

Telencephalon



Ontogenic development of CNS

Primary pouches: prosencephalon, mesencephalon, rhombencephalon

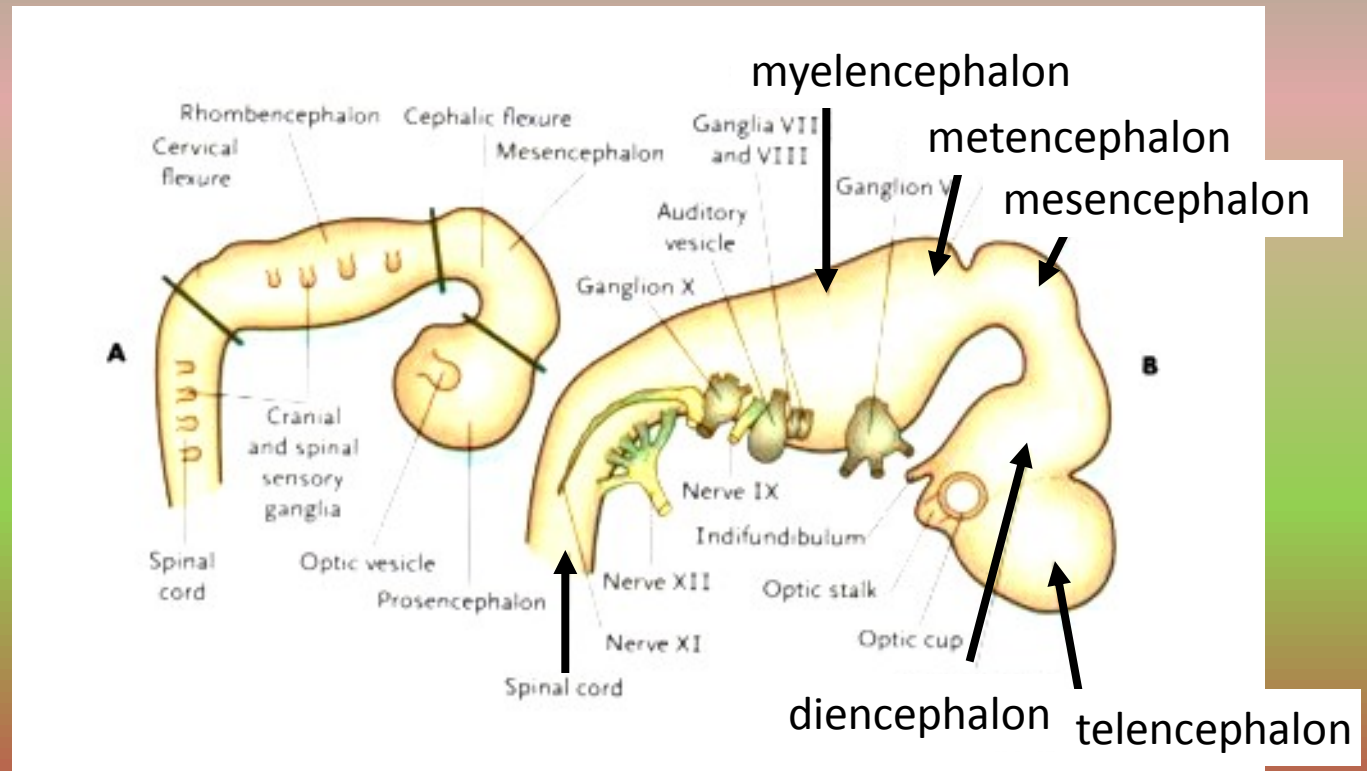
Secondary pouches: telencephalon

diencephalon

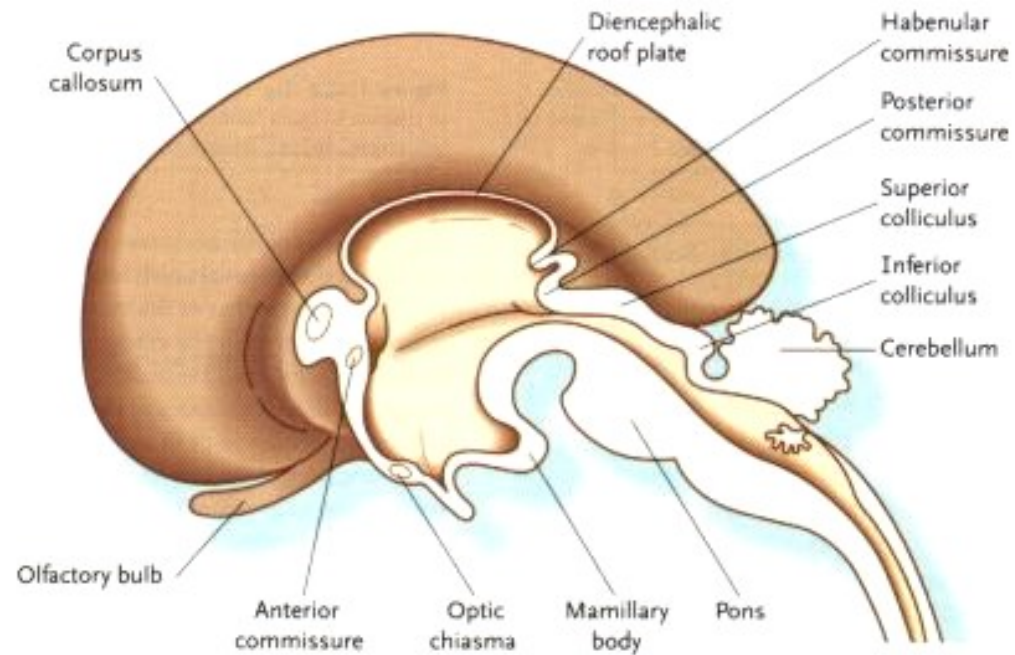
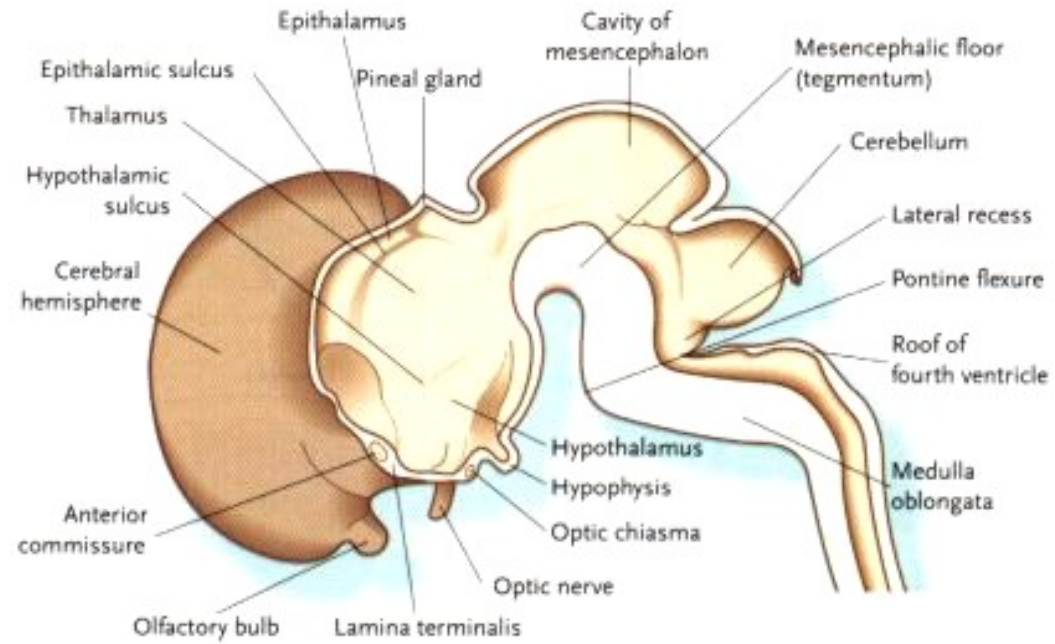
mesencephalon

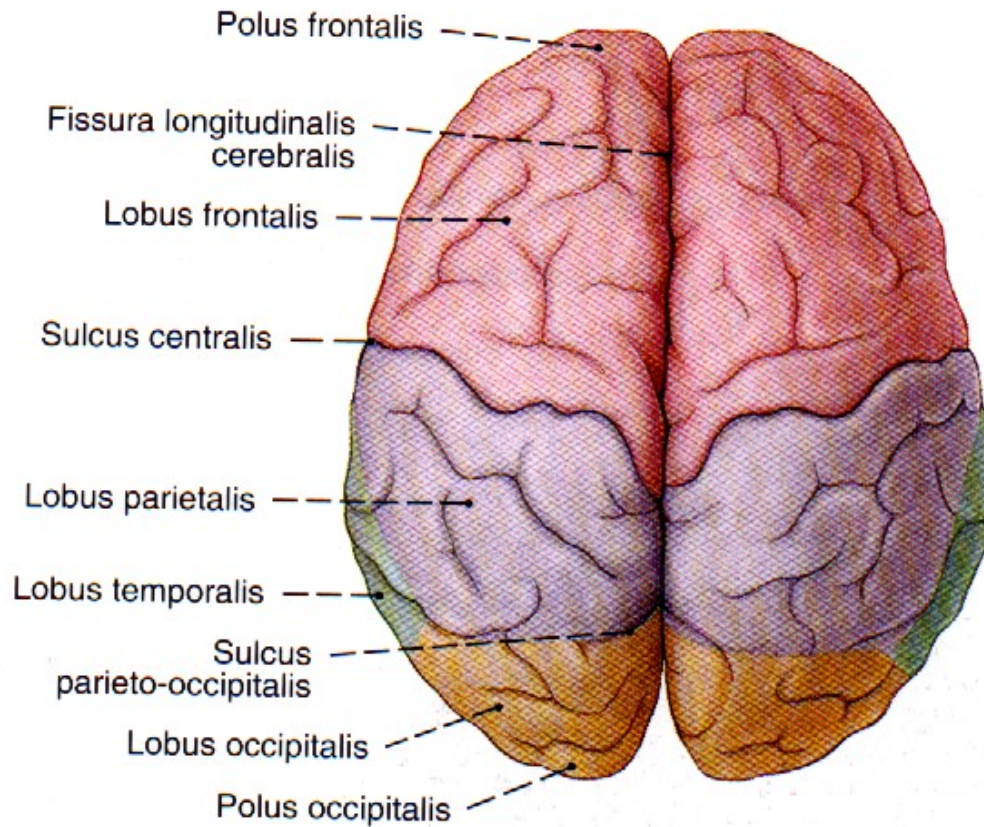
metencephalon ---- pons (pons Varoli), cerebellum

