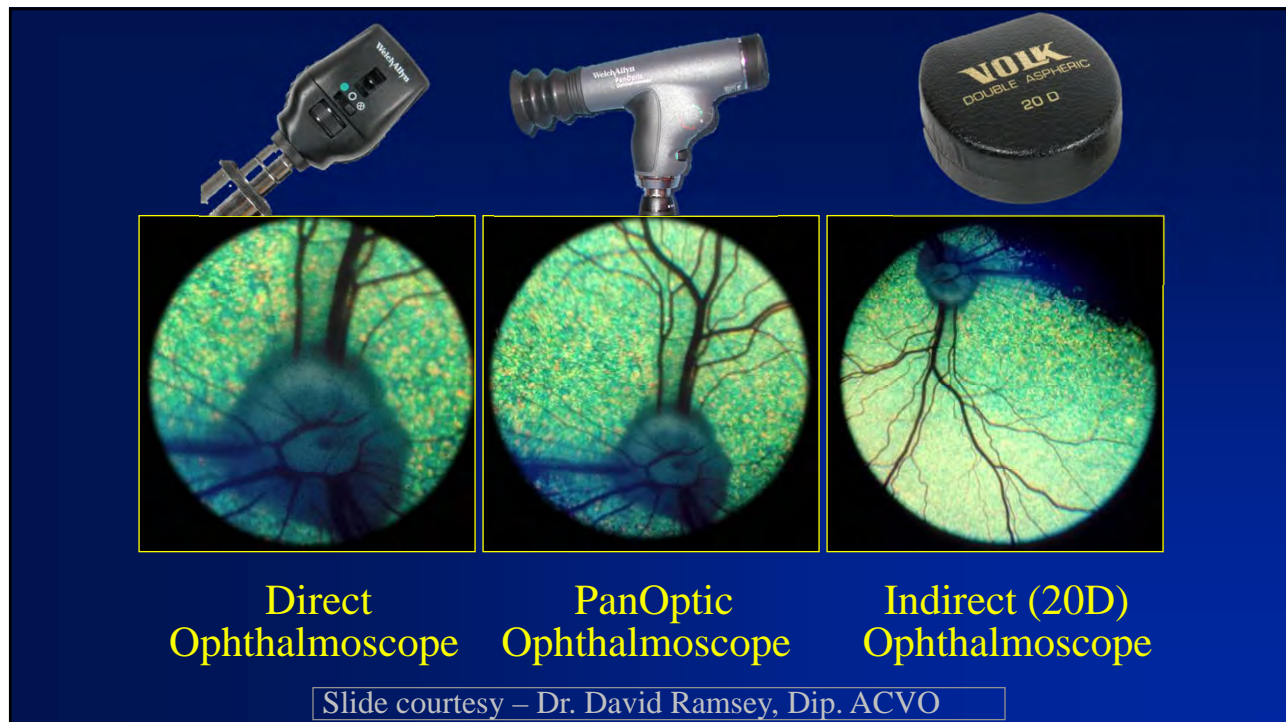






**So Which Ophthalmoscope??**





## Consider a Camera?

Welch Allyn  
iExaminer

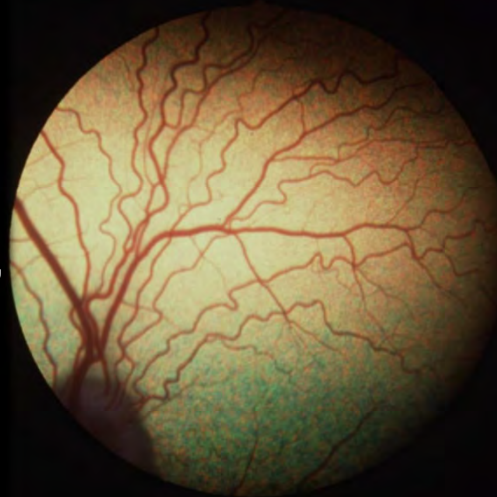


ClearView

1. Gomes & Ledbetter. *Vet Ophthalmol* 2019; 22(1):88-92
2. Kanemaki et al. *Vet Ophthalmol*. 2017; 20(3):280-284

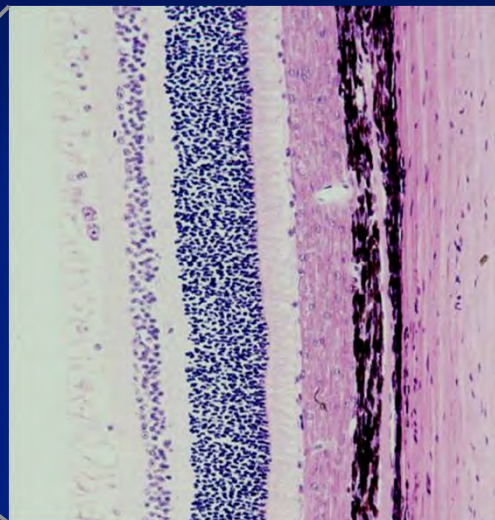
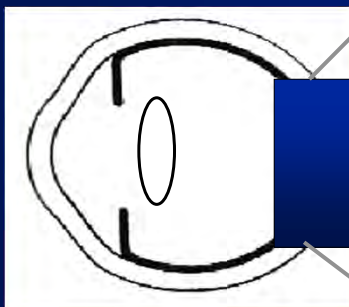
**OK – I’m getting a good view but  
what am I seeing back there?**

