

**THE UNIVERSITY OF CONNECTICUT**  
**Graduate School**  
**Meds 384, Mammalian Neuroanatomy**  
**Diencephalon**

**Barr's: Chapters 11****DIENCEPHALON**

The diencephalon is one of the five main parts of the brain. The dorsal thalamus (often just called the thalamus) is the dorsal half of the diencephalon and is the part most closely associated with the neocortex.

The diencephalon is identified by the third ventricle, optic chiasm, and mammillary bodies. The ventral and medial part of the diencephalon is the hypothalamus. The ventral and lateral part is the subthalamus. Dorsal and posterior in the diencephalon is the epithalamus that contains the habenular nuclei, pineal body, and habenular commissure. The majority of the dorsal diencephalon contains the thalamus.

**Caudal Thalamus**

In slides CNS-27 and CNS-30, find the components of the caudal thalamus:

medial geniculate body	medial lemniscus
lateral geniculate body	spino-thalamic tract
pulvinar	trigeminothalamic tract
optic tract	

**Somatosensory Pathways**

In slide CNS-33, locate the ventral and dorsal tier of nuclei. The dorsal tier is filled with the lateral posterior nucleus. Ventral to this is the ventroposterolateral (VPL) and ventroposteromedial (VPM) nuclei, also called the ventrobasal complex. What is the input to these nuclei? What type of information does this complex process? To where does the information from the ventrobasal complex travel in the cortex?

Dorsomedial to the ventrobasal complex is the nucleus centromedian. This is part of the spino-reticulothalamic pain pathway. Please review how pain information is transmitted from the spinal cord to this level of the brain.

**Visual Pathways**

Retrace the pathway from the retina to the lateral geniculate body, the superior colliculus, and the pretectum. To where does the information from the lateral geniculate body travel in the cortex?

**Rostral Thalamus**

In CNS-38, the major divisions of the thalamus are easy to see and are divided by the internal medullary lamina. Locate the ventrolateral nucleus and dorsomedial nucleus on either

side of the internal medullary lamina. Locate the major structure of the diencephalon at this level:

optic chiasm  
third ventricle  
internal capsule  
subthalamus

hypothalamus  
massa intermedia  
reticular nucleus of the thalamus

Note the ansa lenticularis that extends from the subthalamus into the dorsal thalamus. This carries information from the globus pallidus to the ventrolateral nucleus. We will return to this pathway in the laboratory on the basal ganglia. The ventrolateral nucleus also receive a major input from the dentate nucleus of the cerebellum.