

THE UNIVERSITY OF CONNECTICUT
Graduate School
Meds 384, Mammalian Neuroanatomy
HUMAN GROSS BRAIN LABORATORY

INSTRUCTIONS

During this lab, focus **PRIMARILY** on the major subdivisions of the brain and how to tell them apart. Learn external features that identify the medulla, pons, midbrain, thalamus, and telencephalon. These important structures are marked (☆). Learn which cranial nerves penetrate the surface of each subdivision. USE GLOVES WHEN HANDLING GROSS BRAIN SPECIMENS.

Readings: Your Atlas; Your favorite gross anatomy text.

MENINGES

On the gross brain, identify:

dura mater	arachnoid granulations or villi
pia mater (visible with microscope only)	arachnoid

Where is the pia mater? What is the space between the pia and the arachnoid? What does it contain? Does the arachnoid extend down into the lateral fissure? Note the cisterna magna, an enlargement of the subarachnoid space. Are there other cisterns around the brain?

EXTERNAL FEATURES OF THE BRAINSTEM

On the whole brain, identify the following:

The Medulla (myelencephalon):

Pyramids☆	Also find:
Fourth ventricle☆	Inferior Olive
	Pyramidal decussation

The Pons and cerebellum (metencephalon):

Pontine protuberance☆	Also:
Fourth ventricle☆	Cerebellar peduncles:
Cerebellum☆:	Inferior (restiform body),
Vermis, Hemispheres, Anterior lobe, Posterior lobe, Flocculonodular lobe	Middle (brachium pontis), &
	Superior (brachium conjunctivum)

The Midbrain (mesencephalon):

Superior colliculus☆	Cerebral peduncle (crus cerebri) ☆
inferior colliculus☆	Interpeduncular Fossa

Diencephalon:

Optic chiasm☆	Mammillary body☆
Stalk of pituitary☆	Median eminence

LATERAL VIEW OF TELENCEPHALON

On a whole brain, identify the telencephalon. What are the differences between a fissure, a gyrus, and a sulcus? Remove the arachnoid from the lateral and central fissures ☆. Identify the major lobes of the cerebral cortex:

1. Frontal lobe ☆ Occupies the frontal pole. Anterior to central fissure; dorsal to lateral fissure.
2. Occipital lobe ☆ Occupies the occipital pole. Draw a line between the parieto-occipital sulcus and the pre-occipital notch. The occipital pole is posterior to this line.
3. Parietal lobe ☆ Caudal to the central fissure and rostral to the occipital lobe.
4. Temporal lobe ☆ Ventral to the lateral fissure and anterior to the preoccipital notch.

On the whole brain, identify:

Central sulcus (fissure)

Postcentral sulcus and gyrus

Lateral sulcus (fissure)

Insula: (gently open the lateral fissure slightly, look for it later on the brain slices).

Precentral gyrus and sulcus

BASAL VIEW OF THE TELENCEPHALON

On a whole brain, identify:

olfactory bulb and tract

collateral sulcus

medial and lateral olfactory stria

parahippocampal gyrus

uncus

VENTRICULAR SYSTEM

Use brain slices and a cast of the ventricular system to identify:

Lateral ventricle

Fourth ventricle

third ventricle

Interventricular foramen

Aqueduct

MEDIAL VIEW OF THE BRAINSTEM - On the medial surface of the half brain, identify the diencephalon, mesencephalon, pons, and medulla. Identify:

Third ventricle ☆

Aqueduct of Sylvius ☆

Superior colliculus ☆

Fourth ventricle ☆

Inferior colliculus ☆

Pontine protuberance ☆

Optic chiasm ☆

Mammillary body ☆

Cerebral peduncle ☆

Interventricular foramen (of Monro)

MEDIAL VIEW OF THE TELENCEPHALON

Identify on the half brain:

corpus callosum ☆

parieto-occipital sulcus central fissure ☆

calcarine fissure ☆

CRANIAL NERVES

Identify each of the cranial nerves. Which part of the brain does each cranial nerve enter?

- | | |
|--|--|
| I. Olfactory bulb and tract ☆ | VII. Facial ☆ |
| II. Optic nerve, optic chiasm, and optic tract ☆ | VIII. Stato-acoustic (vestibular & cochlear) ☆ |
| III. Oculomotor ☆ | IX. Glossopharyngeal ☆ |
| IV. Trochlear ☆ | X. Vagus ☆ |
| V. Trigeminal ☆ | XI. Spinal Accessory ☆ |
| VI. Abducens ☆ | XII. Hypoglossal ☆ |

BLOOD VESSELS

Identify the MAJOR arteries of the brain and review their origin.

- | | |
|-----------------------------|--|
| Vertebral artery ☆ | You may also locate: |
| Basilar artery ☆ | Spinal arteries: anterior and posterior |
| Internal carotid arteries ☆ | Cerebellar arteries: posterior inferior, anterior inferior, and superior |
| The circle of Willis ☆ | Cerebral arteries: posterior, middle, and anterior |
| | Communicating arteries: anterior and posterior |