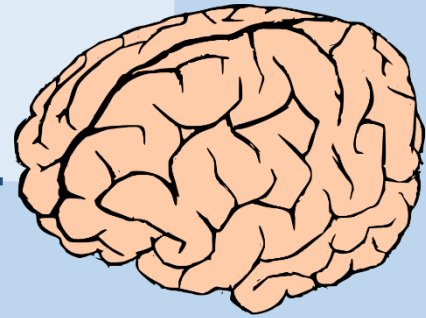




# Anatomy of the {2, 3, 4, 6} Cranial nerves



ملاحظة:

هذا الملف للمراجعة وترتيب المعلومات فقط وليس مرجع للمذاكرة لانه ليست كل المعلومات متضمنة

Some **S**ay **M**arry **M**oney **B**ut  
**M**y Brother **S**ays **B**ig **B**rain  
**M**atter **M**ost

The mnemonic above is to help you remember the types of cranial nerves as: **S**=sensory, **M**=motor and B= **B**oth



# Muscles of the eye:

**intraocular**

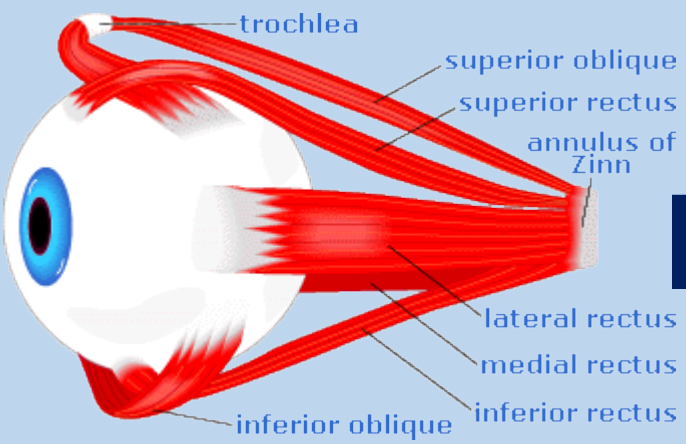
- ciliary Muscles
- radial muscles
- sphincter pupillae

Are innervated by parasympathetic fibers

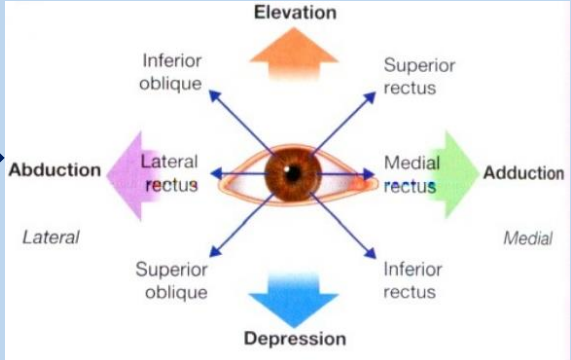
**EXTRA-OCULAR**

- Levator palpebrae superioris
- 4 recti muscles (superior, inferior, medial and lateral)
- 2 Oblique muscles superior and inferior

Are innervated by oculomotor nerve Except: *Superior oblique and Lateral rectus*



**The Action**



# Oculomotor Nerve:

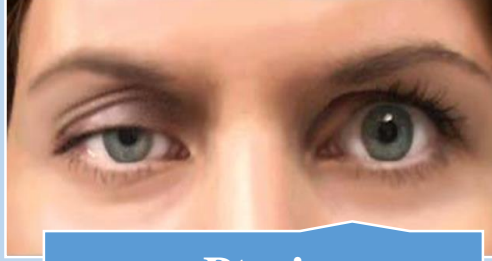
Type	GSE : general somatic efferent + GVE : general visceral efferent (parasympathetic )
nuclei	<ul style="list-style-type: none"> <li>Main oculomotor nucleus</li> <li>Accessory nucleus (Edinger-Westphal nucleus);</li> </ul>
Level of the nuclei	Mid brain <u>superior colliculus</u>
receives	<ul style="list-style-type: none"> <li>Corticonuclear fibers → <u>accommodation reflex</u></li> <li>pretectal nucleus → <u>pupillary reflexes</u></li> </ul>
Important notes:	<p>Fibers of oculomotor nucleus passes through red nucleus((without synapses))→ interpeduncular fossa→ middle cranial fossa→ lateral wall of the cavernous sinus→ <u>superior orbital fissure</u>.</p> <p>Preganglionic fibers of Edinger-Westphal nucleus has the same pathway but terminate in ciliary ganglion</p> <ul style="list-style-type: none"> <li>➤ Postganglionic fibers pass through the <u>short ciliary nerves</u> to the eyeball, where they supply:</li> <li>➤ Constrictor pupillae muscle of the iris and Ciliary muscle</li> </ul>



## Occulomotor Nerve injuries:



Lateral squint.



