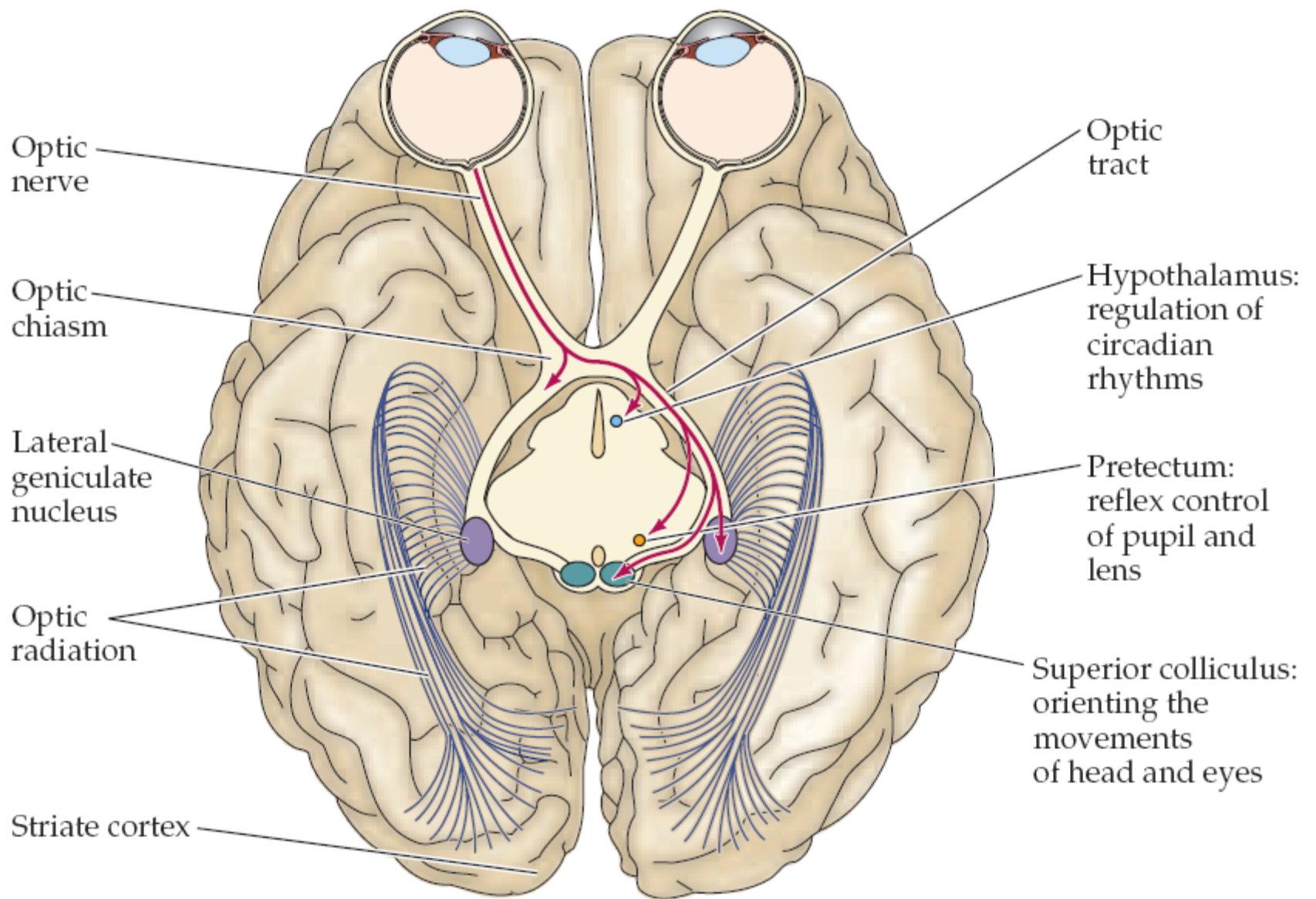


# **VISUAL PATHWAY**



## Visual pathway:

Optic (II) nerve



Optic chiasm



Optic tract



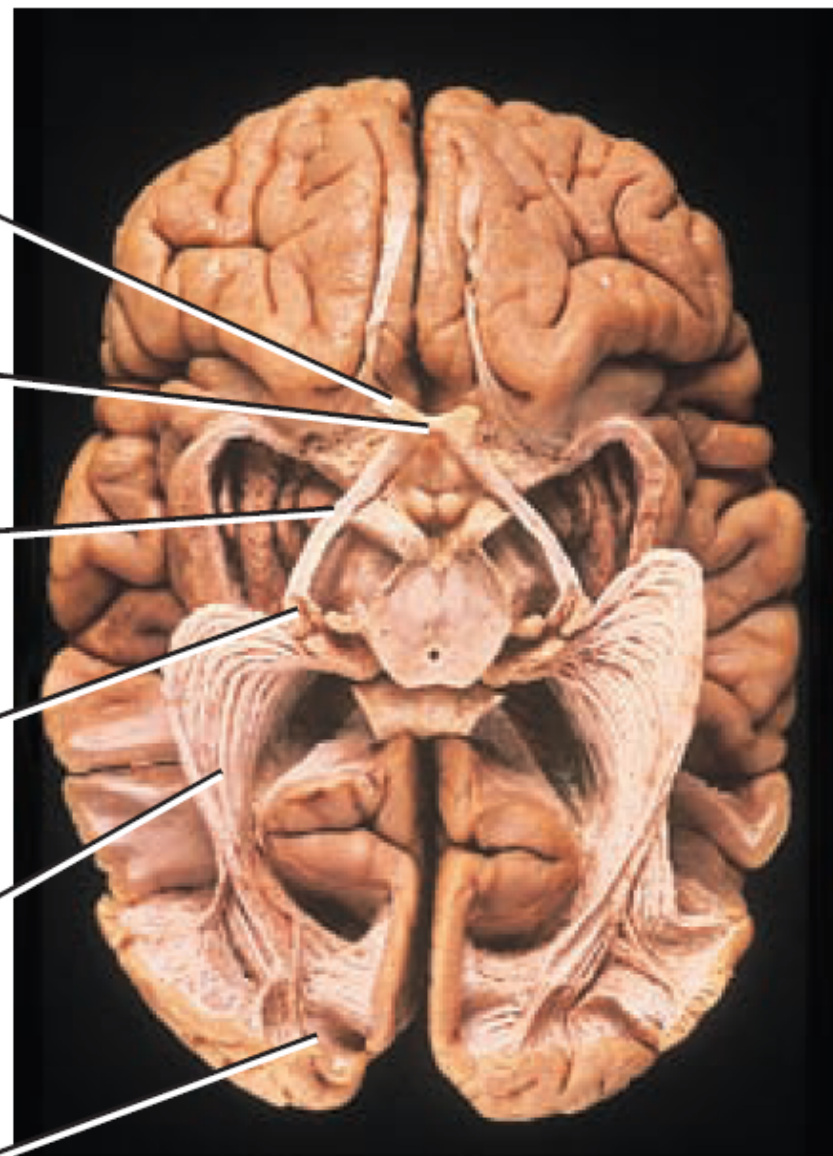
Lateral geniculate  
nucleus of thalamus



Optic radiations

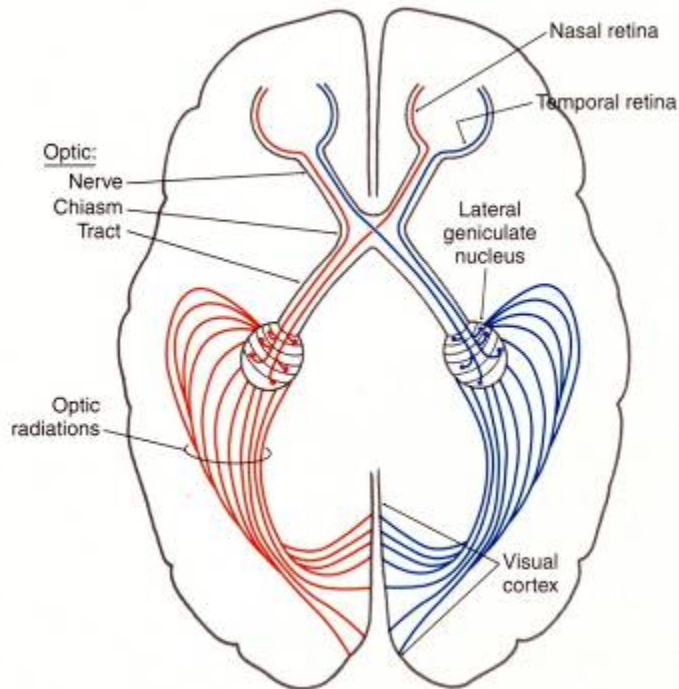


Primary visual area  
of cerebral cortex  
(area 17) in occipital  
lobe

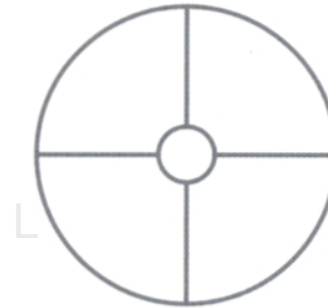


POSTERIOR

## Looking down from above



Visual field of  
patient's left eye  
(oculus sinister, OS)



Visual field of  
patient's right eye  
(oculus dexter, OD)



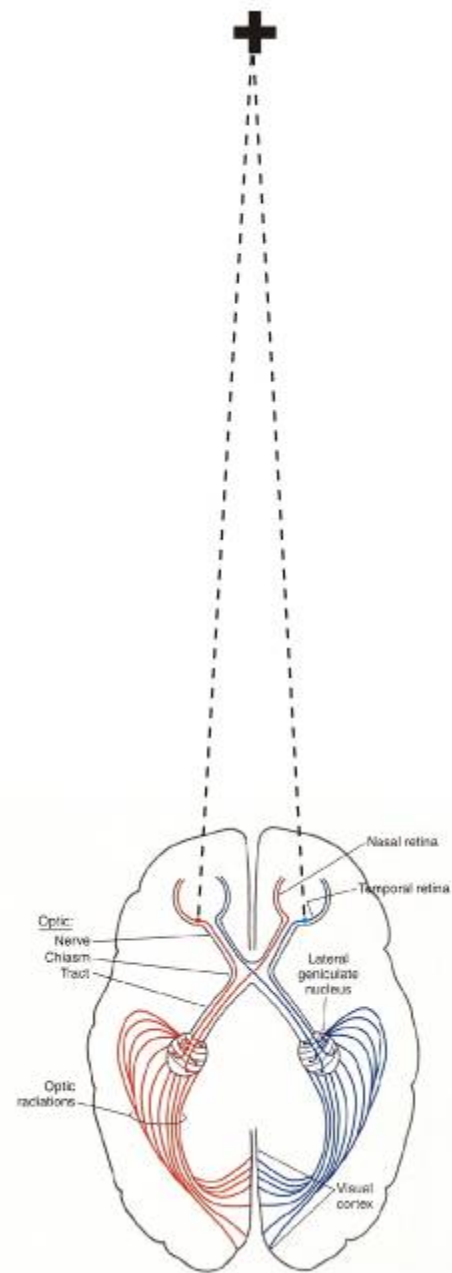
Patient's left

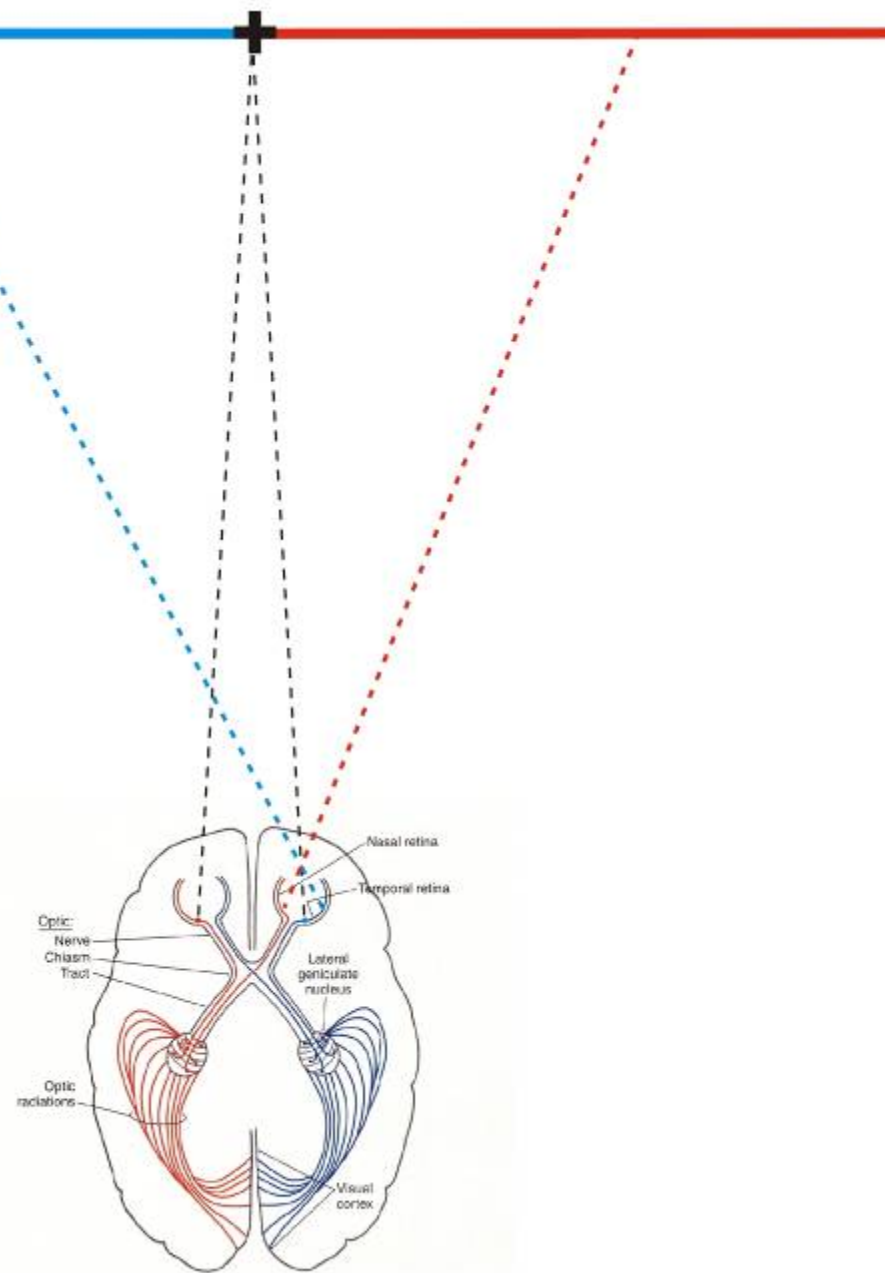


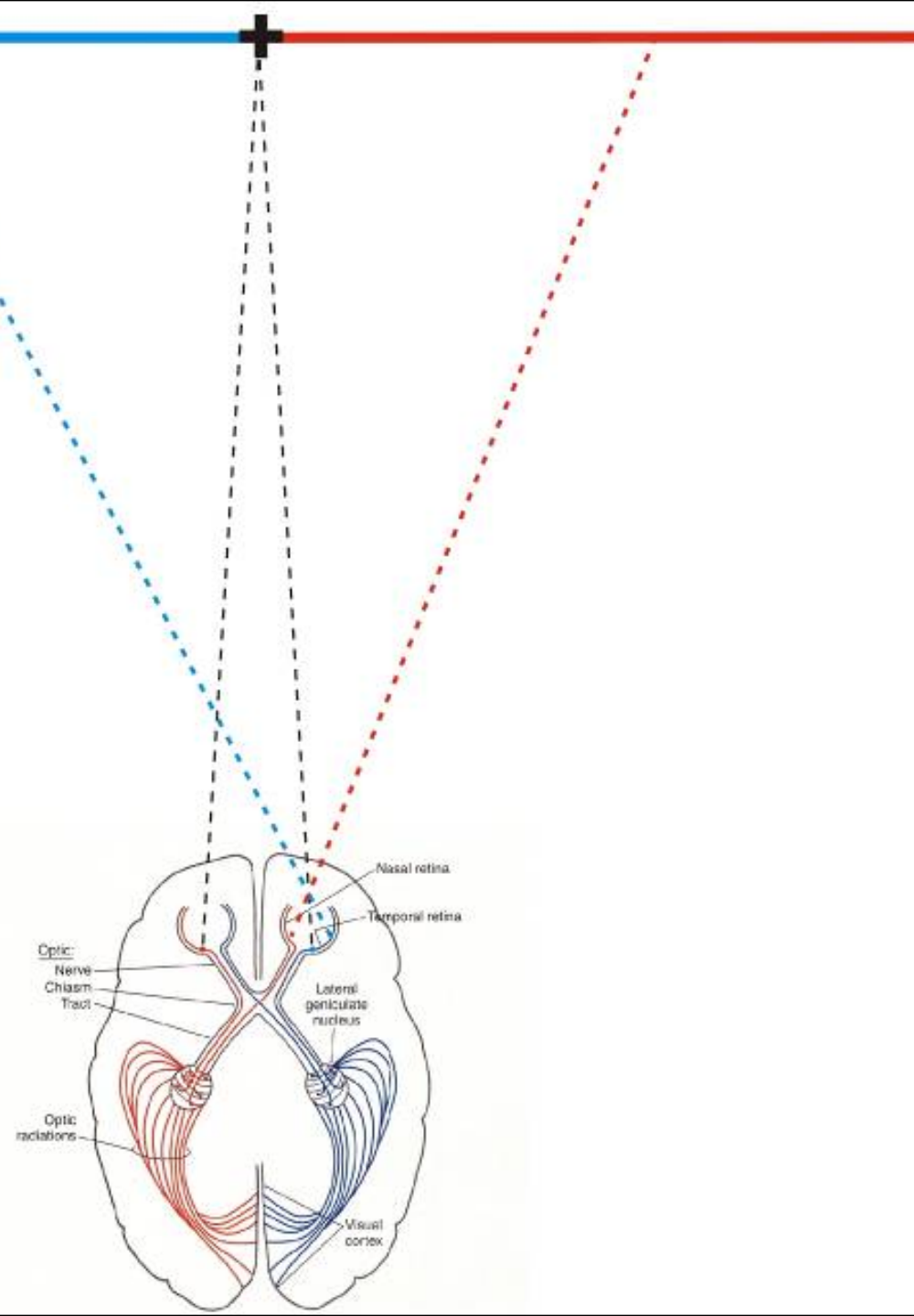
Patient's right

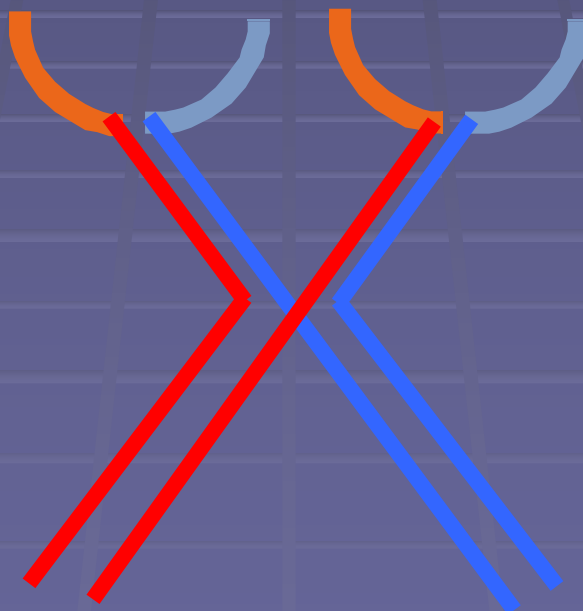
**Figure 20-13.** Relationship of visual field diagrams to patient being examined. The observer draws the diagrams as if they were on the wall the patient is looking at.









