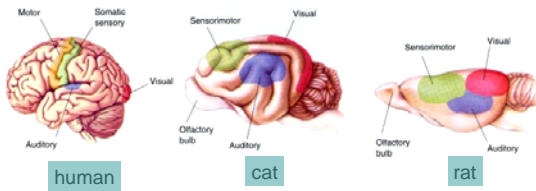


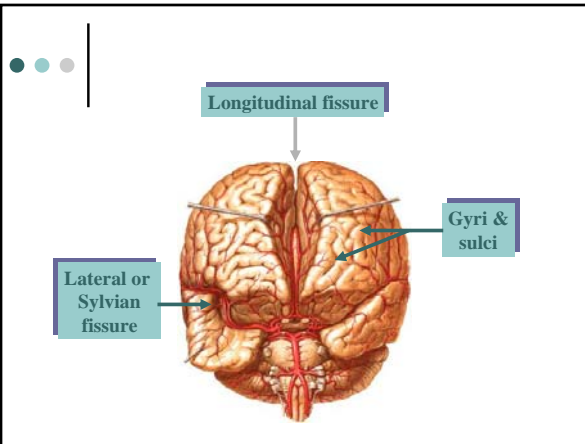
● ● ● | Cerebral Cortex

Medical Neuroscience
Dr. Wiegand

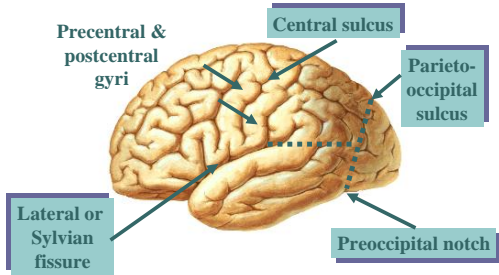
● ● ● | Comparative Anatomy



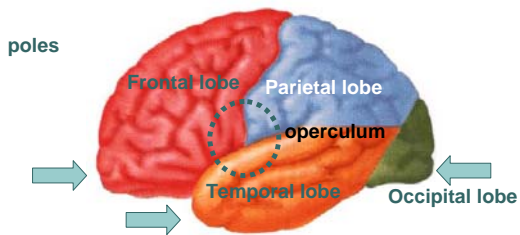
Human cortical expansion not strictly due to enlarged motor or primary sensory areas



