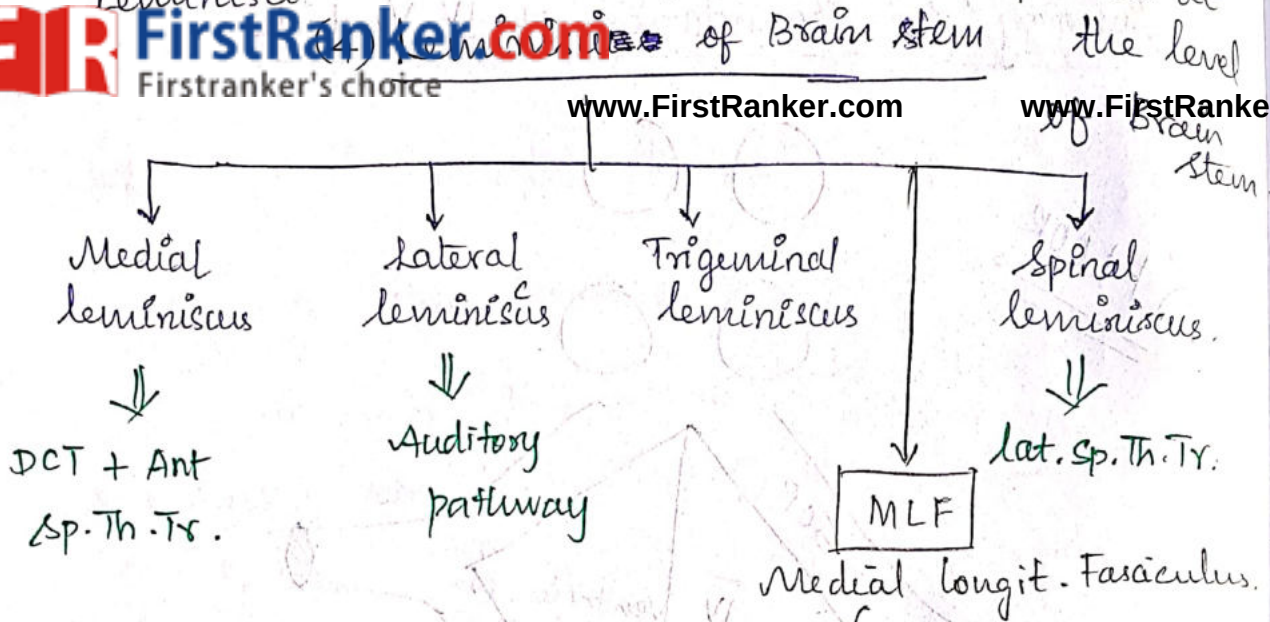
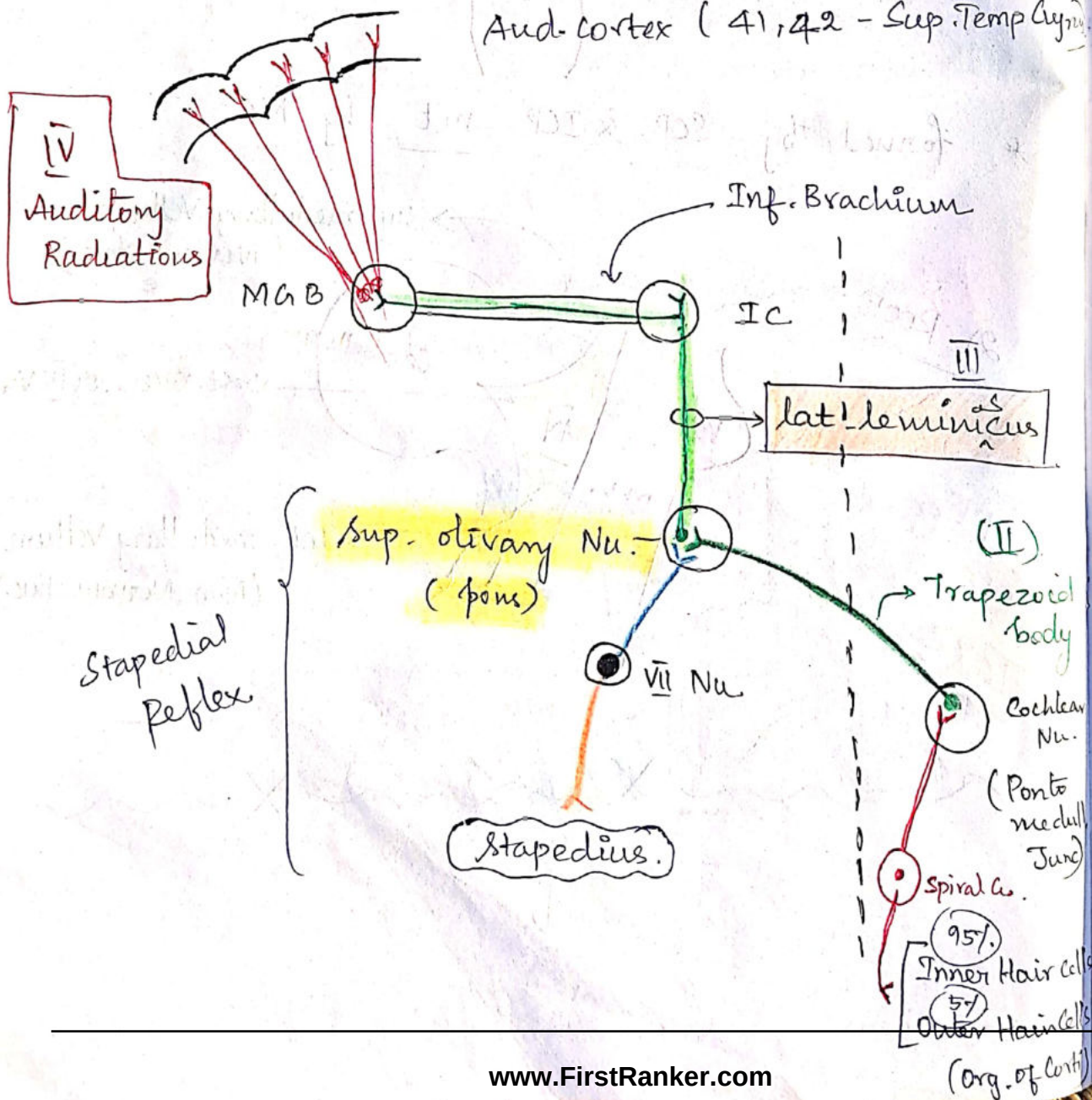