- “Build a fundus”
- “Fundic mathematics”
- “The 5 fundic questions”



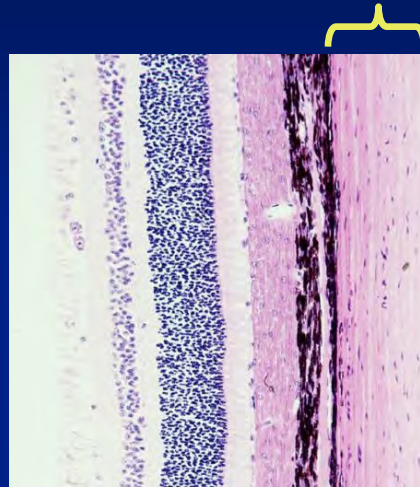
## Build a Fundus

### 5 Critical Layers



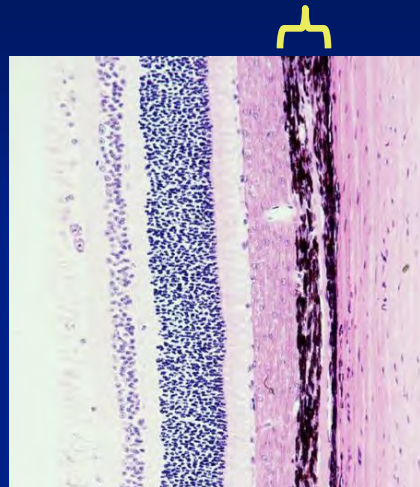
## Build a Fundus

- Sclera
- Choroid
- Tapetum
- RPE
- Sensory retina



## Build a Fundus

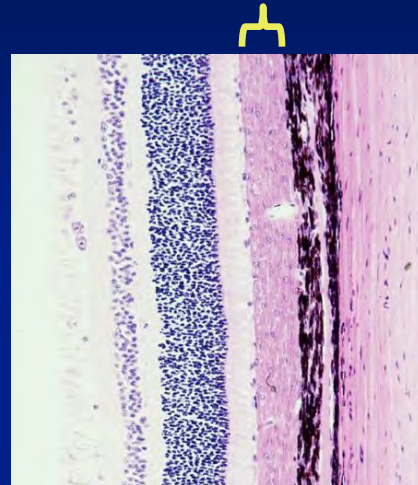
- Sclera
- Choroid
- Tapetum
- RPE
- Sensory retina





