

DIENCEPHALON & MESENCEPHALON

1/7/82, 6 Jan 00, 8 Jan 03, 7 Jan 04, 5 Jan 05, 16 Jan08, 14Jan09, 13Jan10, 12Jan11, 23Jan12, 3Apr13
Martini's 5th: 454-460, 7th: 460-469, 9th: 460-468

MESENCEPHALON (p 462):

cerebral peduncles: connects thalamus, pons and spinal cord, pyramidal tracts oculomotor nerves (cranial nerve III) come from between

Corpora quadrigemina (four twin bodies)

- superior colliculi reflexes to visual stimulation
- inferior colliculi reflexes to auditory stimulation

substantia nigra lateral to and in front of superior colliculi
inhibit cerebral nuclei via **dopamine**

Parkinson's disease: Low of dopamine: coarse, unrefined movements
Headquarters of the reticular activating system (R.A.S.)

DIENCEPHALON is covered by enlarged cerebrum, consists of:

THALAMUS (p 463) (80% of diencephalon) two oval masses of grey matter,
bridge: **massa intermedia**

third ventricle in middle, major relay station:

- sensory relay, integrating center** relay to cortex, etc:
especially basal ganglia and hypothalamus
- coordinates pyramidal and extrapyramidal** systems
relay between cortex and basal ganglia

HYPOTHALAMUS (p 465) **Controls autonomic reactions, endocrine.**

Regulates: body temp. water balance (thirst), appetite, GI, sex, rage, fear

STRUCTURES:

- mamillary bodies** process smell, also control reflex chewing, licking, swallowing
- infundibulum** connects to pituitary from hypothalamus
carries oxytocin and ADH into post pit.
- suprachiasmatic nuclei** (above optic chiasma) controls day-night cycles, directs pineal gland

EPITHALAMUS (pineal gland): synthesizes melatonin, regulates circadian rhythms, reproductive functions

LIMBIC SYSTEM(see p 467 for diagram)

limbic = border, boundary, "edge" because it lies between the cerebrum and thalamus, encircling the upper brain stem.

Limbic system is a motivational system, includes **dopamine pleasure receptors** making you **want** to perform tasks, sexual arousal

- functions:**
- 1) mediates **emotional responses**
 - 2) **links conscious, intellectual with unconscious and autonomic** functions of brain stem
 - 3) facilitates **memory storage and retrieval**

COMPONENTS OF LIMBIC SYSTEM: (p 479)

- hypothalamus** regulates autonomic NS, centers for rage, fear, pain, sex arousal, please
- Olfactory bulbs** part of olfactory tract,(C.N. I).
rhinencephalon: olfactory bulbs and associated areas
Associates smell with emotions and behavior resp.
- mamillary bodies** on floor of hypothalamus, processes sensory, esp olfactory
- Fornix** (tracts) tracts connect hypothalamus especially hypothalamic mamillary bodies, to hippocampus
- hippocampus** "sea horse" (or horse field)layer of cortex below lat ventricles, critical for long term memory.
- amygdala** at end of caudate nucleus, links limbic to cerebrum, fight/flight, aggression, links memories to emotions
Important in learning, long-term memory and retrieval
- cingulate gyrus** of the cerebrum, adjacent and above corpus callosum
- basal ganglia** various components of basal ganglia participate
- caudate nucleus** connected to amygdala by the caudate tail.