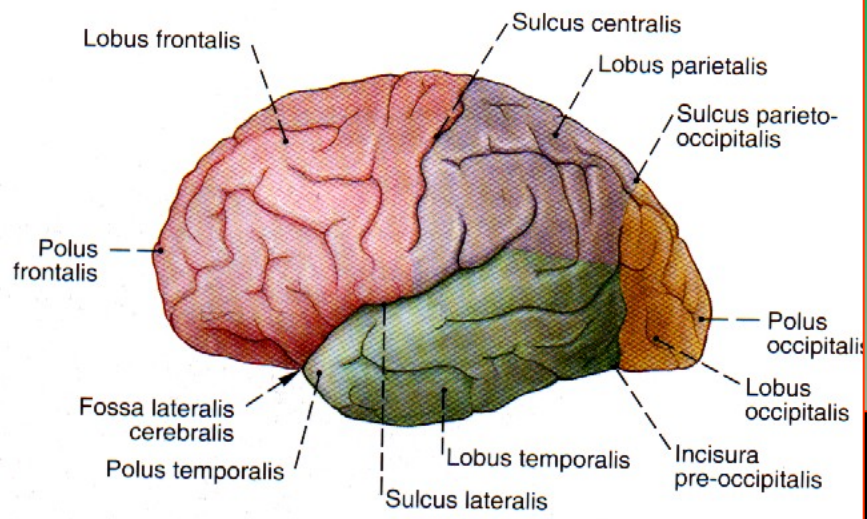
myelencephalon --- medulla oblongata

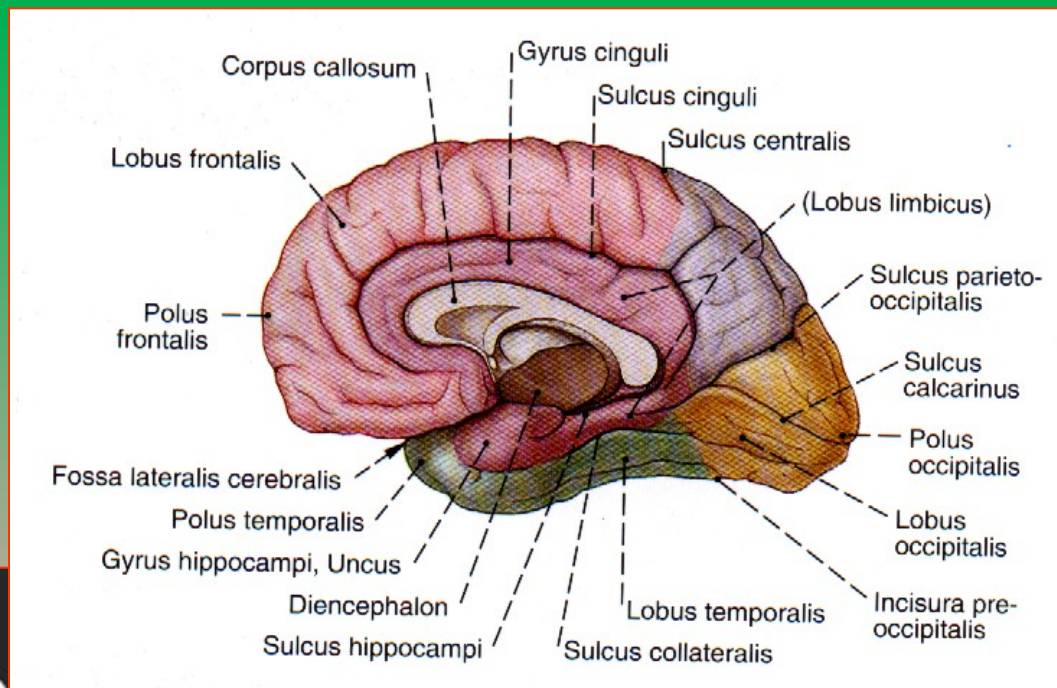


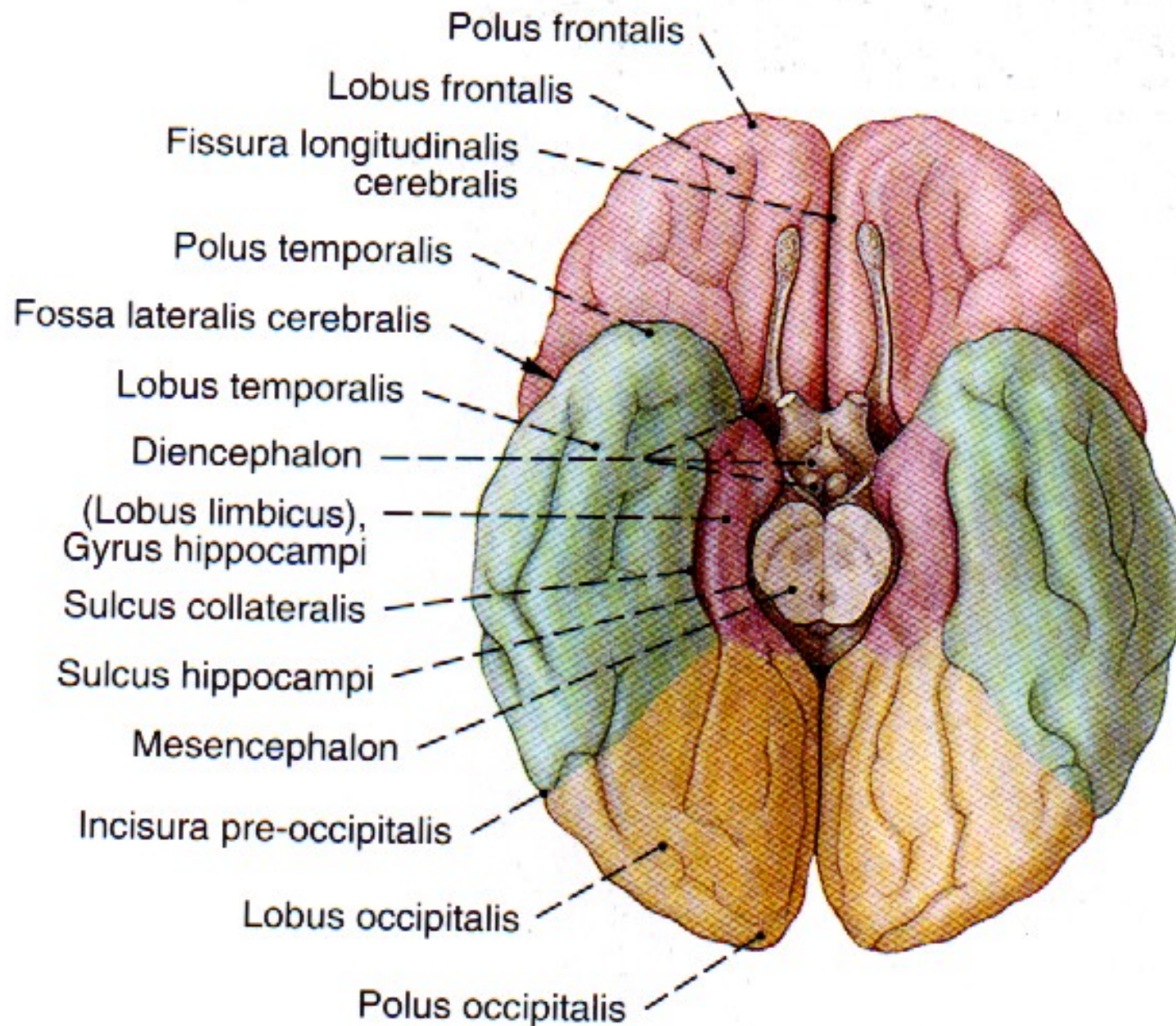
Hemispheria cerebri Lamina terminalis

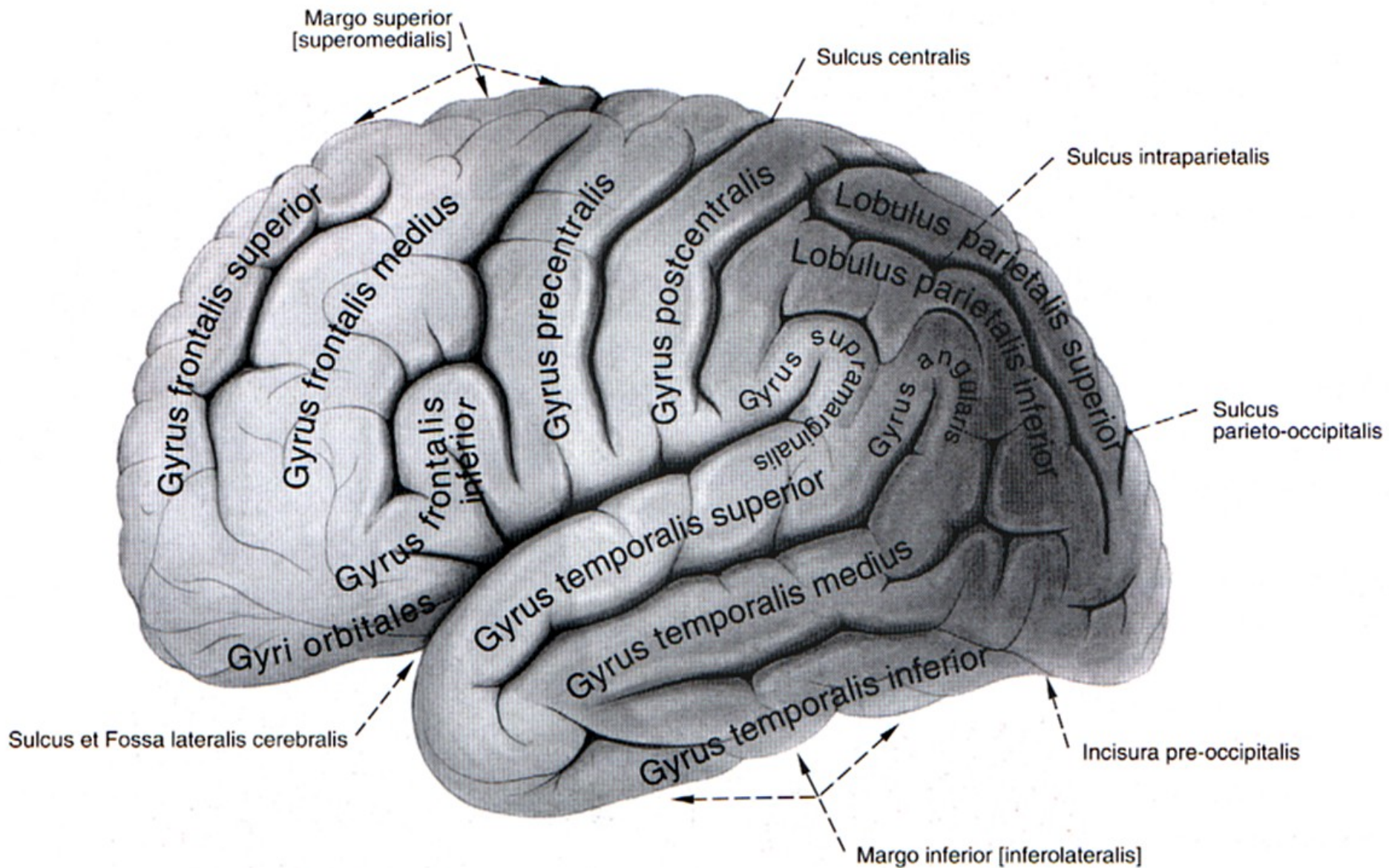


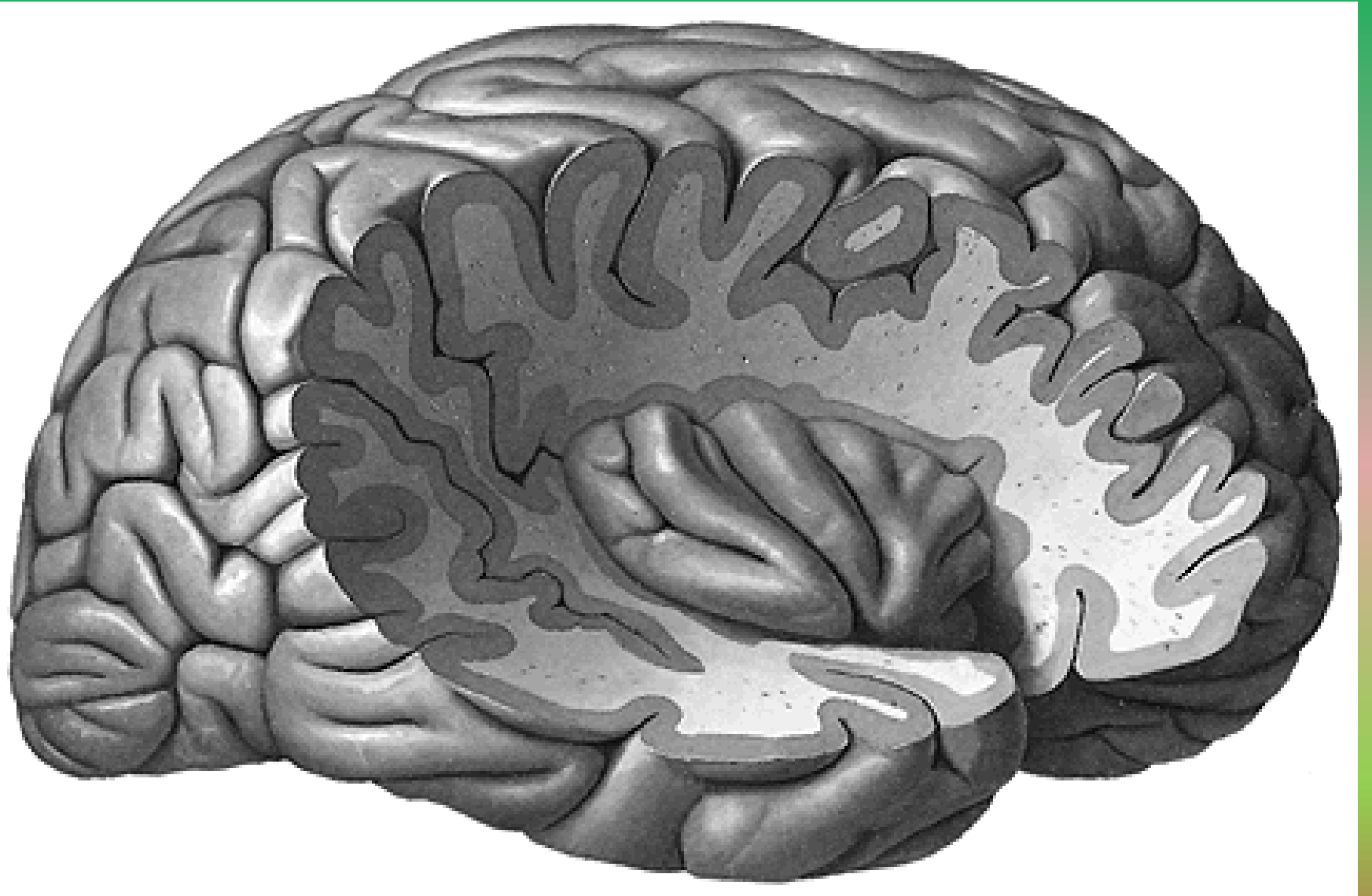


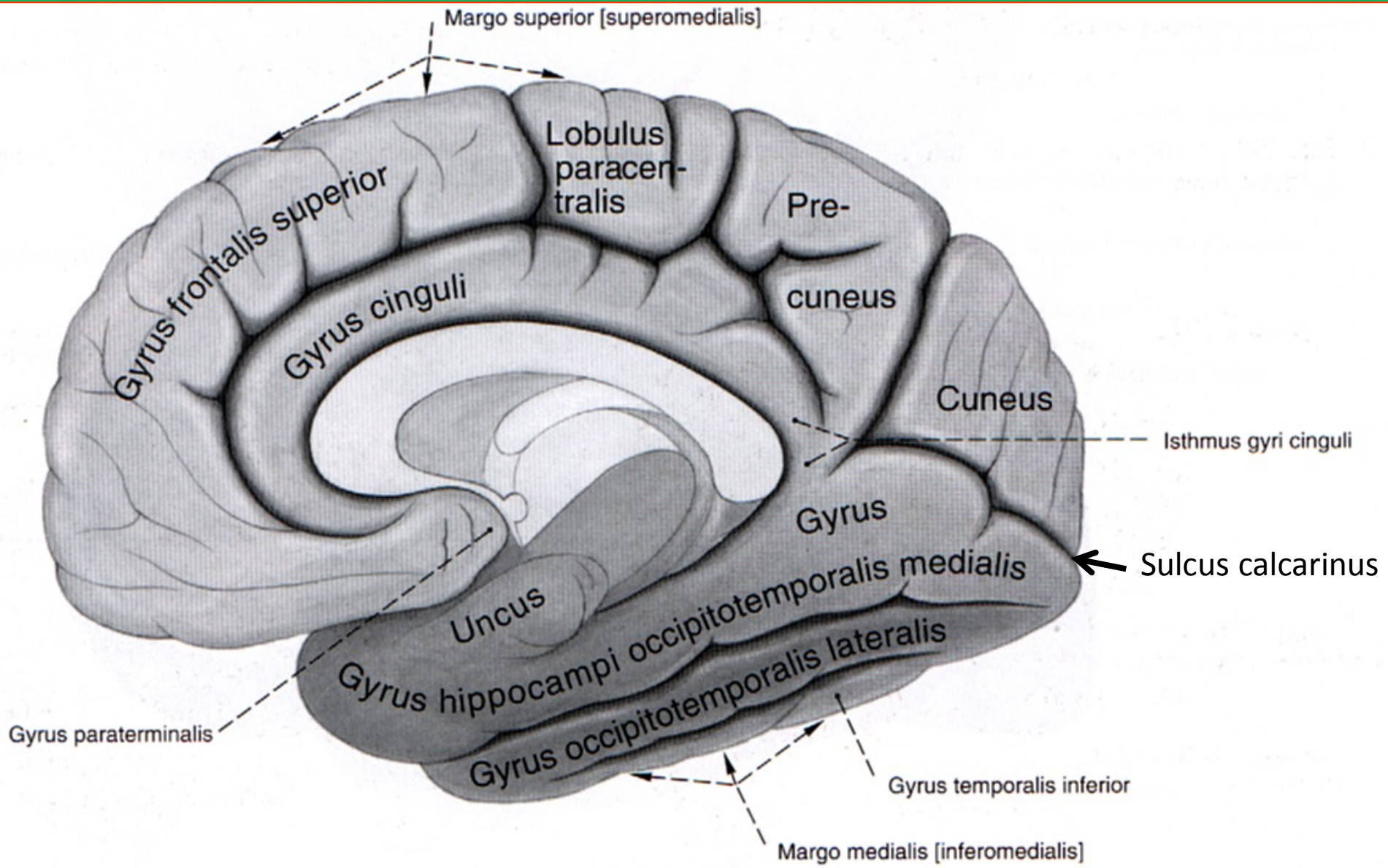


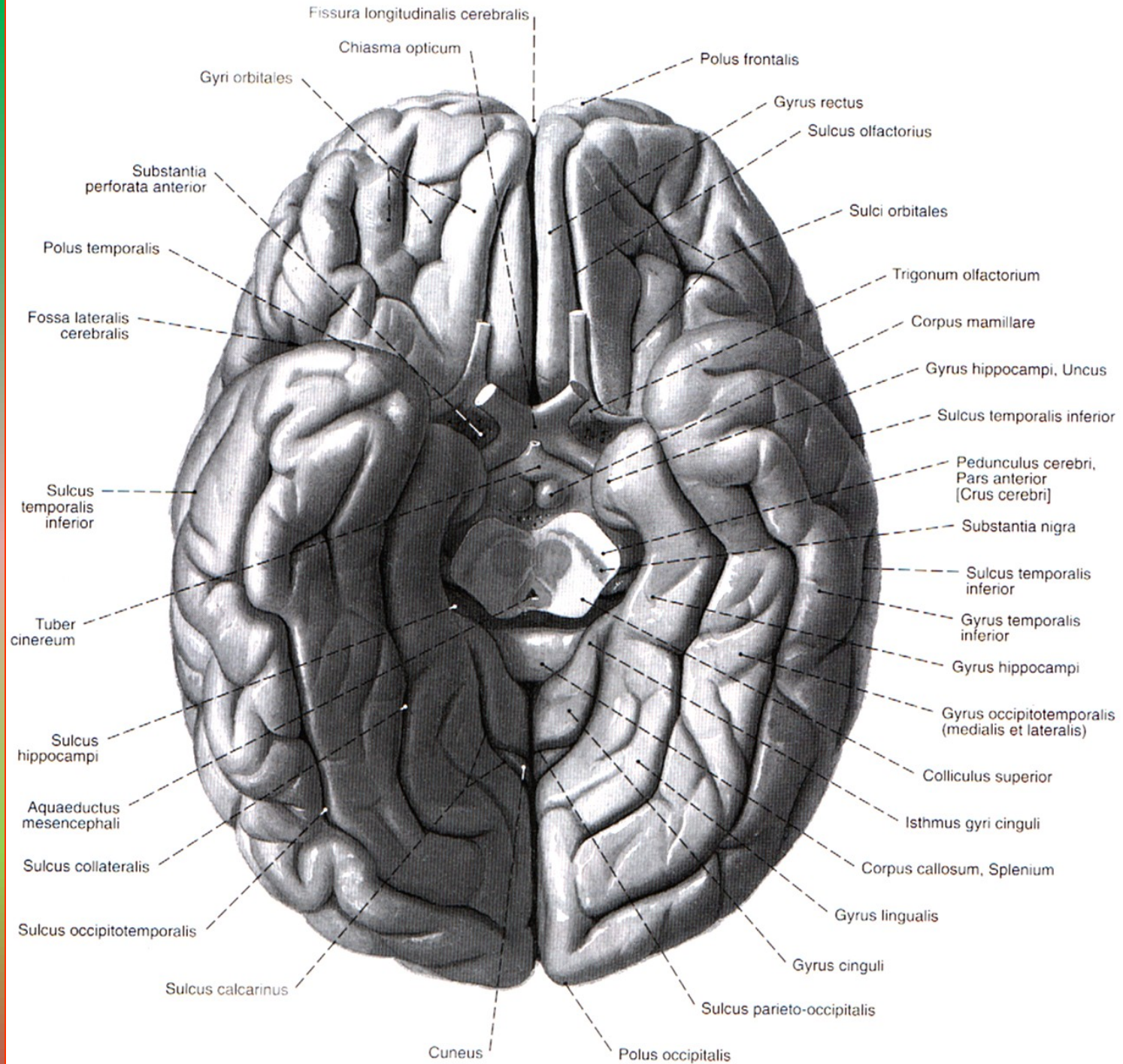




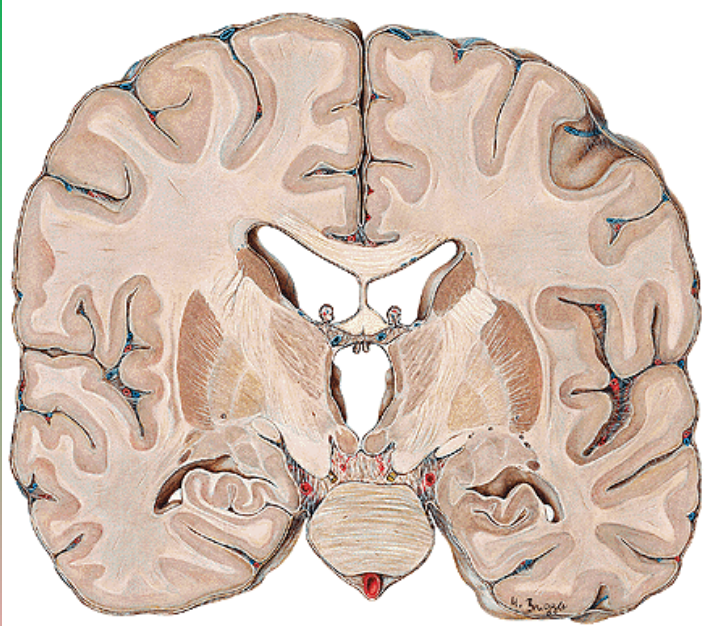




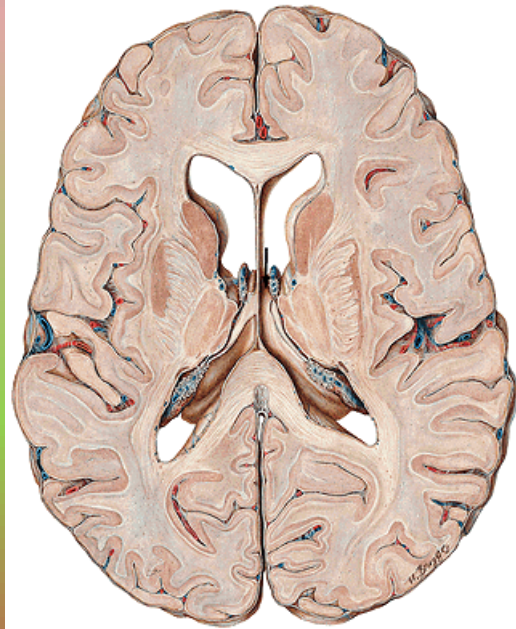




Structure of telencephalon

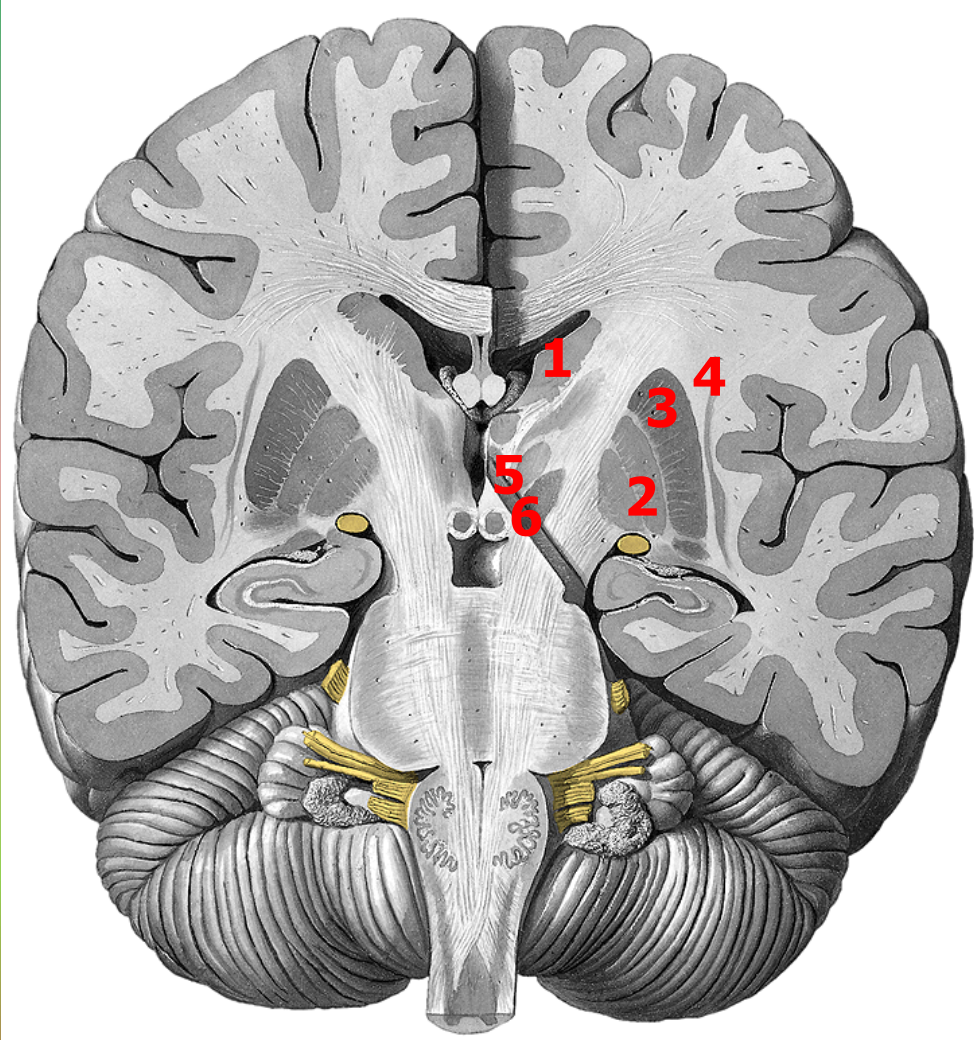


Gray matter
Basal ganglia
Cortex



**White matter -
pathways**
Projection
Commissural
Association