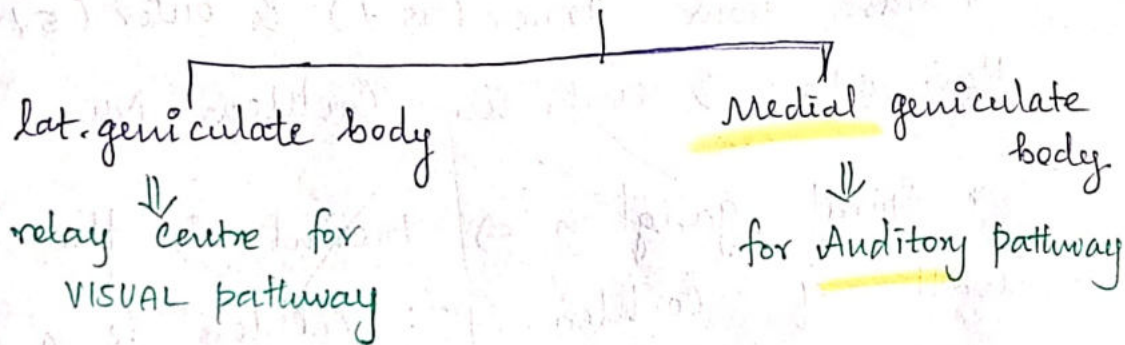
Auditory Pathway: (4 order neuron system).

Aud. cortex (41, 42 - Sup. Temp Gyrus)



- \* It is a 4 order neuron system (others  $\rightarrow 3$ ).

- \* Relay centre is Meta Thalamus (other  $\rightarrow$  Thal.)



- \* M.B.  $\begin{cases} \rightarrow SC \Rightarrow \text{Visual pathway} \\ \rightarrow IC \Rightarrow \text{Auditory pathway.} \end{cases}$

- \* Sup. Brachium  $\Rightarrow$  White matter bundle connecting LGB & SC.

- \* Inf. Brachium  $\Rightarrow$  ..... MAB & IC.

- \* olivary Nu.  $\left\{ \begin{array}{l} \rightarrow \text{sup. (Pons)} \Rightarrow \text{Auditory pathway} \\ \rightarrow \text{inf.} \Rightarrow \text{forms the olive of M.O.} \end{array} \right.$

- \* Cochlear Nu.  $\Rightarrow$  at Ponto medullary Junc..

