

Diencephalon

Objectives:

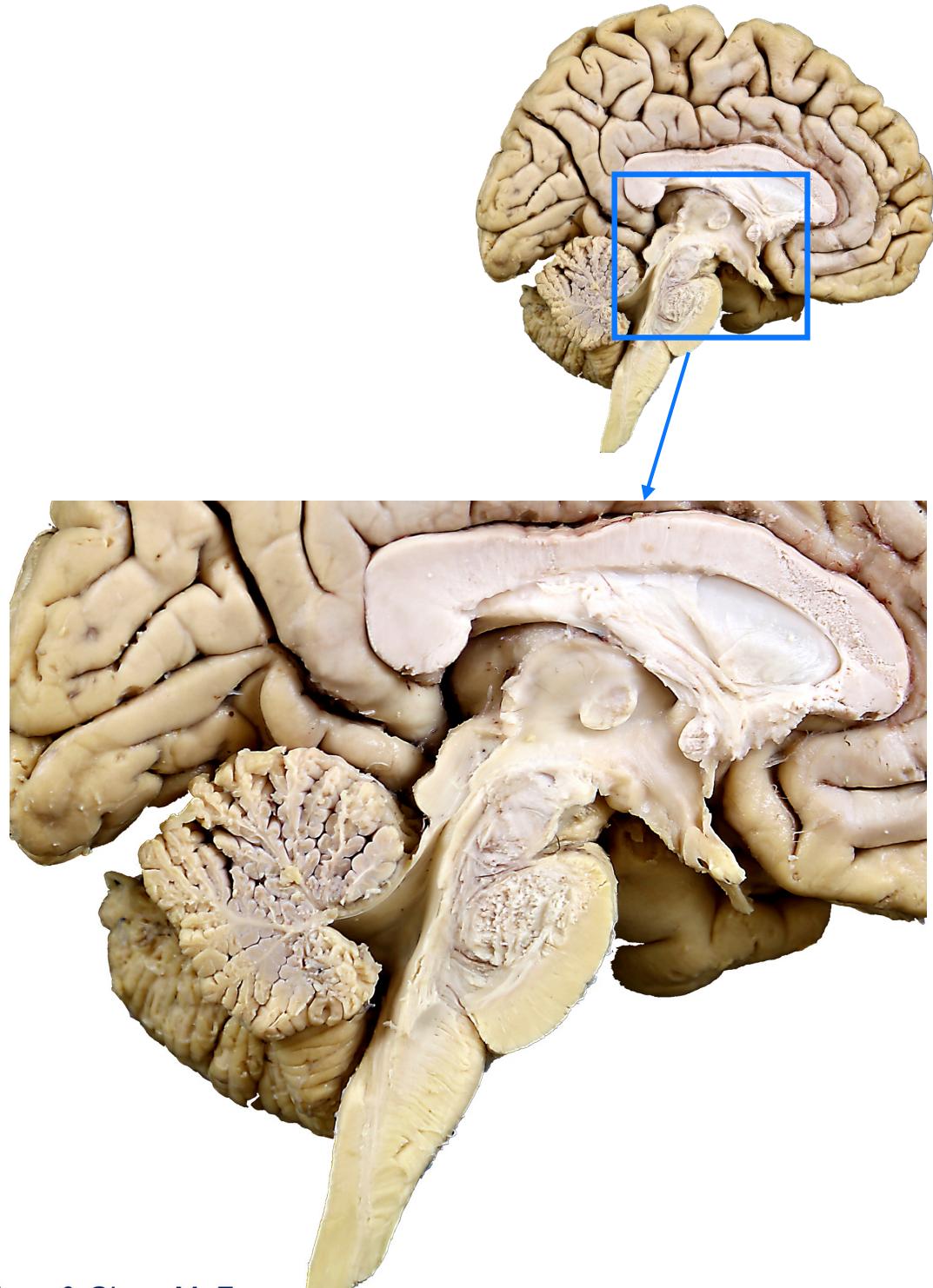
Learn to identify the thalamus and hypothalamus on midsagittal sections of a hemisected brain and on horizontal and coronal brain sections.

