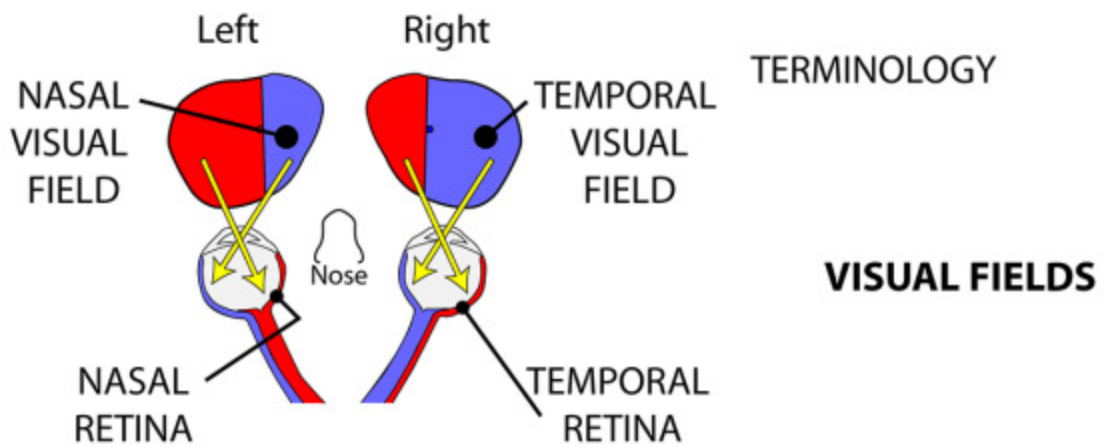
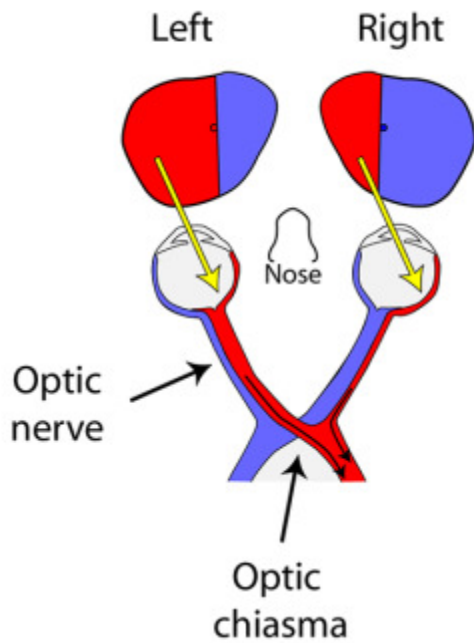


NORMAL AND ABNORMAL VISUAL PATHWAYS



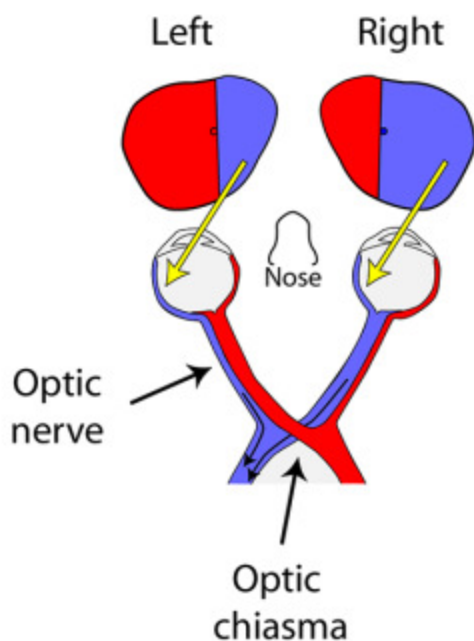


VISUAL PATHWAYS

Left half of vision goes to

1. Nasal retina of left eye (these fibres then cross at the chiasma)
2. Temporal retina of right eye (these fibres do not cross).

Therefore all **left vision** ends up on the **right side of the brain**.