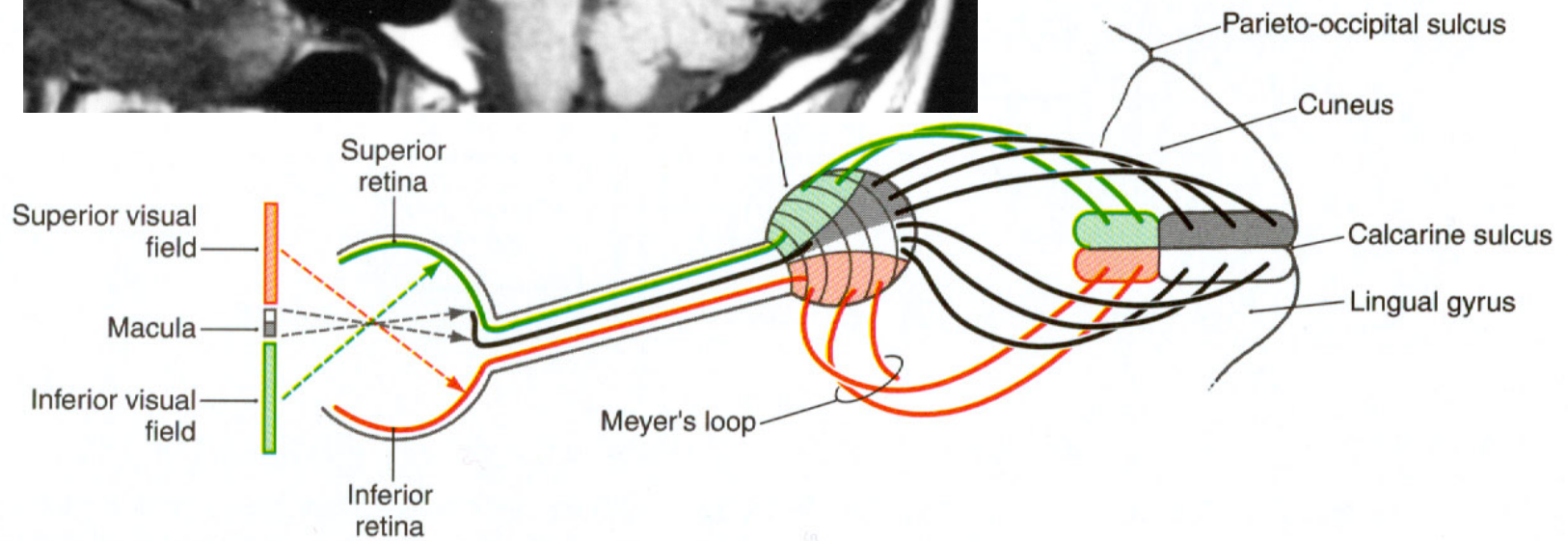




# Primary Visual Cortex



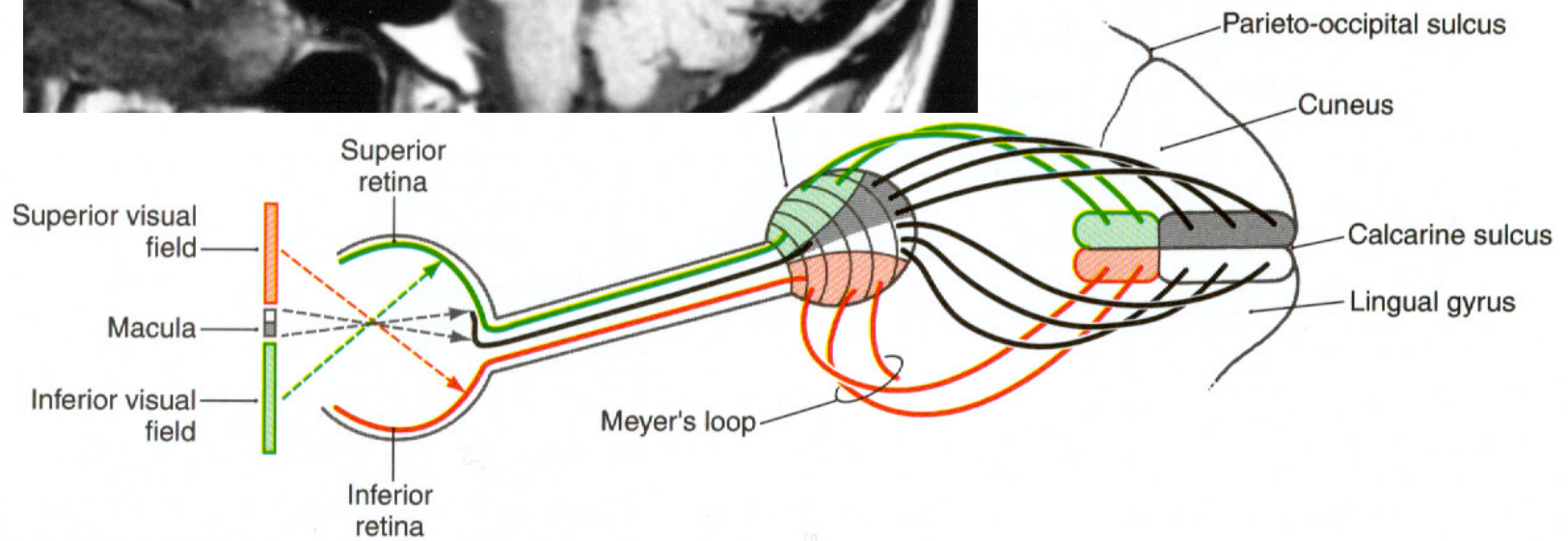
**Calcarine sulcus**



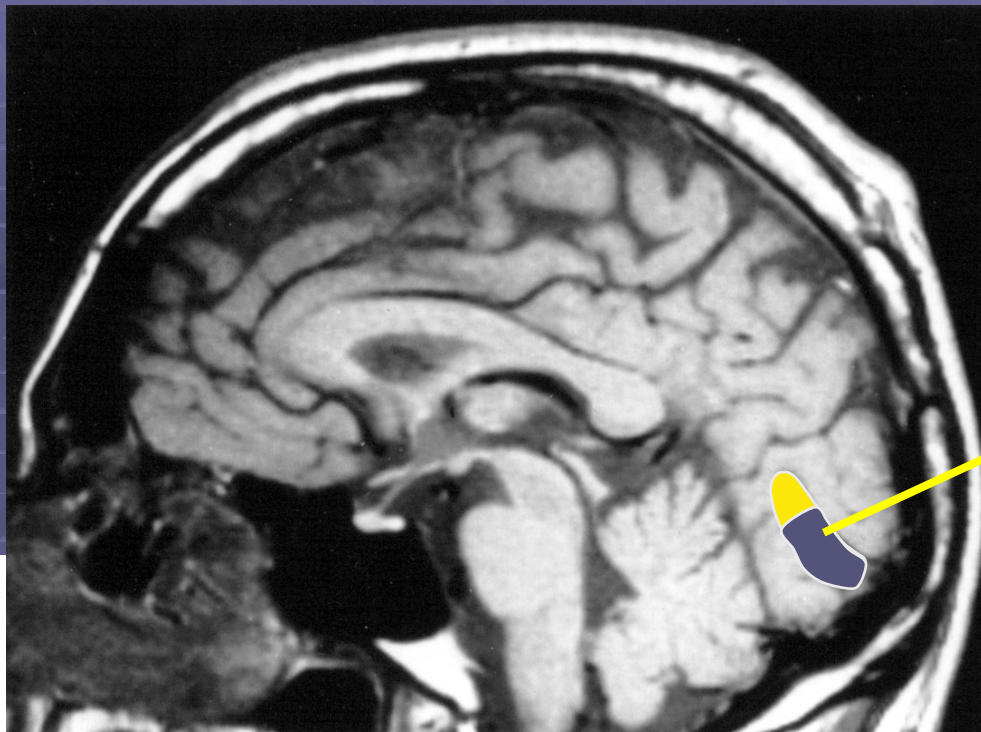
**Text Fig. 20-18**



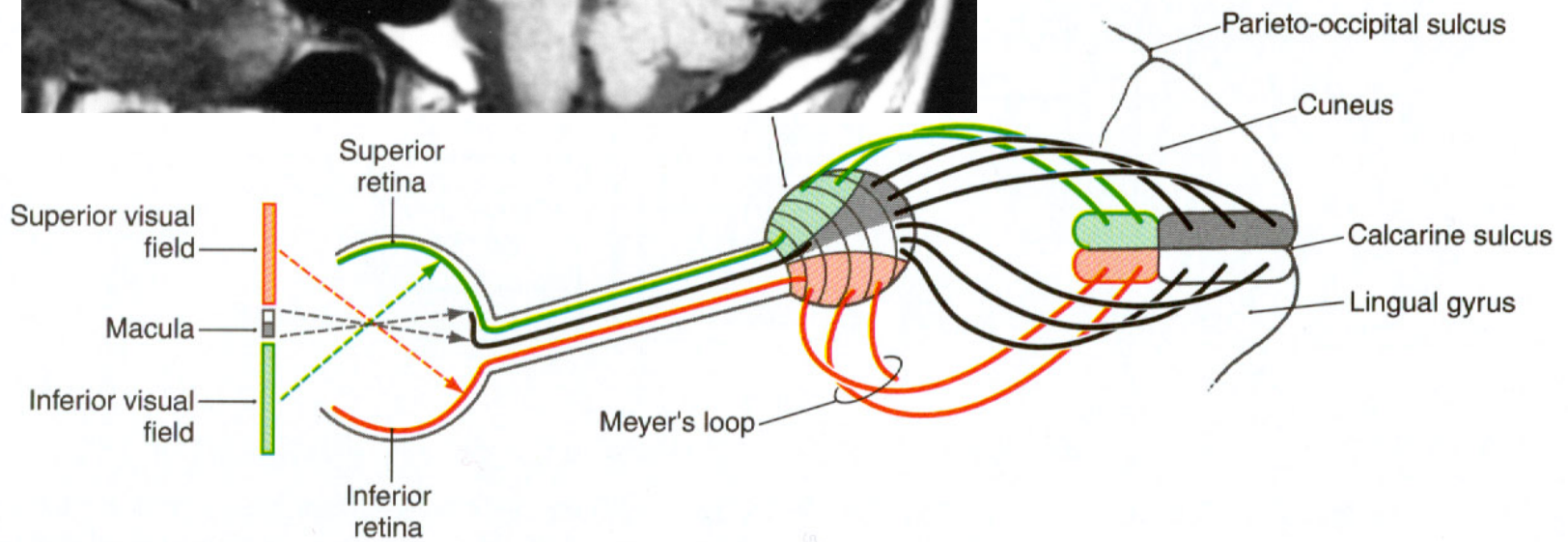
**Lingual gyrus**



**Text Fig. 20-18**



**Central vision**

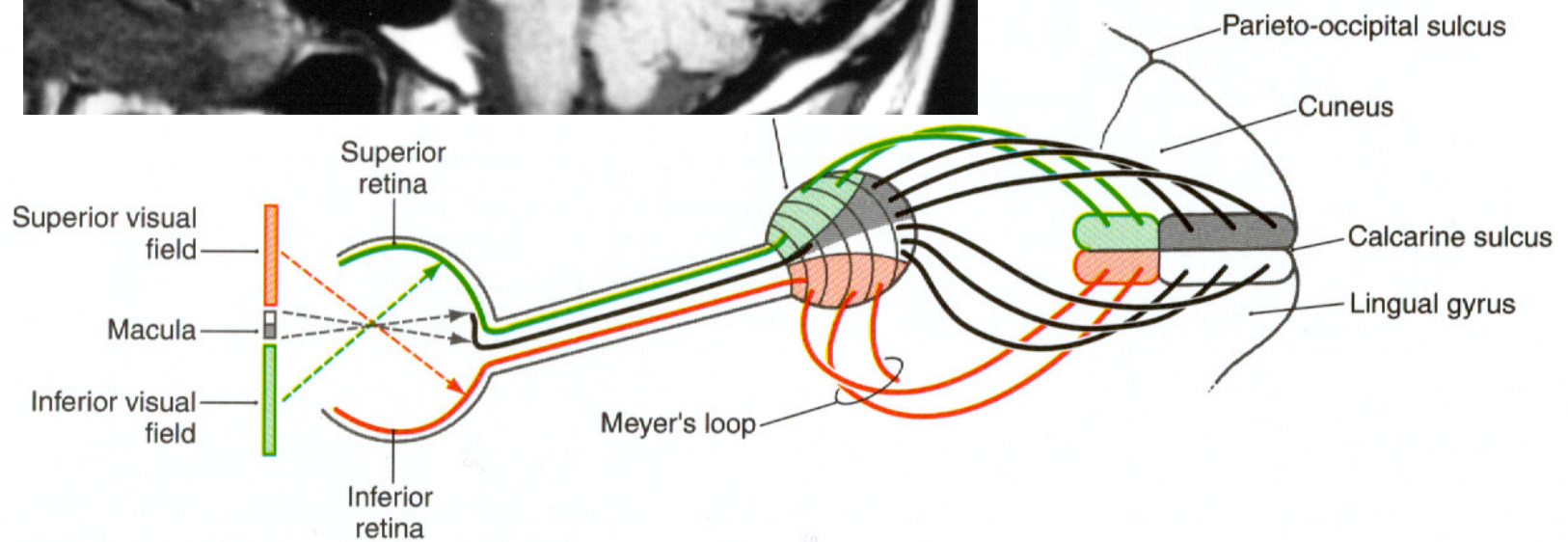


**Text Fig. 20-18**



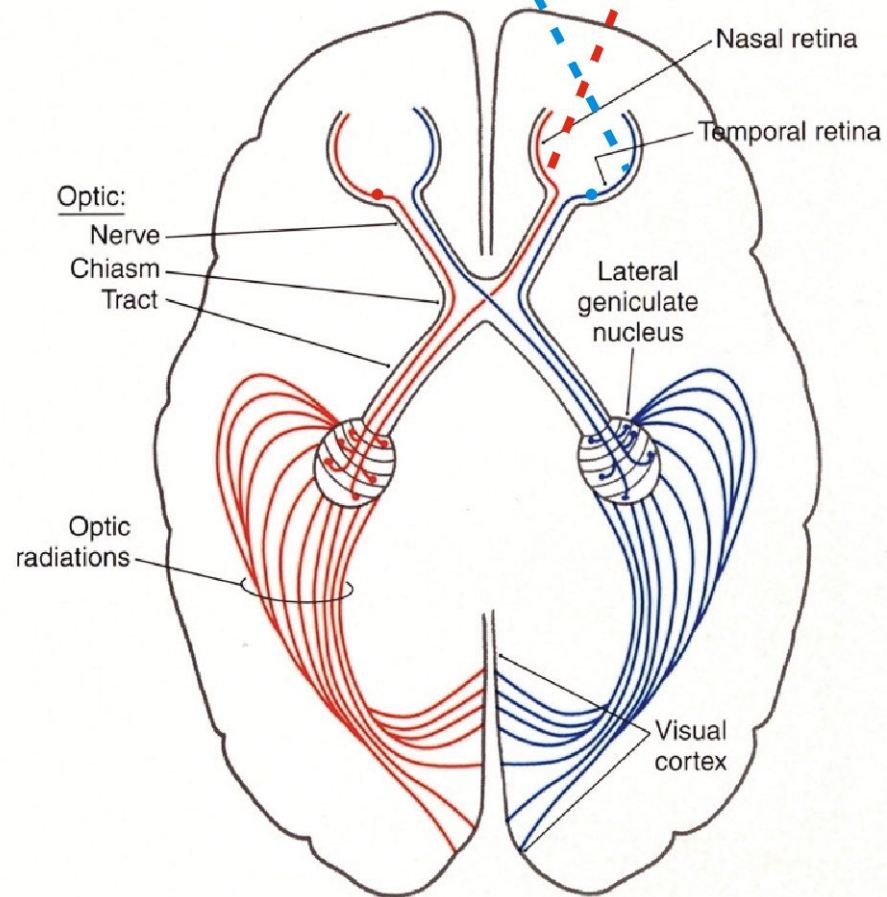


**Cuneus**

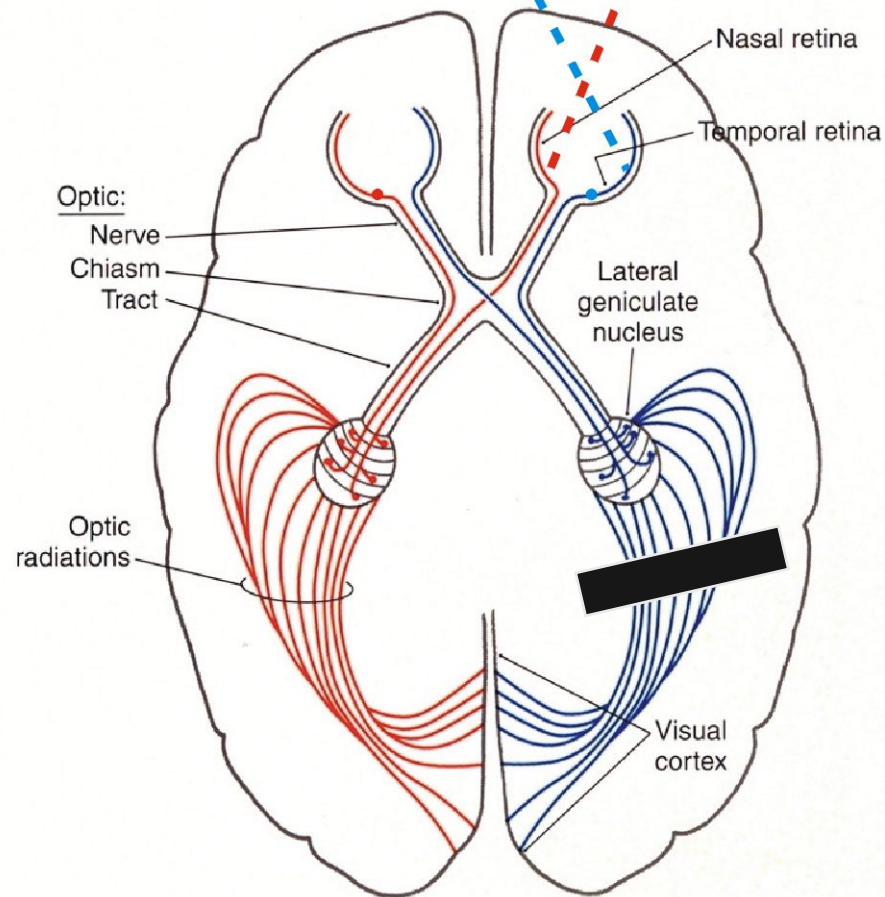


**Text Fig. 20-18**

# Visual Field Deficits



Text Fig. 20-9