Ptosis



Pupillary dilatation

## Trochlear Nerve:



- Small motor nucleus at the level of inferior colliculus.
- The only cranial nerve comes from the dorsal aspect.
- **Supplies Superior oblique**
- Lesion of this results in difficulty in

Walking downstairs **because** of the Inability to rotate the eyeball infero-laterally



## Abducent Nerve:

- One motor nucleus
- Close to the middle line
- forms the facial colliculus ( if injured Facial nerve manifestations may appear).
- Inability to direct the affected eye laterally- *Lateral rectus action* -, so it result in **(medial squint)**.



# OPTIC NERVE:

photoreceptors rods and cones of the retina

1st order neuron bipolar cells of the retina

2nd order neuron ganglion cells of the retina

optic nerve exits the middle cranial fossa as the **optic canal**

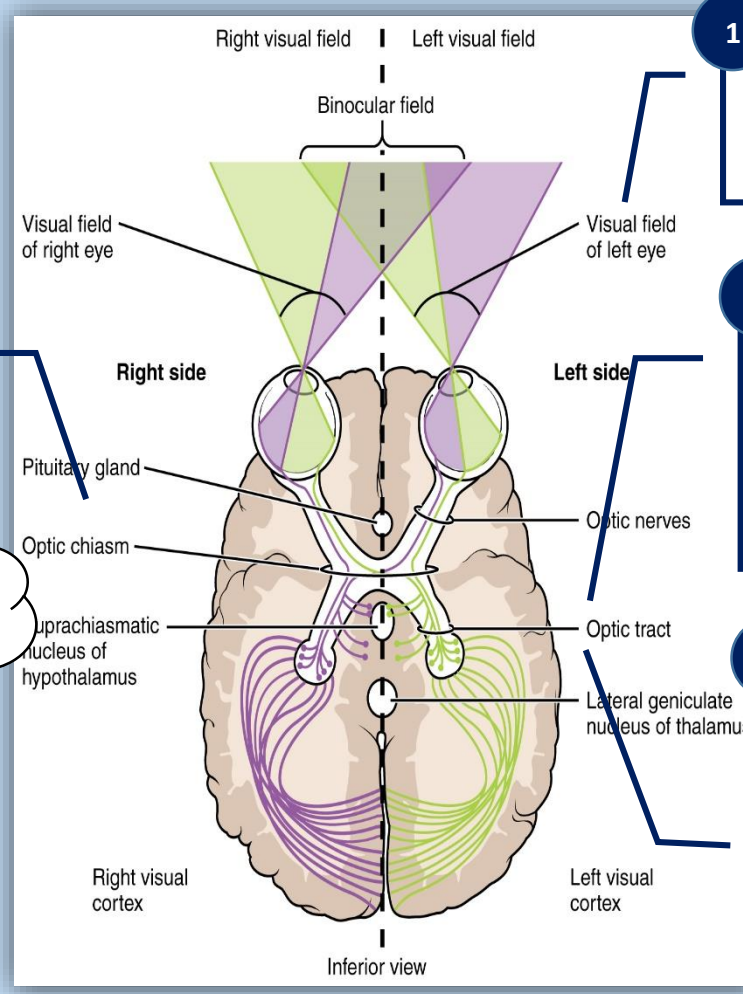
**Optic chiasm**

**Optic tract**

3rd order neuron **Lateral geniculate body (nucleus)\***

**Optic radiation**

visual cortex calcarine sulcus



2 At the level of optic chiasm the nasal fibers (medial) ONLY decussate to join the temporal (lateral) fibers.

1 Note that the medial part of the eye sees the lateral visual field.

3 Let's see what are the Nerve fibers involved in Forming the LEFT optic tract?!