Basal ganglia



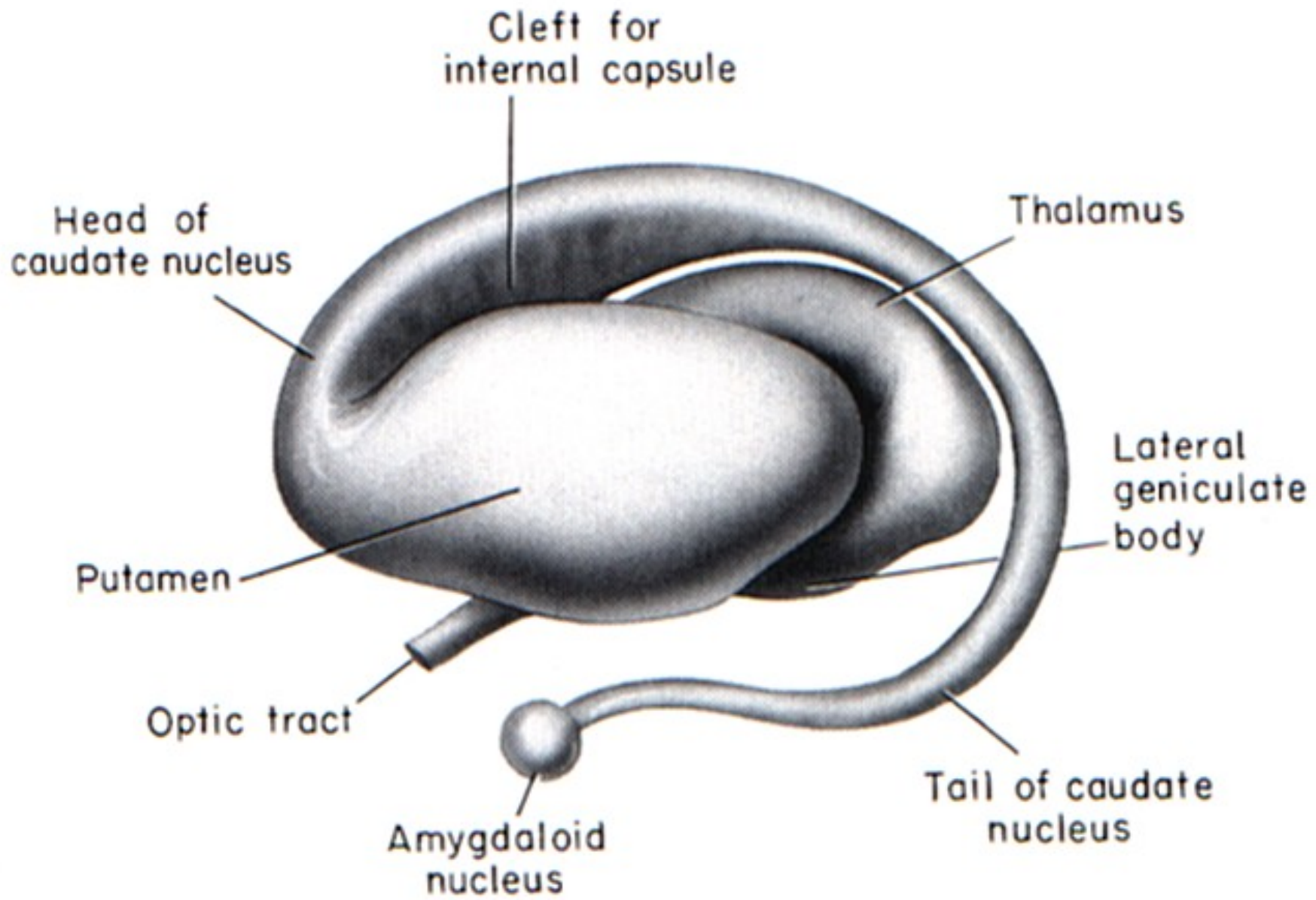
- 1 ncl. caudatus
- 2 globus pallidus
- 3 putamen
- 4 claustrum
corp. amygdaloideum

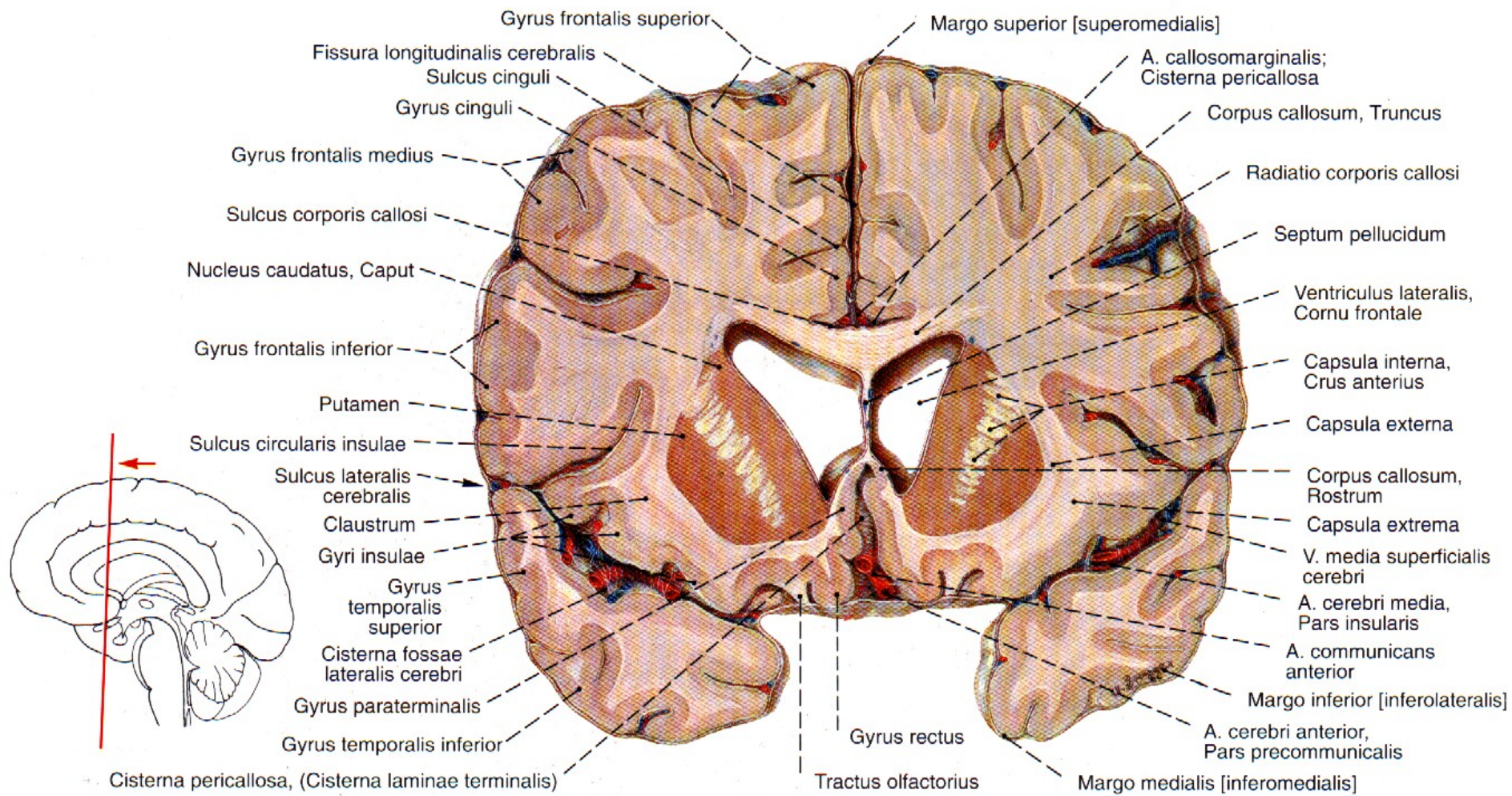
Functionally

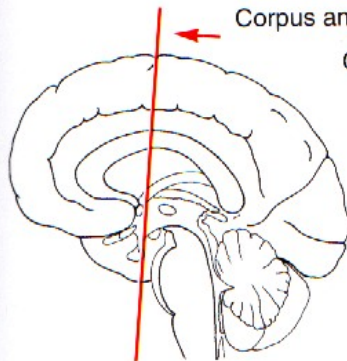
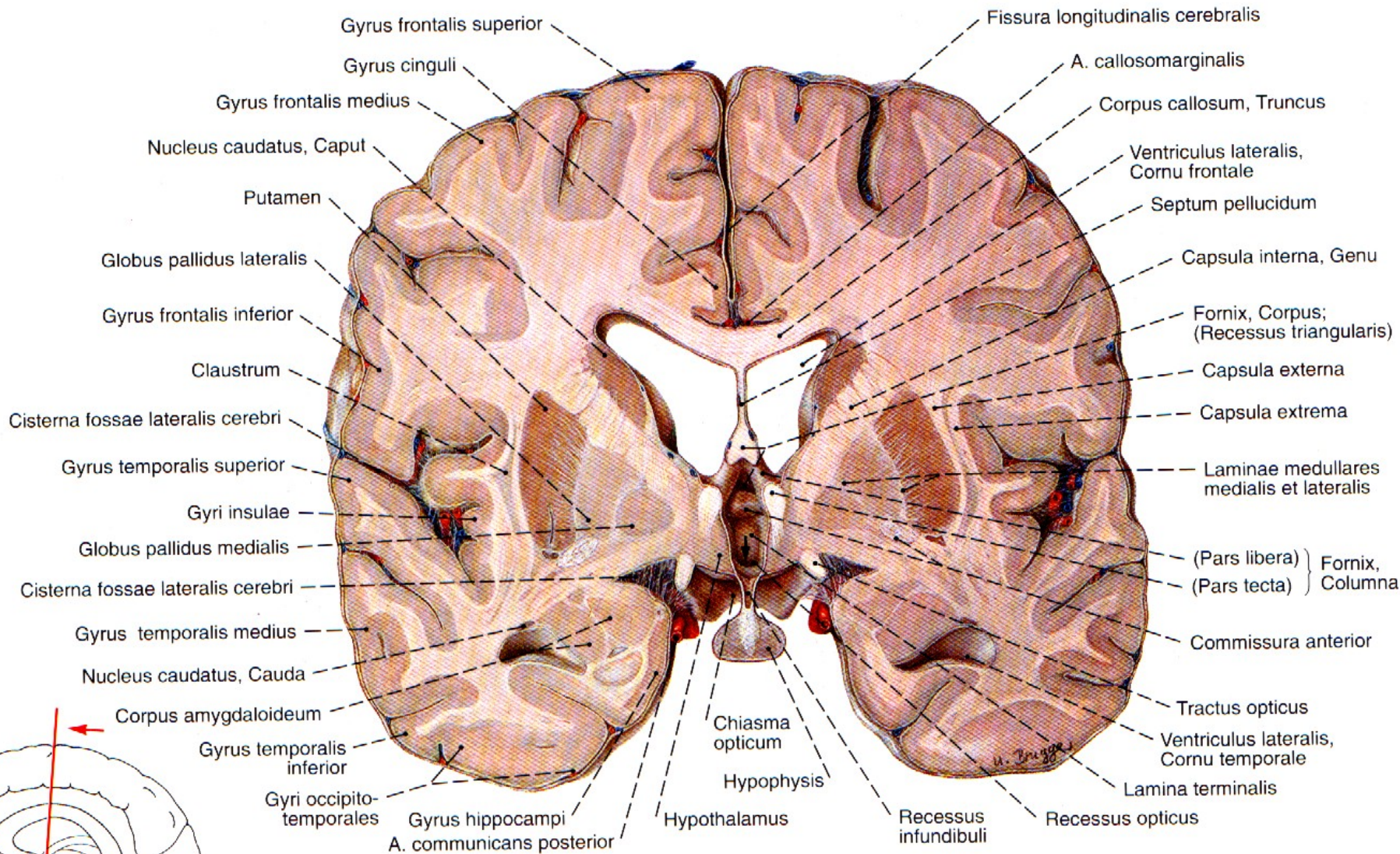
- 5 ncl. subthalamicus
- 6 substantia nigra

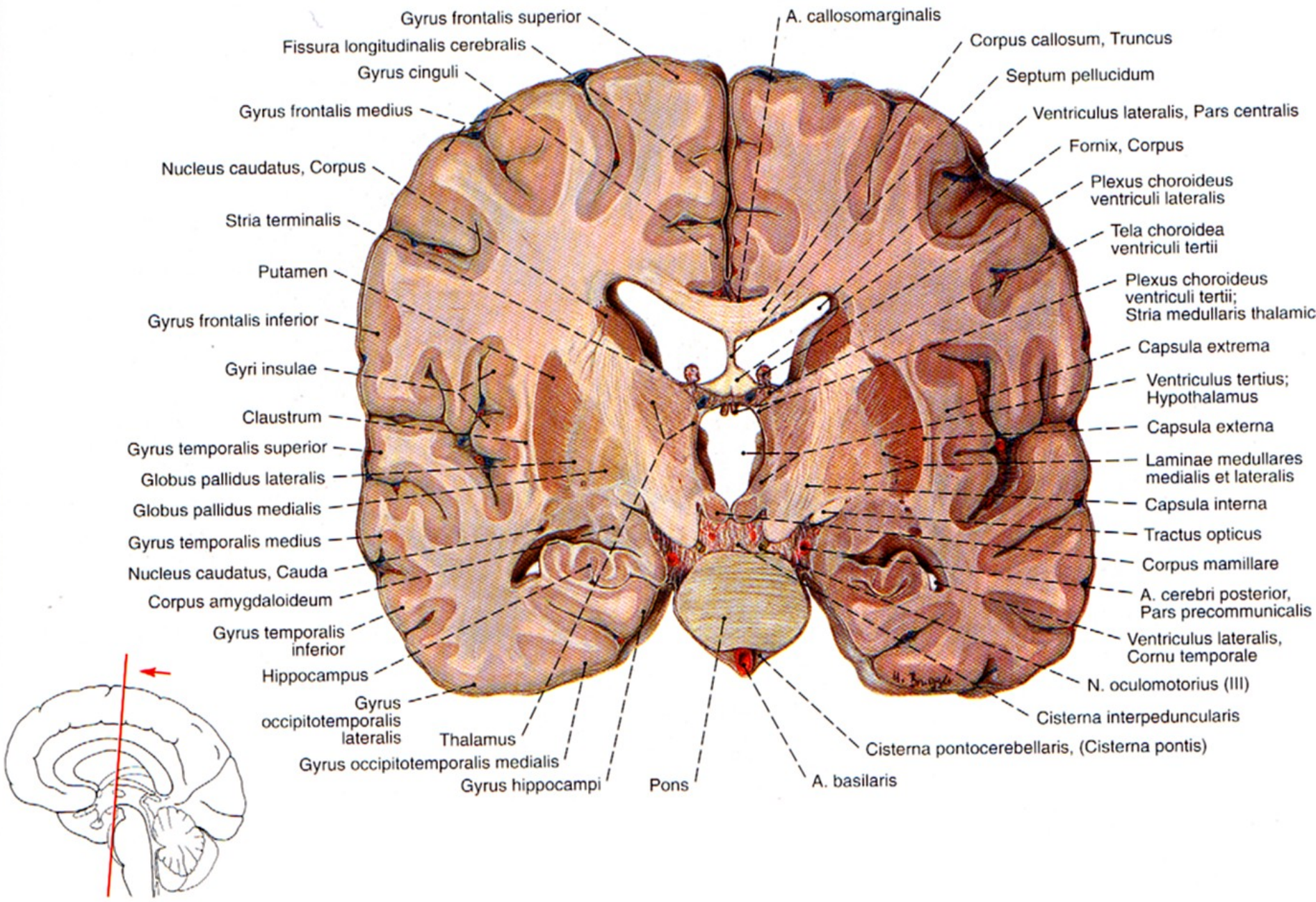
globus pallidus + putamen
= **ncl. lentiformis**

ncl. caudatus + putamen
= **corpus striatum**







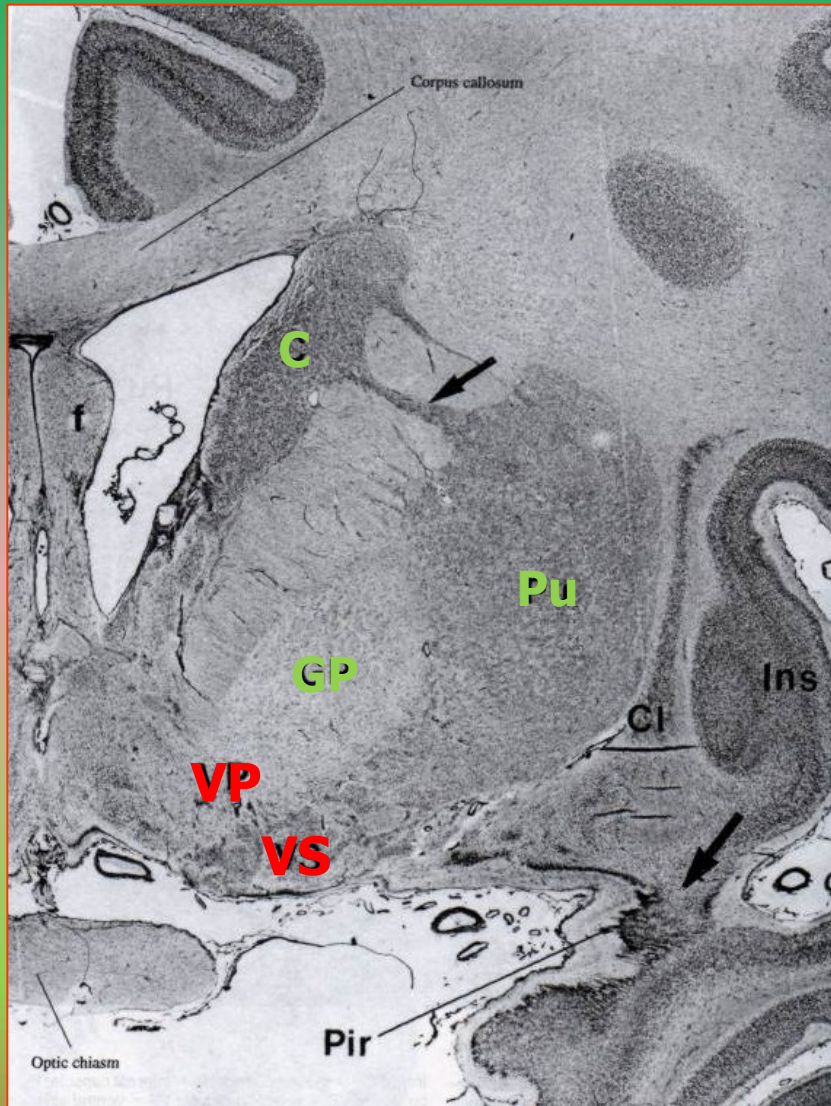


Development of BG

Palleostriatum (pallidum) = globus pallidus
lat. + med. segment – dorsal pallidum
ventral pallidum