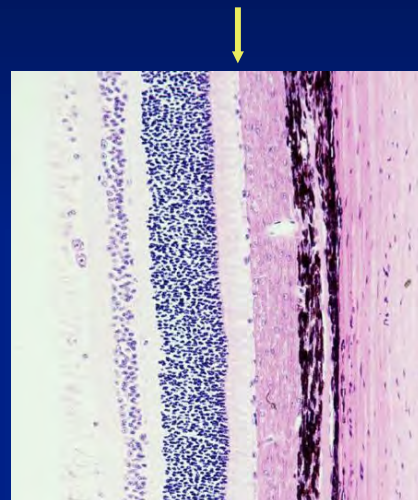
## Build a Fundus

- Sclera
- Choroid
- Tapetum
- RPE
- Sensory retina



## Build a Fundus

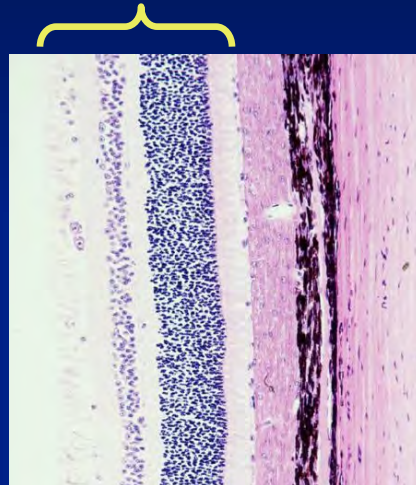
- Sclera
- Choroid
- Tapetum
- RPE
- Sensory retina



