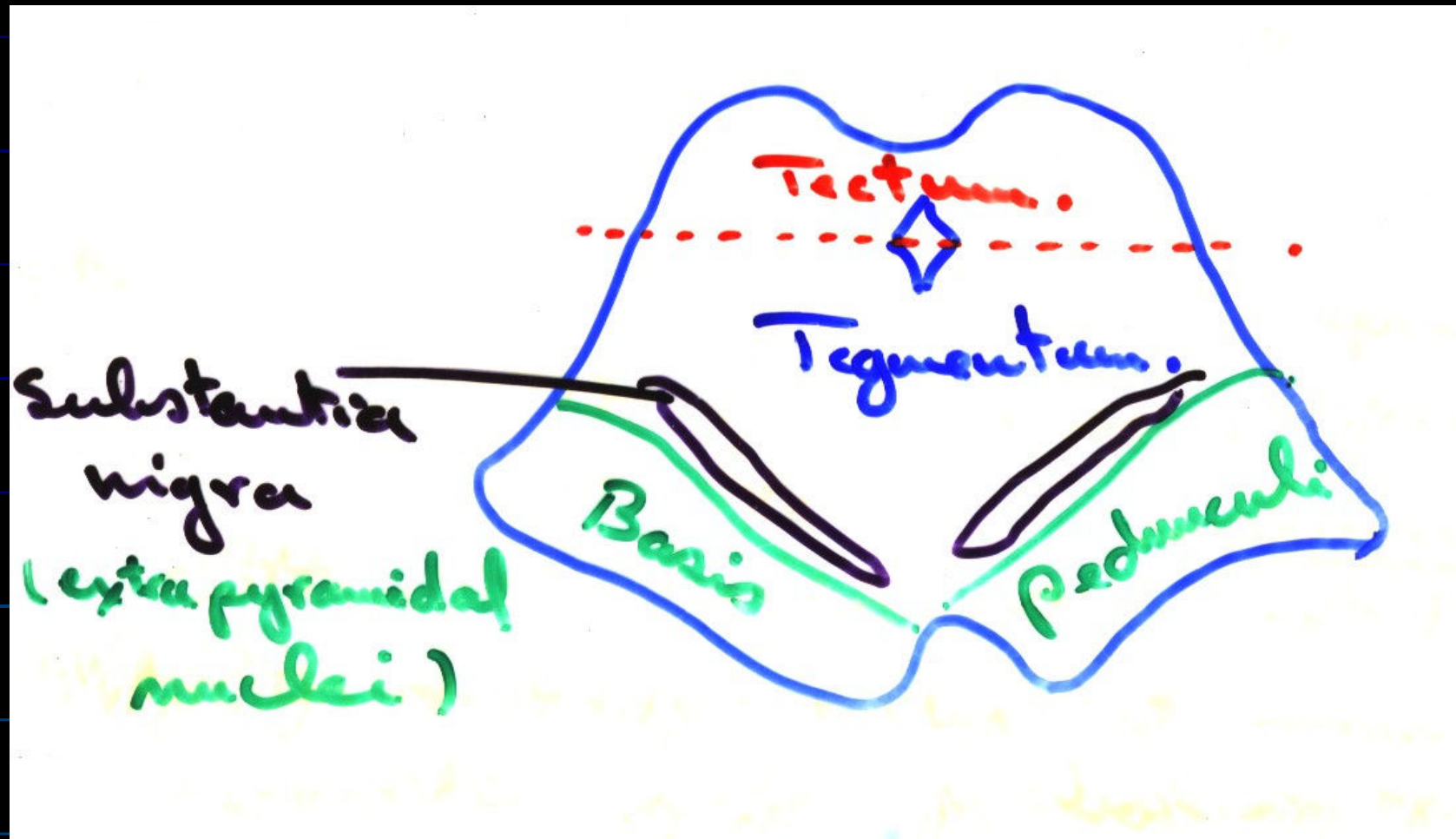


# The Midbrain



## Tectum

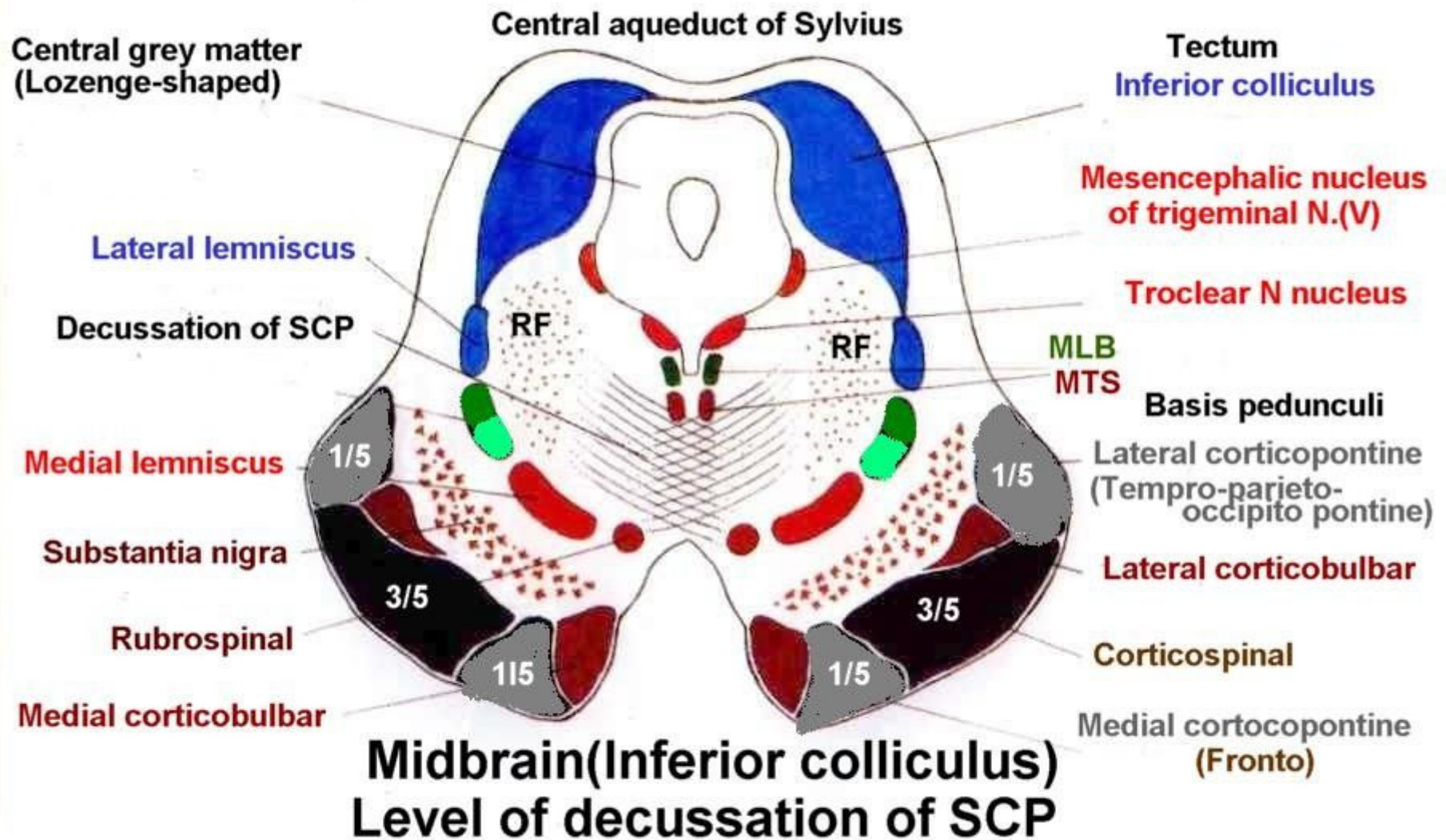
- The roof
- Contains :
  - 1- Inferior colliculus
  - 2- Superior colliculus