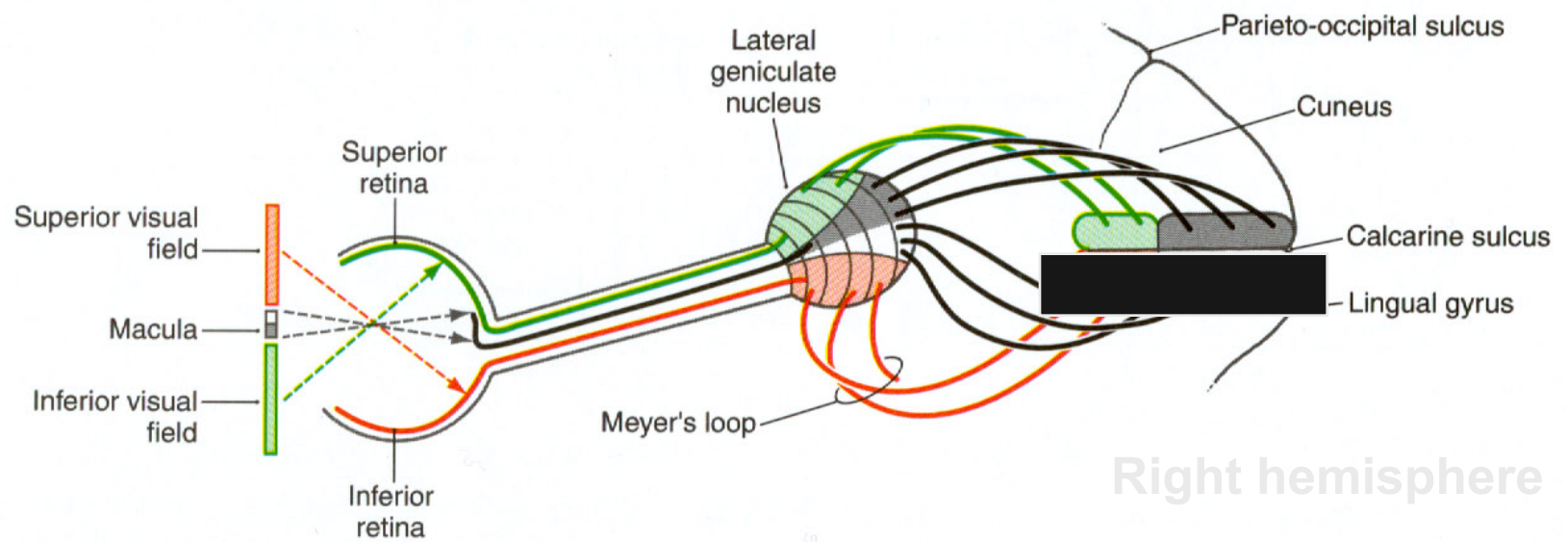


Text Fig. 20-9



**Hemi - anopia**

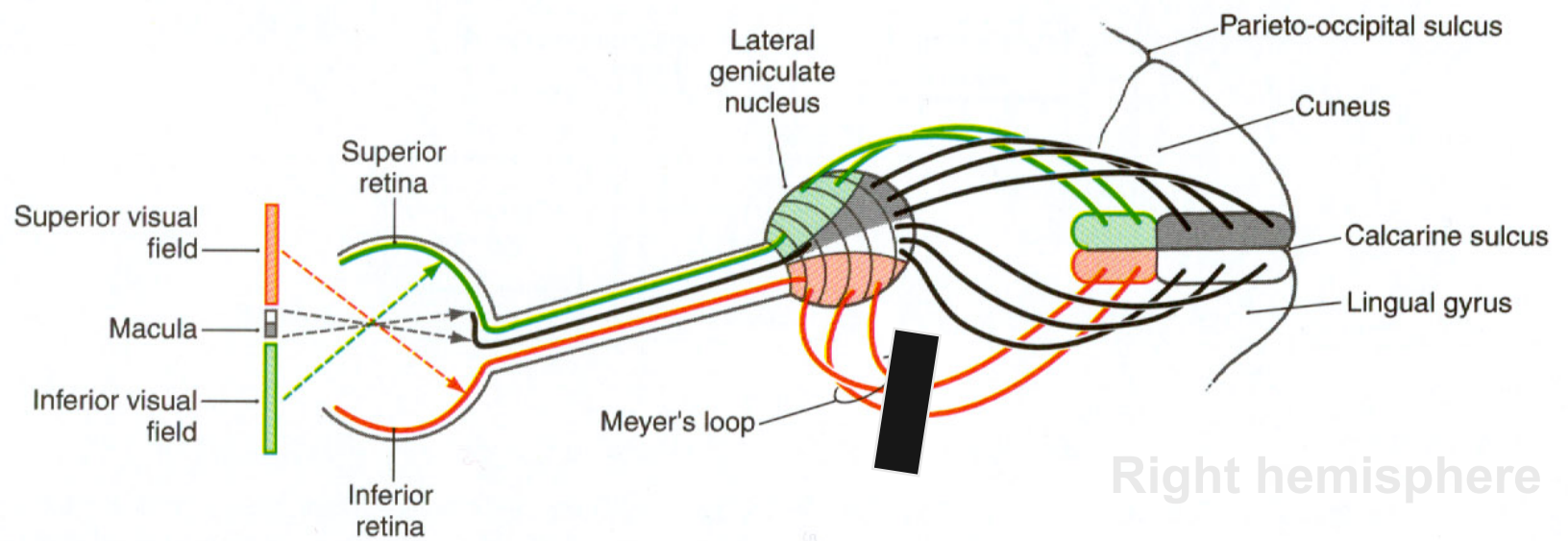




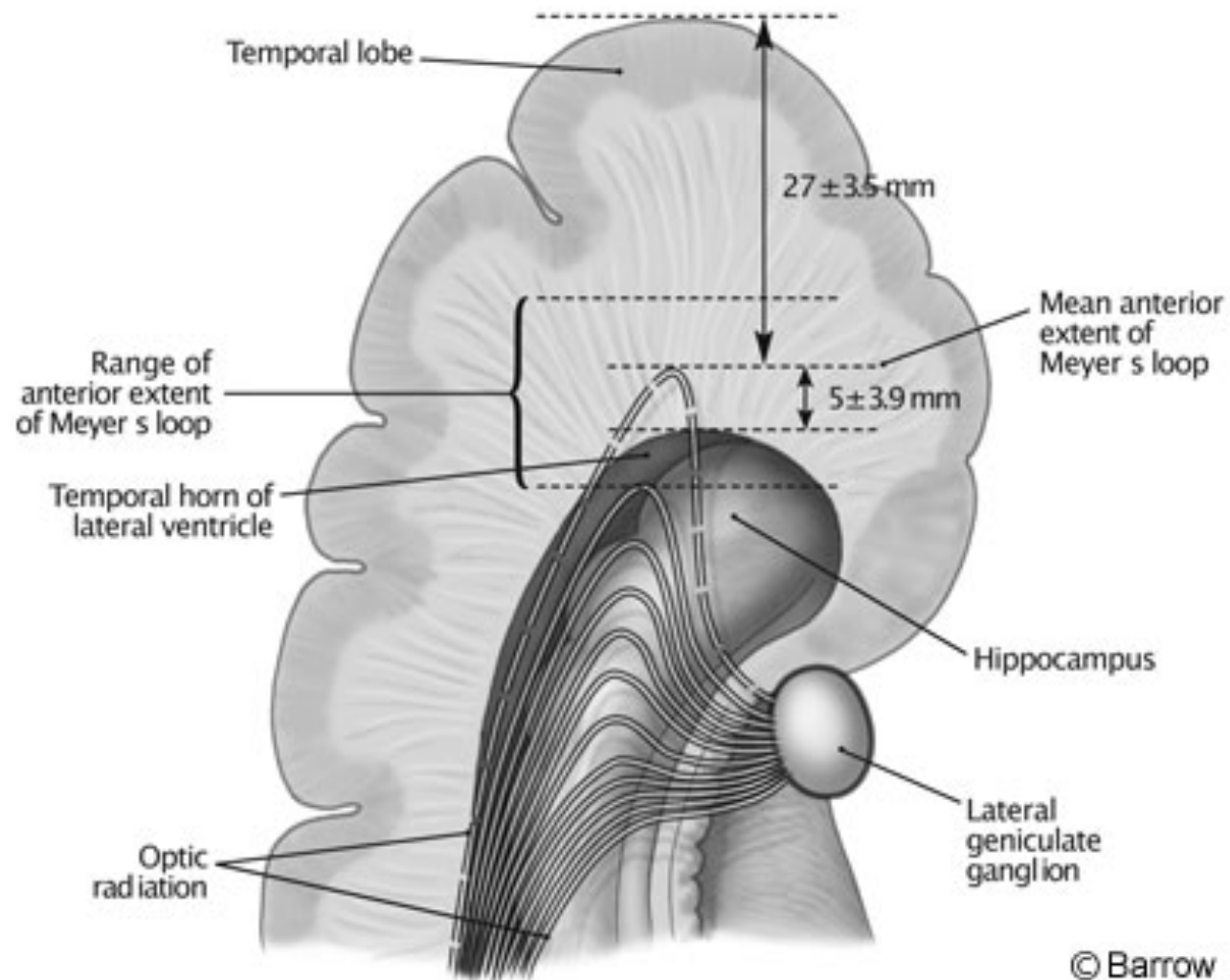
Right hemisphere

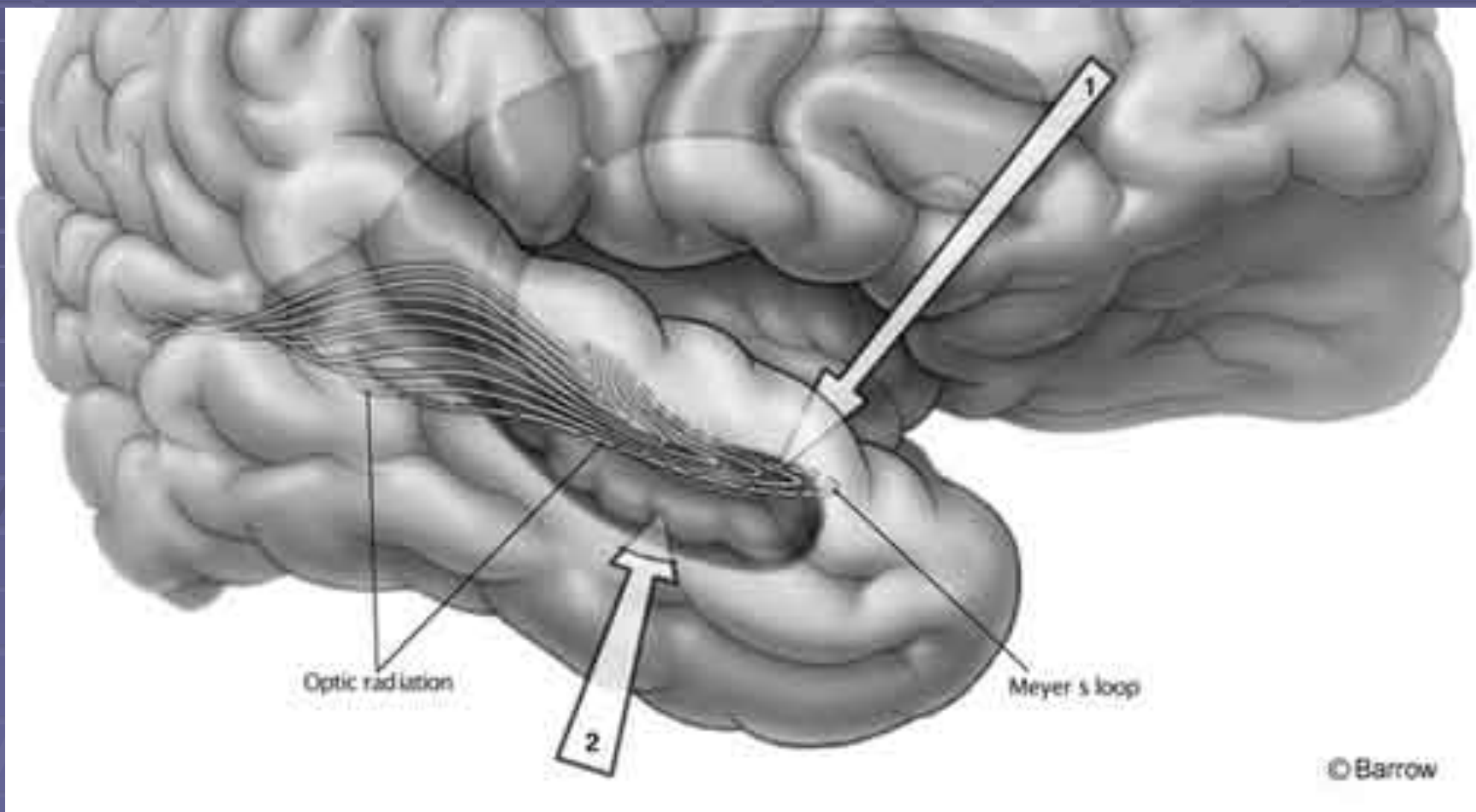
**Quadrant - anopia**

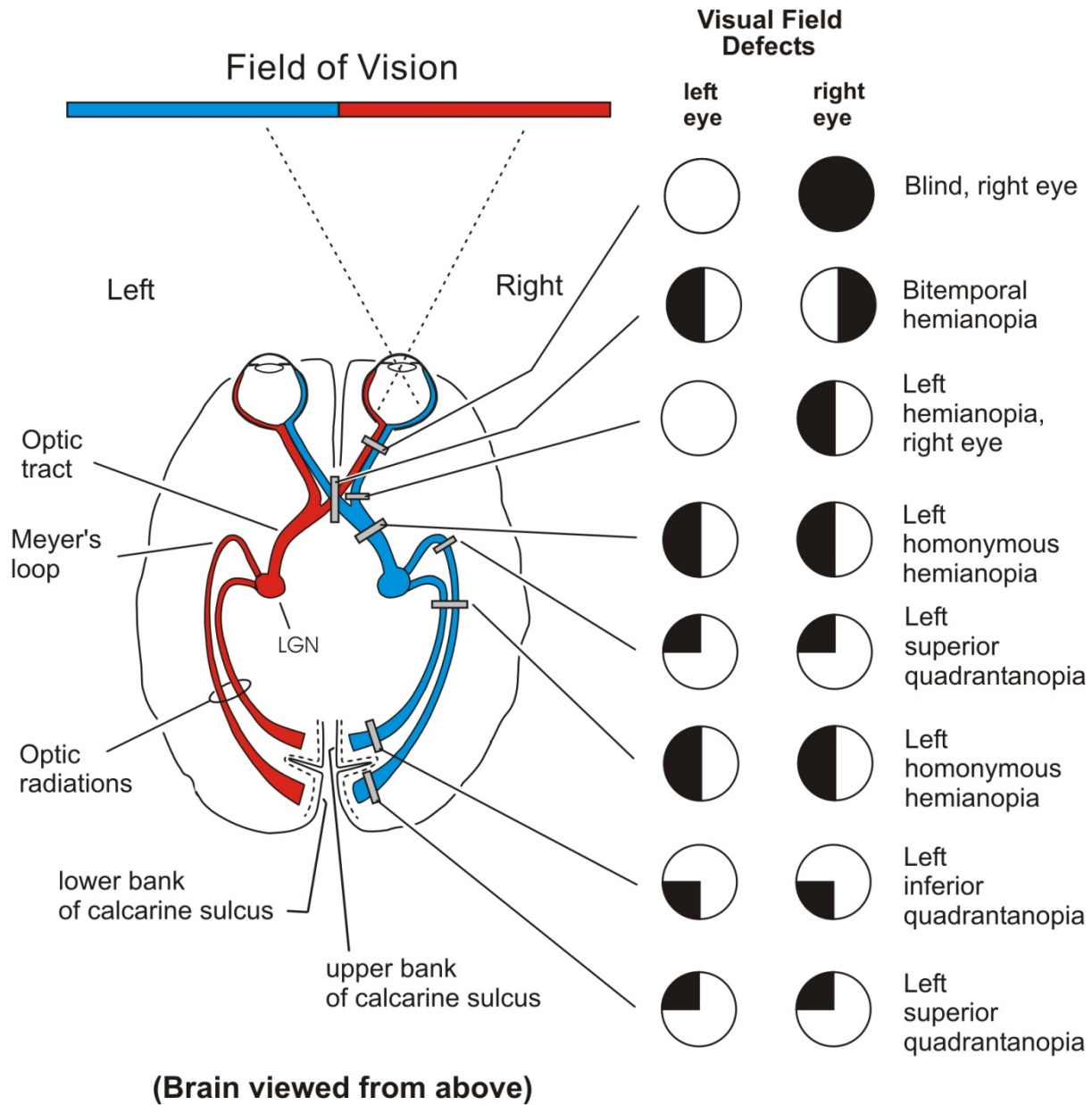


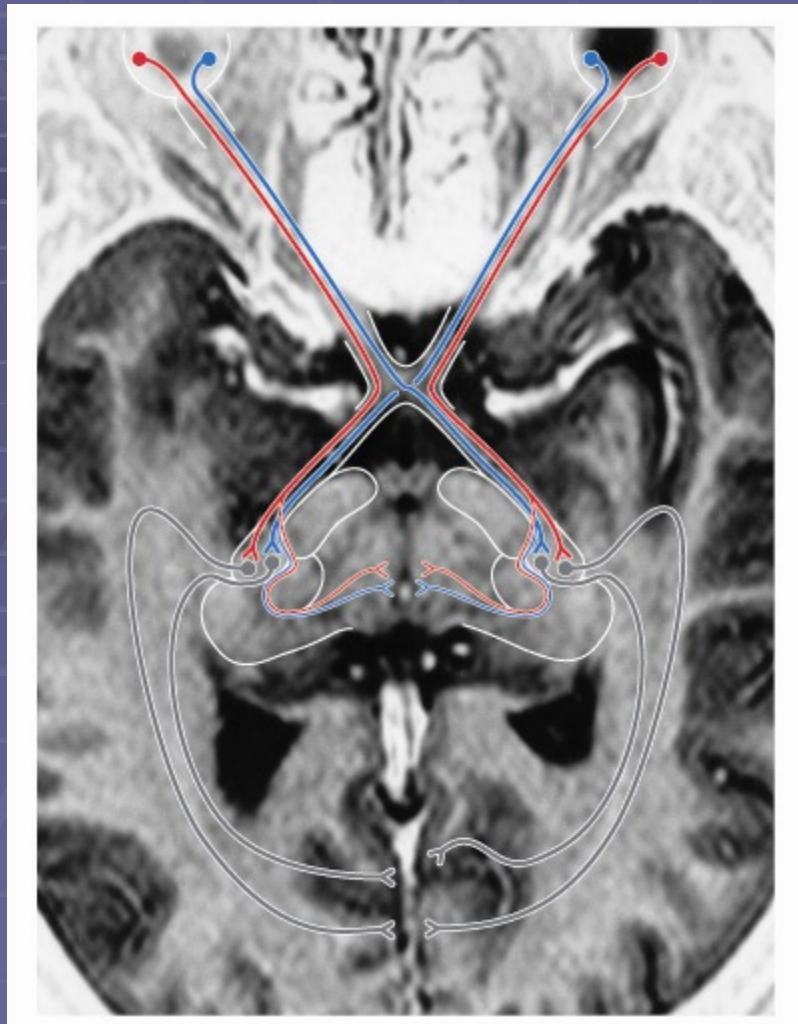






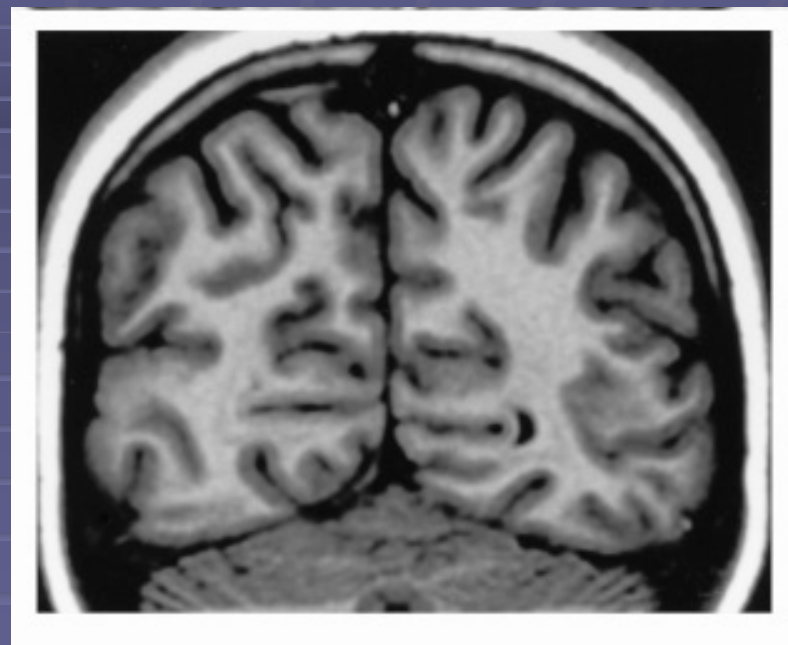






R

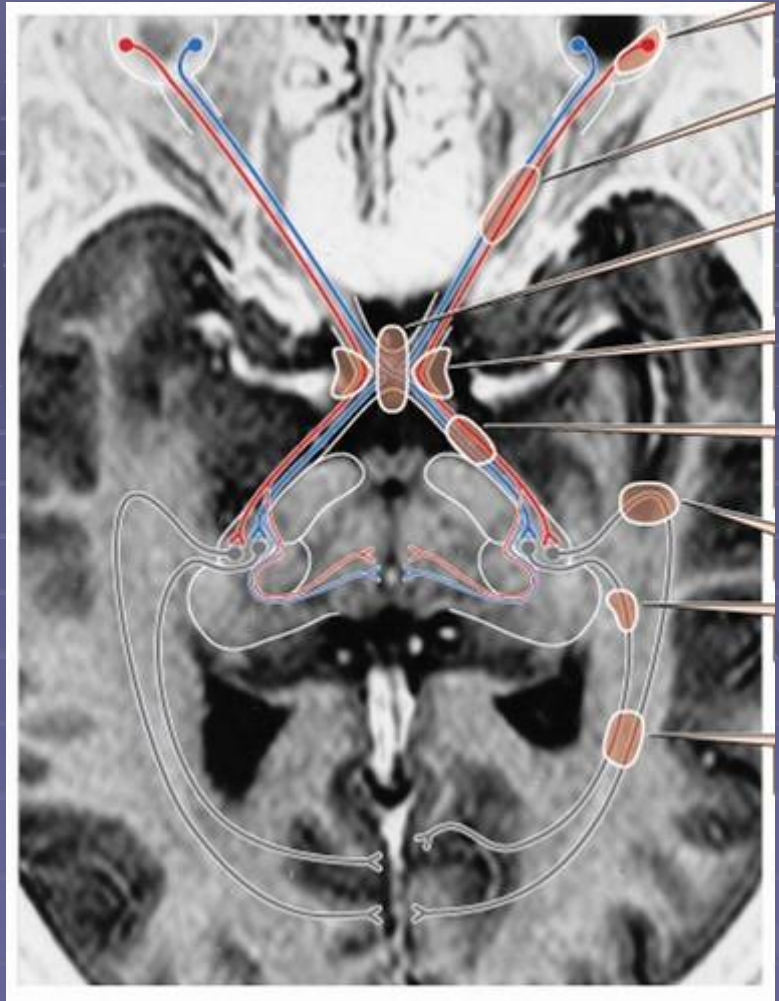
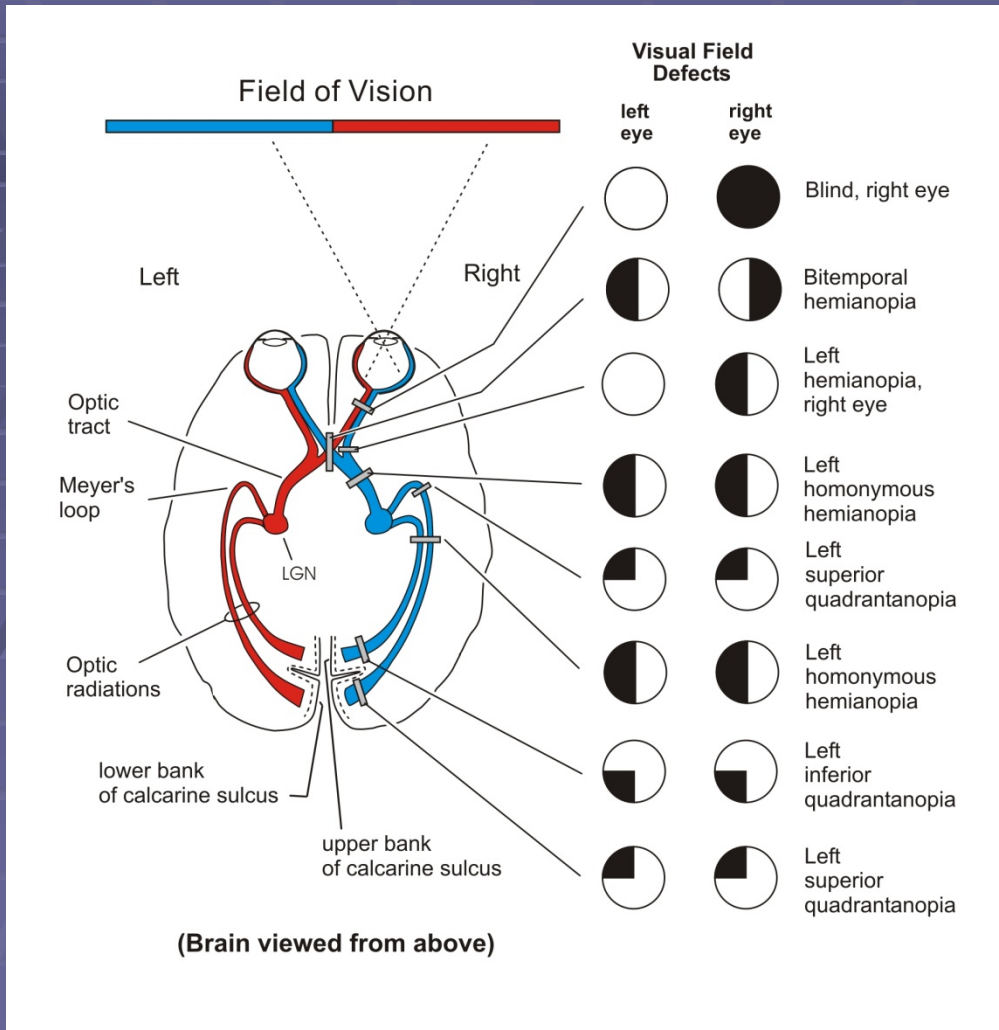
L