~~\* Spiral Ganglion~~

LCB  $\rightarrow$  light (eye)

MGB  $\rightarrow$  Music (Ear).



1st order:

\* Starts from Inner (95%) & outer (5%)

Hair cells. & ends in Cochlear Nu.

\* Spiral ganglion  $\Rightarrow$  present in the wall of Cochlea.  $\because$  Cochlea is a spiral shaped struc. This ganglion also---

\* Peculiar feature:

\* It is a Bipolar Neuron unlike DRG which is pseudounipolar

II<sup>nd</sup> order:

$\hookrightarrow$  (will decussate).

\* Starts from Cochlear Nu. & will decussate to the opp. side to end in sup. olivary Nu. at pons.

\* Due to Decussat<sup>n</sup> it forms a white matter bundle at the level of Pons called

Trapezoid Body 



In a, T-8 of pons, it form a Trapezium like struc.

\* starts from Sup. olivary Nu. (Pons) & ends @ MGB (of MetaThalamus). <sup>thru' Inf Brachium</sup>

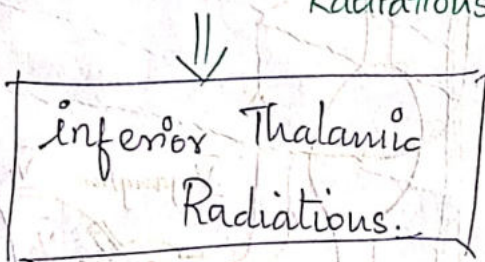
\* It also gives some collateral to I.C.

\* This white matter bundle forms the lat. lemniscus.

IV<sup>th</sup> order: (ends at Area 41, 42).

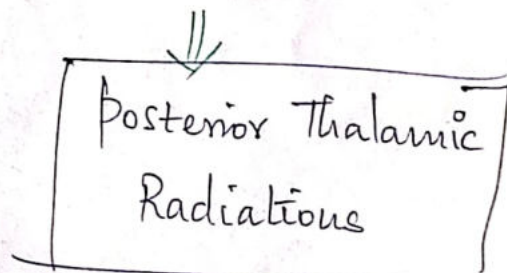
\* Starts from MGB & radiates into Auditory Cortex (41, 42) present in Temp. lobe (Sup. Temporal gyrus). These are called Auditory / Acoustic Radiations).

Auditory / Acoustic Radiations.



∵ Aud. Cortex is present inf. to the MGB.

Visual / optic Radiations.



----- Visual Cortex (occip. lobe) is posterior.