Neostriatum (striatum)
ncl. caudatus, putamen – dorsal striatum
ncl. accumbens – ventral striatum

Archistriatum
corpus amygdaloideum

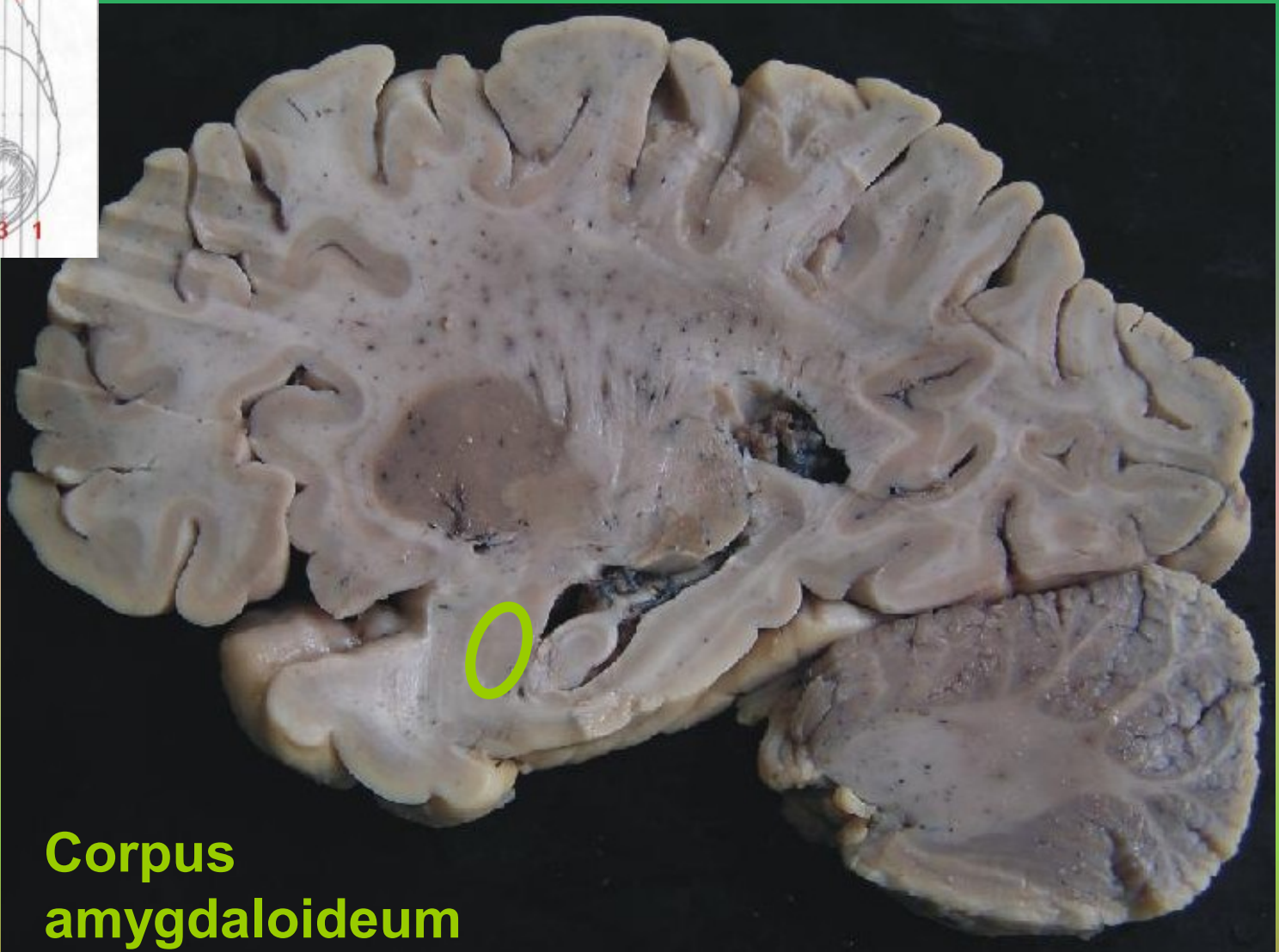
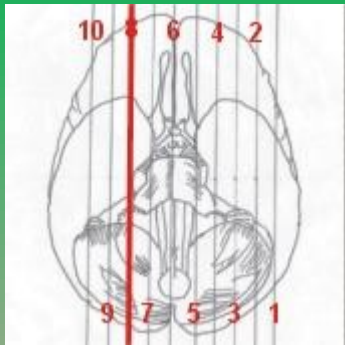


**Ncl caudatus + putamen
= dorsal striatum**

**Globus pallidus
= dorsal pallidum**

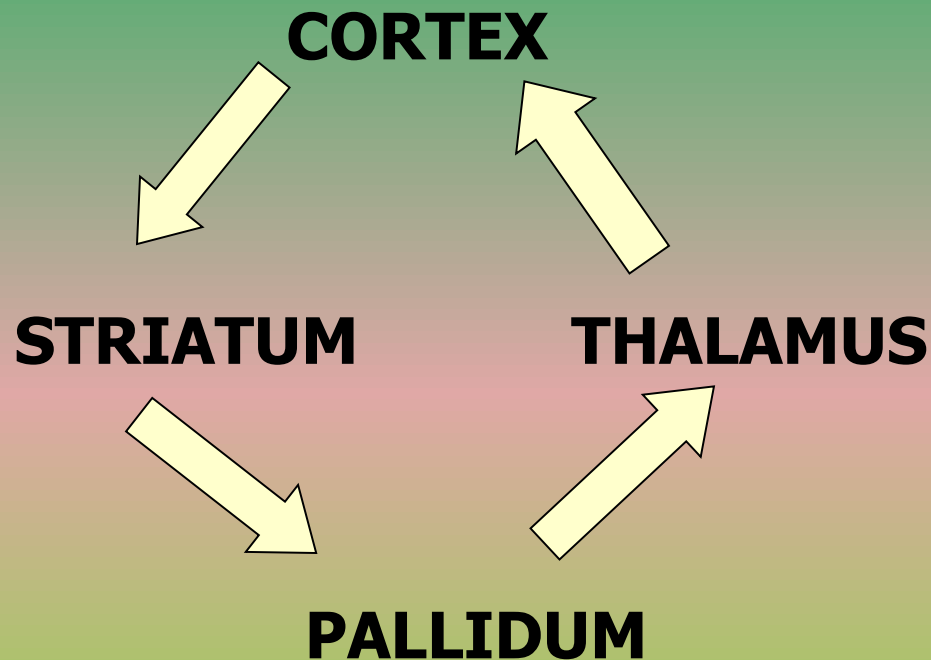
**VS = ventr. striatum (ncl.
accumbens septi)**

**VP = ventral pallidum
(ncl. basalis Meynerti)**



**Corpus
amygdaloideum**

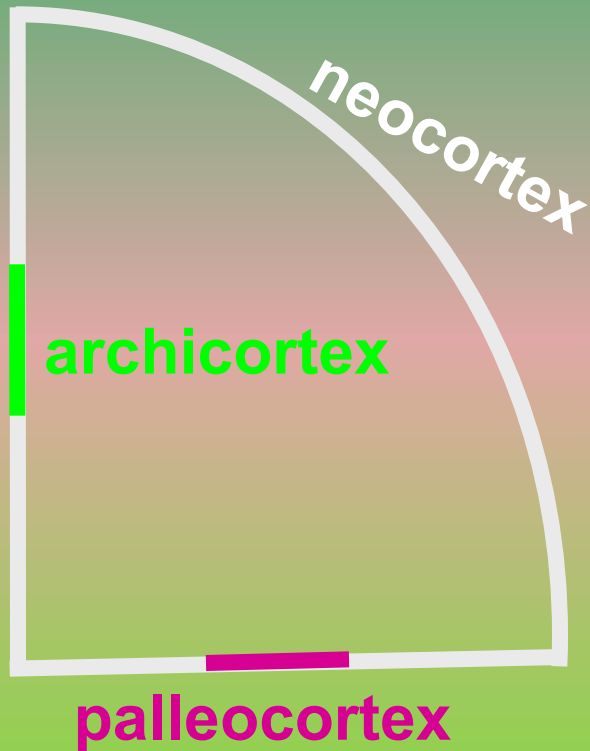
Functional connections of BG



Function of BG

inhibition of cortical and subcortical motor functions

Cerebral cortex



ALLOCORTEX

3-4 layers

a) **palleocortex** (rhinencephalon)

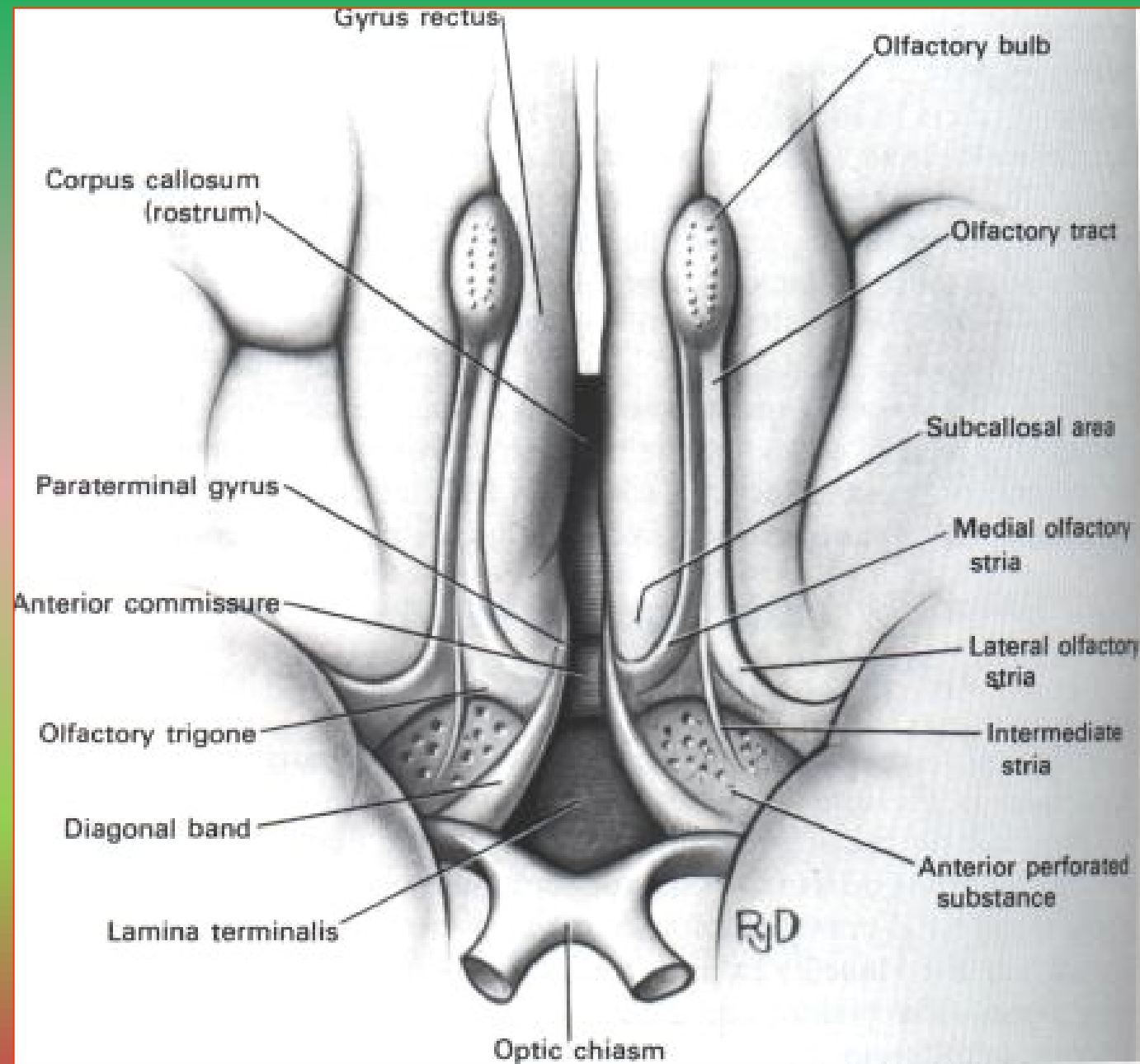
b) **Archicortex** (limbic system)

