

THE UNIVERSITY OF CONNECTICUT
Graduate School
Meds 384, Mammalian Neuroanatomy
Corpus Striatum

Barr's: Chapters 12**CORPUS STRIATUM - BASAL GANGLIA****Slide CNS-43. Gross Structure of the Basal Ganglia: Corpus Striatum**

Identify the corpus striatum, which consists of the caudate and the putamen. Although the large “head” of the caudate is visible, bulging into the lateral side of the lateral ventricle, the much smaller “tail” of the caudate will become visible in more caudal sections, adhering to the lateral side of the lateral ventricle. Here, the head of the caudate, medially, is incompletely separated from the putamen, laterally, by the anterior limb of the internal capsule.

Inputs to the Corpus Striatum

The neocortex provides the major inputs to the caudate and putamen. Identify the neocortical structures at the level of CNS-43. What is the relationship of the internal capsule to the cortical inputs to the striatum? Cortical inputs enter the striatum via the internal capsule.

Slide CNS-41. Gross Structure of Basal Ganglia

CNS-41 is at the level of the anterior commissure. Find the putamen, the globus pallidus, the head of the caudate (adhering to the lateral side of the lateral ventricle), and the anterior limb of the internal capsule. The region inferior to the anterior commissure is the nucleus basalis.

Outputs of the Striatum

The caudate and the putamen both project inhibitory GABAergic axons to the _____?

Slide CNS-39. Gross Structure of Basal Ganglia

In CNS-39, begin by outlining the telencephalon and the diencephalon. Find the caudate, putamen, globus pallidus, and the posterior limb of the internal capsule.

Inputs to Basal Ganglia Nuclei

The caudate and putamen receive excitatory input from most frontal lobe areas and many parts of the temporal, parietal and occipital lobes. Which of these neocortical areas are visible in CNS-39? The globus pallidus receives an important excitatory input from the subthalamic nucleus in addition to inhibitory GABAergic inputs from the caudate and putamen.

Outputs of the Basal Ganglia

The main output of the basal ganglia originates in the globus pallidus and synapses in the VA-VL nuclei of the diencephalon. Locate the ansa lenticularis in CNS-39. What fibers does it carry and where does it terminate? Note that it passes through the subthalamus.

Slide CNS-36. Gross Structure of Basal Ganglia

Begin by outlining the telencephalon and the diencephalon. Find the caudate, putamen, globus pallidus, subthalamus, and the posterior limb of the internal capsule. Locate the tail of the caudate in the posterior and inferior horns of the lateral ventricle.

Connections to the Basal Ganglia

Locate the substantia nigra in the midbrain, just dorsal to the cerebral peduncles. Review the connections of the substantia nigra with the striatum and the globus pallidus.

Slide CNS-34 and CNS-35. Gross Structure of Basal Ganglia

In CNS-34 and CNS-35, find the components of the basal ganglia. What is missing? Locate the “tail” of the caudate nucleus.

Connections to the Basal Ganglia

Locate the substantia nigra in the midbrain in CNS-34 dorsal to the cerebral peduncles. What neurotransmitters are involved in the connections of the substantia nigra?

GROSS ANATOMY OF THE CEREBRAL HEMISPHERES

LATERAL VIEW OF TELECEPHALON

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)
Lateral sulcus (fissure)
Precentral gyrus and sulcus

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

BASAL VIEW OF THE TELEENCEPHALON

On a whole brain, identify:

olfactory bulb and tract

medial and lateral olfactory stria

collateral sulcus

parahippocampal gyrus

uncus

VENTRICULAR SYSTEM

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

Lateral ventricle

third ventricle

Aqueduct

Fourth ventricle

Interventricular foramen