Specimens Required:

Hemisected brain

Horizontal and coronal sections

Rubber brain stem model



Diencephalon

Regions of the diencephalon include:

Epithalamus (pineal gland and habenula)

Thalamus

Hypothalamus

Ventral thalamus (or subthalamus)

On a sagittal section through the brain
the **thalamus** and **hypothalamus** are
visible.

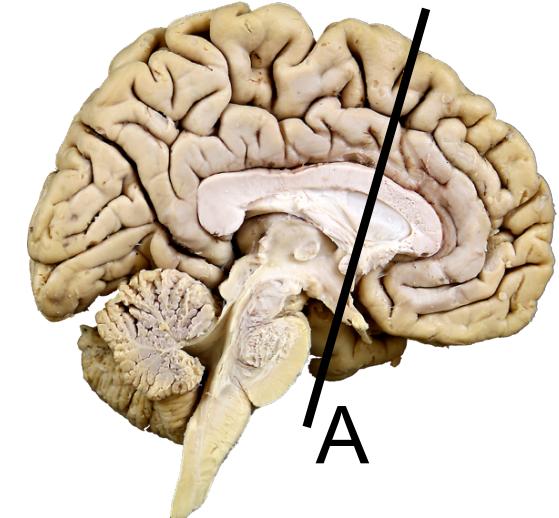
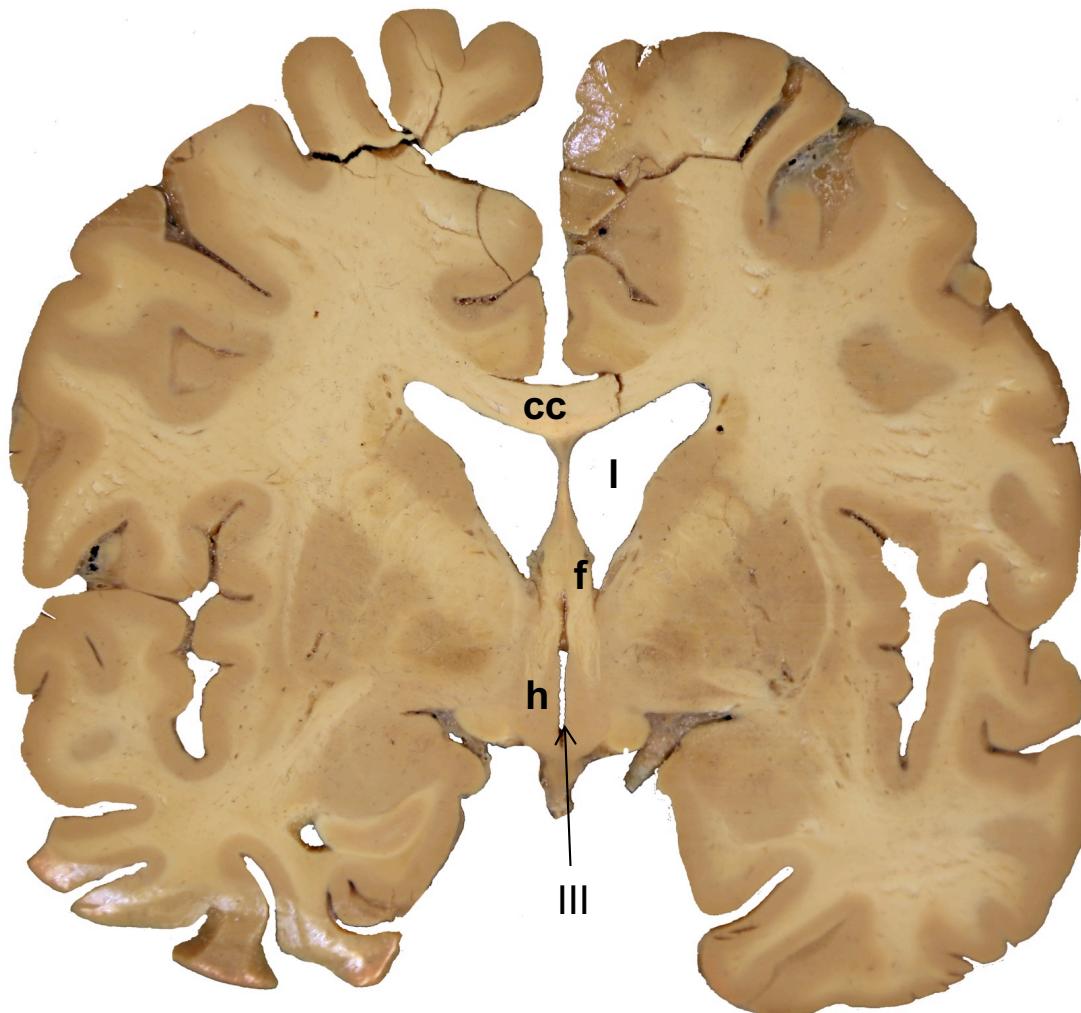
The ventral thalamus is located
lateral to this midline plane.