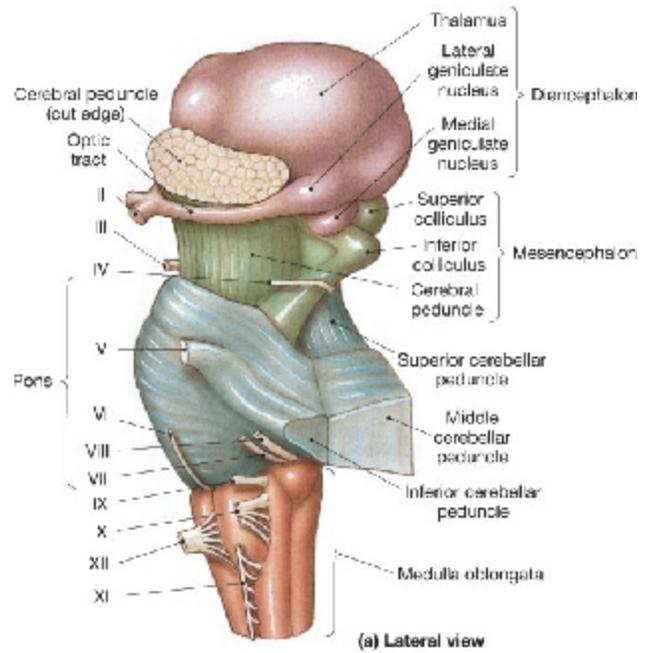


Figure AB-16: Limbic System

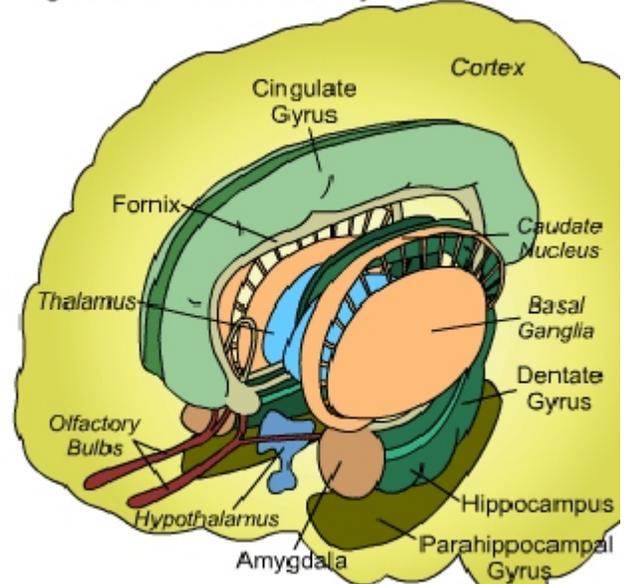
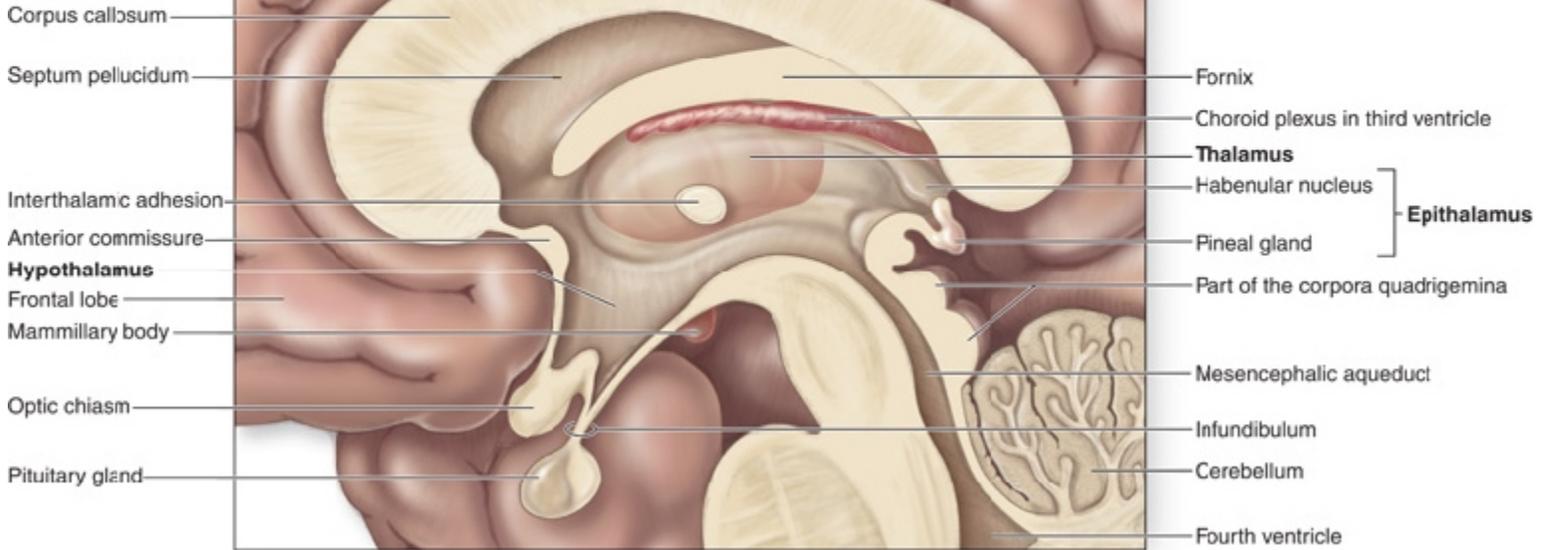
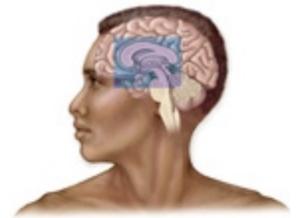


Diagram colors are consistent with Figure AB-17.



Midsagittal section