**LAT. LEMNISCUS** ⇒ cannot be found in T.S of Medulla (auditory)

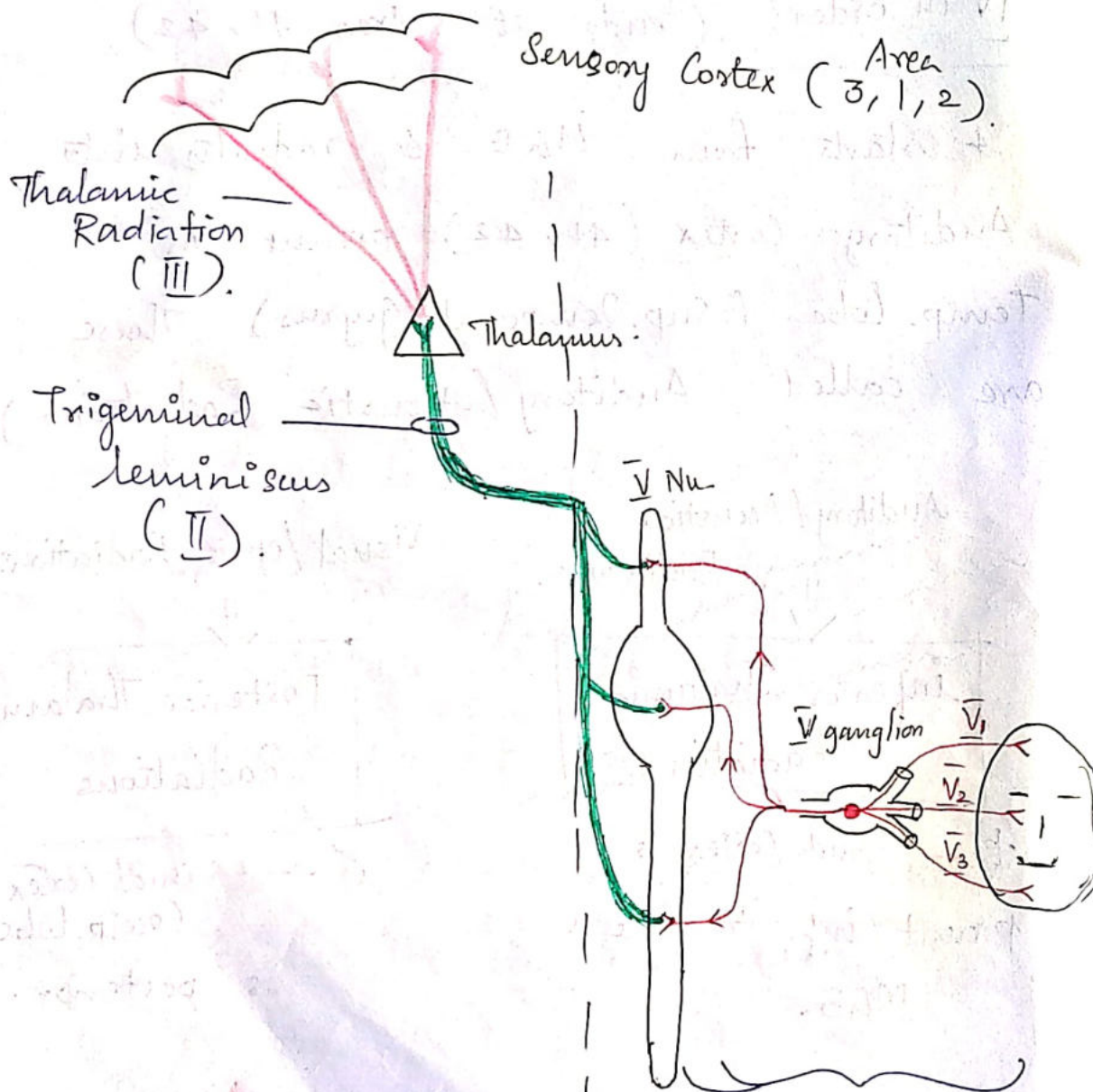
Other lemnisci can be found



(TRIGEMINAL LEMNISCUS).

\* upto Now we have learnt so many Tract which carry Sensory modalities from the body except Face.

\* For face, All sensory Inf. is carried by Trigeminal (Vth) n/v.



1st order

III<sup>rd</sup> clarity b/n DRG &  $\bar{V}$  ganglion

\* DRG  $\Rightarrow$  1st order neuron for all Tracts of Sp. Cord.

III<sup>rd</sup>  $\bar{V}$ th ganglion  $\Rightarrow$  1st order neuron for Sensat<sup>n</sup> of Face.

\* DRG  $\Rightarrow$  pseudounipolar

$\bar{V}$  ganglion  $\Rightarrow$  " "

But Only source of pseudounipolar Neuron

INSIDE CNS is Mesencephalic Nu. ( $\bar{V}$  Nu.)

(Remember, ganglion is not a part of CNS).

1st order:

\*  $\bar{V}_1, \bar{V}_2, \bar{V}_3 \rightarrow \bar{V}$  ganglion  $\rightarrow \bar{V}$  Nuc.

\* propriocep<sup>n</sup>  $\Rightarrow$  Mesenceph. Nu.

Touch & P  $\Rightarrow$  Principal Sensory Nu

Pain & T  $\Rightarrow$  Spinal Nu.

}  $\bar{V}$  Nu.



Injury to

- i)  $\bar{V}$  n/r
- ii)  $\bar{V}$  ganglion
- iii)  $\bar{V}$  Nu.

Ist order  
neuron  
lesion

$\Rightarrow$  effect will  
be loss of  
sensat<sup>n</sup> on  
Same side  
(I/L).