NEOCORTEX

6 layers

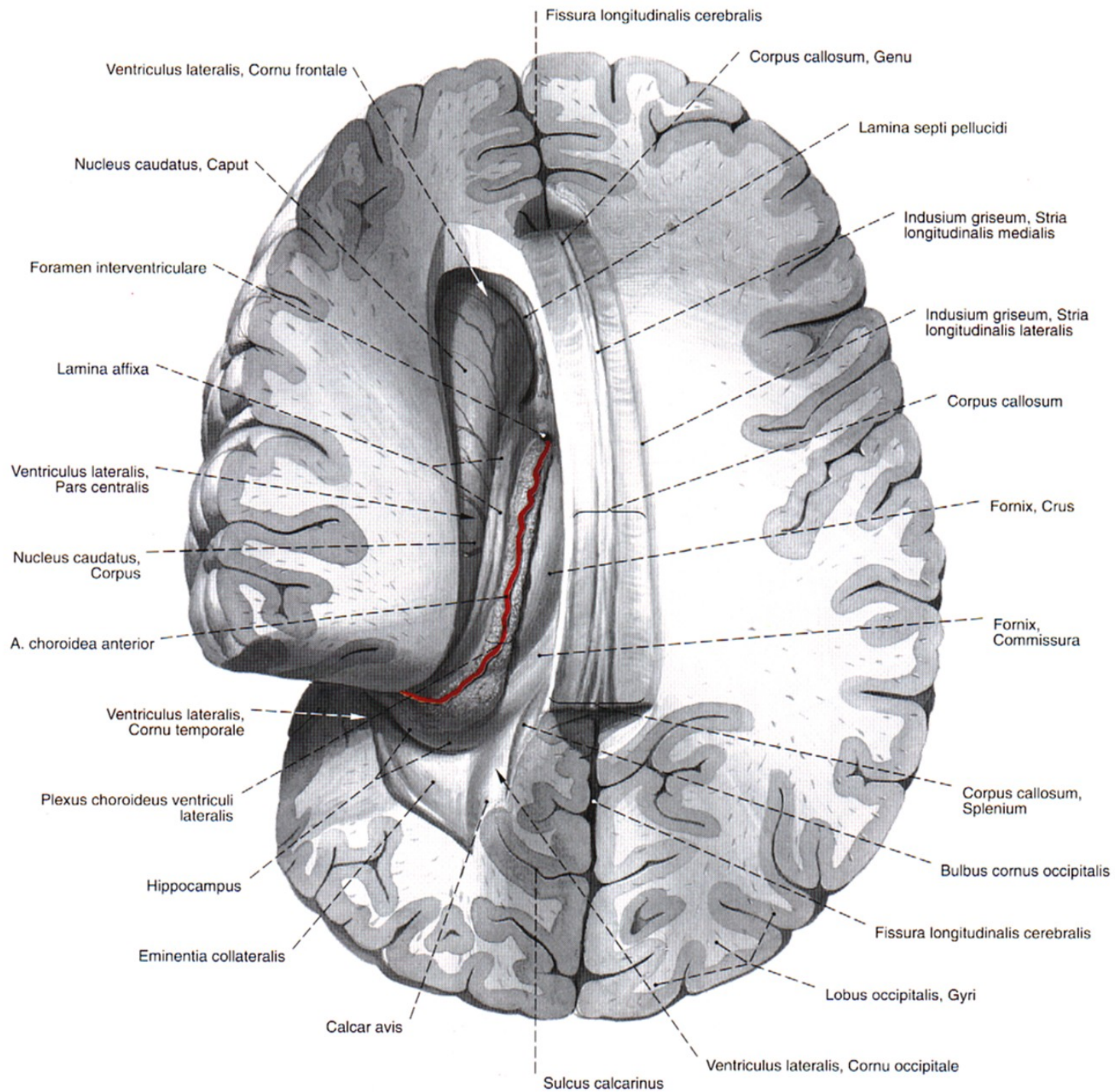
PALEOCORTEX

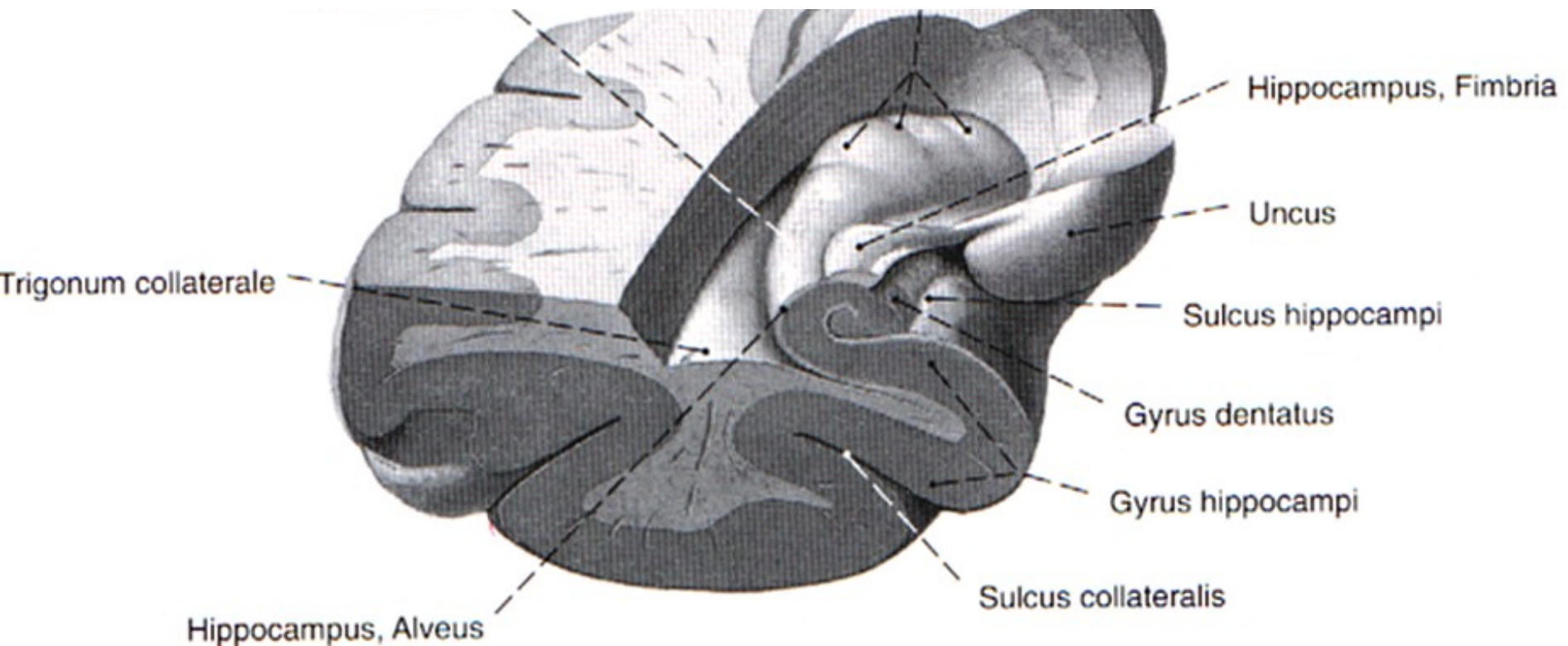
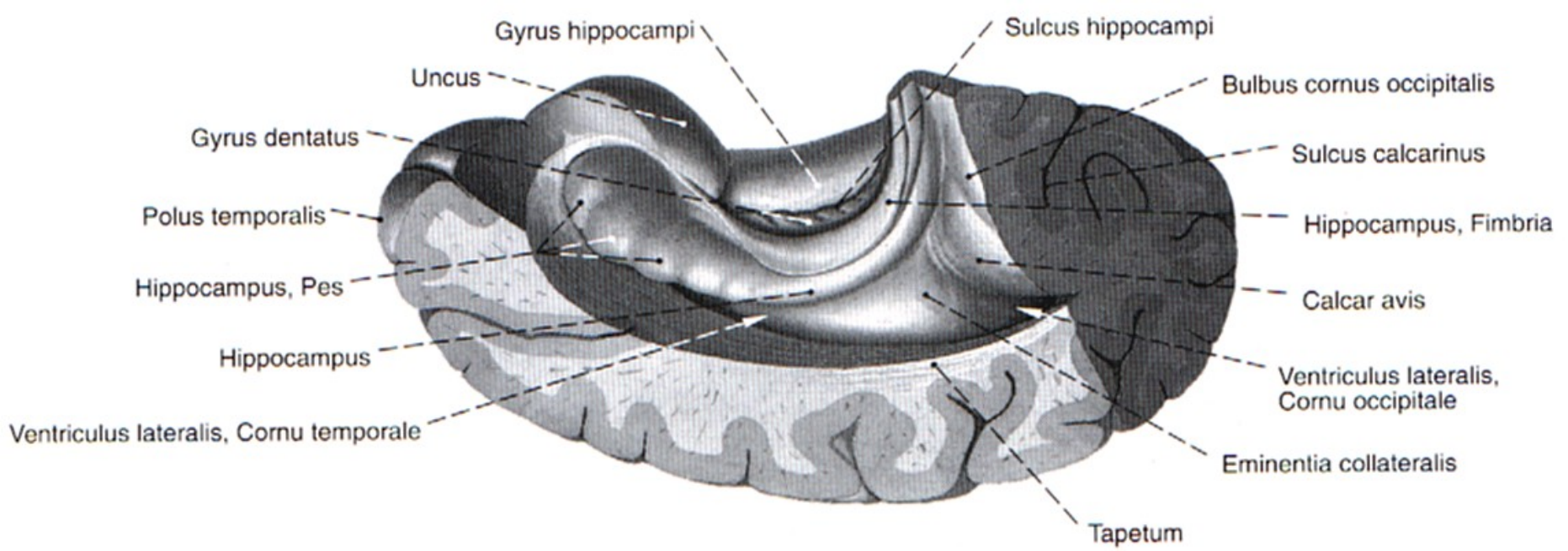
Bulbus olfactorius
Tractus olfactorius
Stria olf. lateralis –
Area piriformis
Stria olf. medialis –
Gyrus paraterminalis

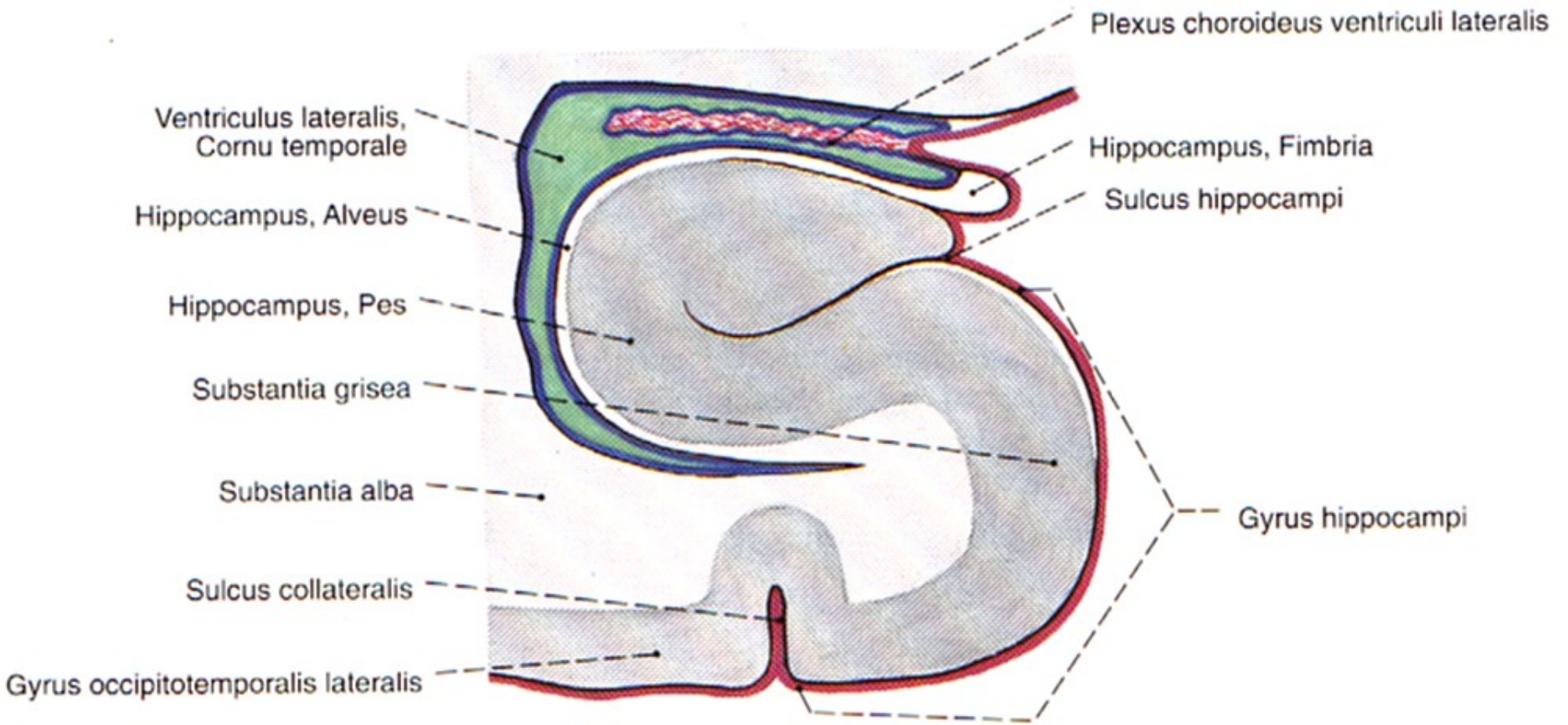


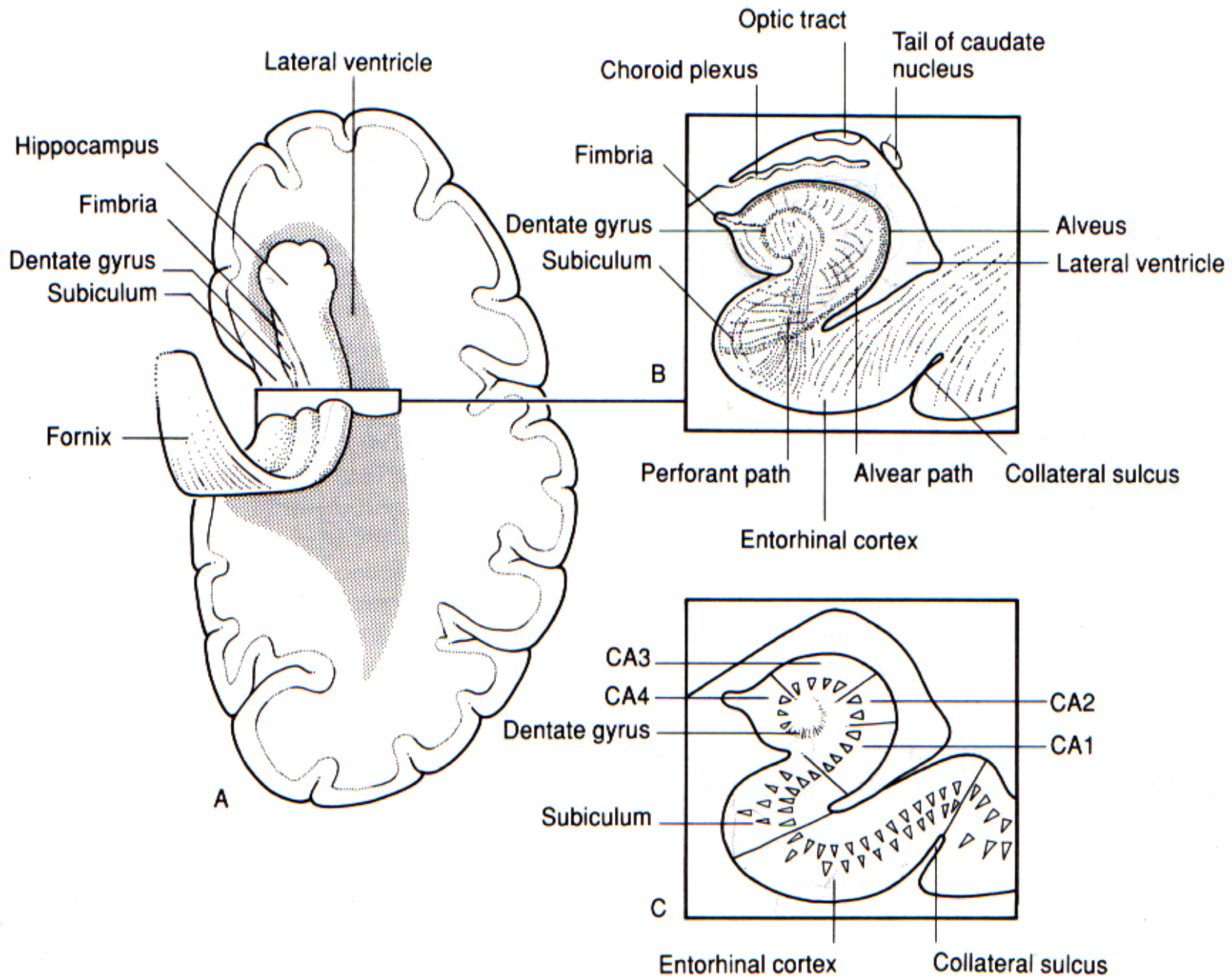
ARCHICORTEX

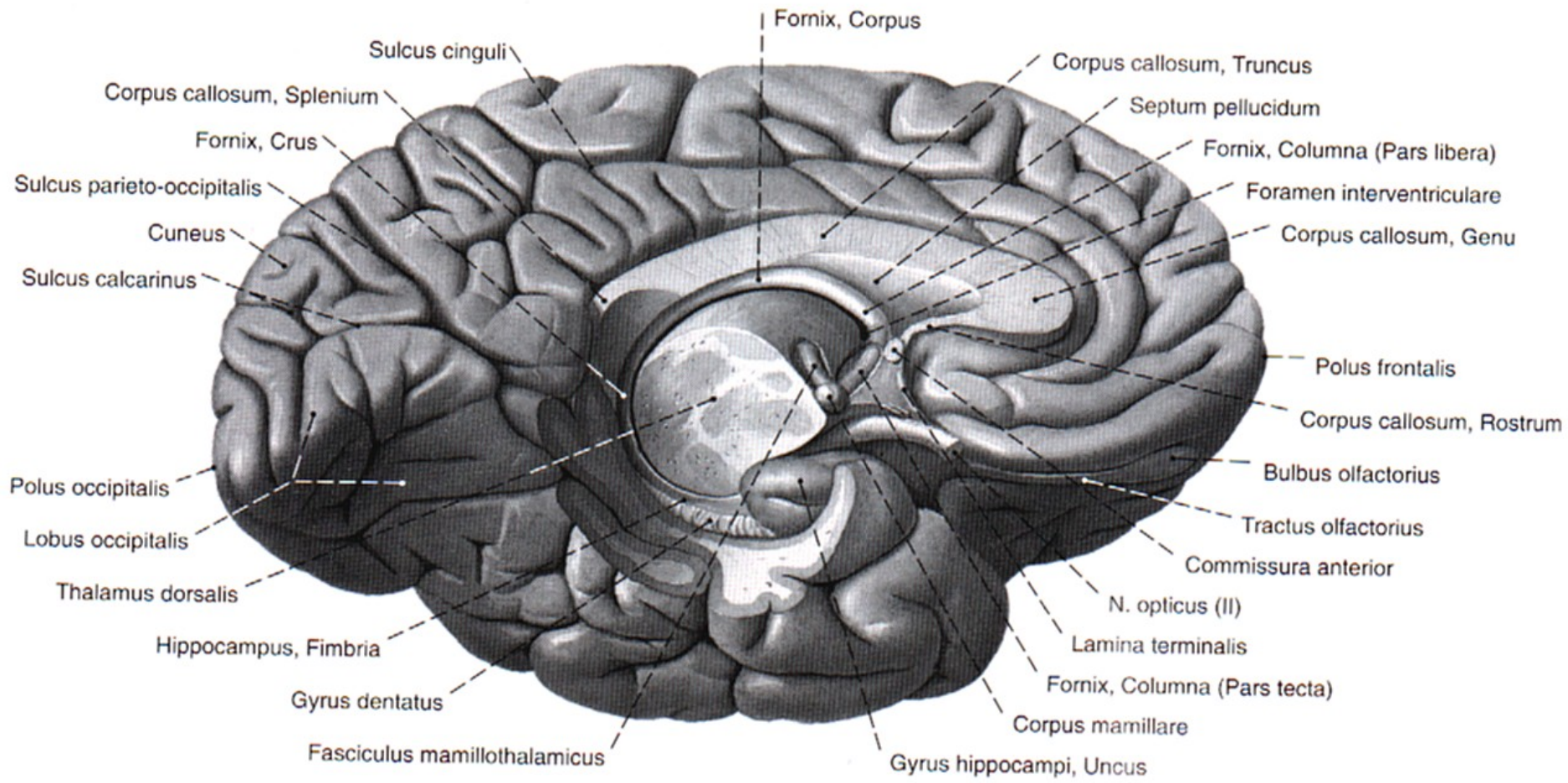
Indusium griseum
Striae longitudinales
Hippocampus
Gyrus dentatus
Subiculum