R

L





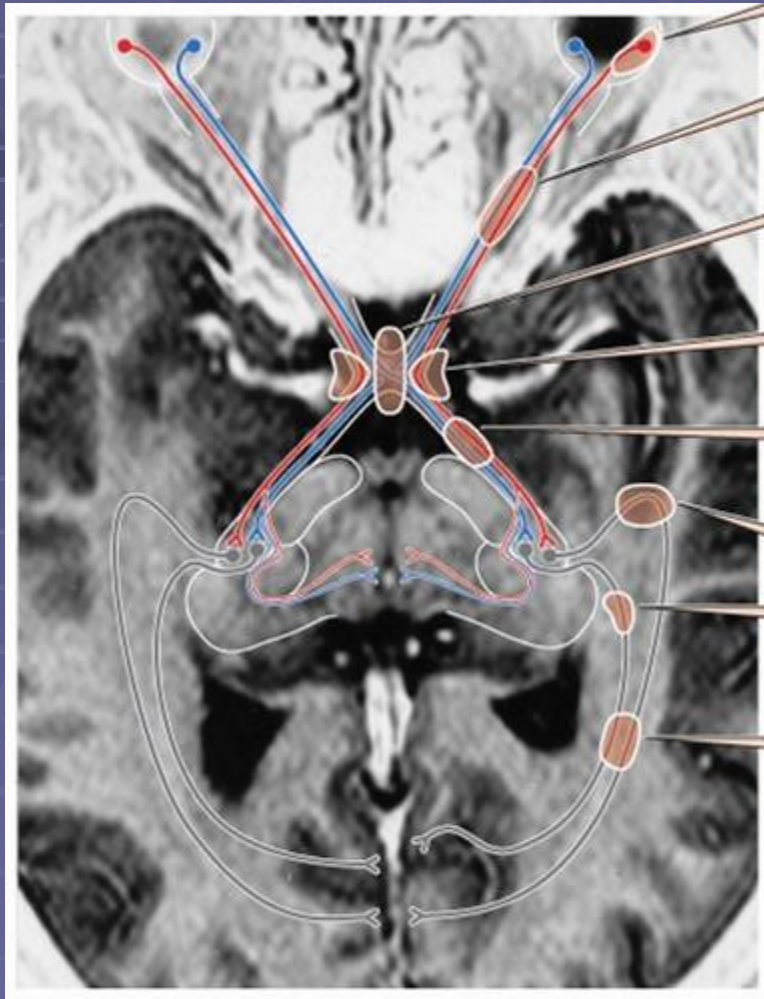
L

R

R

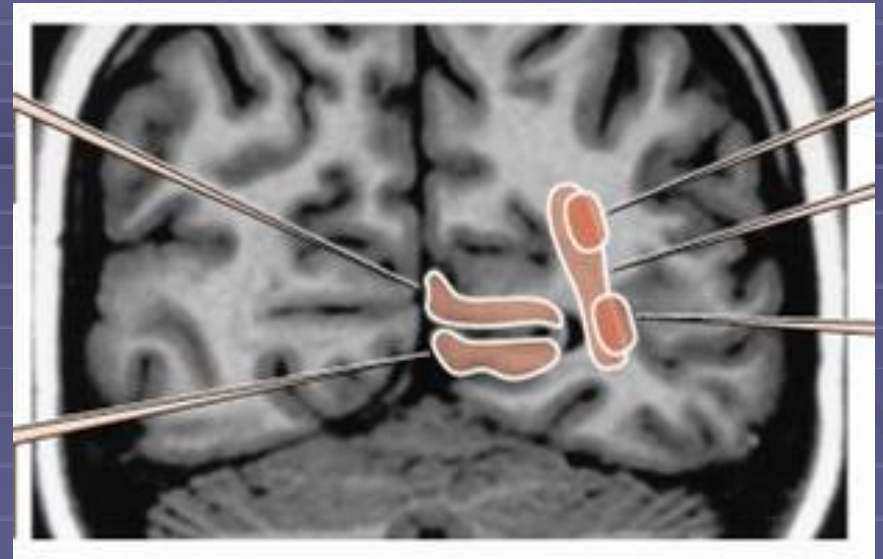
L





R

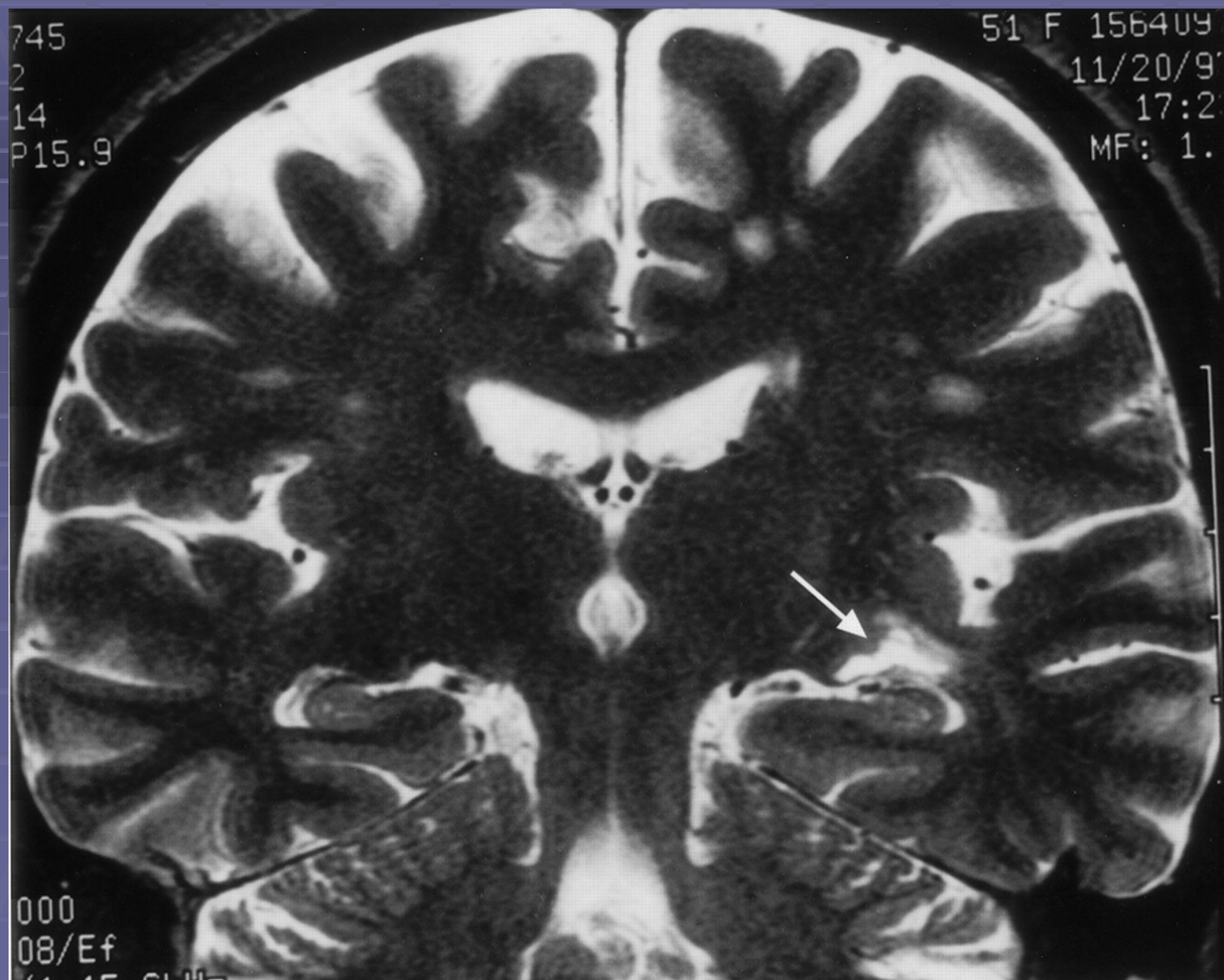
L



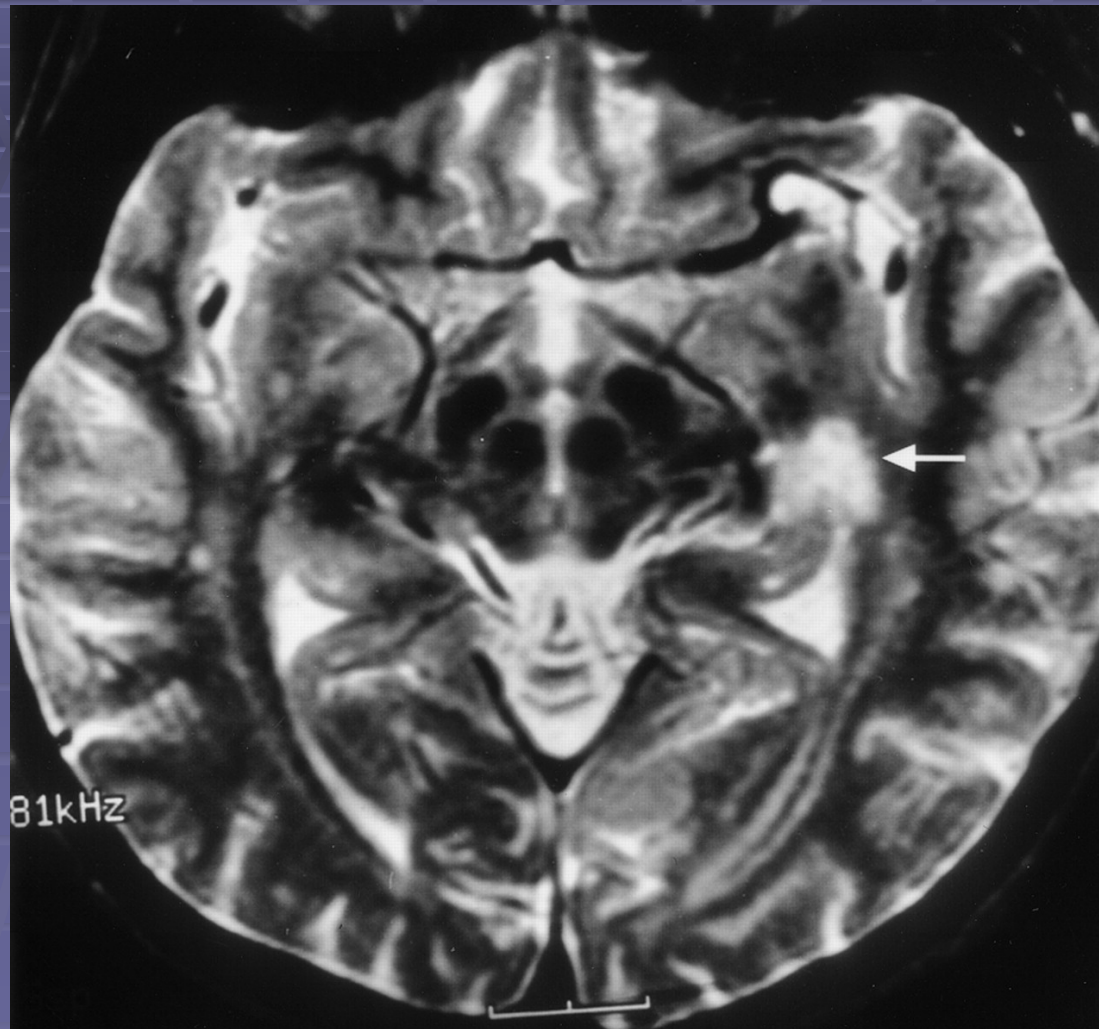
R

L

# Clinical correlation of Meyer's loop in the coronal plane.

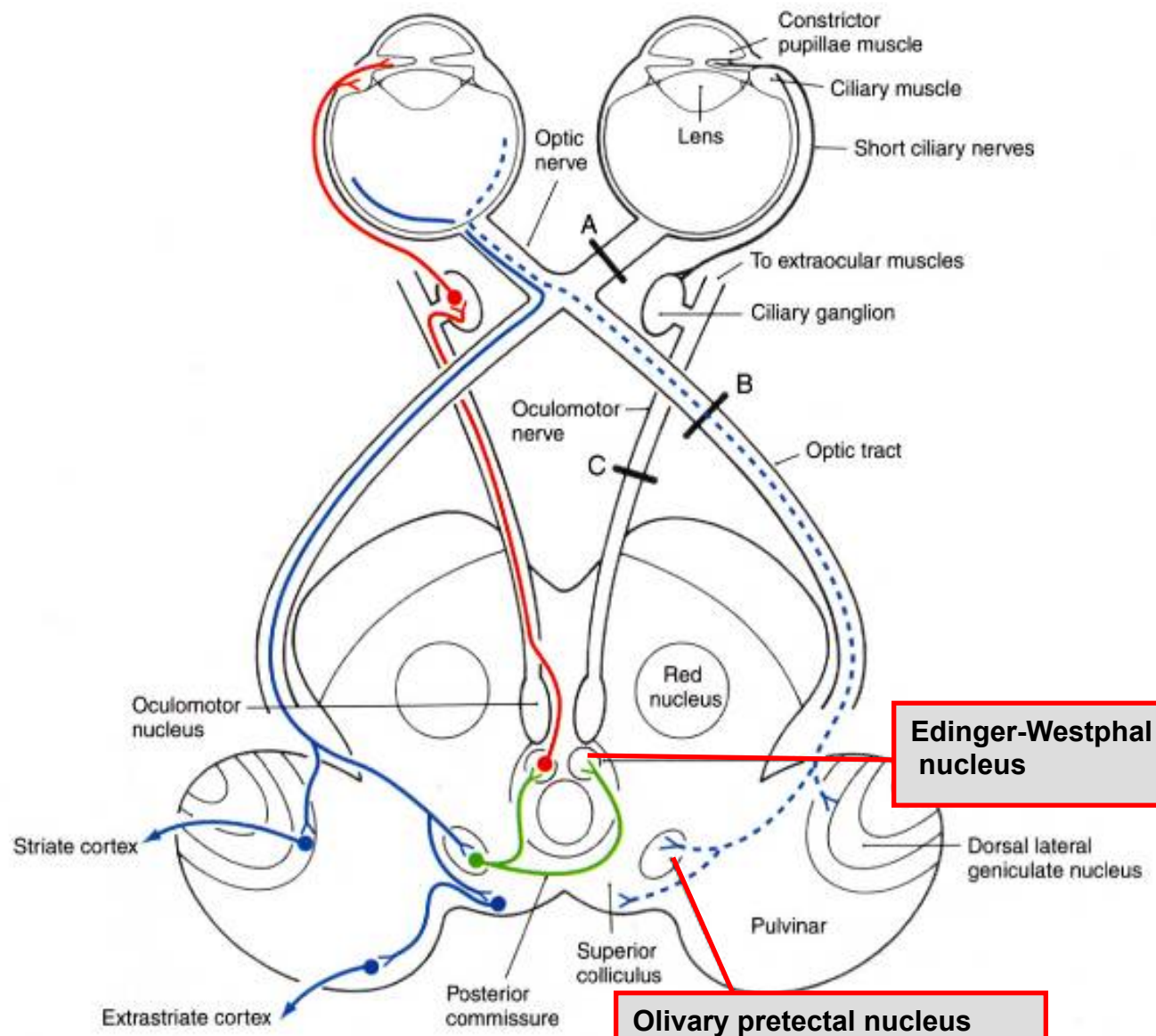


**Clinical correlation of Meyer's loop in the axial plane.**



# Pupillary Light Reflex

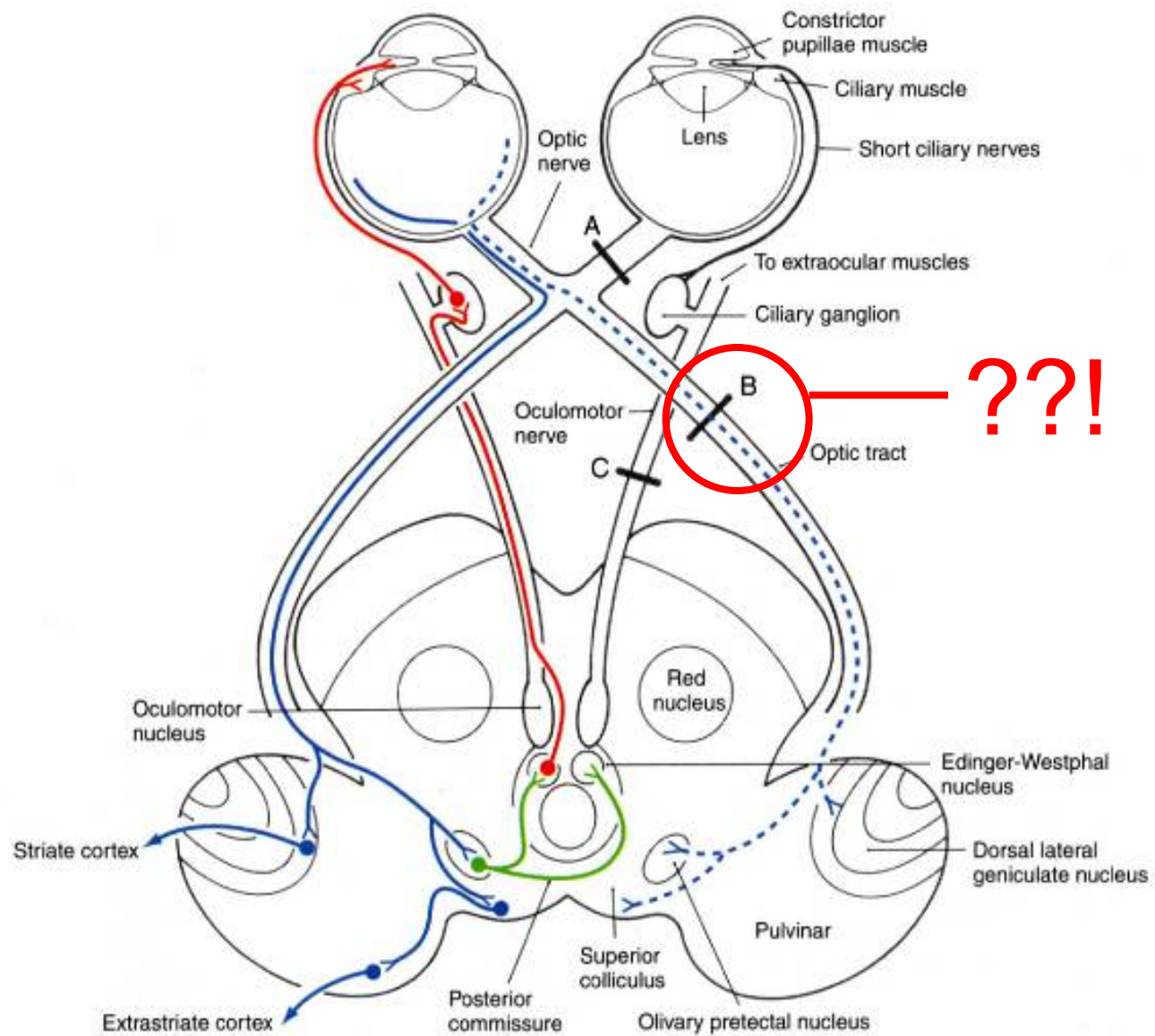