II<sup>nd</sup> order

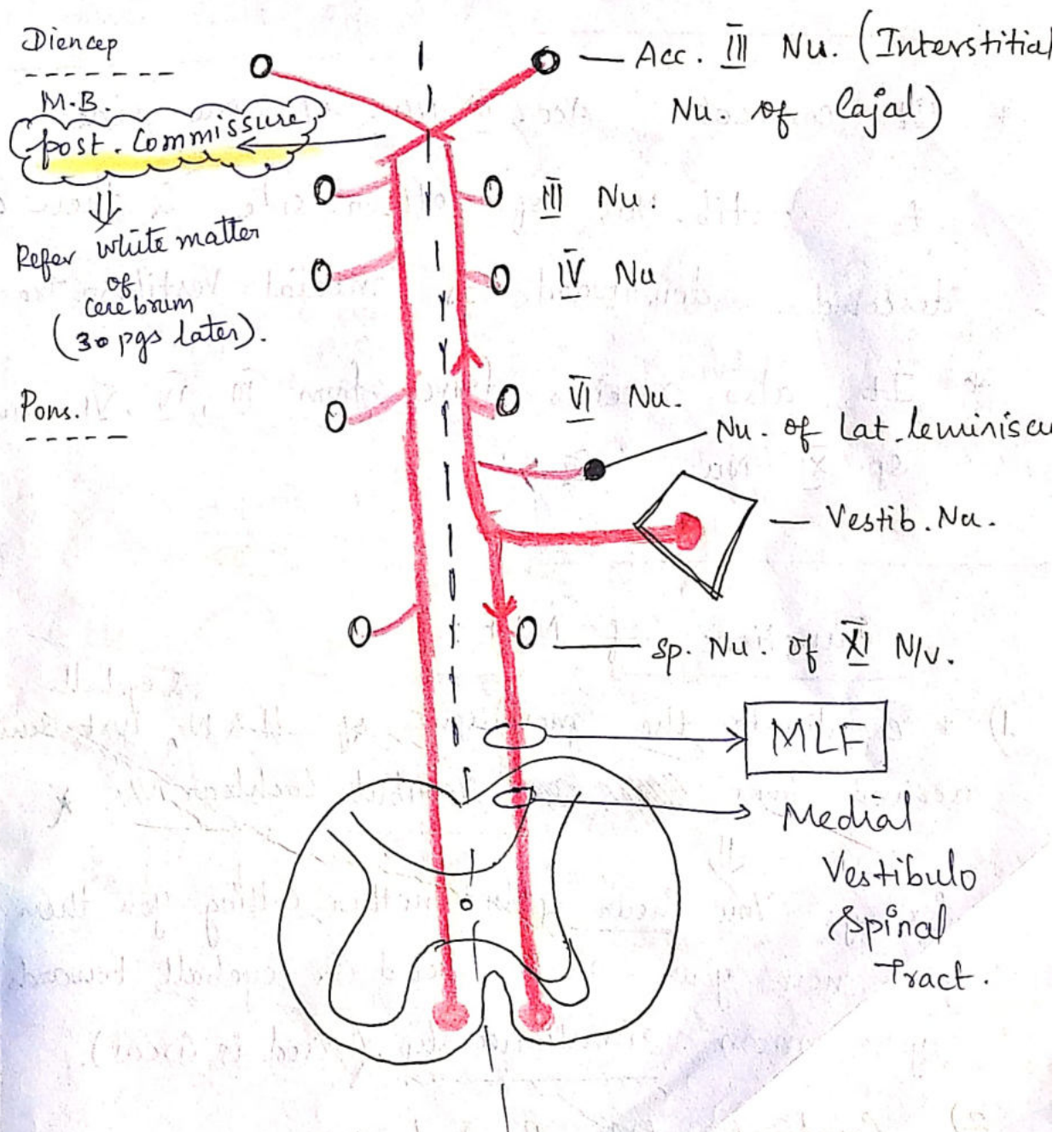
\* Trigeminal lemniscus.

III<sup>rd</sup> order:

\* Thalamic Radiations

X ————— X

\* Thickly myelinated white matter.  
found close to midline of B. stem, close to the periaqueductal grey matter.







• Junc. of Diencephalon & M.B.  
at Acc. III (oculomotor) Nu./Interstitial  
Nu. of Cajal, V.V. close to the  
aqueduct of Sylvius.

\* It connects Acc. III Nu. of one side  
to Vestib. Nu. of other side & then also  
descends downward as medial Vestib. sp. Tract.

\* It also receives fibres from III, IV, VI and  
sp. XI Nu.

### Functions of MLF:

1) \* Coordinate the movements of H & N, <sup>& eyeball</sup> wrt Stimuli  
received from ~~Vestibulo Cochlear N/s~~... Vestibulo Cochlear N/s. \*

↓  
for eg: You hear your mother calling you then  
you move your neck, head & eyeball towards  
your mom simultaneously. (God is Great).

2) Coordinate b/w R & L eyes.