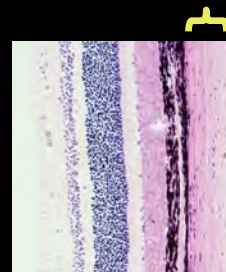


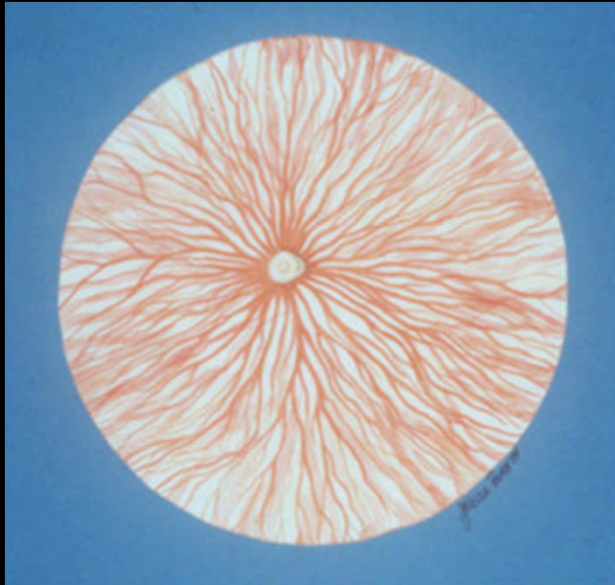
## Build a Fundus

- Sclera
- Choroid
- Tapetum
- RPE
- **Sensory retina**

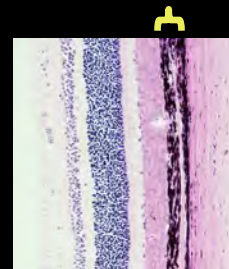


Sclera

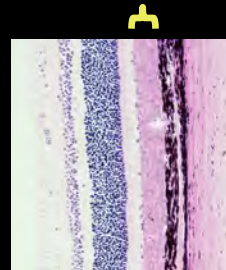




**Choroid**

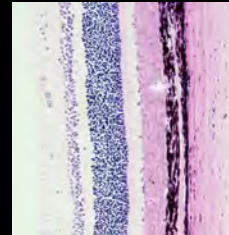


**RPE & Tapetum**





Retina



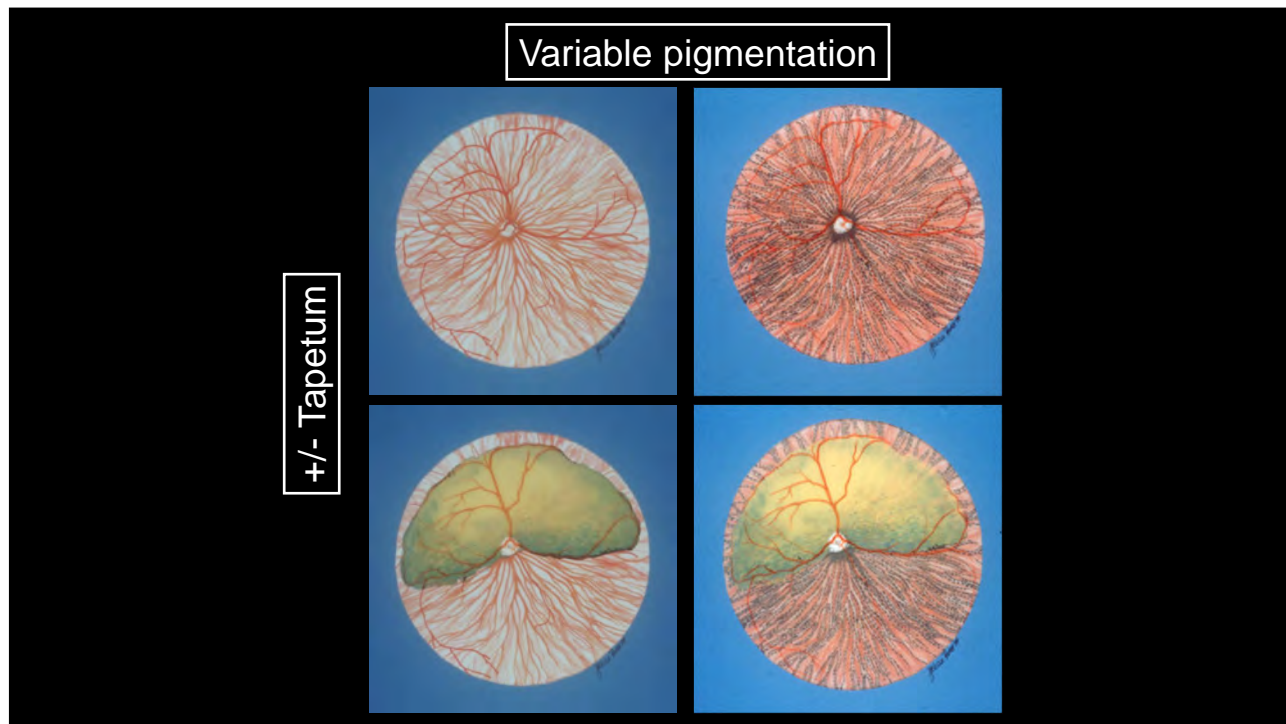


## Two Common Variations

- The RPE & choroid may be variably pigmented
  - The tapetum may be present or absent







Every fundic disease can be explained by fundic mathematics:

- ✚ Either something new has been added (and obscures what you would normally see)
- or
- Something that should be there has been taken away exposing what you normally would not see.





## Five Fundic Questions

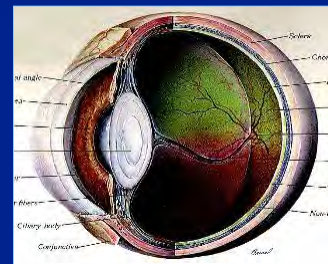
### 1. Can I focus on all parts of the fundus?

#### ◆ Is the defocused area recessed?

- VERY uncommon

#### ◆ Is the defocused area raised?

- Common
- **Retinal Detachment**



**Normal**

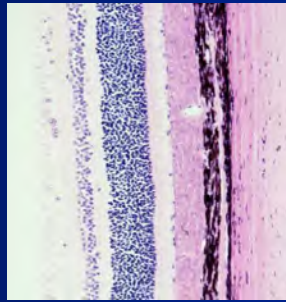


**Retinal  
detachment**

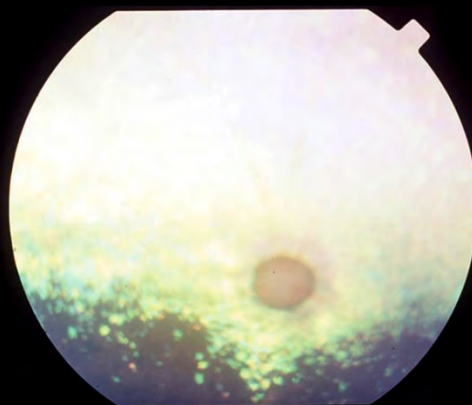
## Five Fundic Questions

### 2. What is the general tapetal “sheen”?

- ◆ Hyporeflectivity = “addition” (usually acute)
- ◆ Hyperreflectivity = “subtraction” (always chronic)



