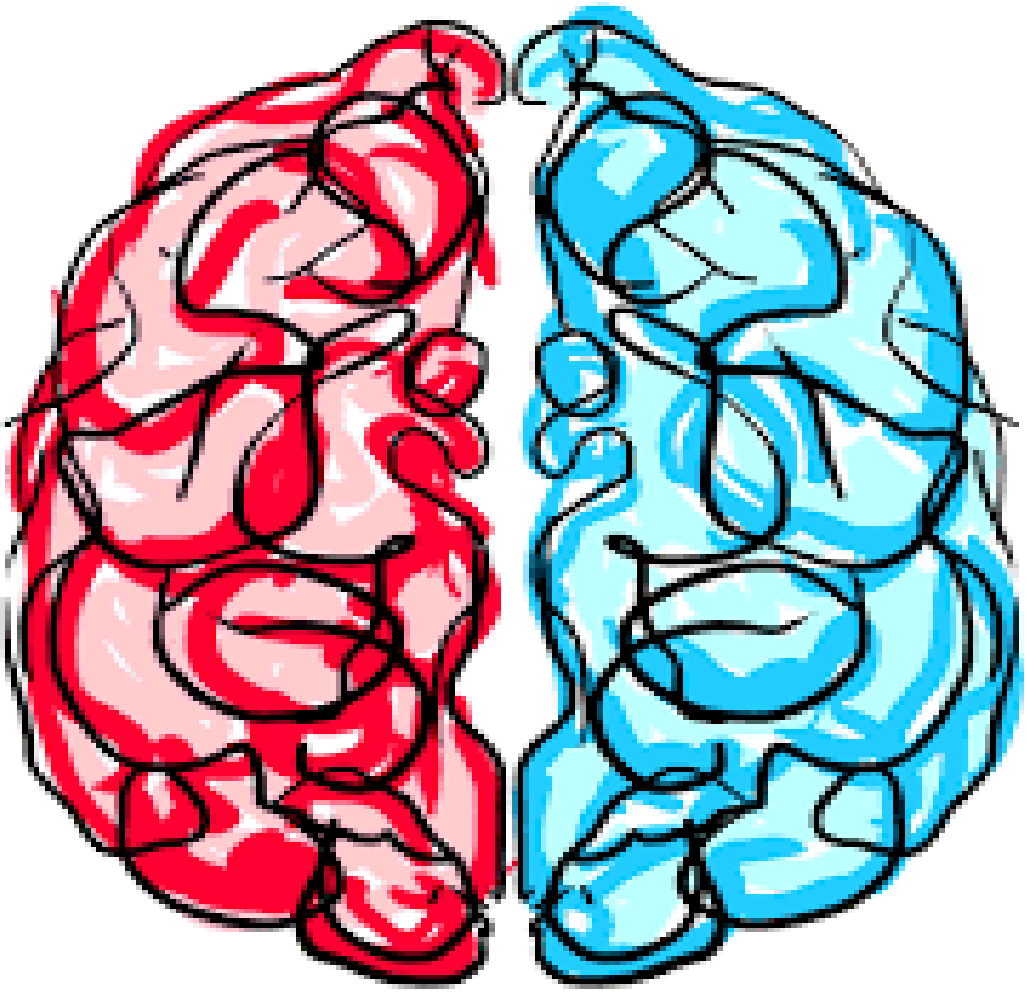
Thalamus and Limbic system

ملاحظة:

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



Done by:

رند الحميضي

Thalamus "found in diencephalon ":

is the largest nuclear mass of the body , it is our pathway to the cortex " last relay site " , except " olfaction " they go directly to the cortex without passing by it.

lateral nuclear group , medial , anterior "names only":

Lateral:**(L)** :Posterior limb of the **internal capsule**

Superior: **(s) Lateral ventricle** and **fornix**.

has 4 surfaces

Medial: **"3rd ventricle"** connected to thalamus of the opposite side by the **Massa intermedia.**

Inferior: **(I) Hypothalamus**, anteriorly & **Subthalamus** posteriorly.

Anterior *end*

- *its projection called the **anterior tubercle.***
- *It lies just **behind** the interventricular foramen.*

Posterior *end:*

- *projection called **Pulvinar***
- *lies **above** the superior colliculus and the lateral & medial Geniculate bodies*

Internal medullary lamina:

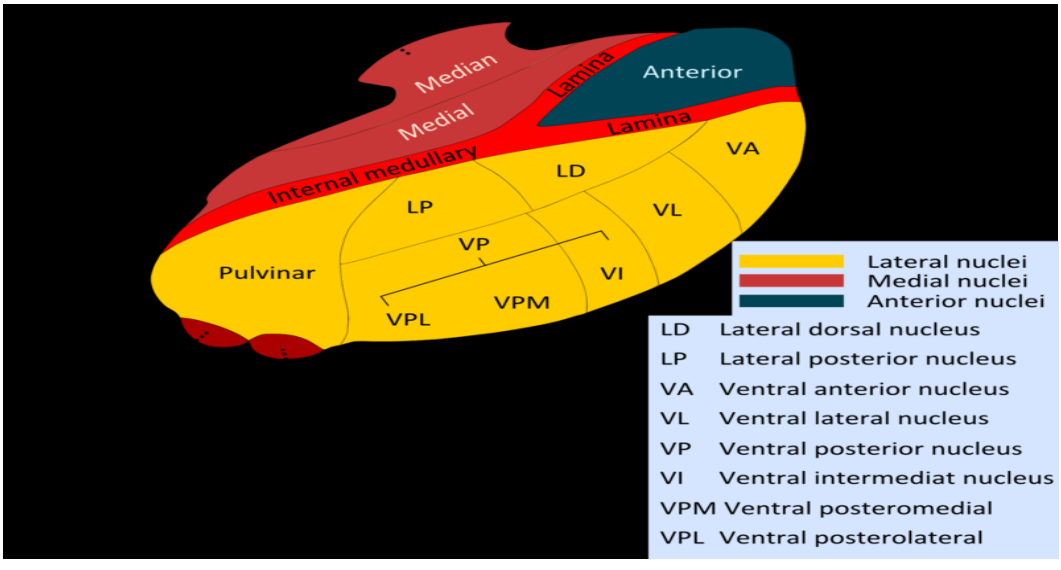
Bundle of myelinated (afferent & efferent) fibers.

divide the thalamus into**: anterior , medial, lateral nuclear** groups each one of them contain bunch of nuclei

External medullary lamina:

Covers the lateral surface.

It consists of thalamocortical & corticothalamic fibers



Projection of thalamic nuclei :

Name of Nucleus	Afferent	Efferent
Anterior Thalamic Nucleus	Mammillary body." under the hypothalamus	Cingulate gyrus, (limbic system)
Medial Nucleus or dorso medial	Hypothalamus.	Frontal &Prefrontal cortex
Ventral Anterior Nucleus	Globus pallidus body.	Premotor cortex.
Ventral Lateral Nucleus	Dentate Nucleus "cerebellum "	primary motor cortex.
Ventral Posterior Lateral Nucleus	Medial and spinal leminsci.	Sensory cortex.
Ventral Posterior Medial Nucleus	Trigeminal Leminiscus	Sensory cortex.
Lateral geniculate body	optic tract.	visual cortex
Medial geniculate body	Lateral lemniscus	auditory cortex.

LIMBIC SYSTEM

Latin word means edge or border, separates the medial surface of the cerebral cortex from the diencephalon, consists of a number of cortical & subcortical structures with looped connections that all project to the hypothalamus (particularly mammilary bodies).

- *4 main Function:* ***Emotions, Memory, Visceral & Motor responses, Olfaction.***
- *4 main structure :* ***Limbic cortex***, ***Hippocampus****"memory"* ***Amygdala, Septal area.***

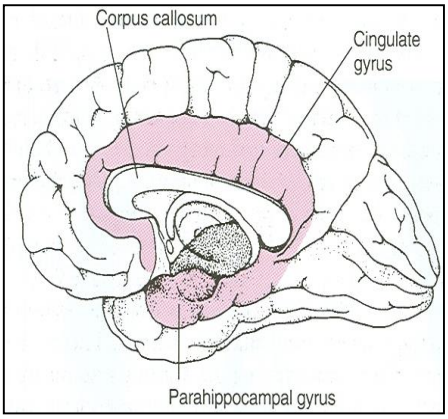
Cortical structure

1. **Limbic lobe.**

C-shaped ring of grey matter surrounding the corpus callosum.

It includes:

Subcallosal area ,Cingulate gyrus Isthmus,Parahippocampal gyrus and theUncus.



2. **Hippocampal formation."hippocampus with dendate gyrus"**
3. **Septal areas.**
4. **Prefrontal area.**

Hippocampus

1-Site: horseshoe paired structure found in temporal lobe.

2-function:

*forming new memories and connecting emotions to it.

*acts as a memory indexer by sending memories to cerebral hemisphere for long-term storage and retrieving .

The hippocampus necessary for ***consolidation*** of ***new short-term memories.***

3-main connection:

efferent pathway "FORNIX":

C-shaped group of fibers connecting the hippocampus with mammillary body.

consists of:

Fimbria, Crus,Body ,Column.

The Fornix is an important component of PAPEZ CIRCUIT

Amygdala

1-site: temporal pole.

2-function: FEAR , Emotions Anger, &Hormonal secretions.

3-main connection:

***Inputs:**

Association areas of visual, auditory & somatosensory cortices.

*** Outputs**:

Hypothalamus & Autonomic nuclei in the brain stem,

4-Lesion:

Lack of emotional responses &docility.

Septal area

1-site :anterior to the interventricular septum

2-Function:

pleasure zone

3-Main connections:

1-To Hypothalamus

2-To Habenular nuclei

Lesions associated with limbic lobe disorders:

Korsakoff's psychosis	Temporal lobe epilepsy	Alzheimer's disease:	Schizophrenia
Deficiency of thiamine (vitamin B-1) & alcoholic intoxication. Will lead to: 1-Retrograde :loss of new memories at the time of lesion with retained old memories 2- Anterograde amnesia: inability to gain new memories.	The hippocampus is a common focus site in epilepsy can be damaged through chronic seizures. *sometimes damaged in diseases such as" herpes encephalitis"	The hippocampus is one of the first brain areas to show damage in Alzheimer's.	failure to recognize what is real.

***very helpful video " limbic system " by khan academy :**

https://www.youtube.com/watch?v=GDlDirzOSI8

Best of luck.