*The habenula and pineal gland are not in
this section, but are located near the
midline above the tectum **



Diencephalon

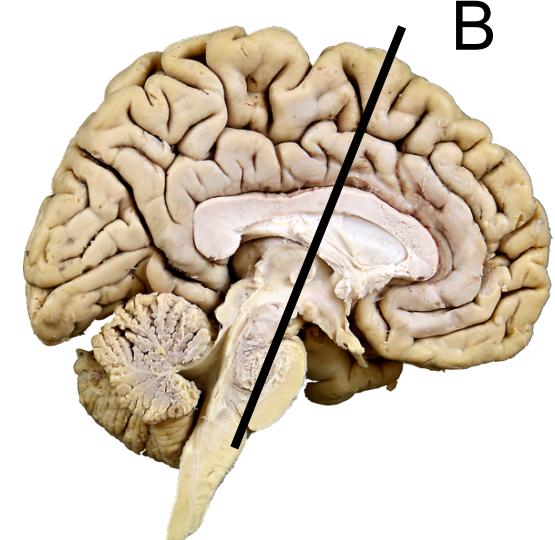
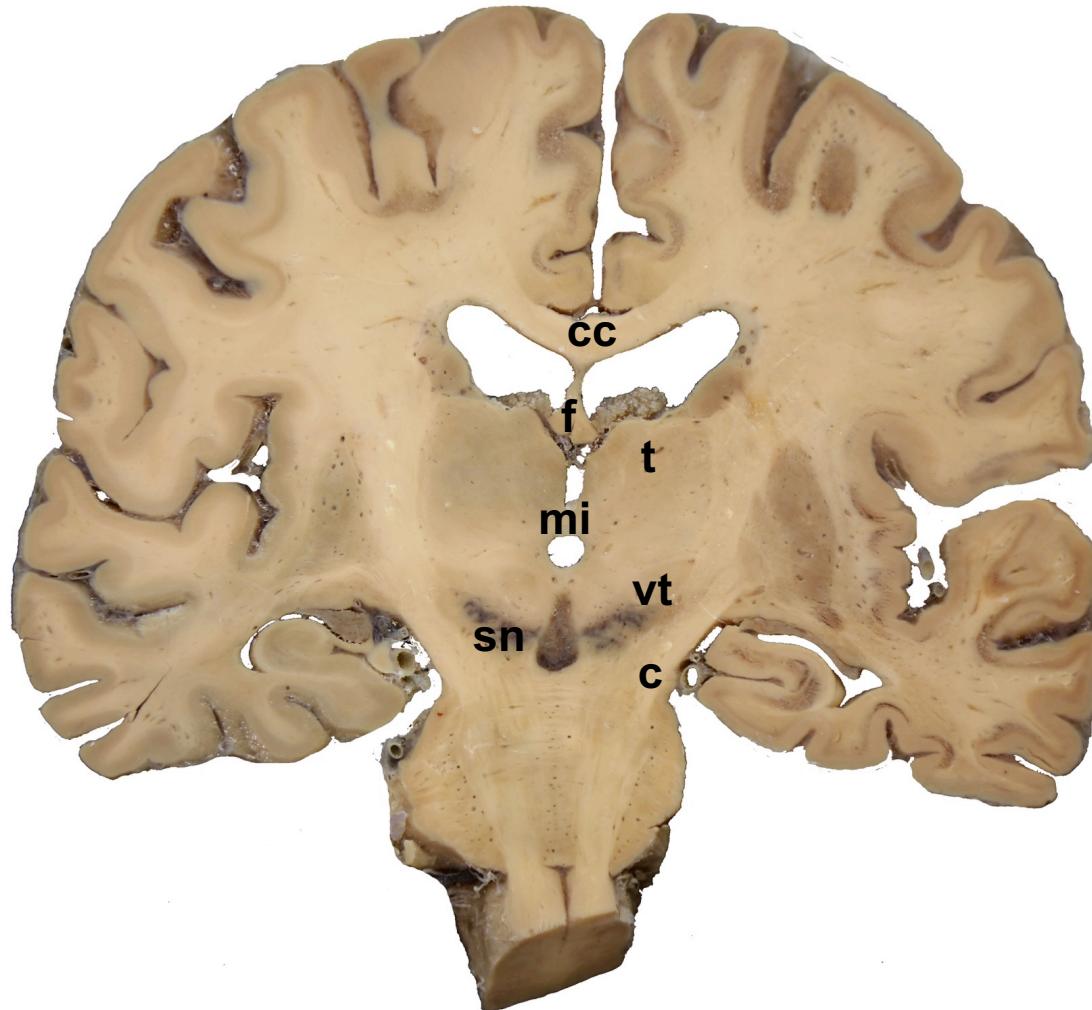
A coronal section through the forebrain at the level indicated by line “A” reveals **hypothalamus** of the diencephalon and the third ventricle (III) in the midline.