**Normal**



**Tapetal hyper-reflectivity  
(Retinal degeneration)**

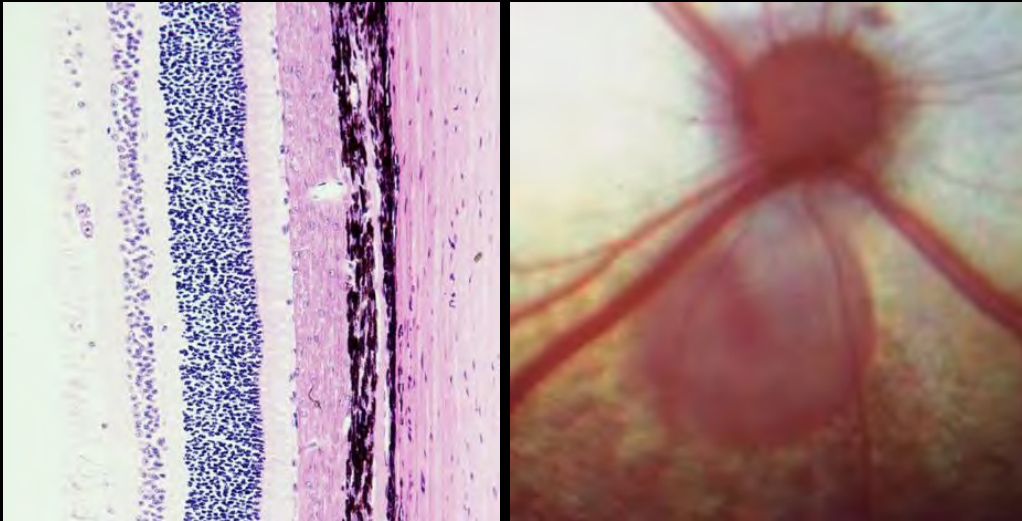
## Five Fundic Questions

### 3. Are there focal areas of discoloration?

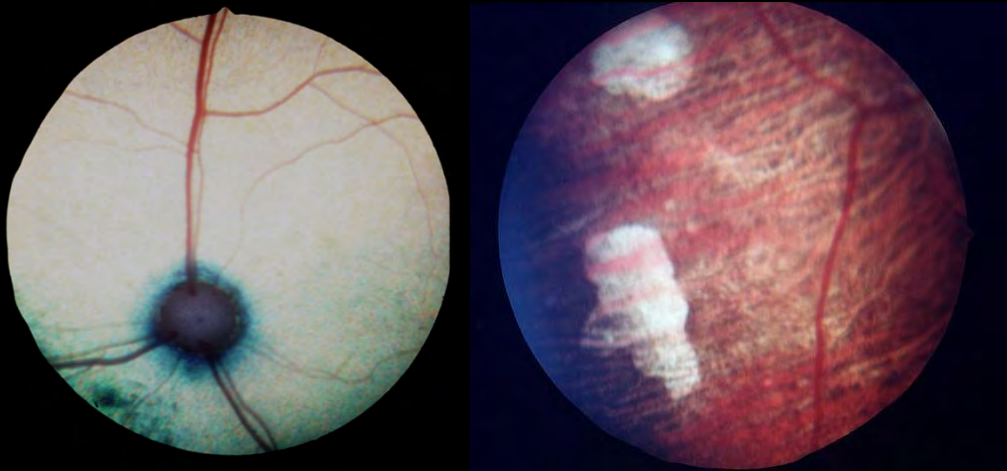
- ◆ What color are they?
- ◆ Are they:
  - ✚ Additions (“fuzzy” borders)?
  - Subtractions (sharp borders)?
- ◆ What level are they?



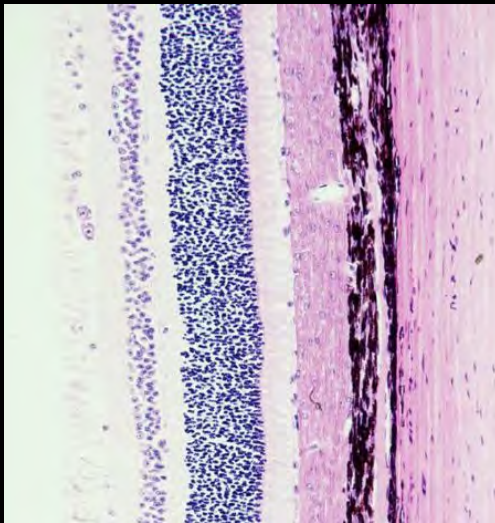
Chorioretinitis (hemorrhage, edema, white blood cells)