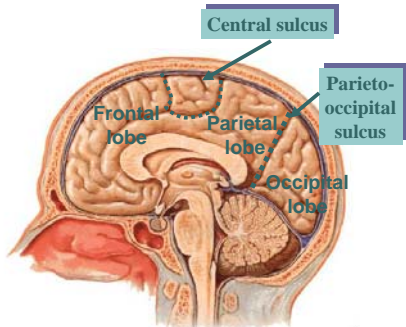
● ● ● Landmarks

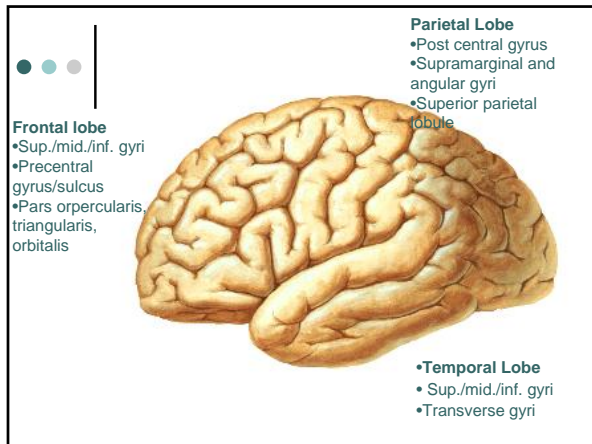


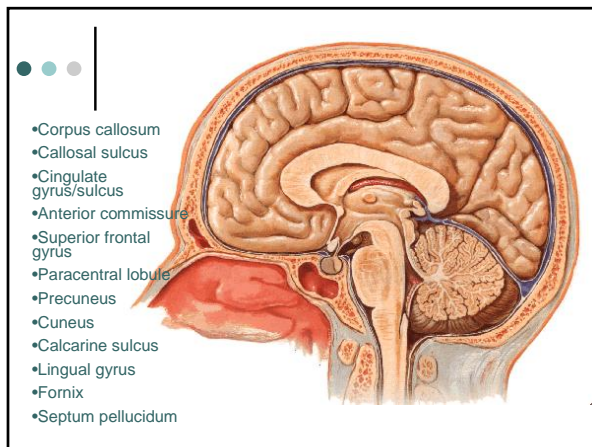
● ● ● Lobes

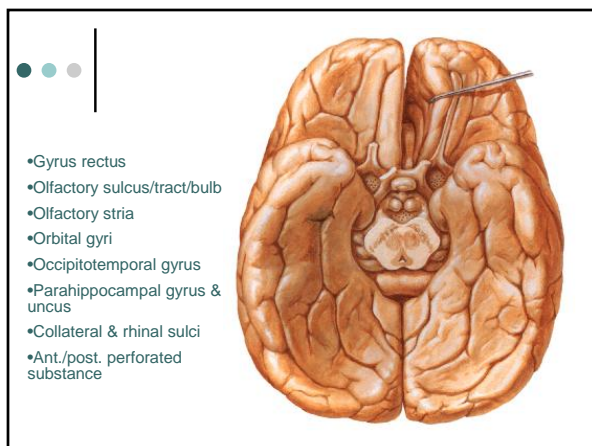


● ● ● Medial Surface










Deep Telencephalic Nuclei



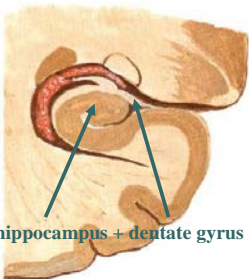
Striatum { Caudate nucleus
Putamen
Globus pallidus } Lentiform nucleus } Corpus striatum } Basal ganglia

Amygdala
Subthalamic nucleus
Substantia nigra

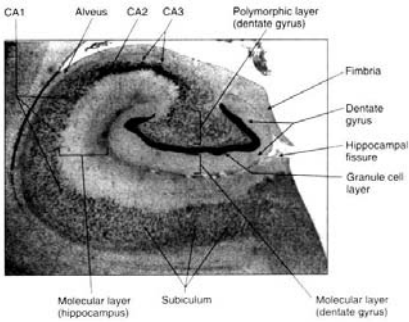
claustrum

Gray Matter of the Cerebral Cortex

- o Archicortex – 3 layers (hippocampus)
- o Neocortex – 6 cellular layers



Hippocampal formation = hippocampus + dentate gyrus



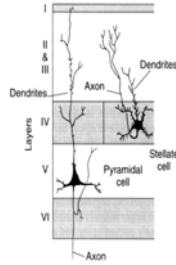
CA1 Alveus CA2 CA3 Polymorphic layer (dentate gyrus)

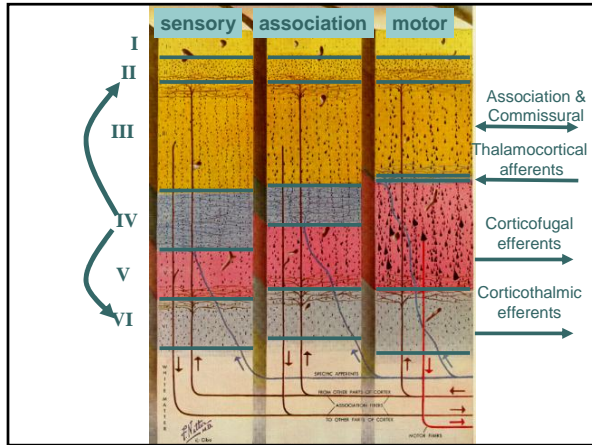
Fimbria
Dentate gyrus
Hippocampal fissure
Granule cell layer