This coronal section also contains the **corpus callosum**, the **fornix** and the **lateral ventricles**

Diencephalon

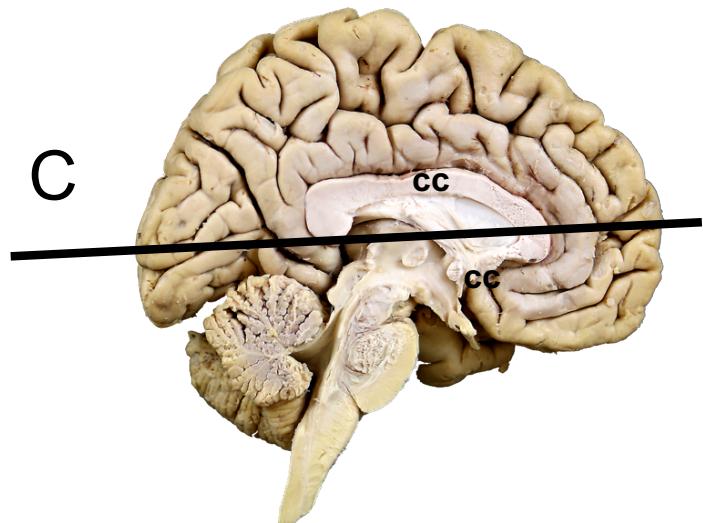
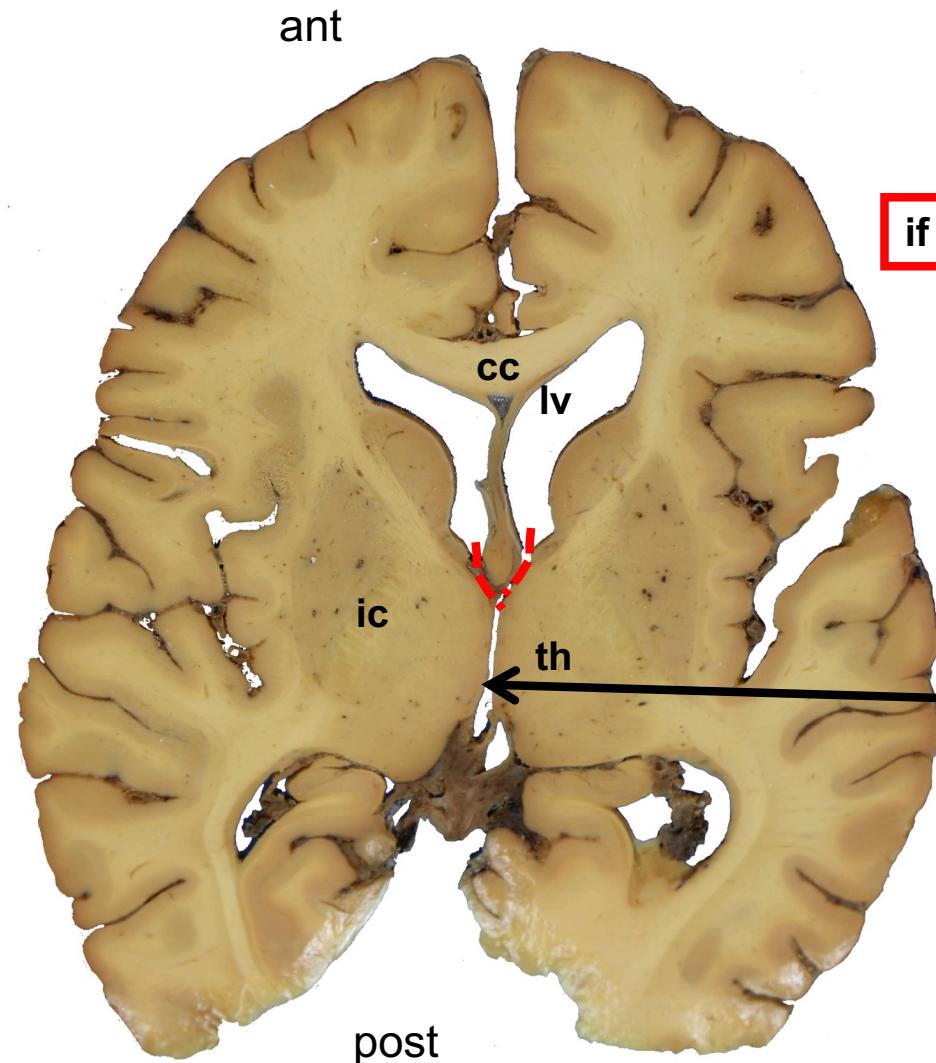
A coronal section through the forebrain at the level indicated by line “B” reveals the **ventral thalamus**, or subthalamus, lateral to the hypothalamus.