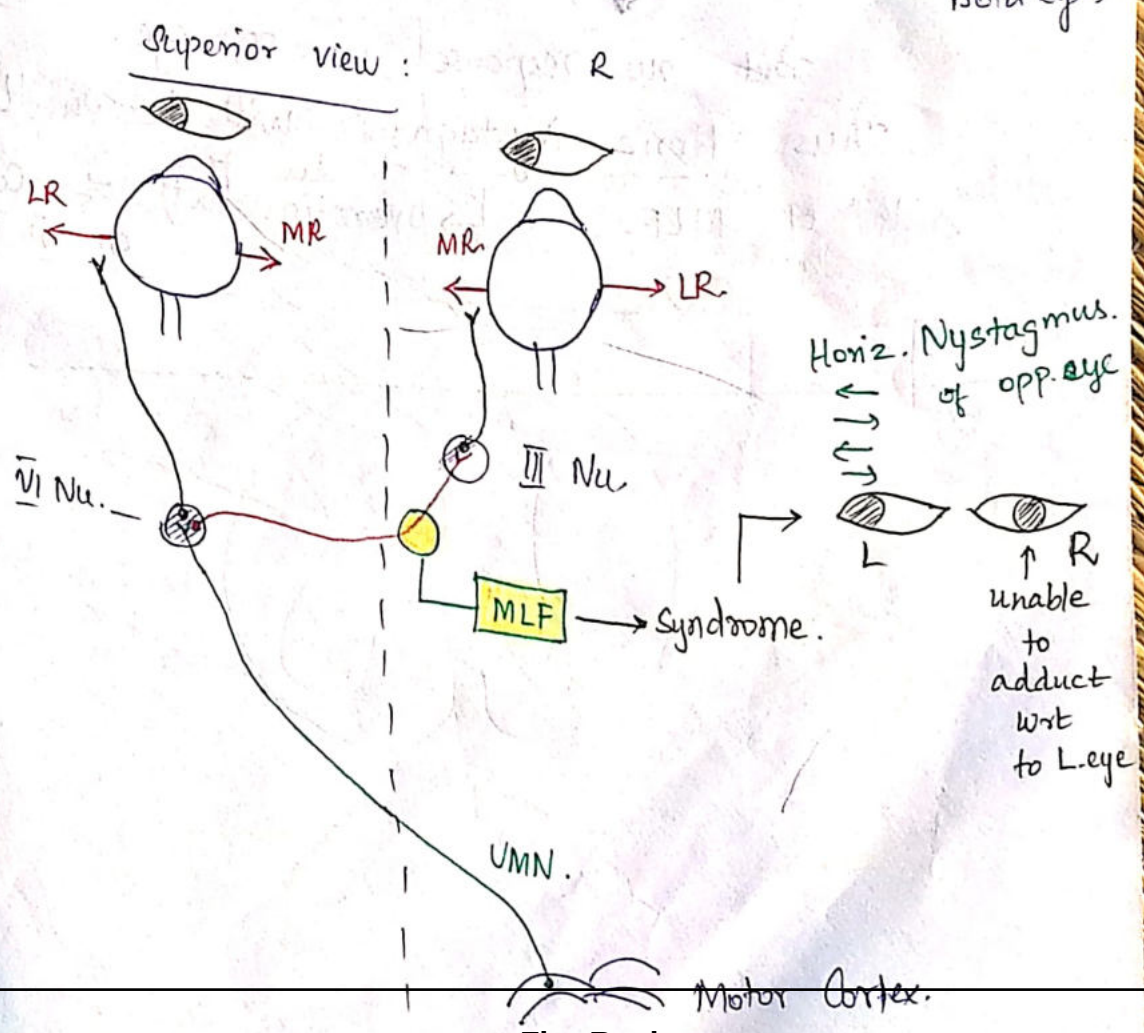
vascular lesion b/n III Nu. (upper part of M.B) & VI Nu. (Pons)

Normal func. of MLF :

Suppose you are looking towards R. side.  
then your

R. eye → R. side (Abduc<sup>n</sup>).  
 L. eye → R. side (Adduc<sup>n</sup>).

} Coordinat<sup>n</sup> b/n both eyes





1) UMN  $\Rightarrow$  decussate

LMN  $\Rightarrow$  I/L (except IV n/v).

### MLF syndrome:

$\Downarrow$   
In coordinat<sup>n</sup> b/n R & L eye.  $\rightarrow$  due to MLF syndrome  
(ophthalmoplegia).

So motor cortex over stimulates the VI Nu. (bcz C-cortex is a mad man).

But no response on opp eye.

Thus Horiz Nystagmus will be on Healthy side of MLF.  $\rightarrow$  due to overstimulat<sup>n</sup> of Cortex on VI Nu.