Molecular layer (hippocampus) Subiculum Molecular layer (dentate gyrus)

Neocortex

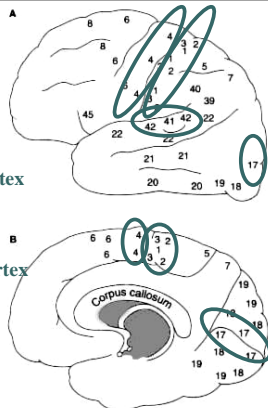
- o Neocortex – 6 cellular layers
 - I. Molecular layer – mostly neuropil
 - II. External granular layer – stellate cells
 - III. External pyramidal layer – small pyramidal cells
 - IV. Internal granular layer – stellate cells
 - V. Internal pyramidal layer – large pyramidal cells
 - VI. Multiform layer – multiple cell types



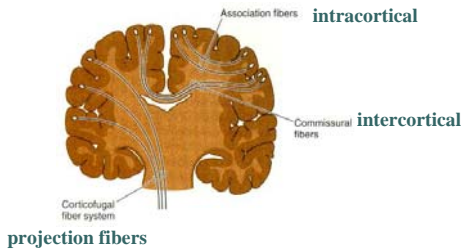


Brodmann Areas

- Area 4 = primary motor cortex
- Areas 3, 1, 2 = primary somatosensory cortex
- Area 17 = primary visual cortex
- Areas 41, 42 = primary auditory cortex



• • • | White Matter



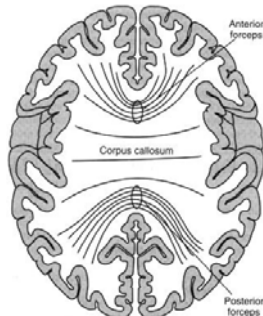
• • • | Commissural Fibers

- Anterior Commissure
 - Inf. & mid. temporal gyri, olfactory areas
- Posterior Commissure
 - Preoptic nuclei (vision)
- Habenular Commissure
 - Habenular nuclei (olfaction)
- Corpus Callosum
 - Connects hemispheres
 - Rostrum, genu, body & splenium



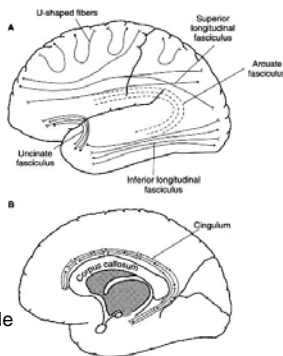
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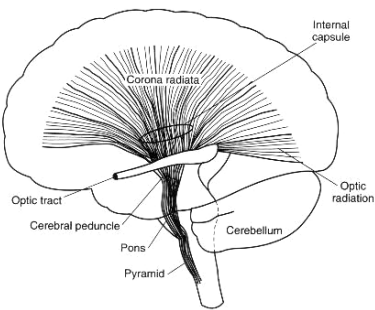


Association Fibers

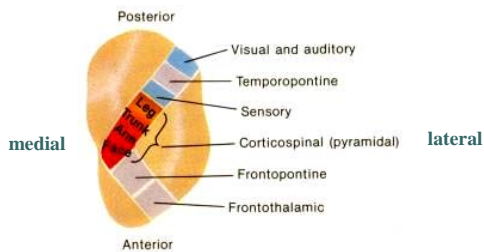
- o Short fibers – connect adjacent gyri
- o Long fibers
 - Superior longitudinal fasc.
 - Arcuate fasciculus
 - Inferior longitudinal fasc.
 - Cingulum – septal area, cingulate and parahippocampal gyri
 - Uncinate fasc. – orbital frontal gyri to temporal pole



Projection Fibers



Internal Capsule Organization



Cortical Functional Organization

Similar organization in visual, auditory and somatosensory cortices

