

DIENCEPHALON & MESENCEPHALON

1/7/82, 6 Jan 00, 8 Jan 03, 7 Jan 04, 5 Jan 05, 16 Jan08, 14Jan09, 13Jan10, 12Jan11, 23Jan12
Martini's 5th: 454-460, 7th: 460-469, 9th: 474-480

MESENCEPHALON (p 462):

cerebral peduncles: carry pyramidal tracts, connects thalamus to pons and spinal cord
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**

Loss of dopamine: Parkinson's disease: 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 ("edge" because it is between the cerebrum and thalamus) (see p 467 for diagram)

encircles upper brain stem (limbic = border, boundary, edge because between cerebrum and diencephalon)

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

Limbic system makes you **want** to perform tasks (motivational system)

COMPONENTS OF LIMBIC SYSTEM: (p 479)

Olfactory bulbs part of olfactory tract, (C.N. I).
rhinencephalon olfactory bulbs plus associated areas of brain
Some of rhinencephalon not smell, but emotions and behavior resp.

amygdaloid body at end of caudate nucleus, links limbic to cerebrum, fight/flight, memories to emotions

hippocampus layer of cortex below lat ventricles.
Important in learning, long term

cingulate gyrus adjacent and above corpus callosum
hippocampus below floor lat ventricle

learning, memory storage and retrieval

Fornix (tracts) carries tracts which connect hippocampus to hypothalamus, esp mamillary bodies

mamillary bodies on floor of hypothalamus processes sensory info, esp olfactory

thalamic and hypothalamic nuclei

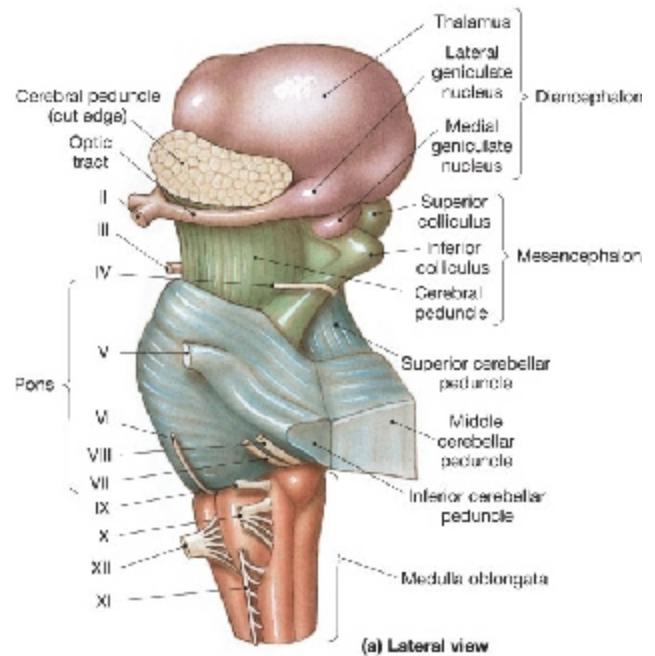


Figure AB-16: Limbic System

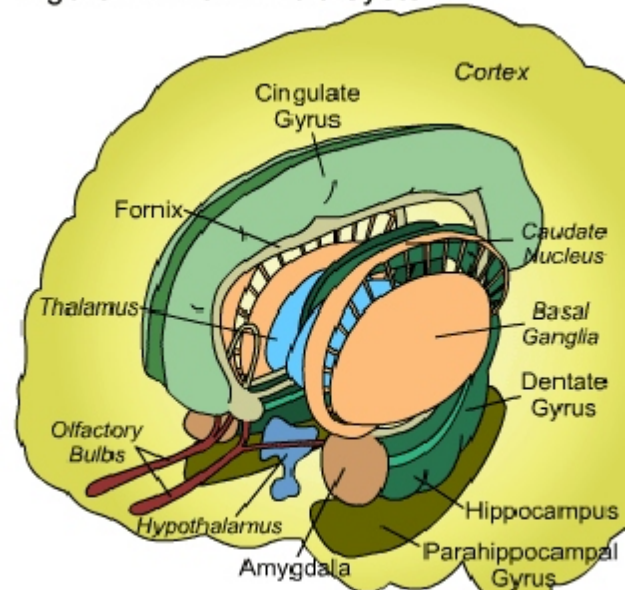
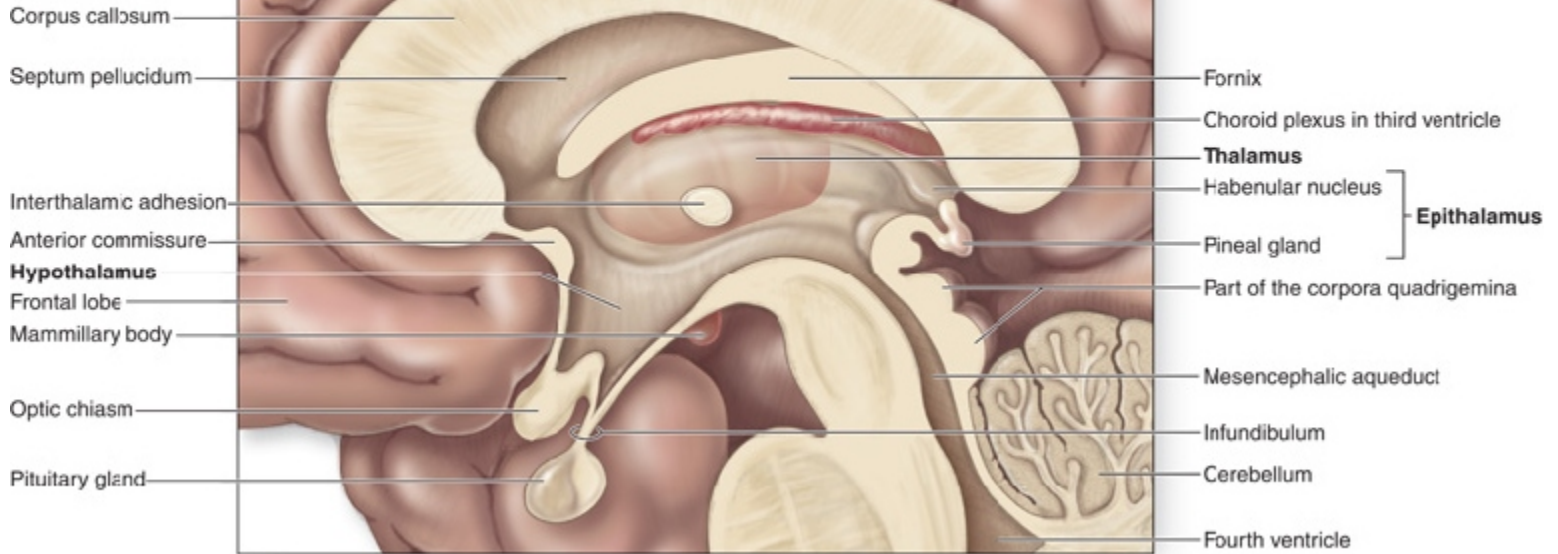


Diagram colors are consistent with Figure AB-17.



Midsagittal section