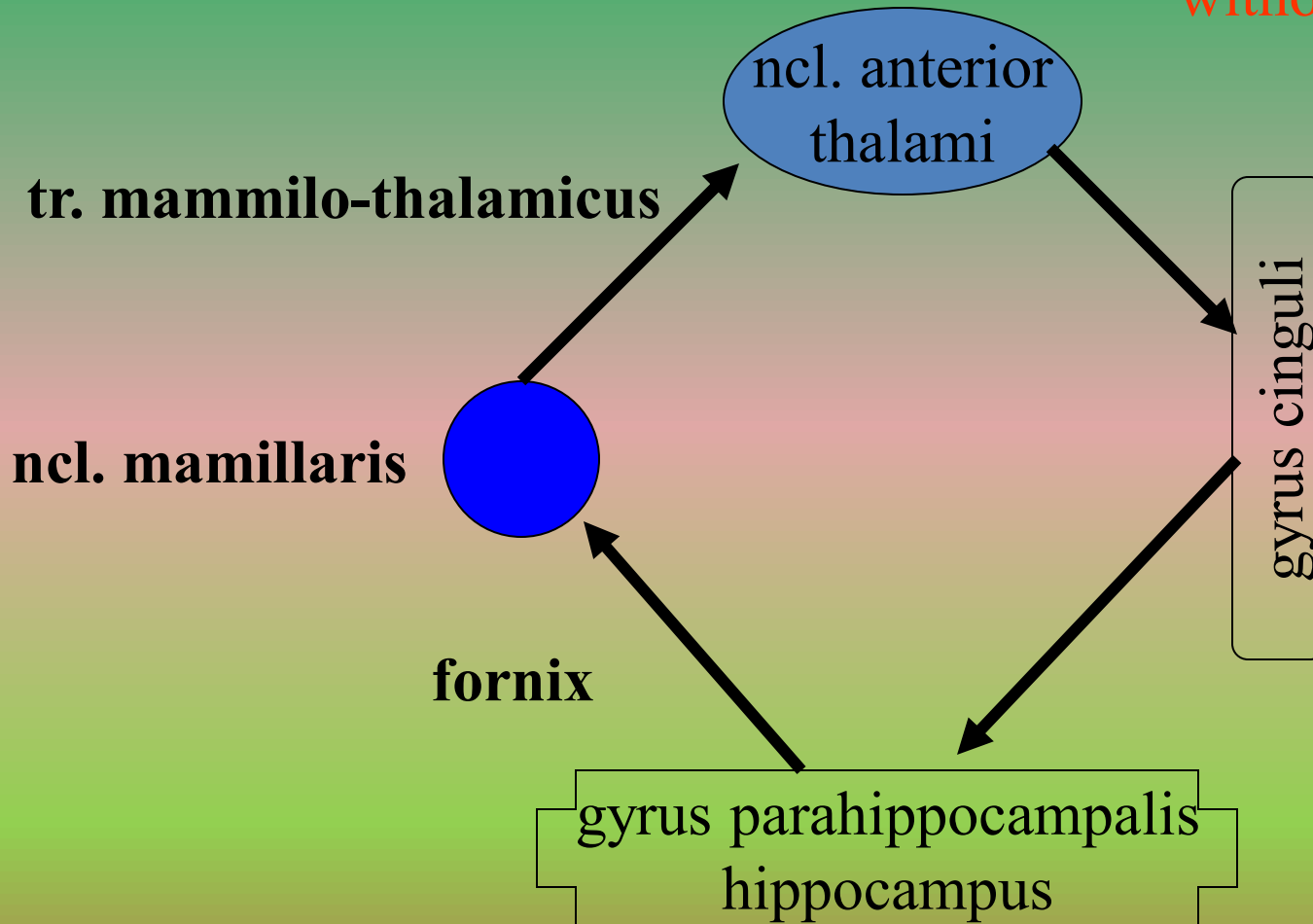




Limbic system – classic conception

Papez's circuit (James Papez 1939)

without specific function

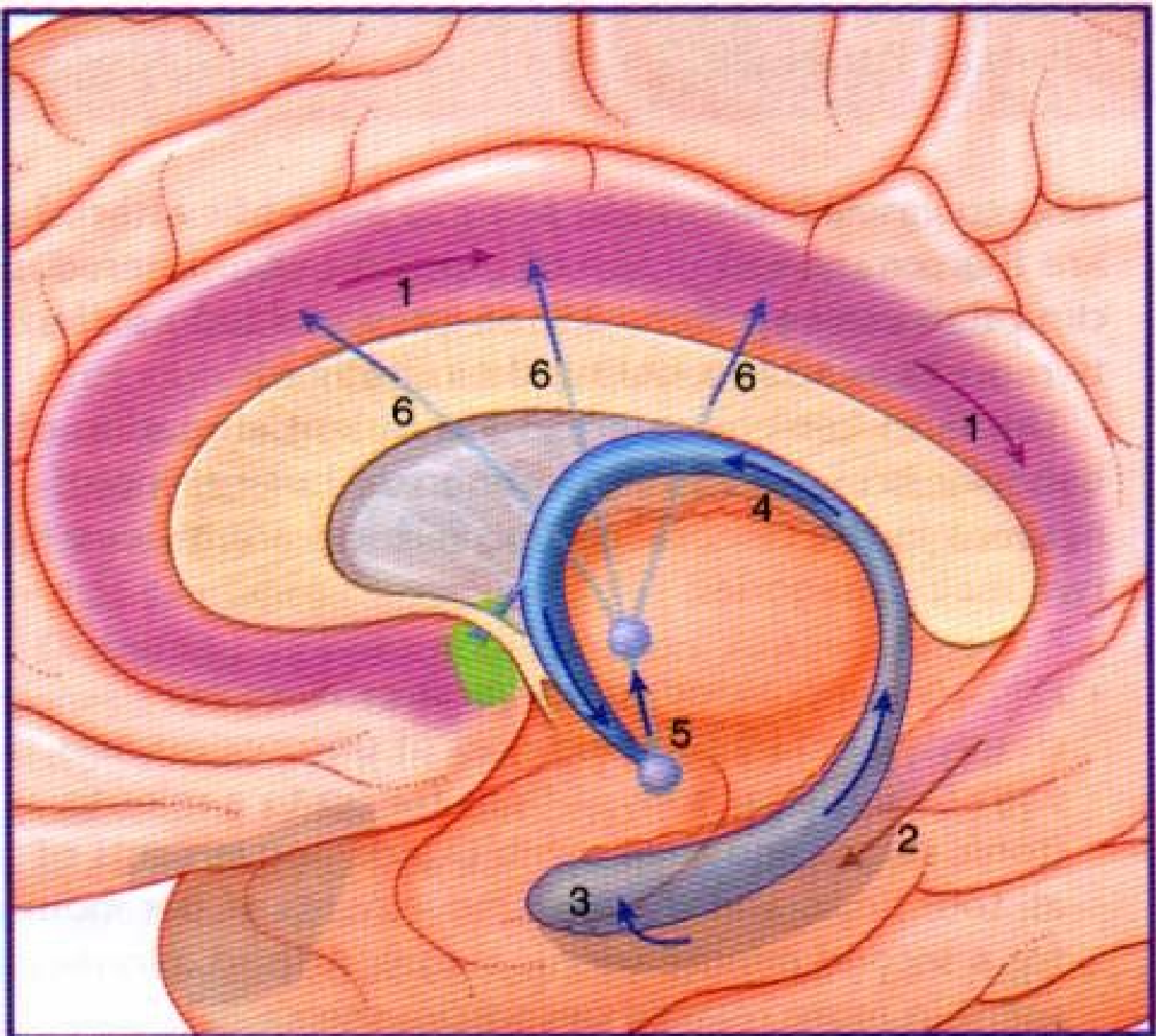


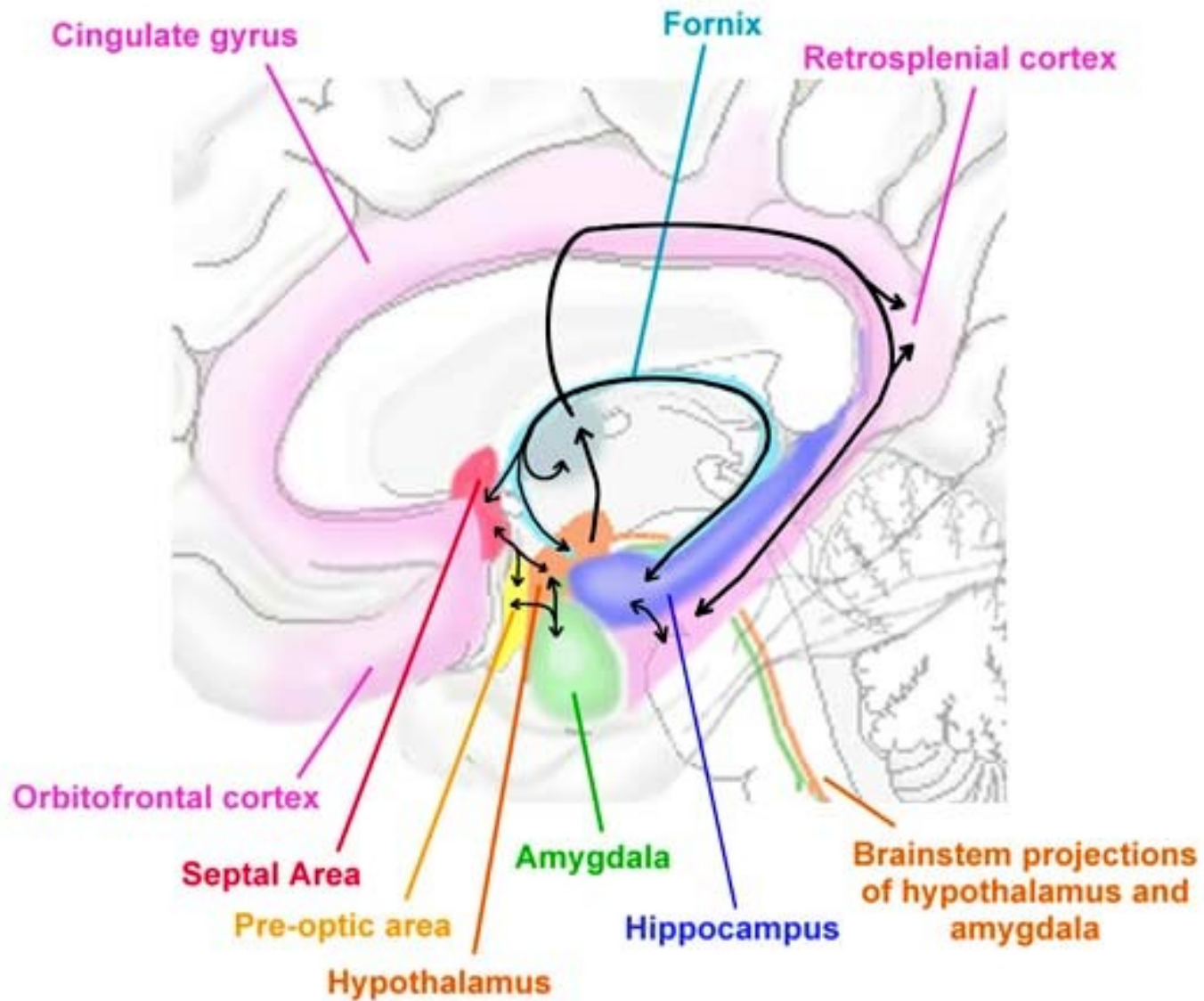
RECENT CONCEPTION OF LIMBIC FOREBRAIN

- basomedial telencephalon, structures of diencephalon and mesencephalon for emotion and motivation of our behavior

Regular structures

- g. cinguli, g. parahippocampalis, hippocampus, insular cortex, neocortical regions of forebrain - basal frontotemporal regions, orbital cortex
- area septalis, amygdalar ncl., ventral striatum (pallidum)
- ncl. anterior et medialis dorsalis thalami, habenulla
- hypothalamus (ncl. mammillaris)



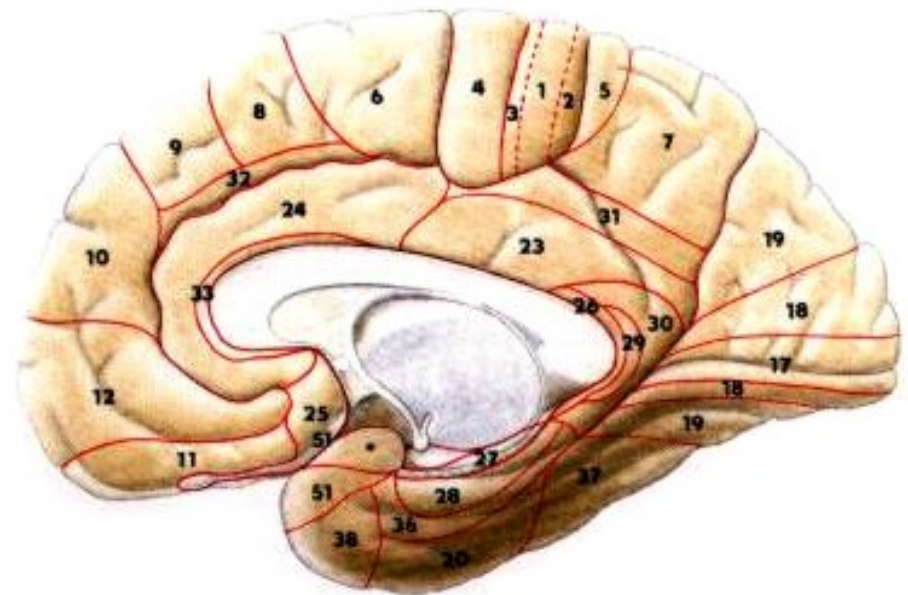
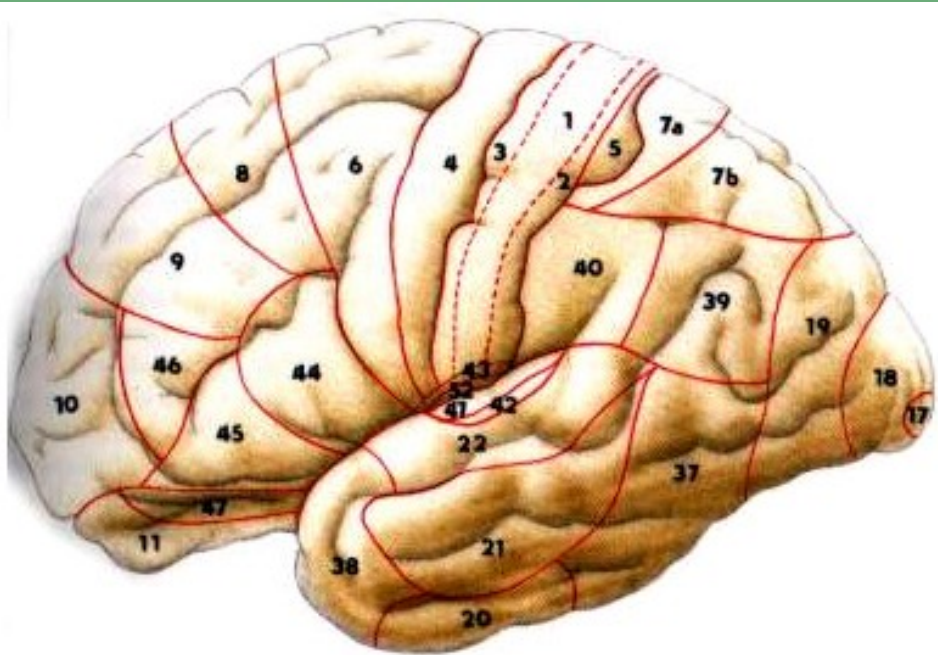


"Limbic" areas

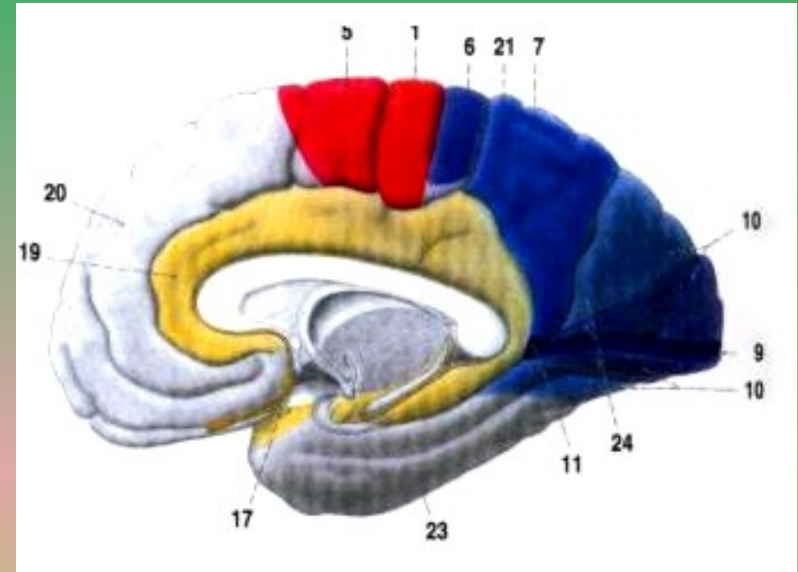
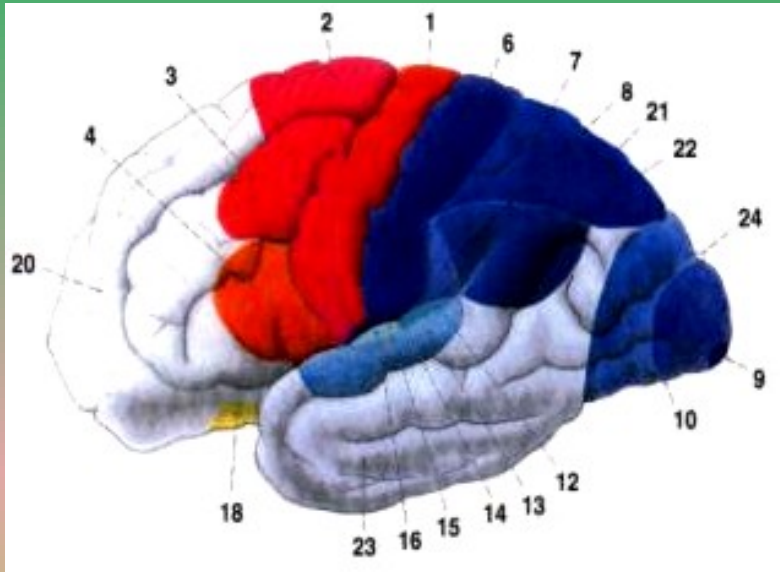
Brodman's map (cytoarchitectonic map of cortex)