## Tegmentum

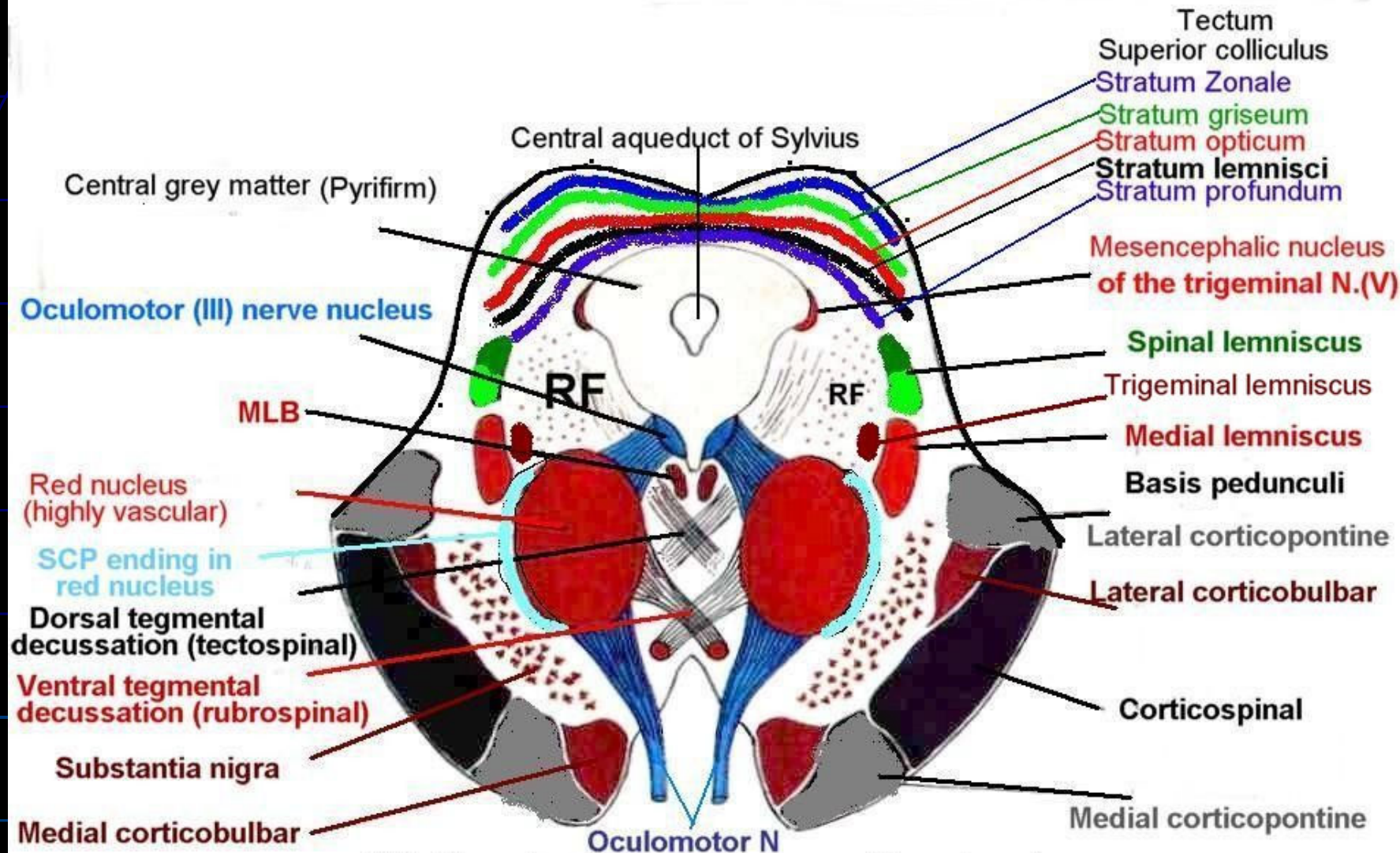
- In between
- Contains 3<sup>rd</sup> & 4<sup>th</sup> cranial nerves nuclei + 5<sup>th</sup> (mesencephalic)
- Decussations of
  - 1- RS
  - 2- SCP
  - 3-TS