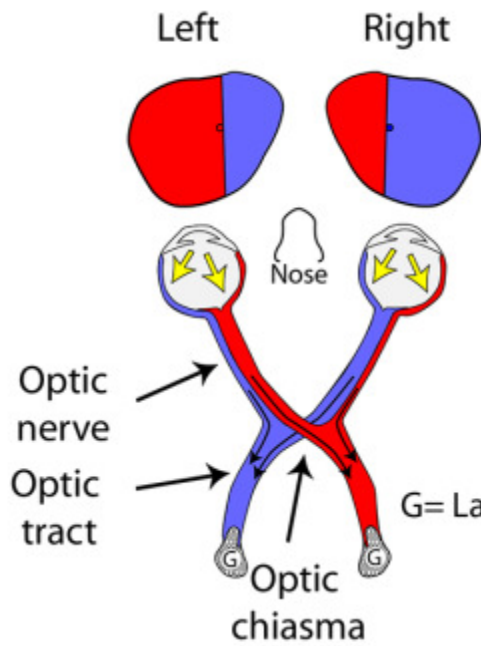


VISUAL PATHWAYS

Right half of vision goes to

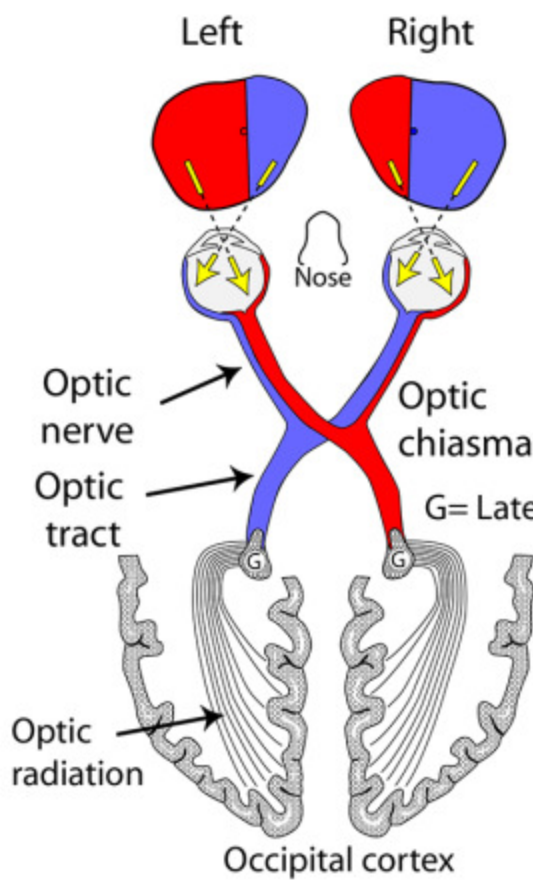
1. Nasal retina of right eye (these fibres then cross at the chiasma)
2. Temporal retina of left eye (these fibres do not cross).

Therefore all **right vision** ends up on the **left side of the brain**.



VISUAL PATHWAYS

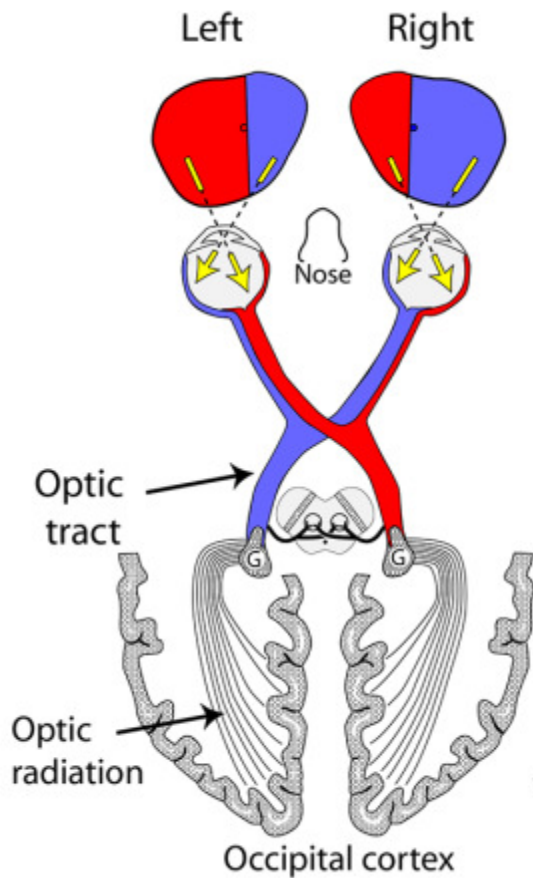
All fibres, whether or not they cross at the chiasma, pass in their respective optic tracts and synapse in the lateral geniculate bodies.



VISUAL PATHWAYS

From the lateral geniculate bodies fibres pass in the optic radiations to the left and right occipital cortex.