This coronal section contains the **corpus callosum**, the **fornix**, the upper and lower parts of the third ventricle separated by the **massa intermedia** and the **thalamus**. It also cuts through the base of the, midbrain and the pons. In the midbrain we see **substantia nigra** and the fibers of the **crus cerebri**.

Diencephalon

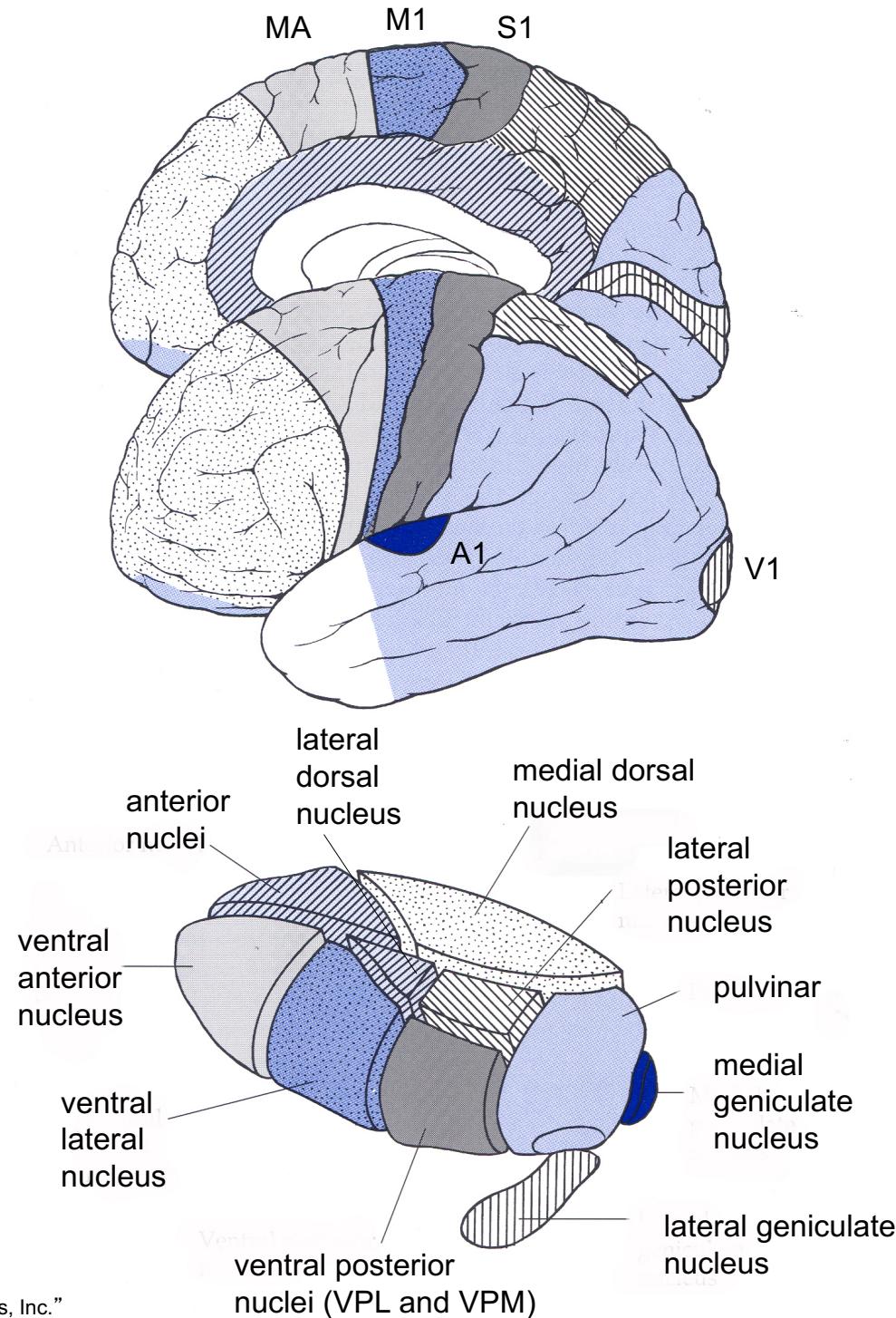
A horizontal slice through the forebrain demonstrates the midline position of the **thalamus**. The posterior limb of the **internal capsule** is lateral to the thalamus.



This horizontal section (C) contains the **corpus callosum**. It also contains the **interventricular foramen**, where the **lateral ventricle** (lv) communicates with the **third ventricle** (III).

Thalamus

Thalamocortical projections and the reciprocating corticothalamic projections link individual thalamic nuclei with specific regions of the cortex.