- Left temporal fibers
- Right nasal fibers

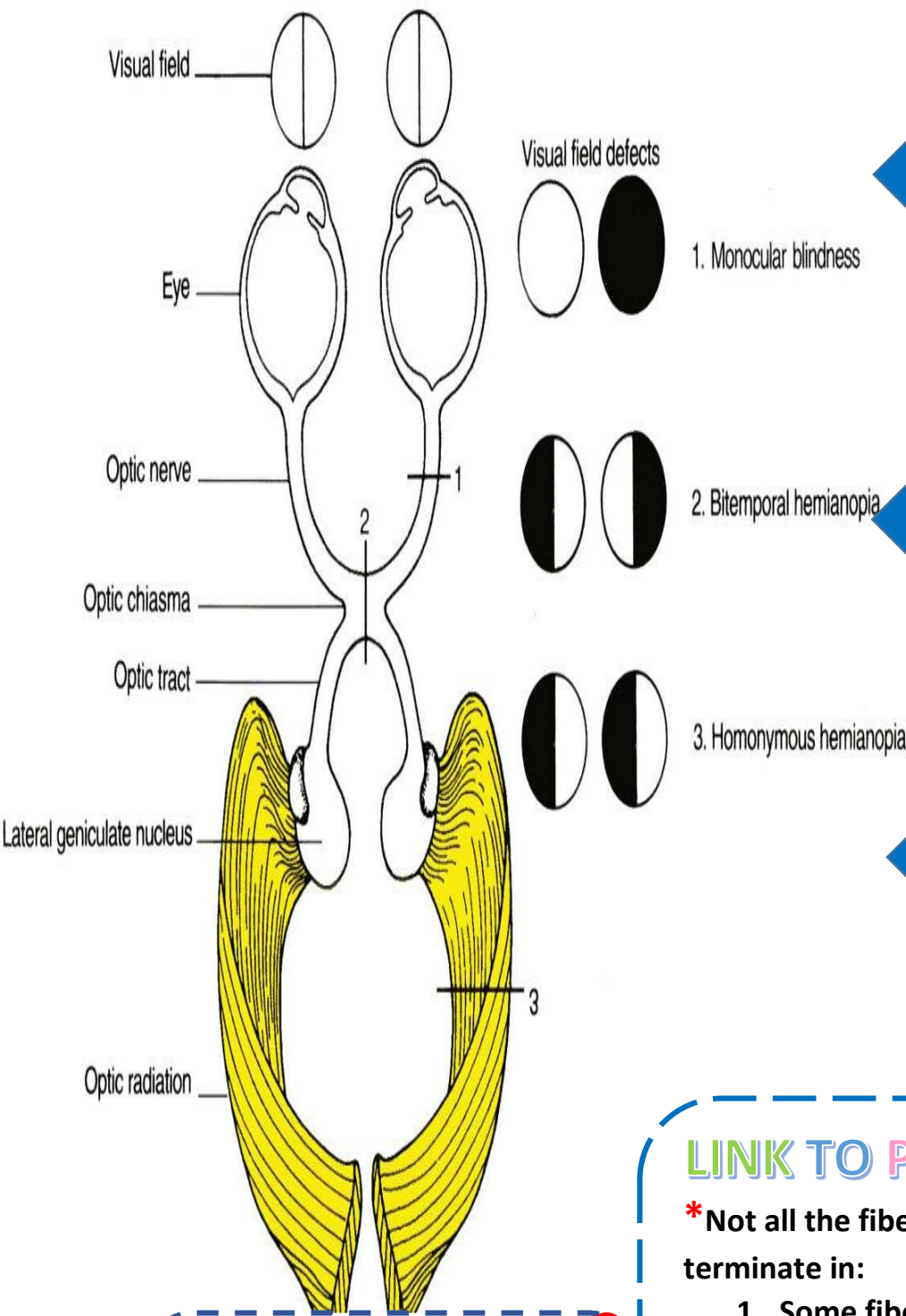
4 But what about the visual Field?! The left tract is responsible For:

- Medial field of the left eye
- Lateral field of the right eye.

Still confused?? Watch this video



# VISUAL FIELDS DEFICITS



Diseases like cataract, intraocular hemorrhage, retinal detachment and MS

Compression of the optic chiasm (pituitary gland tumor)

Vascular or neoplastic lesions of the optic tract, occipital cortex and optic radiation

**LINK TO 8<sup>th</sup> cranial nerve** 😊

Remember : vestibulocochlear nerve : Its 3<sup>rd</sup> order neuron in the **INFERIOR colliculus**, and 4<sup>th</sup> order neuron the **MEDIAL geniculate nucleus**.

**LINK TO PHYSIOLOGY** 😊

\*Not all the fibers terminate in the (LGN) some terminate in:

1. Some fibers-of the optic tract- **don't** pass through the LGN they directly pass to **pretectal area** for eye movement and **pupil reflexes**.
2. Some fibers of the LGN pass to the **superior colliculus** for **accommodation reflex**.

Dreams  
+ Work  
-----  
= Success



It is literally true  
that you can  
succeed best  
and quickest by  
helping others to  
succeed

Thank you for checking our team

Done by:

سارة محمد الجاسر