**Chorioretinitis (hemorrhage, edema, white blood cells)**



**Scleral exposure (uveodermatologic syndrome)**



Scleral exposure (uveodermatologic syndrome)

## Five Fundic Questions

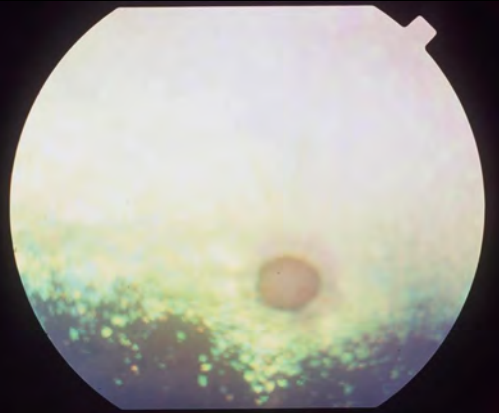
### 4. How is the retinal vasculature?

- ◆ Size (attenuated, engorged)
- ◆ Form (tortuous, decreased branching)
- ◆ Color (pale, lipemic)





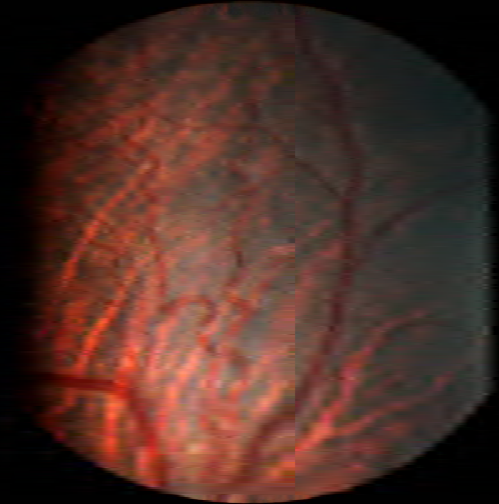
**Normal**



**Attenuated retinal  
blood vessels  