**Edinger-Westphal nucleus**

**Olivary pretectal nucleus**

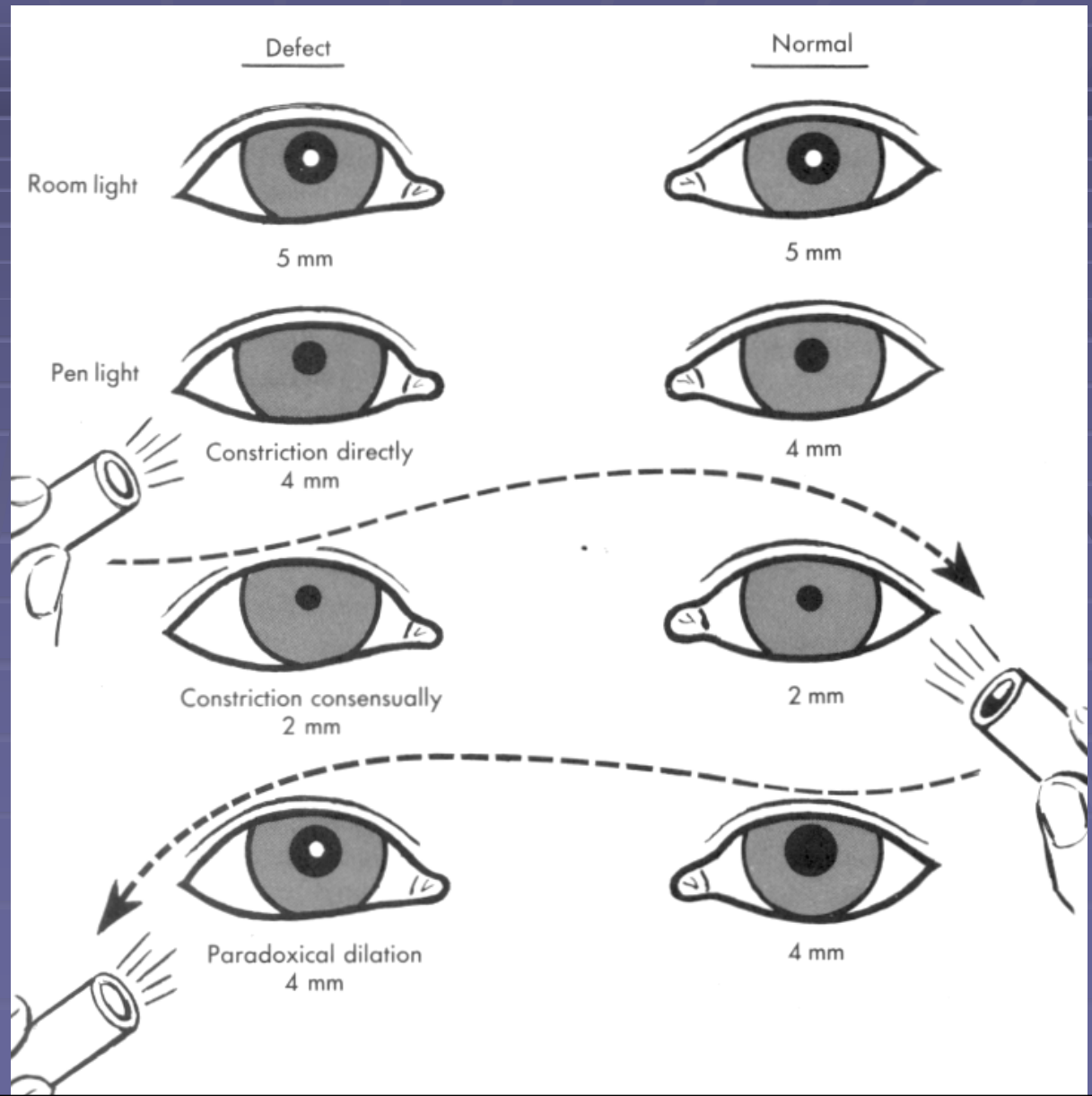




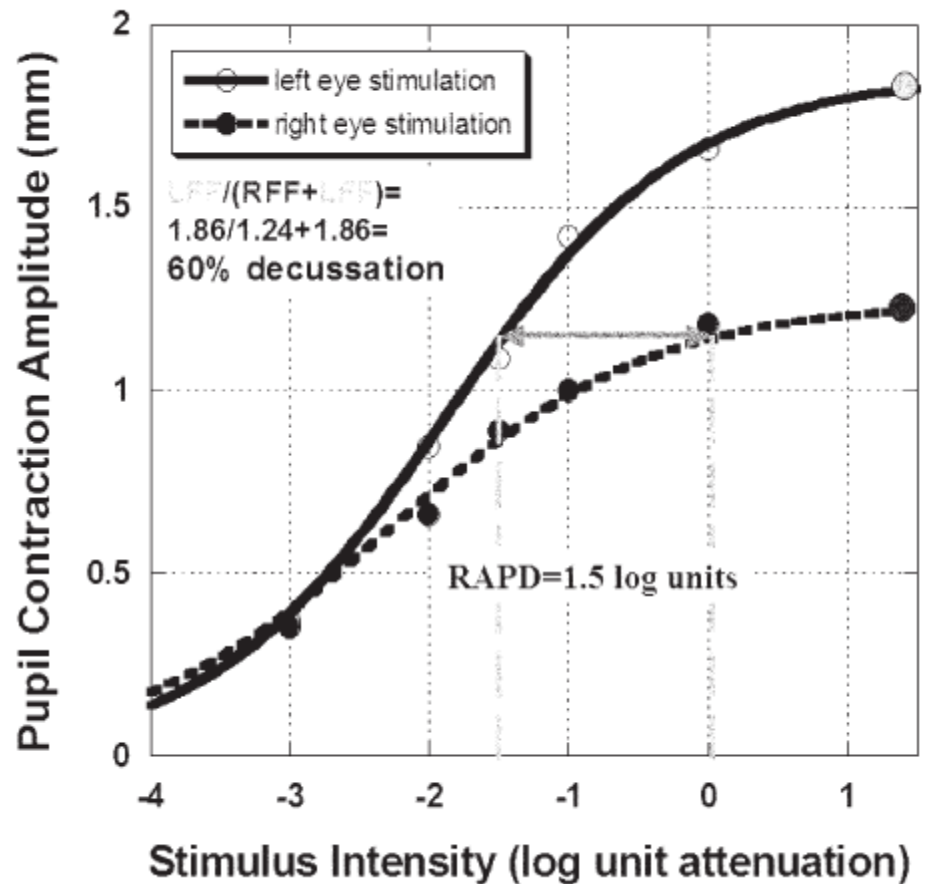
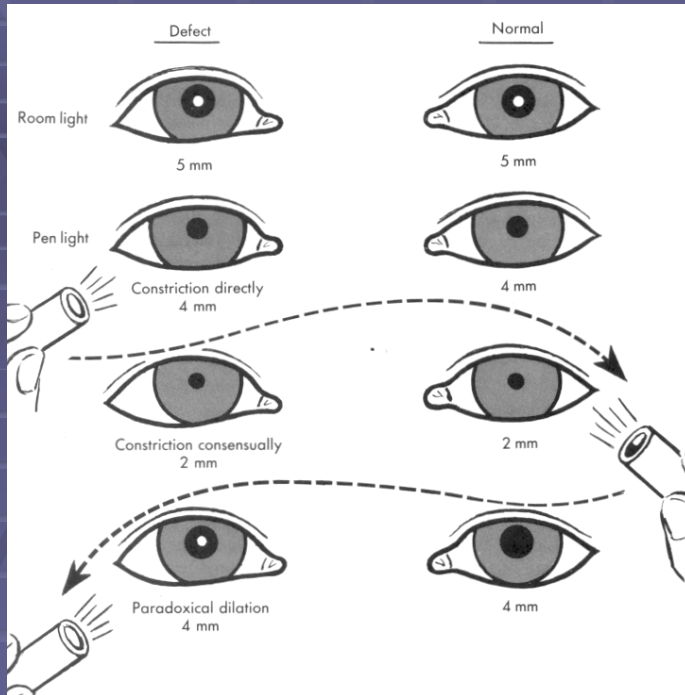
relative afferent pupillary defect  
(RAPD)

# relative afferent pupillary defect (RAPD)

swinging-flashlight test



# relative afferent pupillary defect (RAPD)



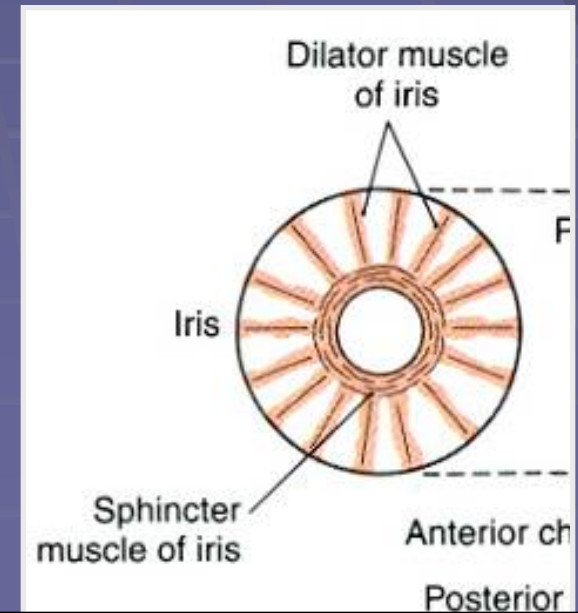
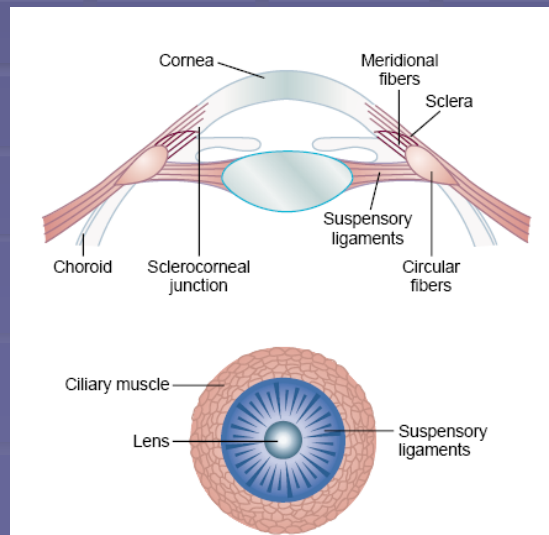
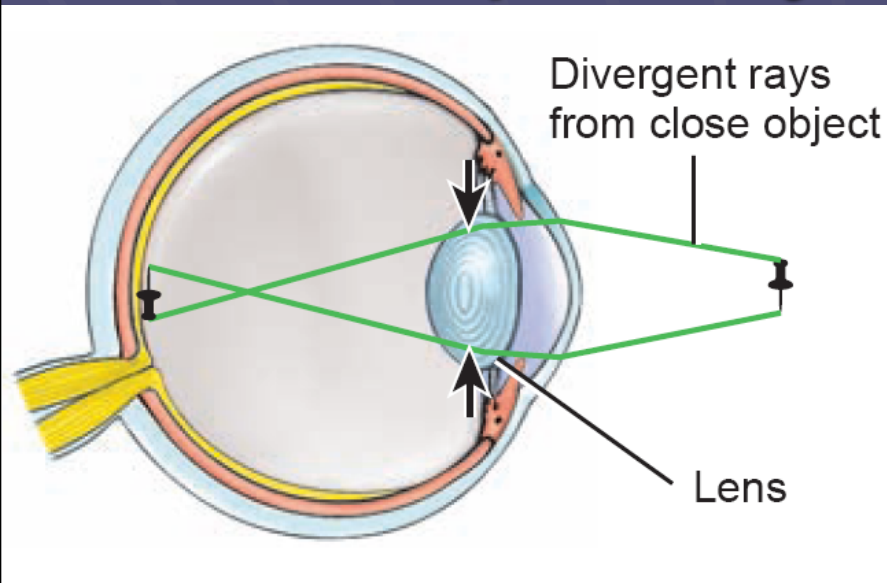
# relative afferent pupillary defect (RAPD)