Note that all images arrive in the occipital cortex inverted (upside down)

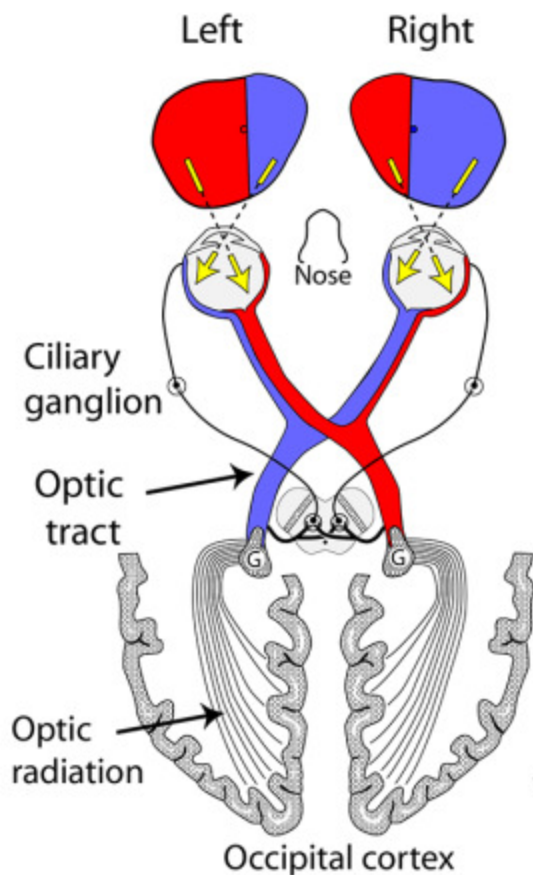


VISUAL PATHWAYS

Fibres from the optic tracts on each side synapse with each of the Edinger Westphal nuclei so that all reflexes are bilateral.

To initiate rapid reflexes at brain stem level, the incoming fibres from the eye must connect to the mid brain which lies near the optic tracts.

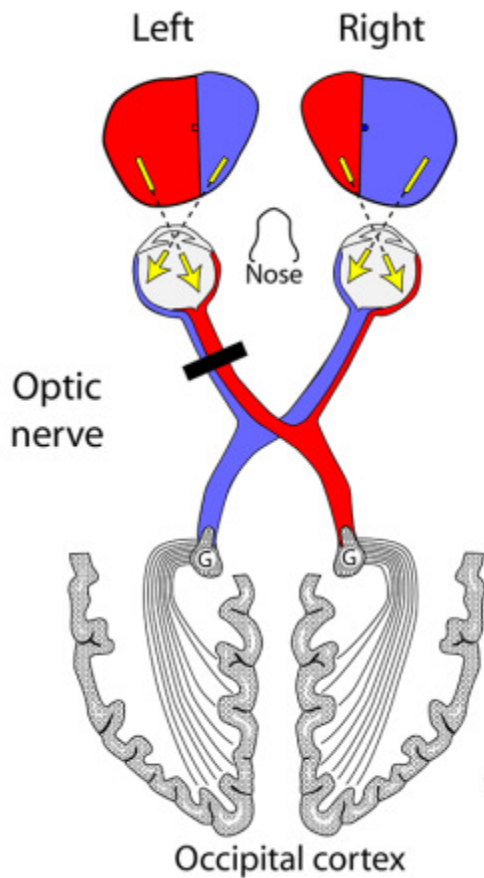
G= Lateral geniculate body



VISUAL PATHWAYS

Parasympathetics from the Edinger Westphal nuclei synapse in the ciliary ganglia and then supply the sphincter pupillae muscles for constricting the pupils.