- 11 regiones

- 52 areae



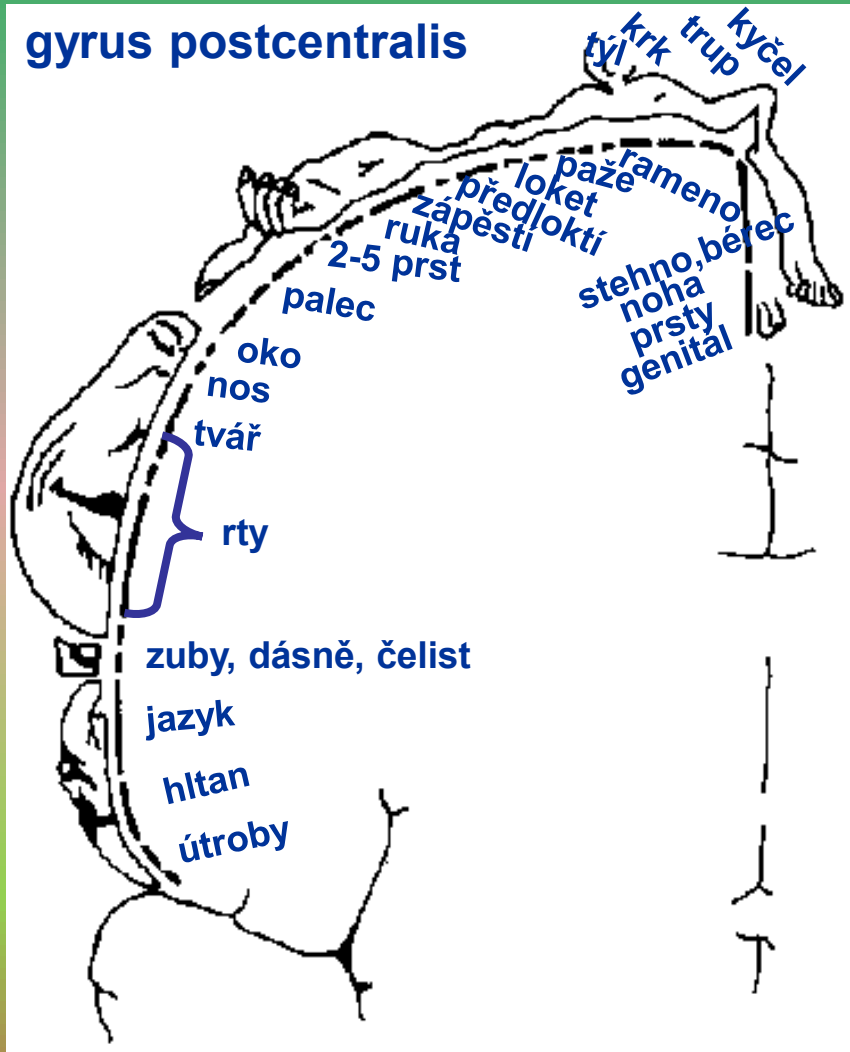
Functional regions of cortex



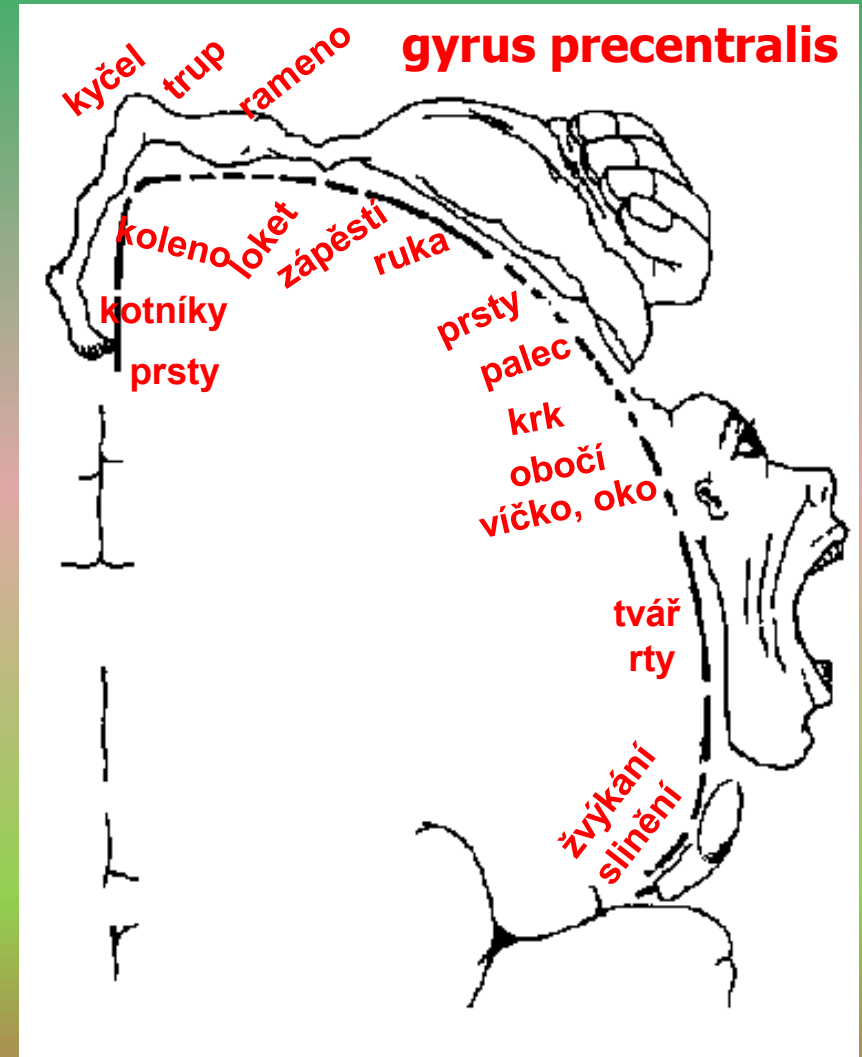
Primary motor c. (a 4), primary somatic sensory c. (a 3,1,2), primary visual c. (a 17), primary auditory c. (a 41,42)

Secondary and association areas

Representation of contralateral body parts

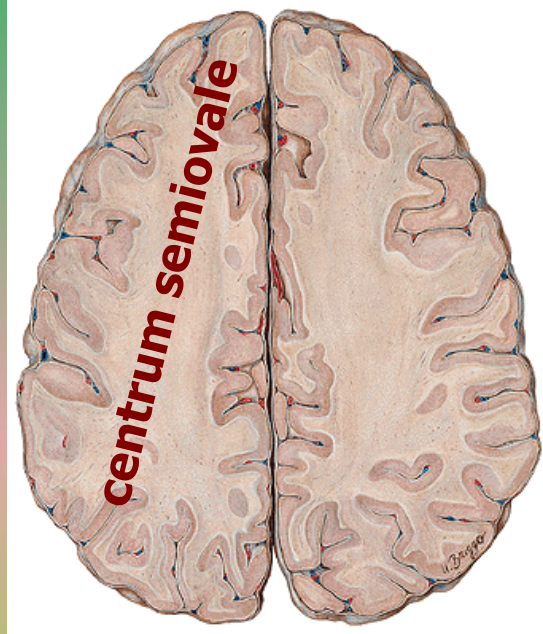


„sensory homunculus“



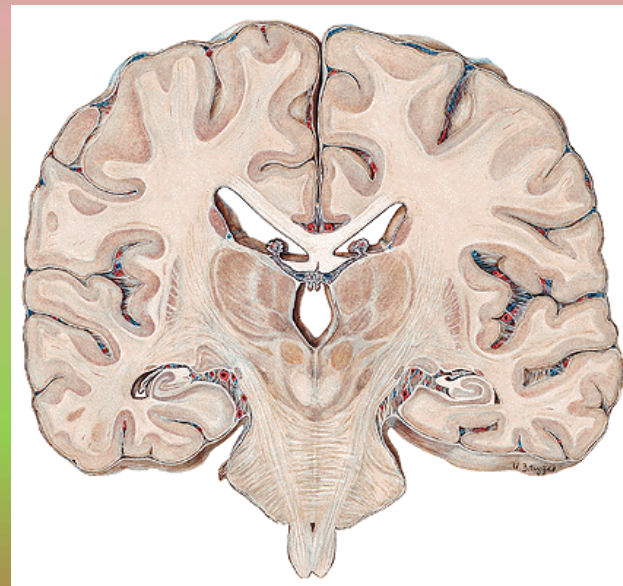
„motor homunculus“

White matter of the telencephalon - **corpus medullare**

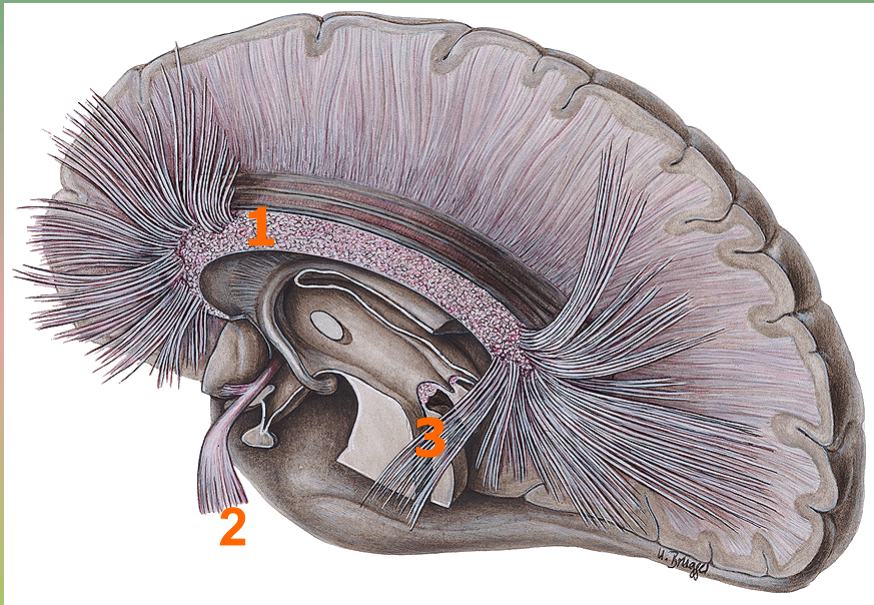


Fibers

commissural
projection
association



Commissural fibers



1 corpus callosum
neocortex

2 commissura ant.
pars ant.- paleocortex
pars post. - neocortex

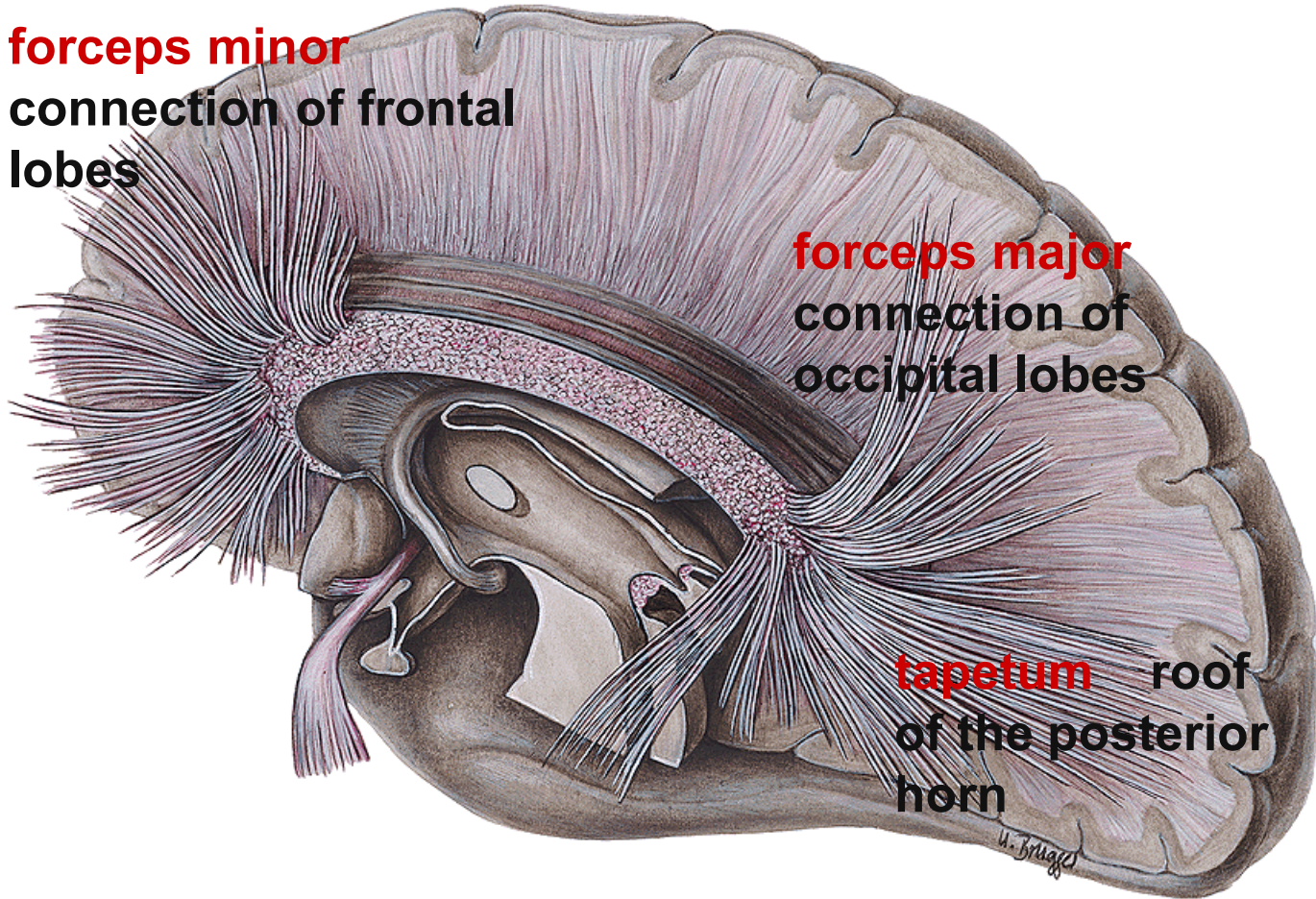
3 commissura fornicis
archicortex

Corpus callosum - 300 million fibers

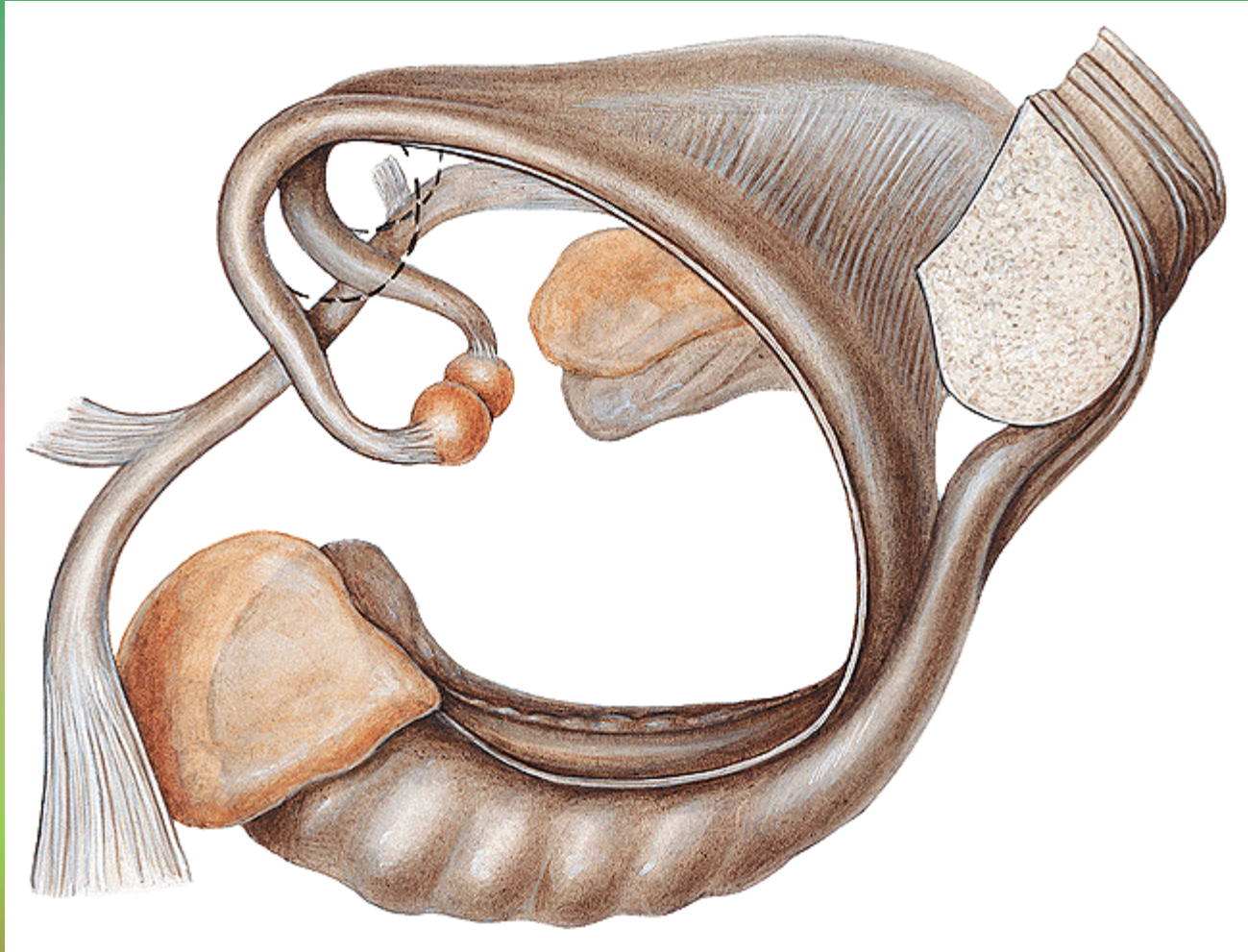
forceps minor
connection of frontal
lobes