- Usually before the chiasm problem
  - Retinal detachment
  - Ischemic retina
  - Optic nerve : ischemia ,compression neuritis , recovered neuritis ... etc
  - diabetic retinopathy
  - Demyelination (MS)
- Unilateral Optic track lesion
- Unilateral mid brain lesion

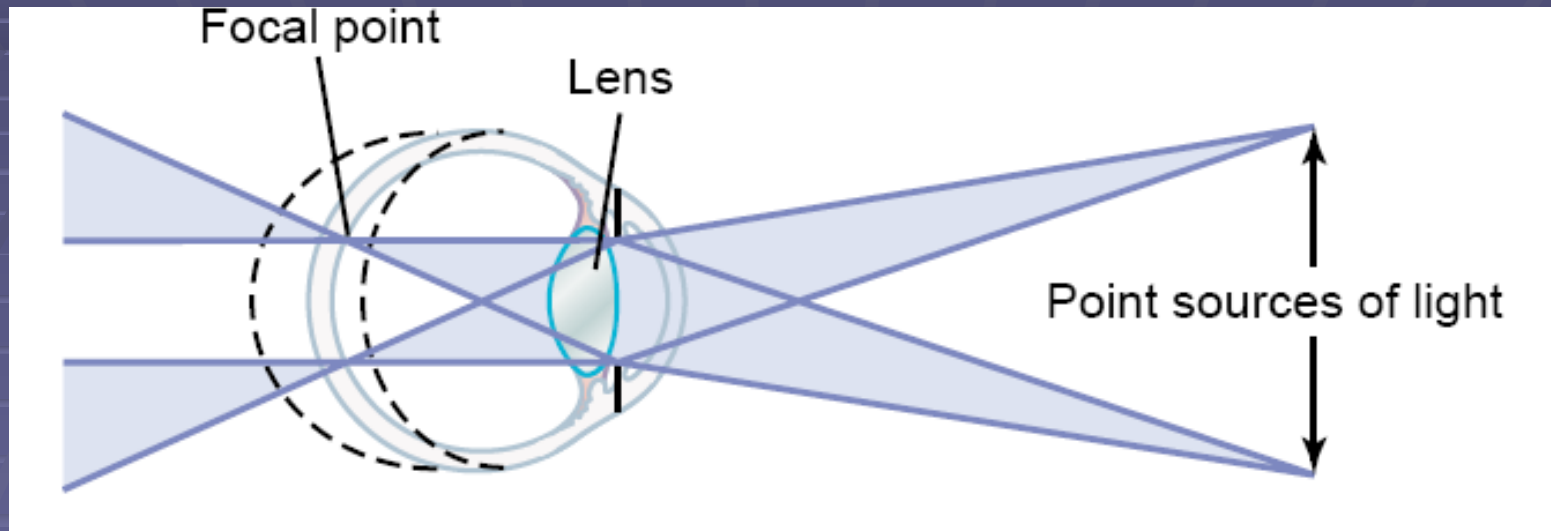


# Accommodation and parasympathetic

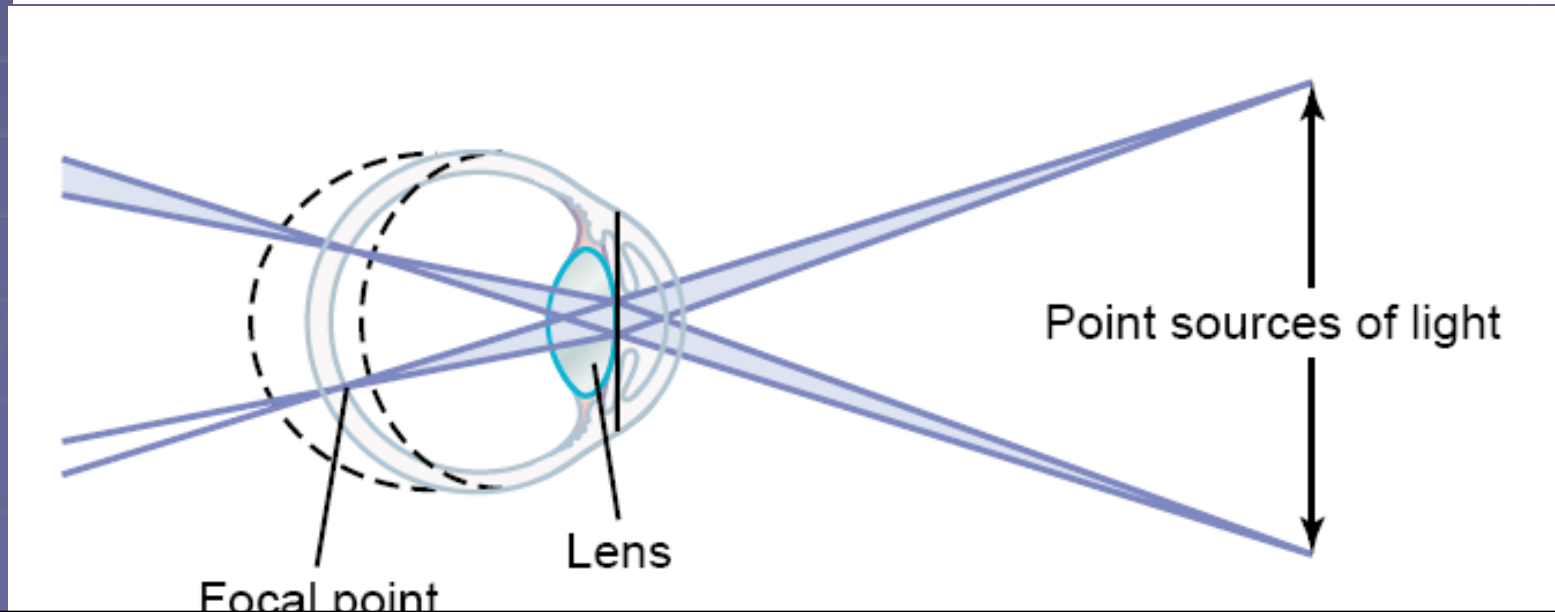
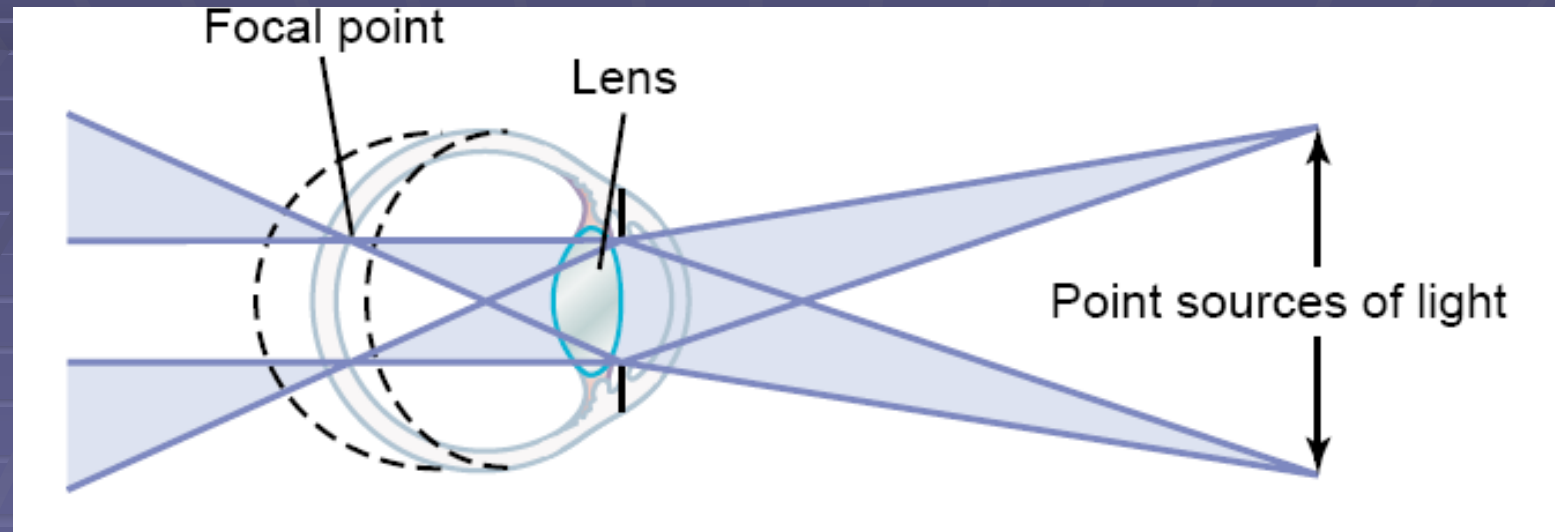
## The pupil near reflex

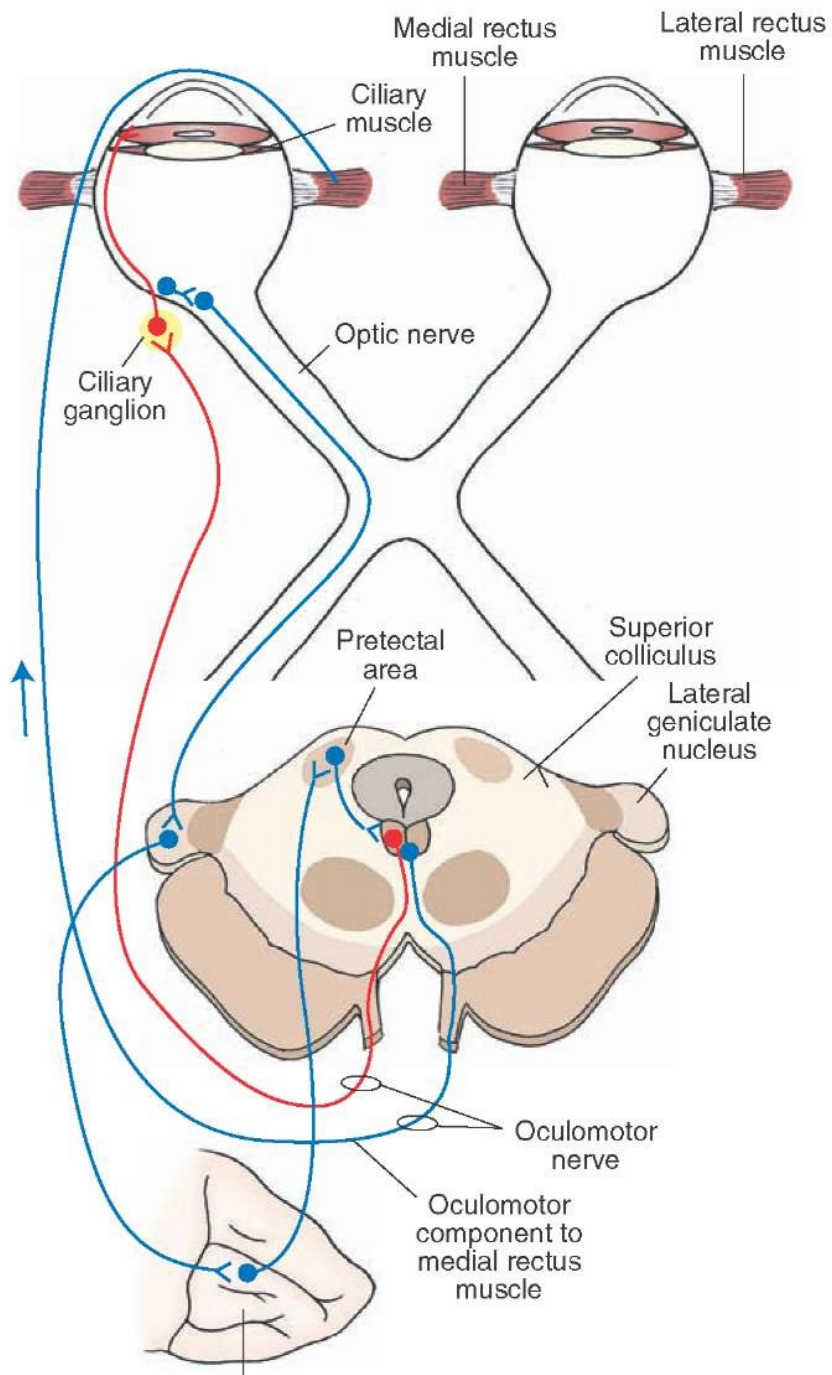


# Pupillary Adjustment



# Pupillary Adjustment





extrastriatal Visual cortex

light-near dissociation

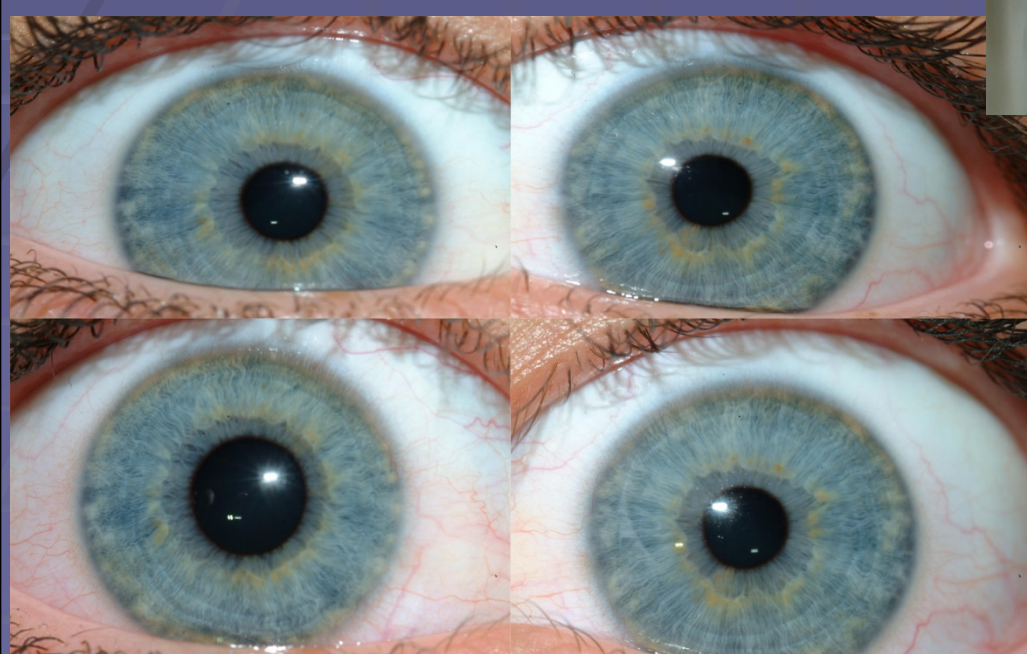


# light-near dissociation

- Adie's tonic pupil
- Damage to the dorsal mid-brain (tectal area) around the cerebral aqueduct “but not the E W nucleus”
  - Stroke
  - Meningitis
  - Tumor
  - Neurosyphilis
  - Diabetic neuropathy
  - Demyelination (MS)
- Dorsal midbrain syndrome  
**(Parinaud's Syndrome)**