## Basis pedunculi (Crus cerebri)

- Ventral part
- Contains :
  - 1- Lateral & medial Corticobulbar
  - 2- Middle 2/3 Corticospinal & corticonuclear
  - 3- Lateral & medial Corticopontine bundles







**Midbrain (Superior colliculus)**  
**(Level of oculomotor nucleus)                      (Level of red nucleus )**



# The inferior colliculus

- An oval mass of central **grey matter** surrounded by white matter of afferent nerve fibers found in the tectum of midbrain.
- It is the center of **auditory reflexes**, Connected to **medial geniculate body**, interconnected with inferior colliculus of the opposite side by its **commisure**
- **Afferents fibers from**
  - 1- Lateral lemniscus
  - 2- Cerebral cortex (temporal lobe)
- **Efferent fibers to**
  - 1- Tectospinal tract
  - 2- Tectobulbar tract
  - 3- Medial geniculate body
  - 4- Opposite inferior colliculus

# The Superior Colliculus

It coordinates the visual impulses coming from the retina with different body movements

■ It is formed of :

1- **Stratum zonale**

2- **Stratum griseum**

3- **Stratum opticum**

4- **Stratum lemnisci** 5- **Stratum profundum**

**Afferent fibers from**

1- Retina

2- Spinotectal

3- Occipital cortex

4- Inferior colliculus

**Efferent fibers to**

1- Tectobulbar : III , IV , VI

2- Tectospinal

3- Tectoreticular

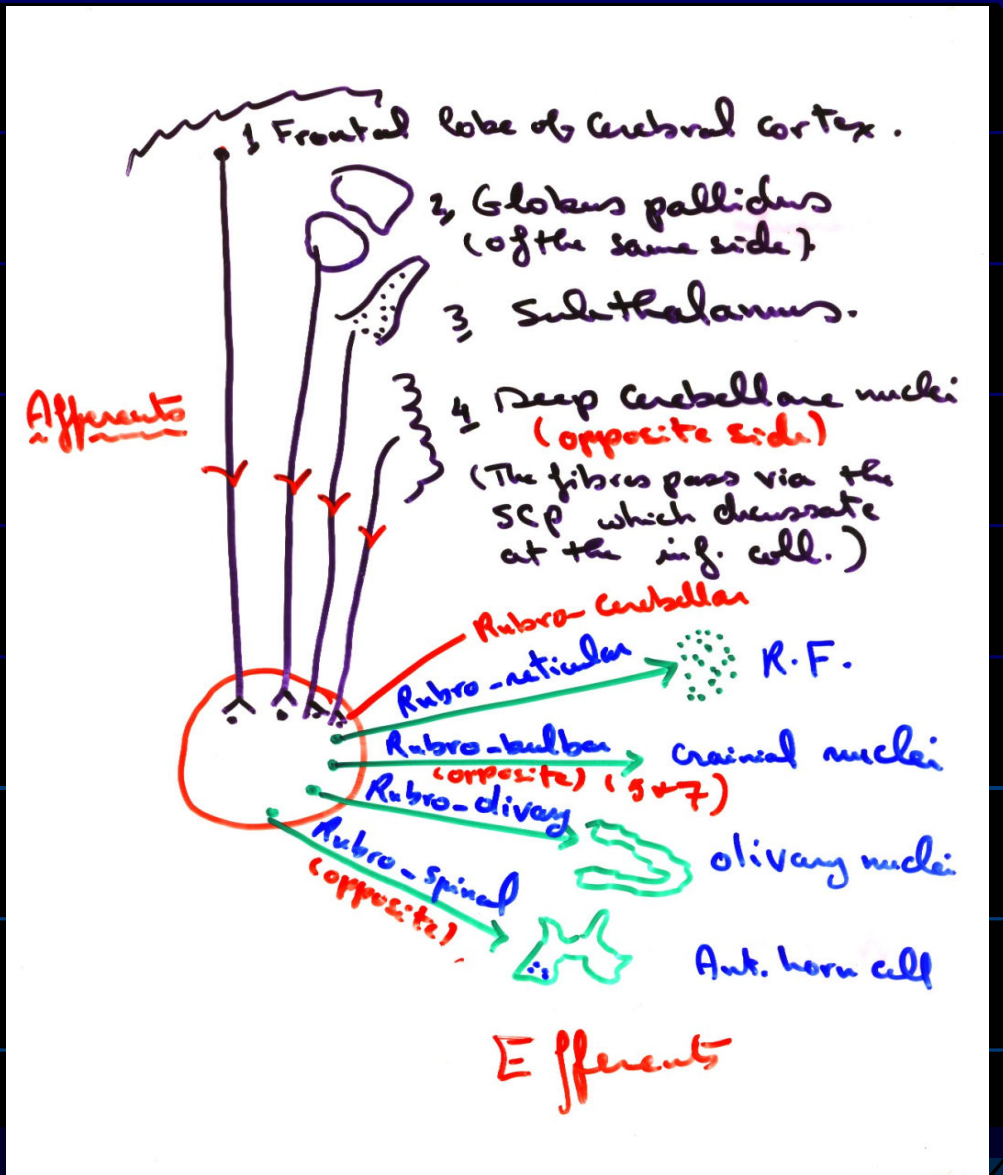
4- Tectopontine

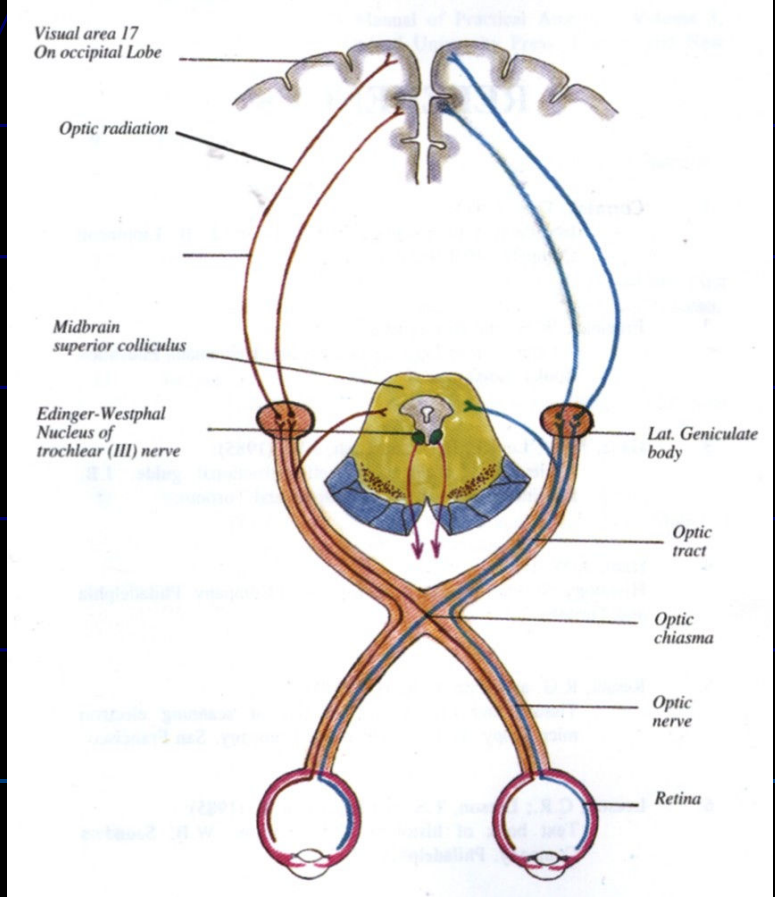


# Extrapyramidal nuclei in midbrain

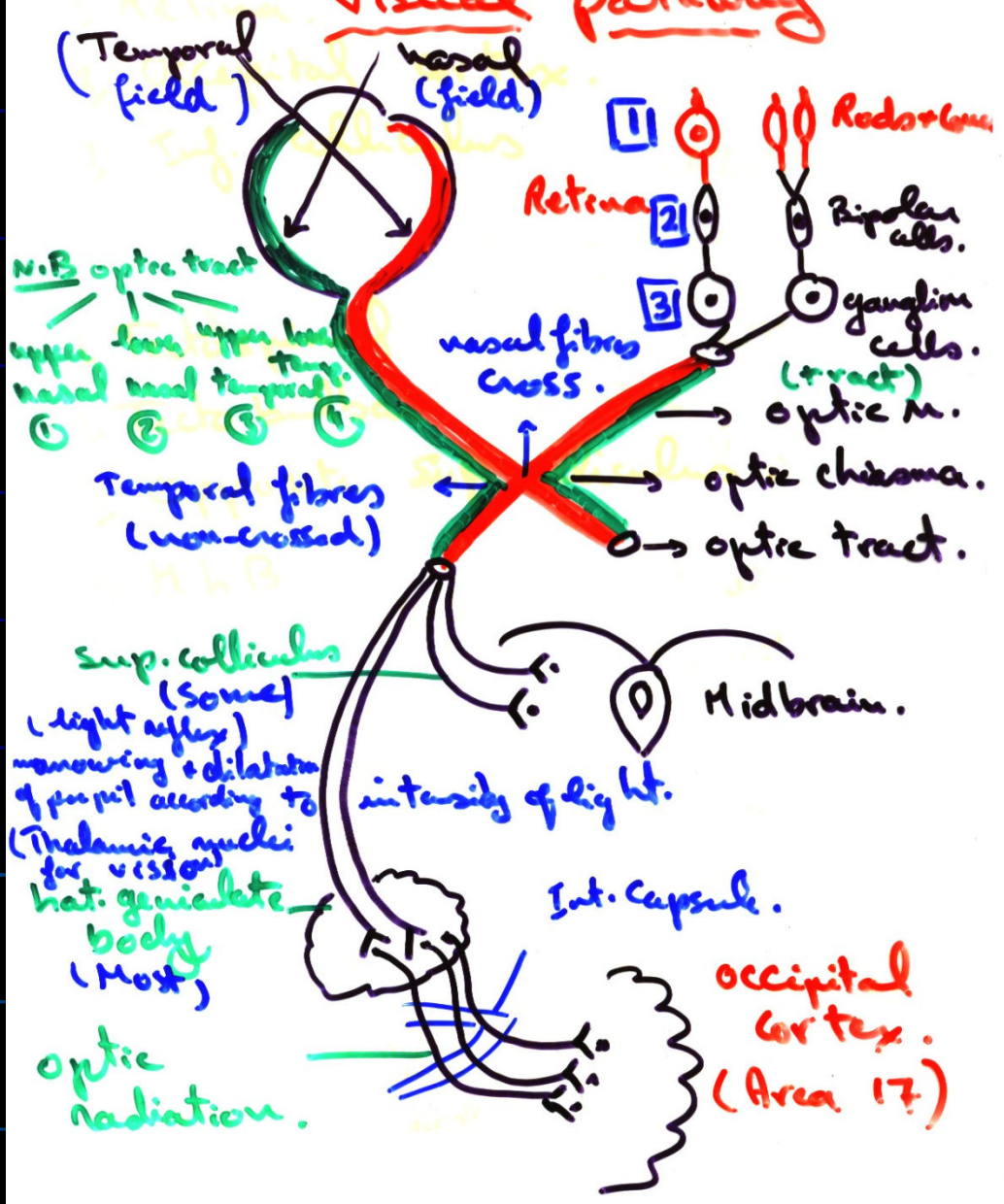
## Red nucleus

- An oval mass of grey matter at level of superior colliculus
- Appears **red** (rich in capillaries)
- **Circular** in cross section
- Formed of nerve cells