G= Lateral geniculate body



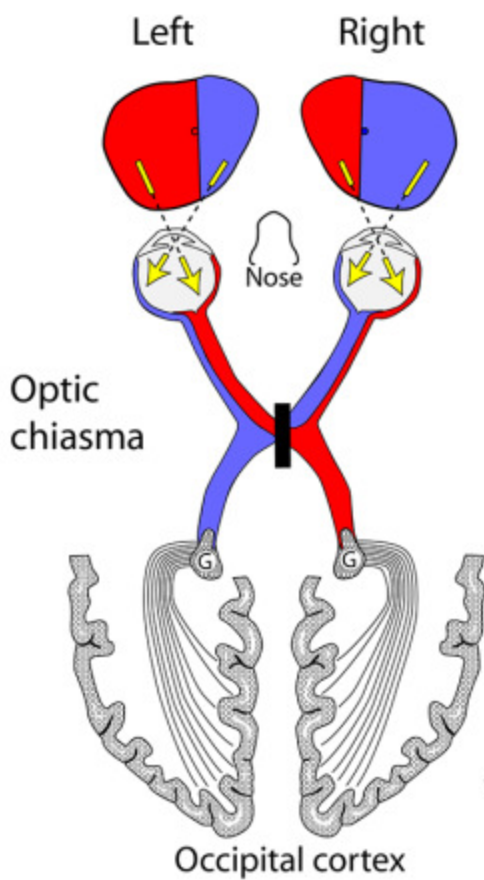
VISUAL DEFECTS

LESION 1: **OPTIC NERVE**

Complete destruction of the left optic nerve gives **blindness** in the left eye



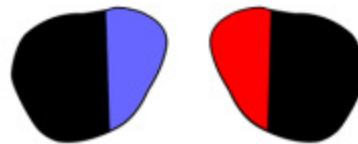
G= Lateral geniculate body



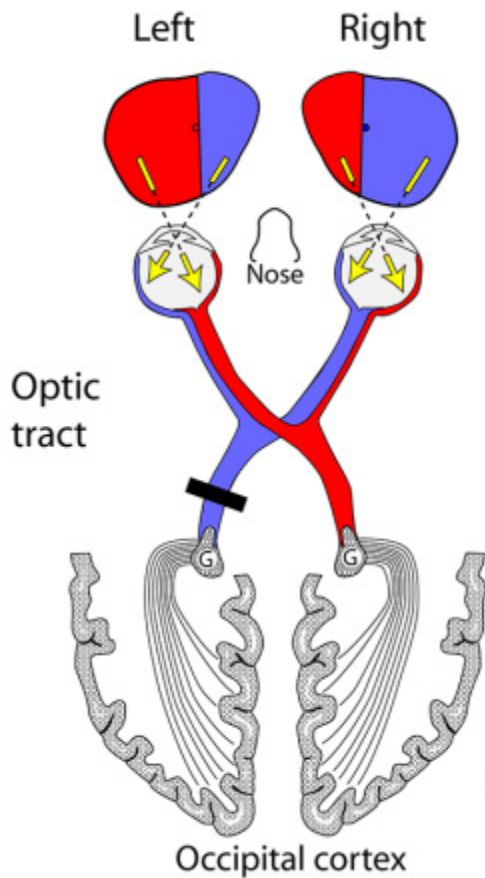
VISUAL DEFECTS

LESION 2: **OPTIC CHIASMA**

Complete destruction of all the crossing fibres leads to blindness of both temporal visual fields. This is a **BITEMPORAL HEMIANOPIA**



G= Lateral geniculate body



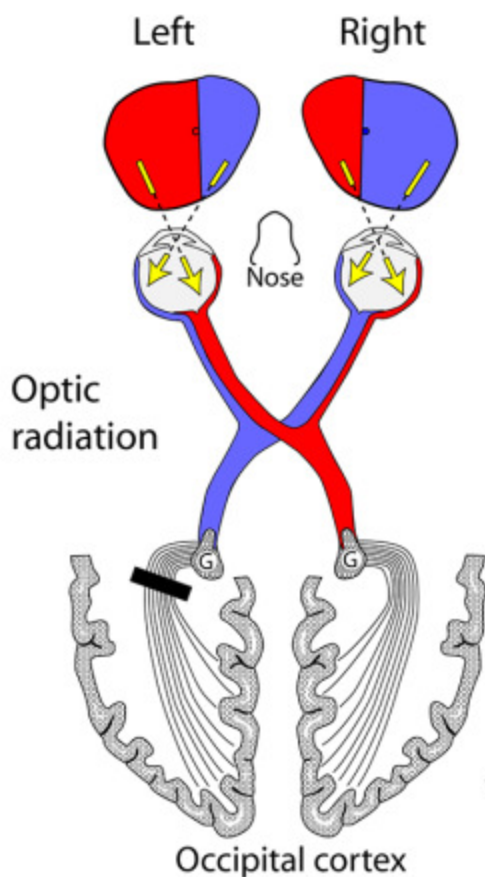
VISUAL DEFECTS

LESION 3: **OPTIC TRACT**

Complete destruction of all fibres in the left optic tract leads to blindness of both right visual fields. This is a **RIGHT HOMONYMOUS HEMIANOPIA**



G= Lateral geniculate body



VISUAL DEFECTS

LESION 4: **OPTIC RADIATION**

Selective destruction of fibres in the left optic radiation leads to **variations** on the theme of a **RIGHT HOMONYMOUS HEMIANOPIA** that may be loss of a quadrant. For example:



G= Lateral geniculate body

"A CENTRAL FIELD LOSS
IS ALWAYS CAUSED
BY A PROBLEM IN THE EYE"
(E.G. GLAUCOMA OR
DETACHED RETINA)

"A UNILATERAL COMPLETE
FIELD LOSS
IS ALWAYS CAUSED
BY A PROBLEM IN THE EYE
OR IN THE OPTIC NERVE"