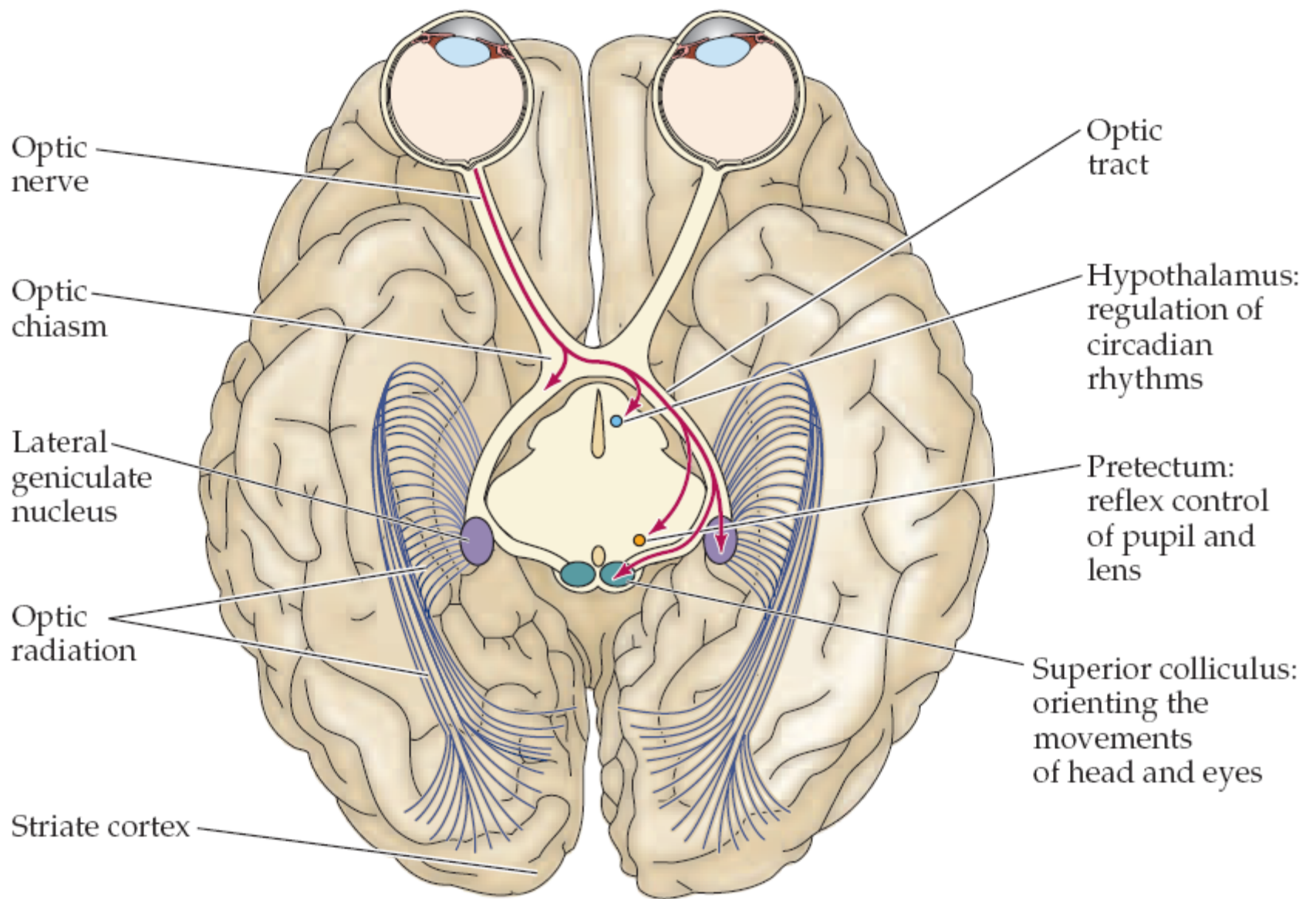
# Anisocoria



# Anisocoria

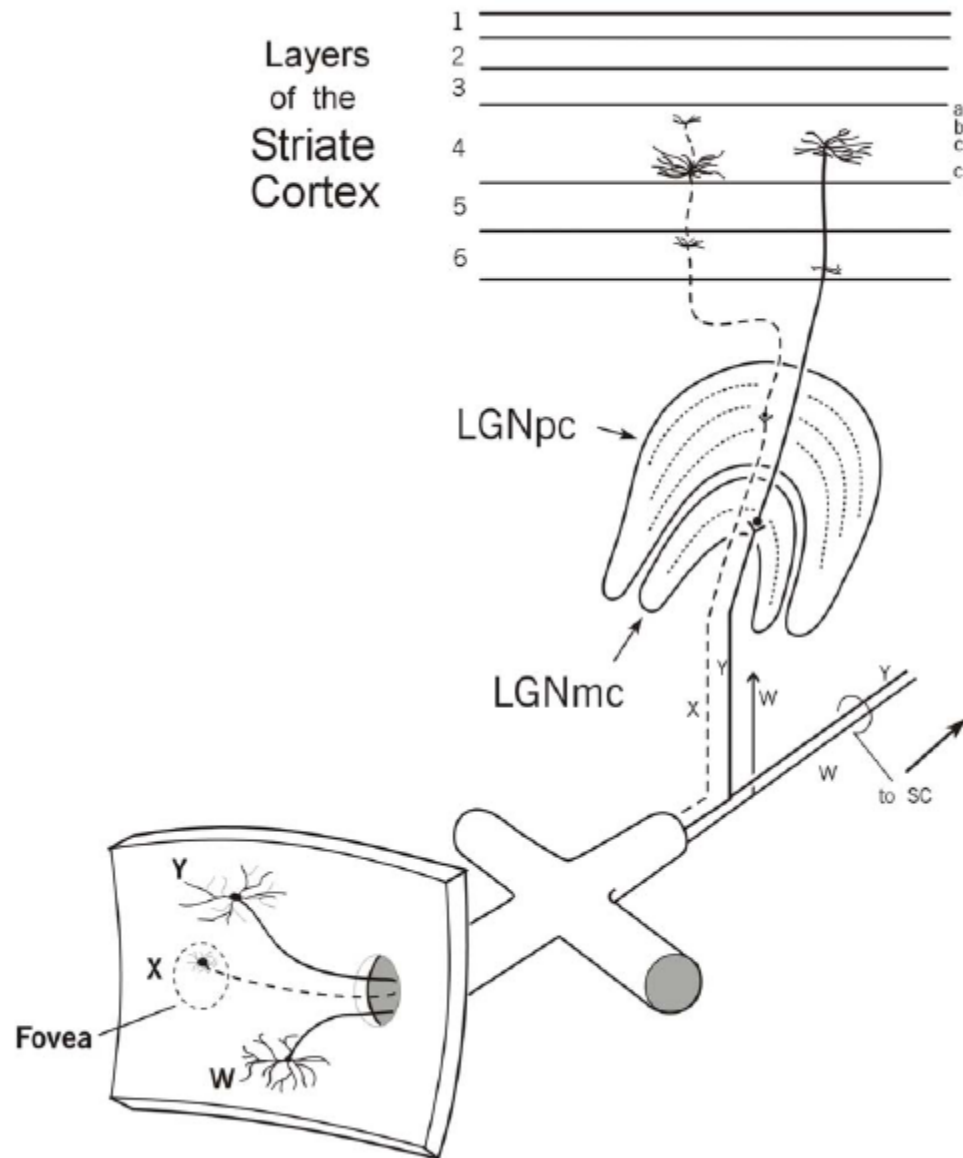
- Efferent pathway or the eye it self
- Adie's tonic pupil
- One side Dorsal midbrain syndrome
- Horner syndrome

# **VISUAL PATHWAY**

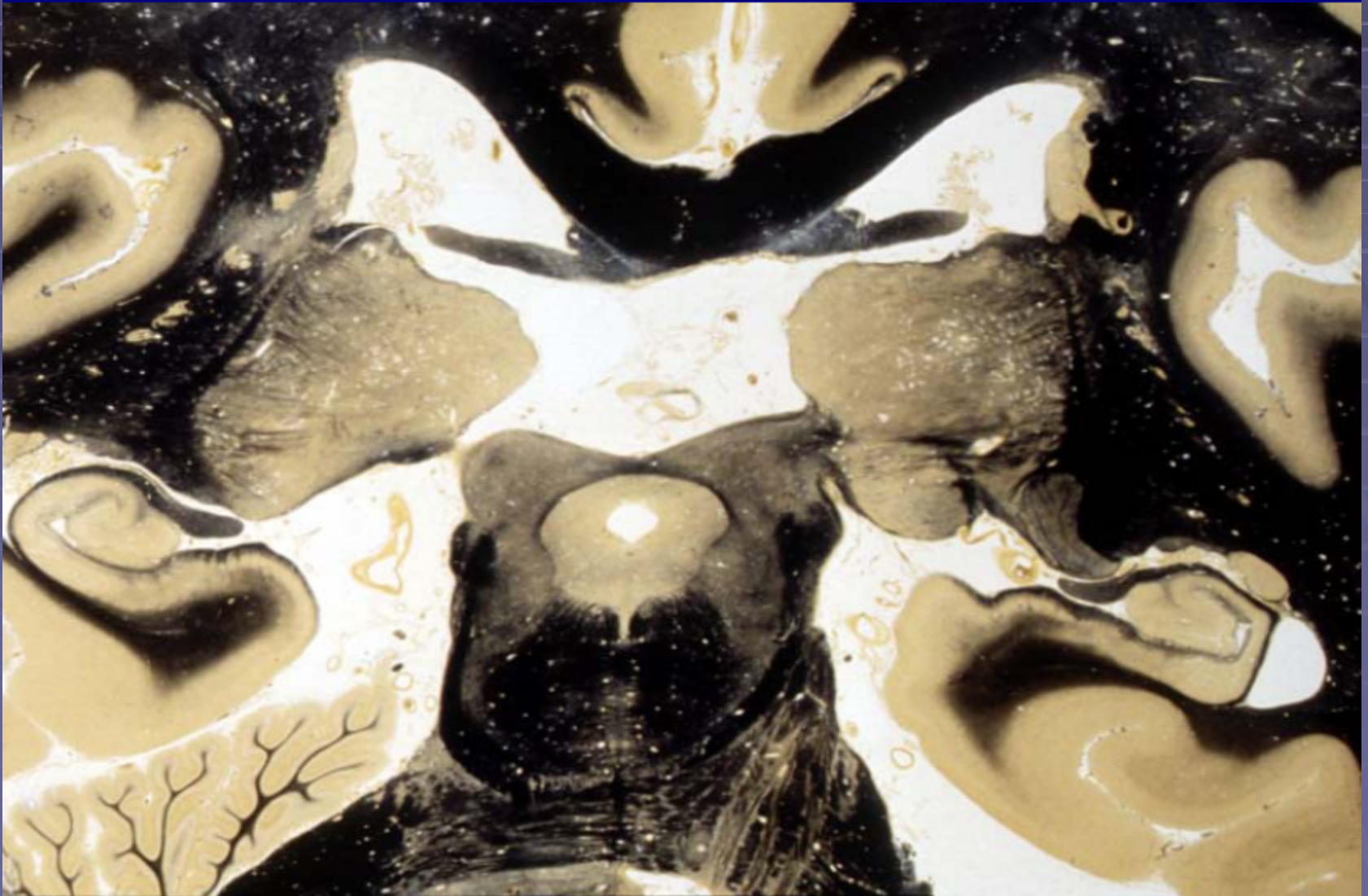




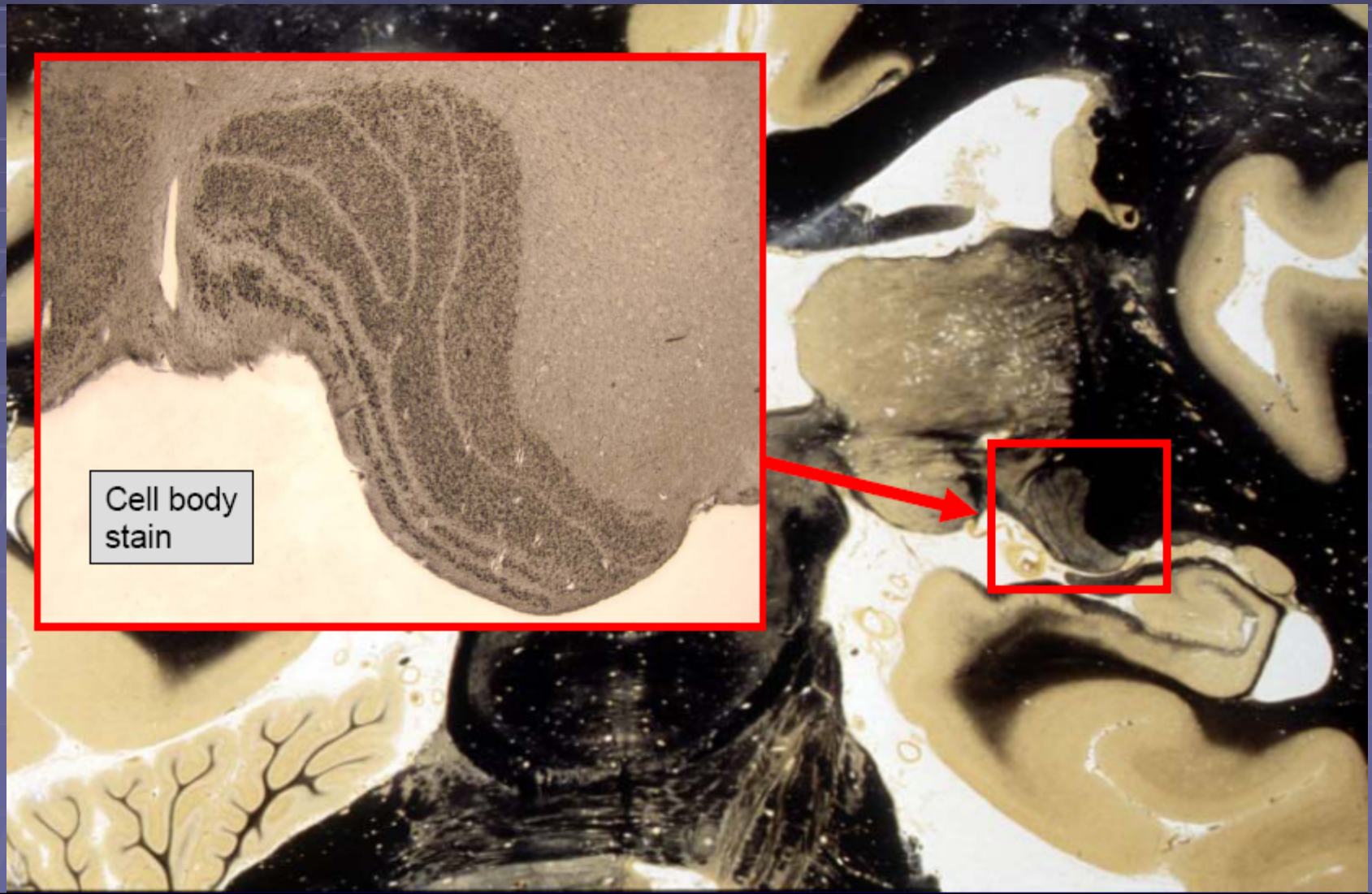
# Primary visual cortex



# Lateral geniculate nucleus

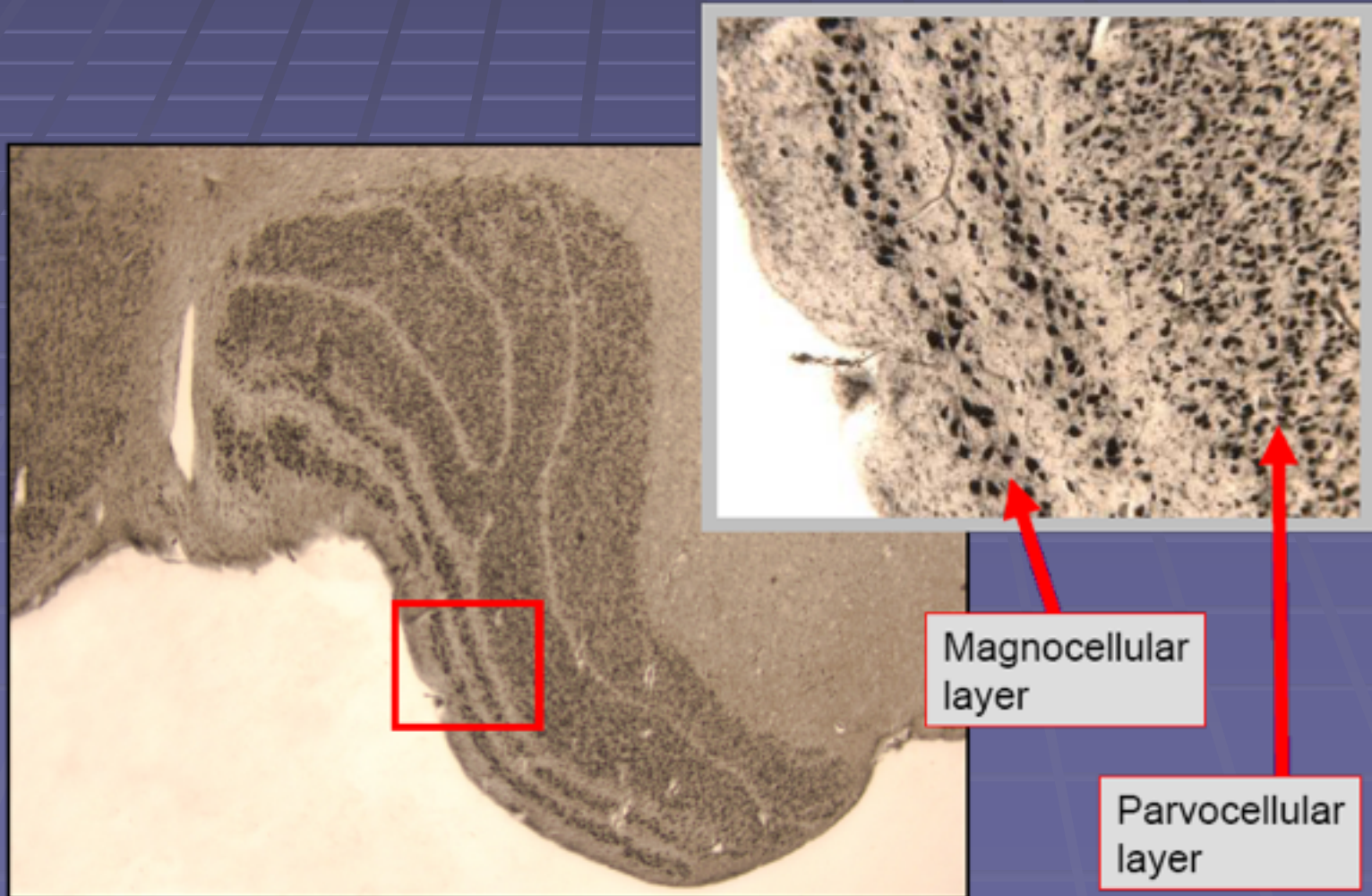


# Lateral geniculate nucleus

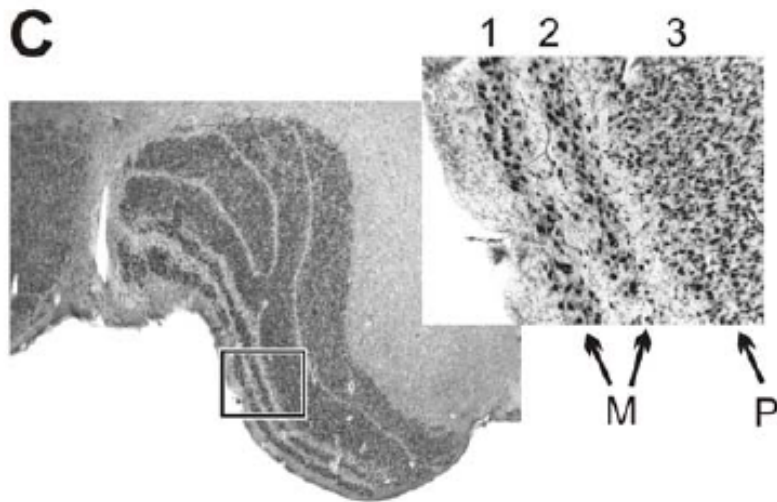




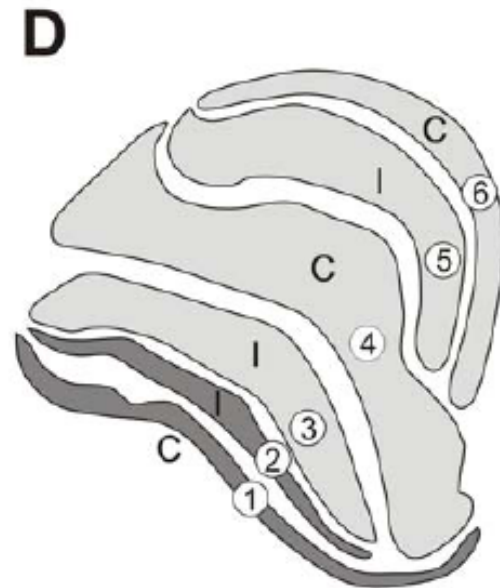
# Lateral geniculate nucleus



# Lateral geniculate nucleus



Left Lateral geniculate nucleus  
(coronal plane, posterior part of nucleus)  
M: magnocellular layers  
P: parvocellular layers



Left Lateral geniculate nucleus  
(coronal plane, middle of nucleus)  
Layers 1 and 2: magnocellular layers  
Layers 3-6: parvocellular layers  
C: layer receives input from contralateral eye  
I: layer receives input from ipsilateral eye