## II Optic nerve Visual pathway

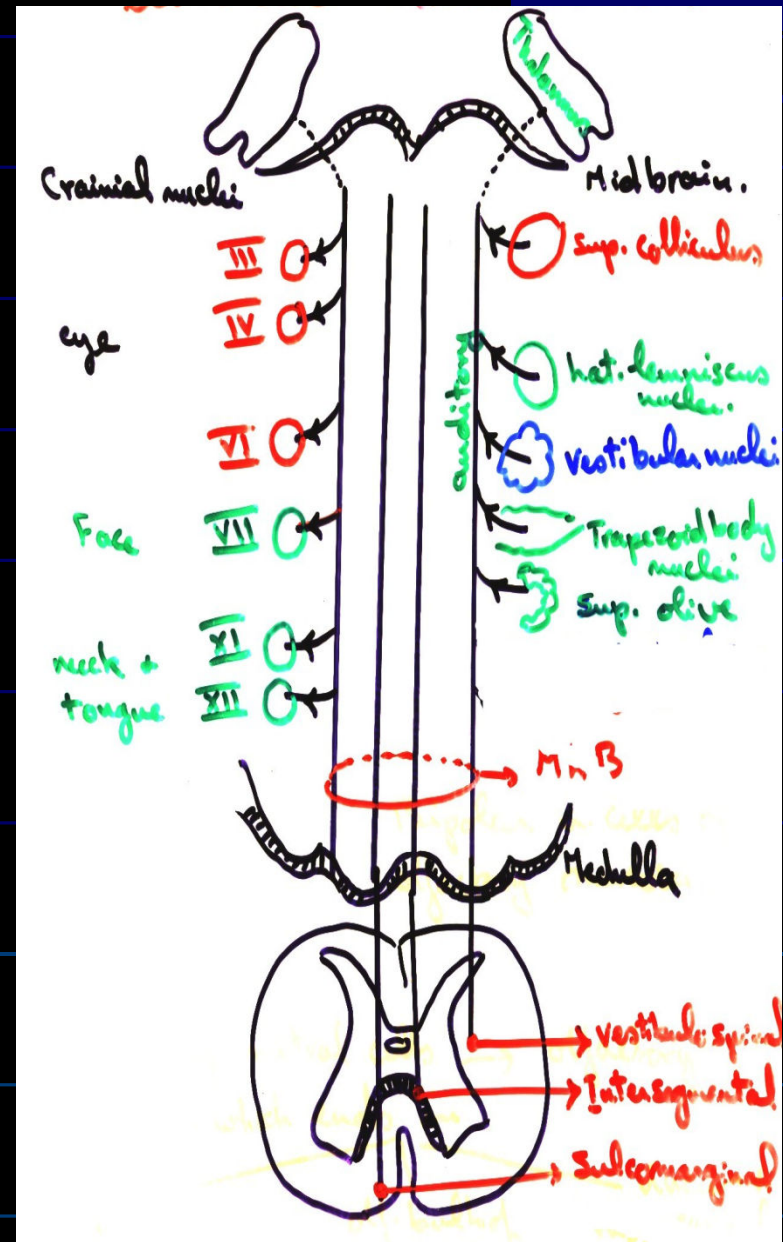


## The Medial Longitudinal Bundle

It is an associative tract formed of **ascending & descending** myelinated nerve fibers in the brain stem extending from upper part of midbrain down to lower part of medulla

Its continuation in the **SC** is through **sulcomarginal**

**Functions** : Coordinates the equilibrium, vision & hearing with the movements of the eye, face & neck



# 1- Vestibular connections

- a) **Vestibulo-ocular** : Fibers connecting vestibular nuclei with nuclei of eye movements (III , IV & VI). Coordinate eye movements with head movements
- b) **Vestibulospinal** : Fibers connecting vestibular nuclei with AHCs of the SC to coordinate movements of head with neck & trunk

2- Auditory connections :Fibers connecting superior olive , trapezoid body & lateral lemniscus with nuclei of eye movement (III , IV & VI) so the eye can move in response to auditory stimuli . Fibers from lateral lemniscus are also connected with the 7<sup>th</sup>, 11<sup>th</sup> & 12<sup>th</sup> nuclei so muscles of face , neck & tongue can react with auditory stimuli

### **3- Cranial connections :**

- a) Fibers connecting nuclei of eye movements of both sides so both eyes can move in the same direction**
- b) Fibers connecting VII , XI & XII on both sides so the lips , tongue could work together**

## 4- Extrapyramidal nuclei connections

- It receives fibers from 2 nuclei
  - a) **Interstitial nucleus of Cajal**
  - b) **Posterior commissural nucleus**
- These are **inhibitory** to motor cranial nuclei and to AHCs to control movements of head , neck & trunk