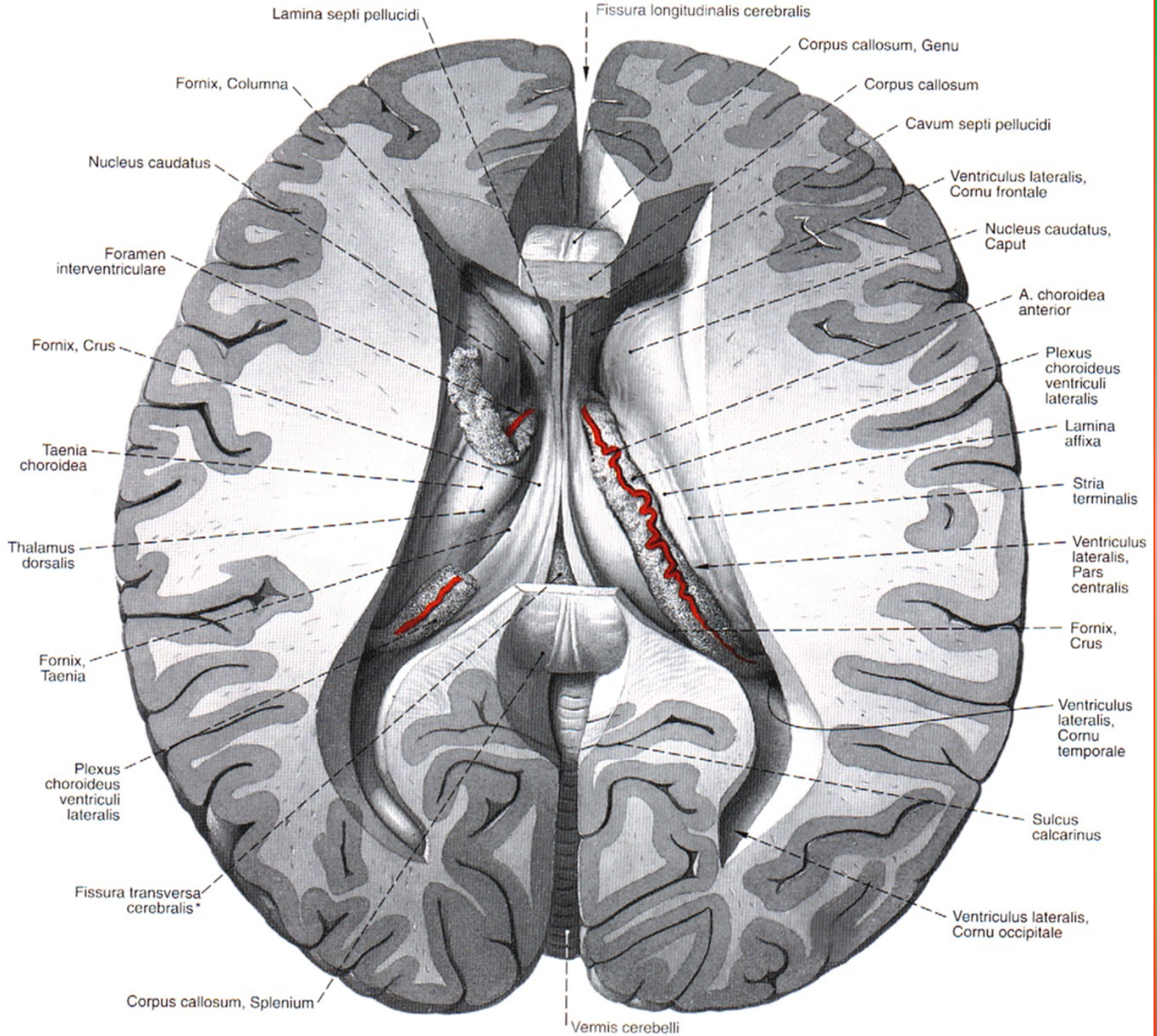
forceps major
connection of
occipital lobes

tapetum roof
of the posterior
horn

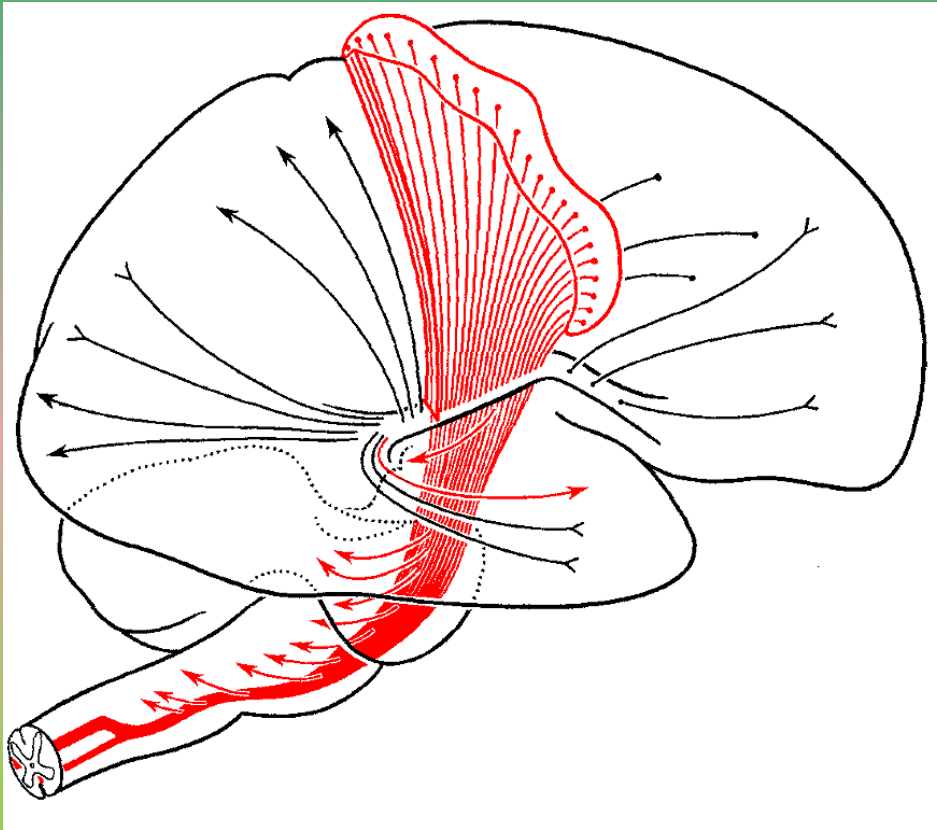


Commissura fornicis et anterior





Projection fibers



short

■ connections between cortex and BG

reciprocal connections between cortex and thalamus

long

tr. co-sp

tr. co-ncl

tr. co-ret

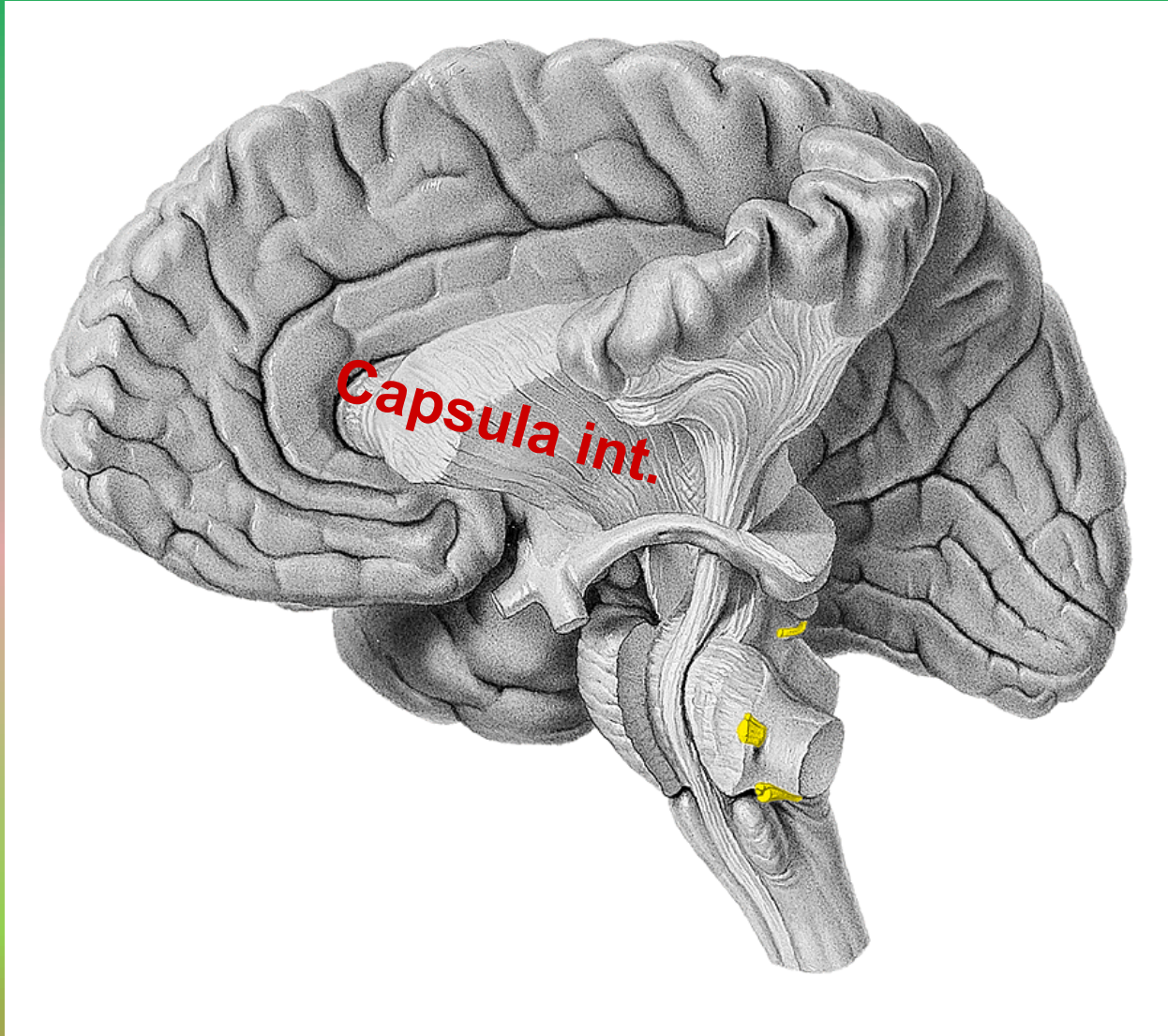
tr. co-tec

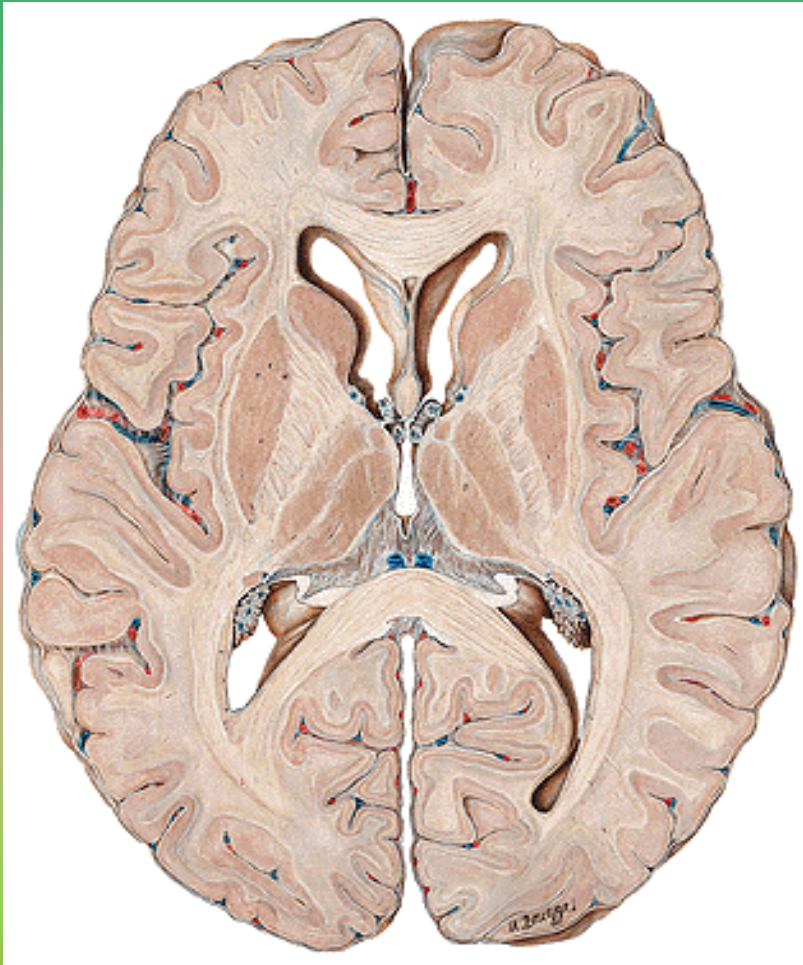
tr. co-ru

tr. co-bulb

tr. co-po

capsula interna





crus ant.

fr-po

genu

co-ncl

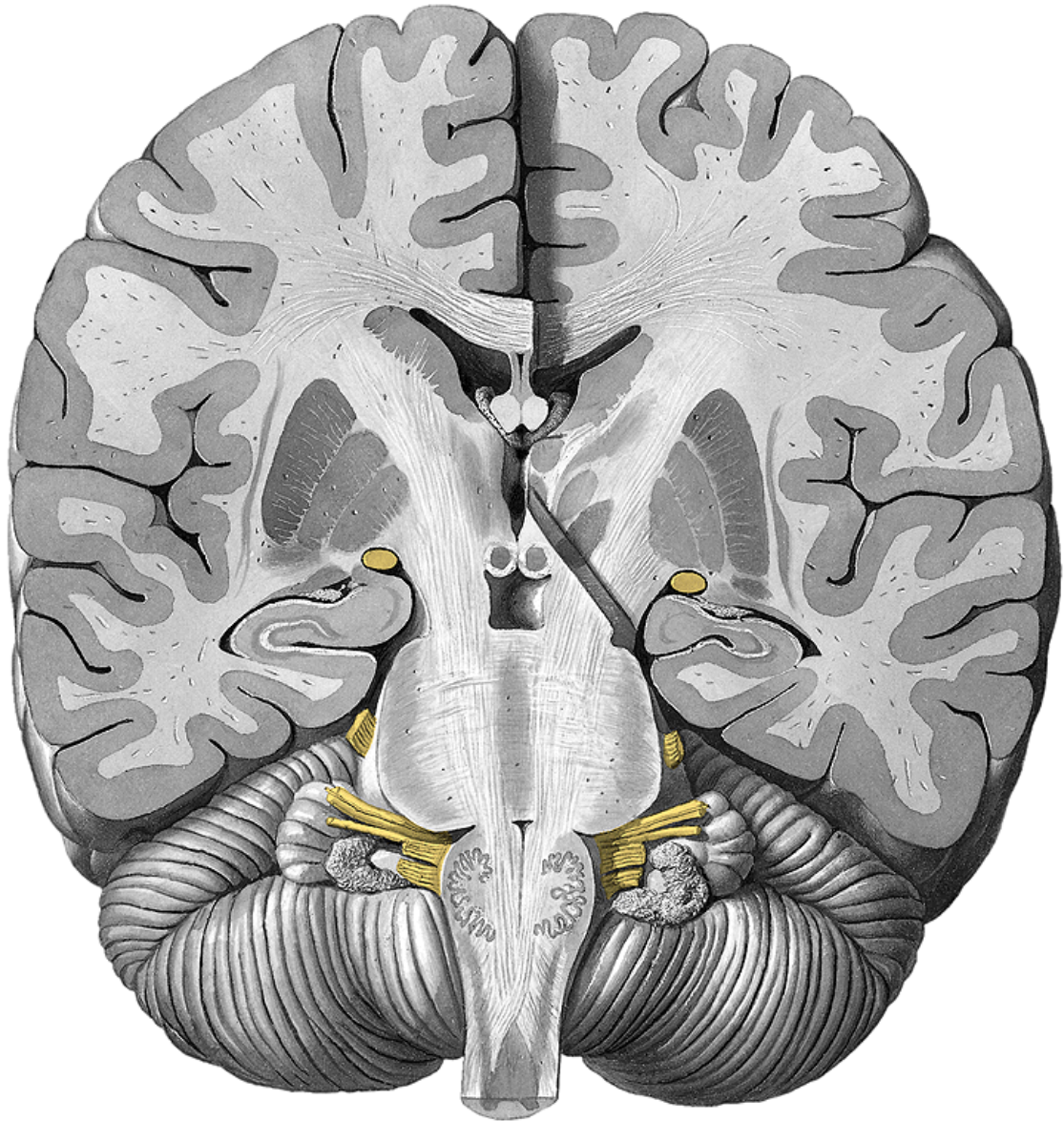
co-sp,
ru,re

crus post.

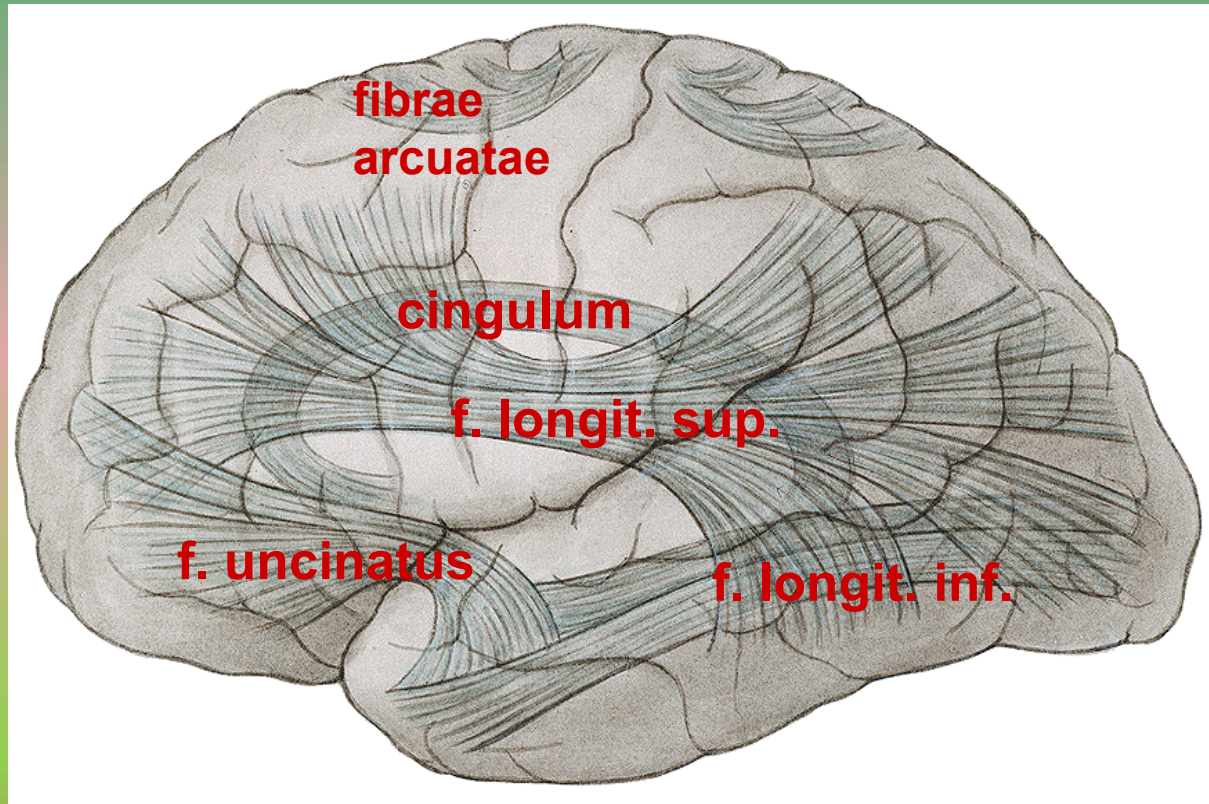
p,o,t
-po

radiatio
optica

radiatio
acustica



Association fibers: short (fibrae arcuatae), long



- Illustrations were copied from:
- **Atlas der Anatomie des Menschen/ Sobotta.**
Putz,R., und Pabst,R. 20. Auflage. München:
Urban & Schwarzenberg, 1993
- **Netter: Interactive Atlas of Human Anatomy.**
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