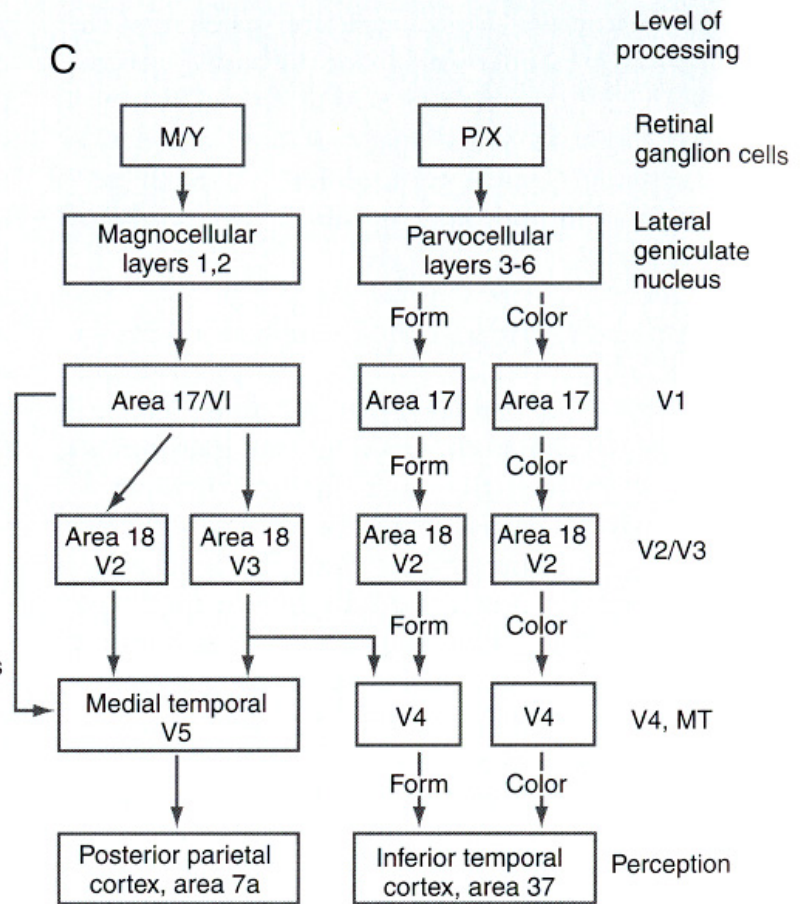
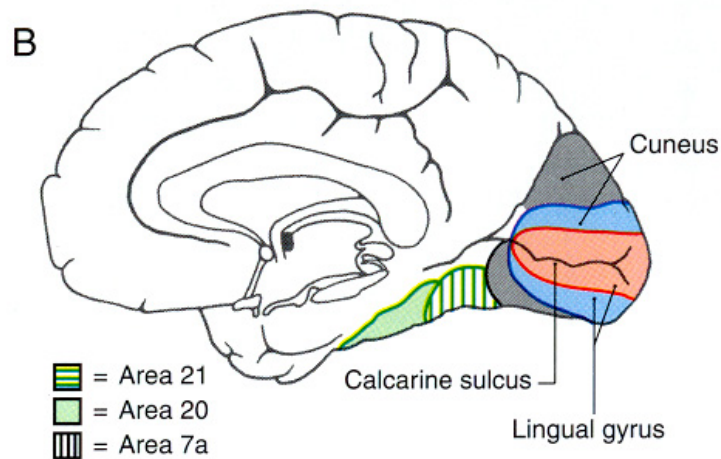
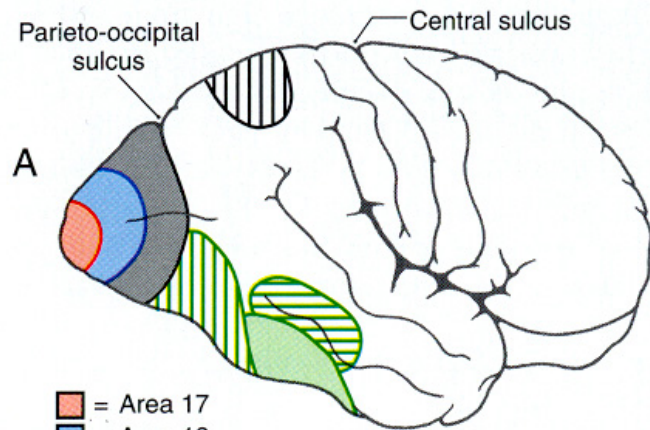


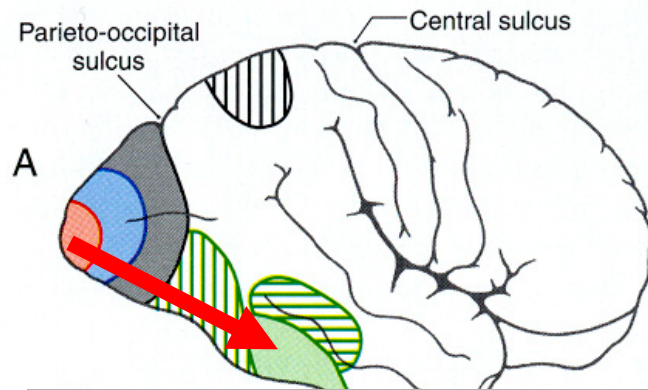


**Magnocellular system**



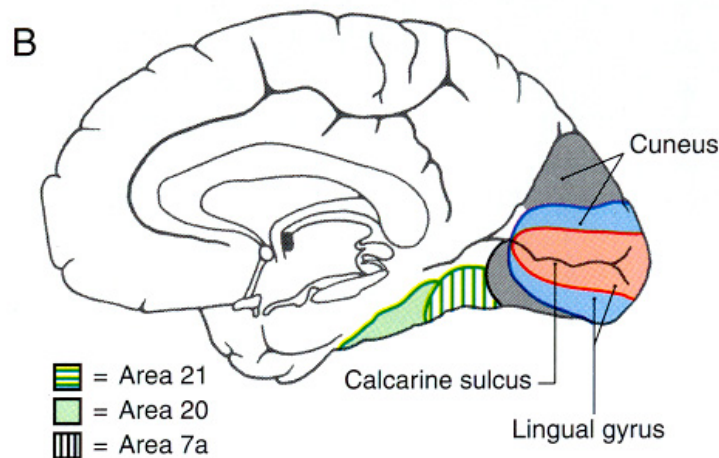
**Parvocellular system**



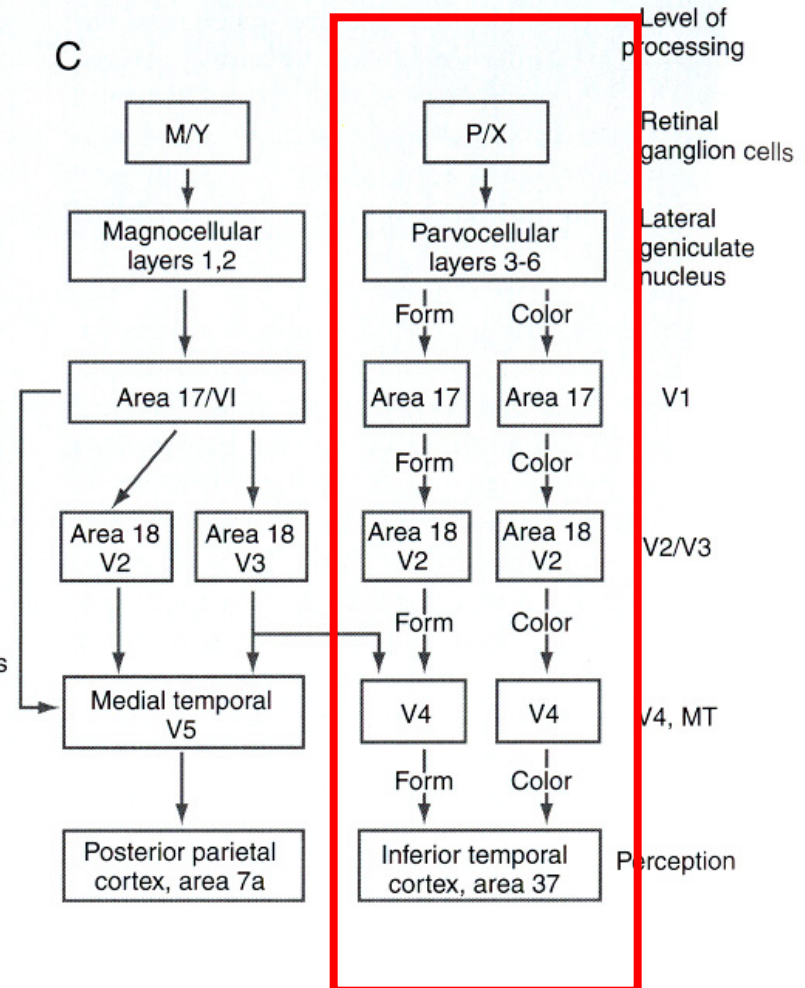


## Ventral "What" pathway

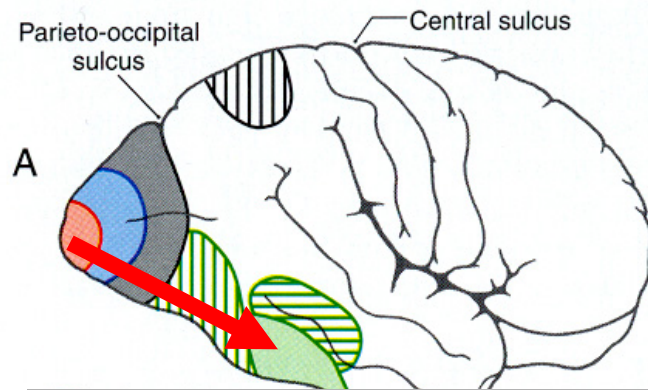
Area 17  
Area 37



C

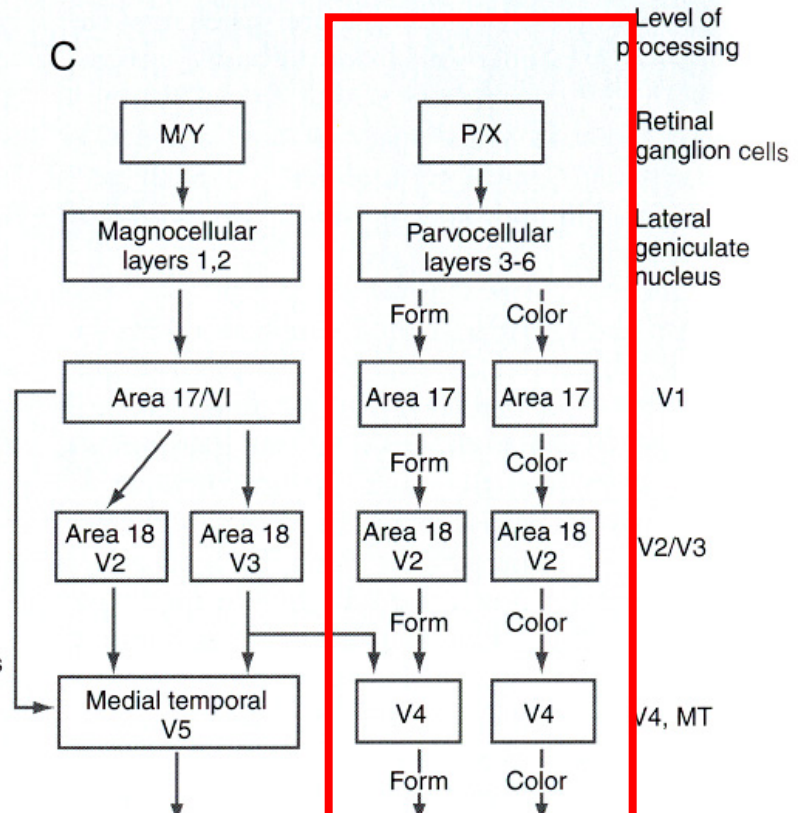






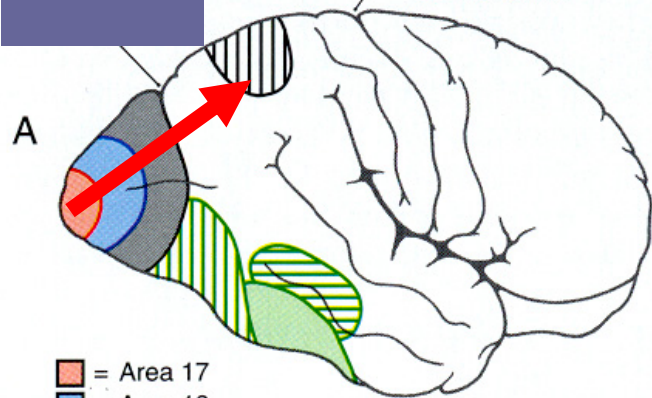
## Ventral “What” pathway

■ = Area 18  
 ■ = Area 37

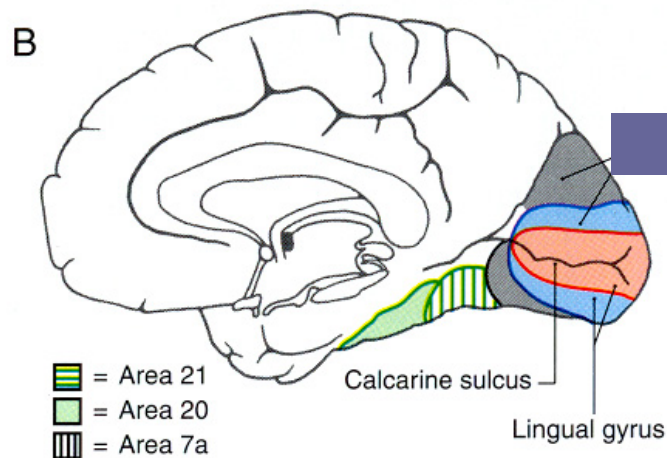


- Carries information about **static object properties** such as **colour, luminance, stereopsis and pattern recognition**.
- Slow pathway from P-ganglion cells (through laminae 3-6 of LGN, V1) to V2, V4 and **inferior temporal cortex**

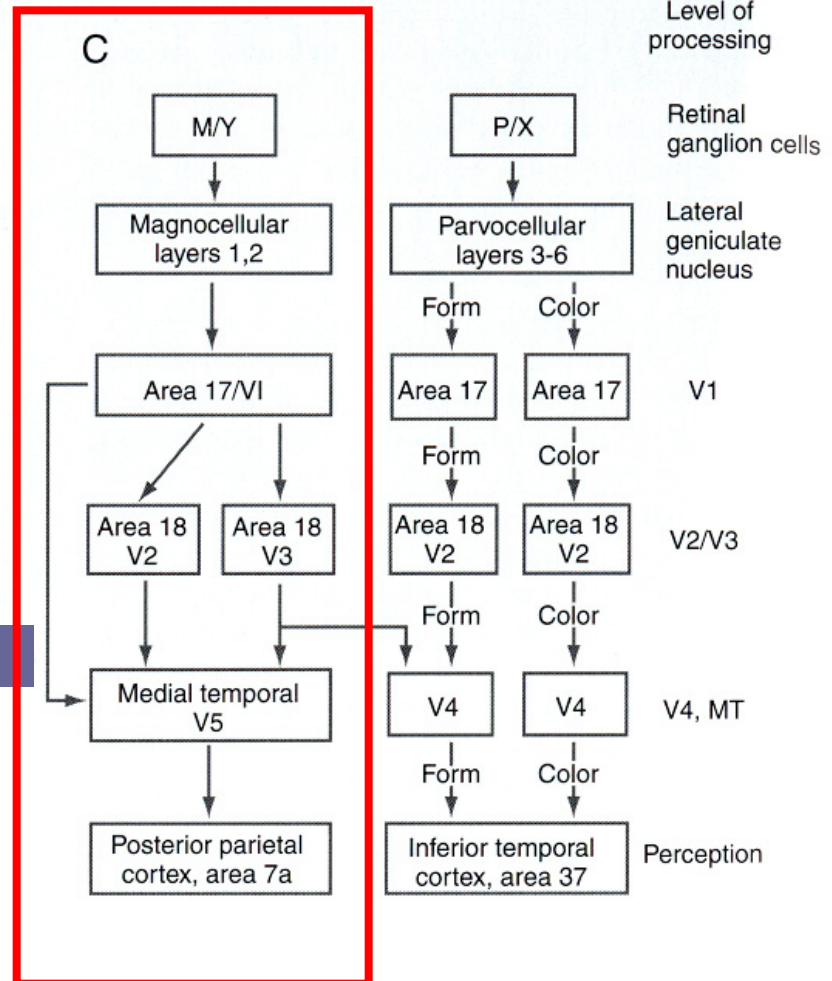
# Dorsal "Where" pathway



- = Area 17
- = Area 18
- = Area 19
- = Area 37

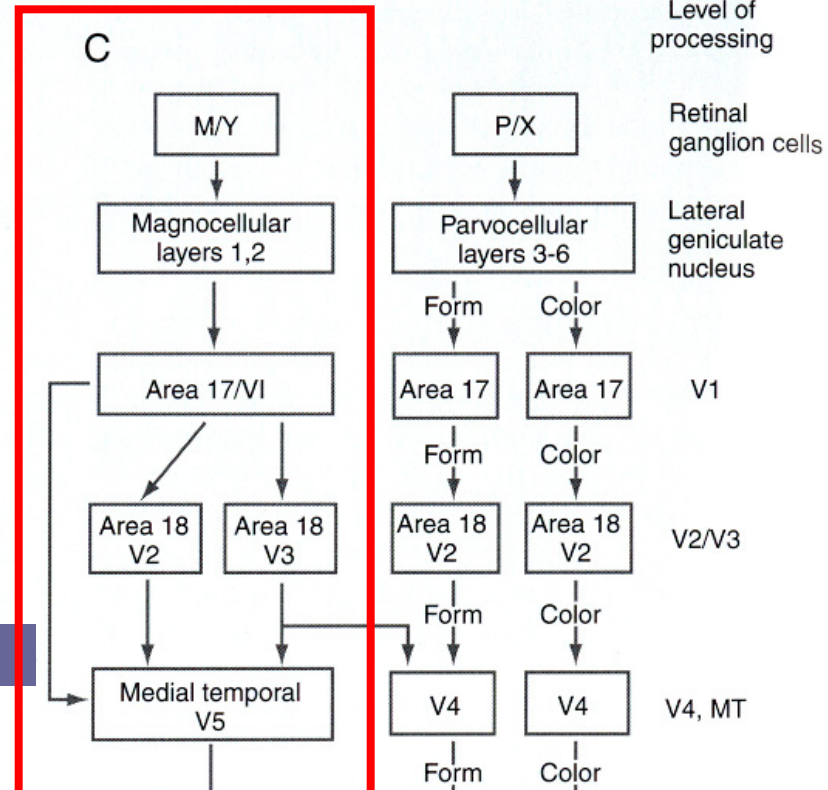
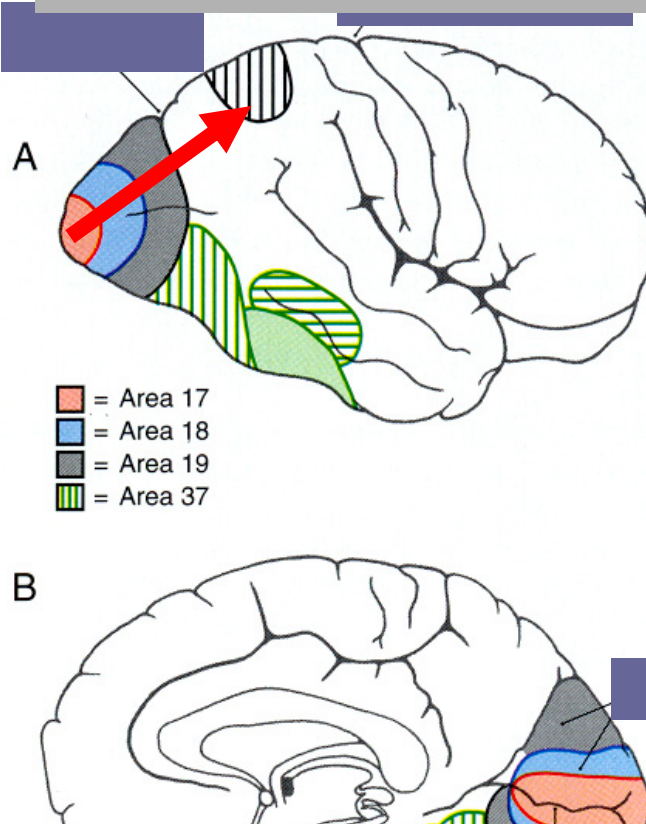


- = Area 21
- = Area 20
- = Area 7a





## Dorsal “Where” pathway



- Information about **dynamic object properties- motion and spatial relationships**
- Fast pathway for transient visual signals
- Pathway to V1, V2, MT, medial superior temporal and parietal lobe