(Retinal degeneration)**



**Normal**

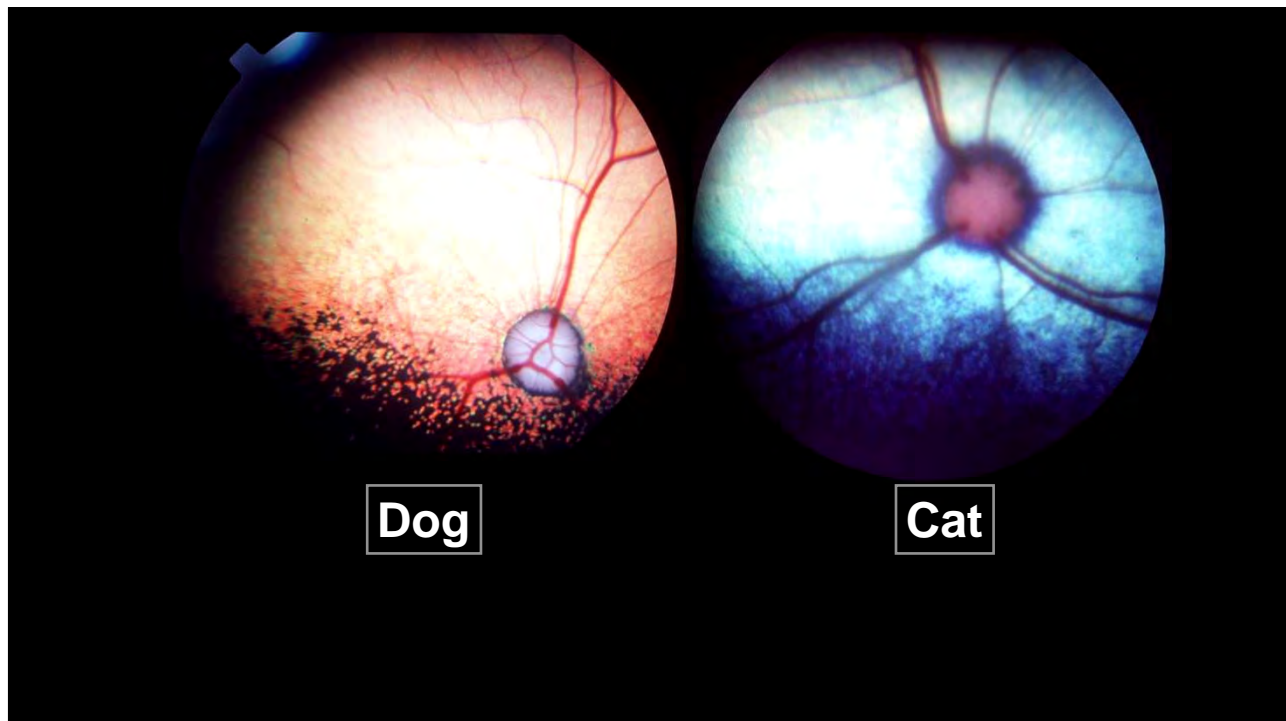


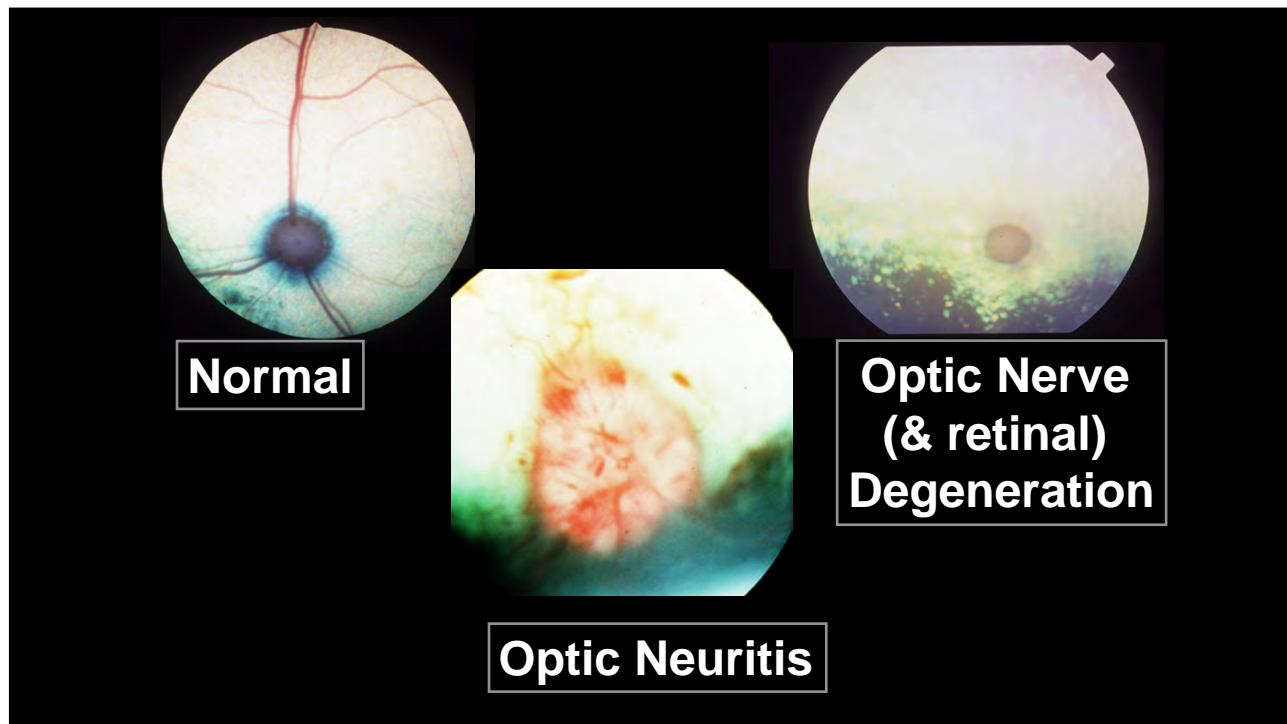
**Tortuous retinal  
blood vessels  
(Collie eye anomaly)**

## Five Fundic Questions

### 5. How is the optic nerve head?

- ◆ Size (swollen, atrophied, hypoplastic)
- ◆ Shape (irregular, circular)
- ◆ Color (pale, dark, hyperemic)
- ◆ Focus (raised or cupped)





Like everything else:  
***“Practice Makes Permanent”***