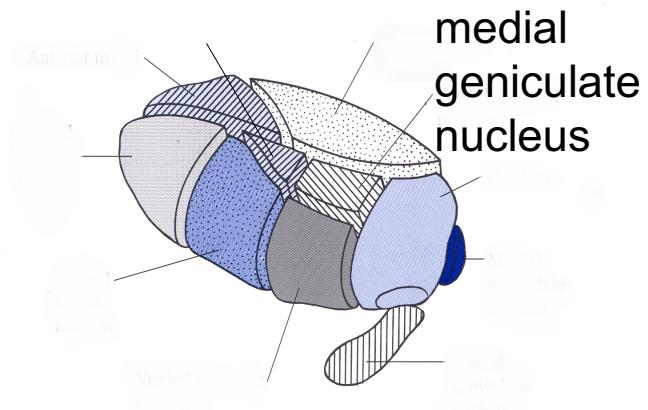
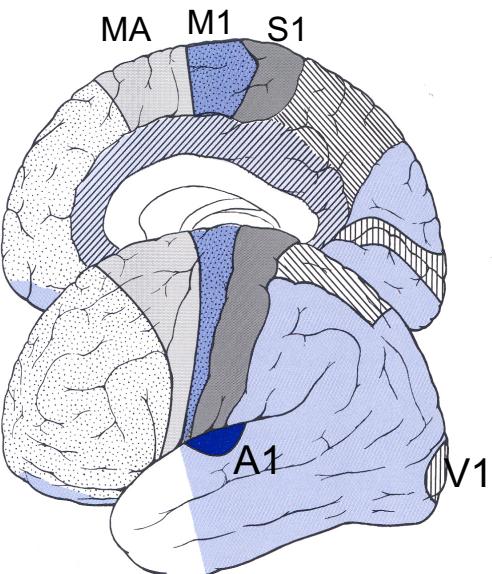
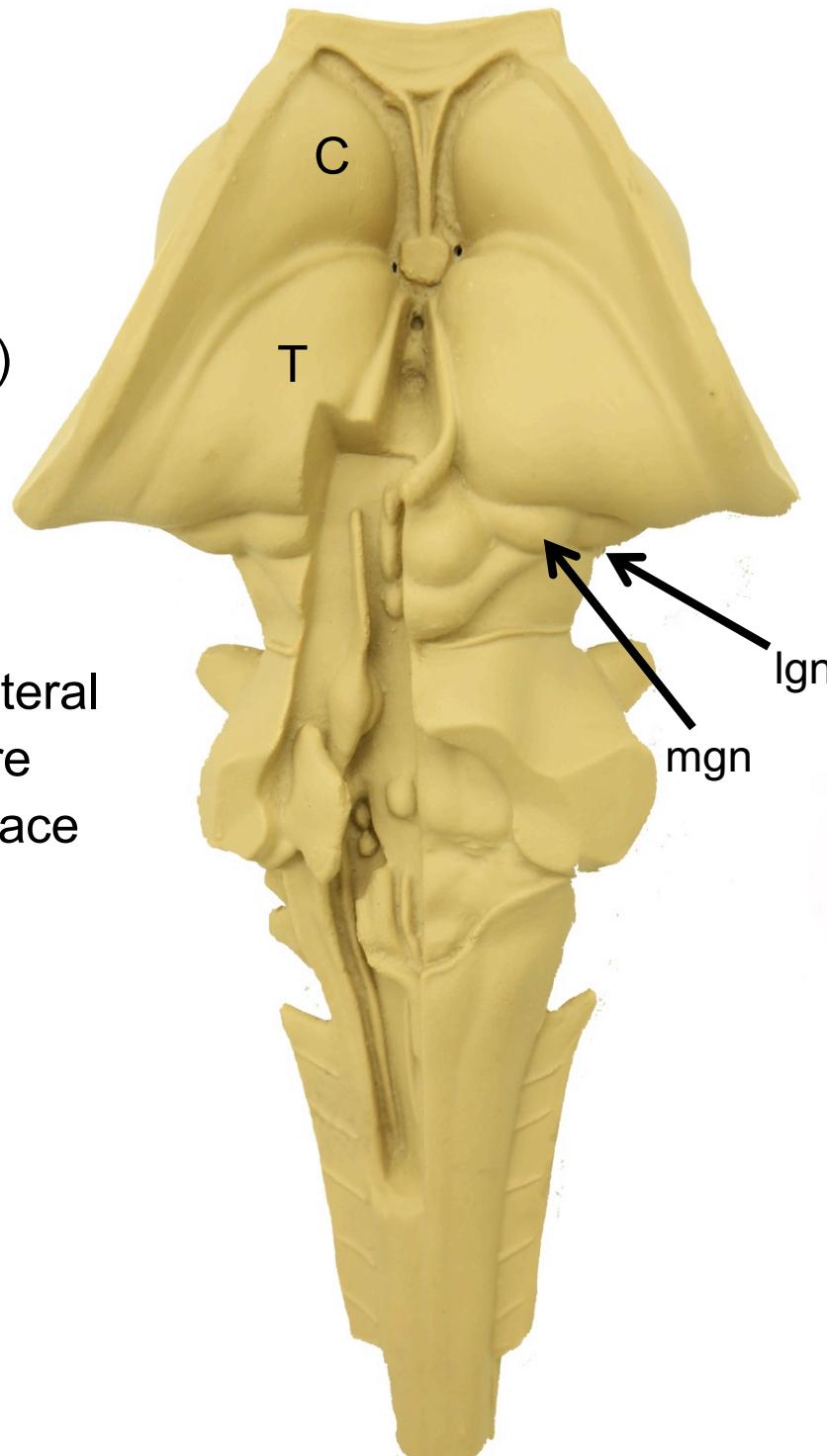
Thalamus

The medial geniculate (auditory) and lateral geniculate (vision) nuclei provide input to their respective sensory cortices A1, and V1.

The medial (mgn) and lateral (lgn) geniculate nuclei are visible on the dorsal surface of the rubber brain stem model.

T = thalamus

C = caudate

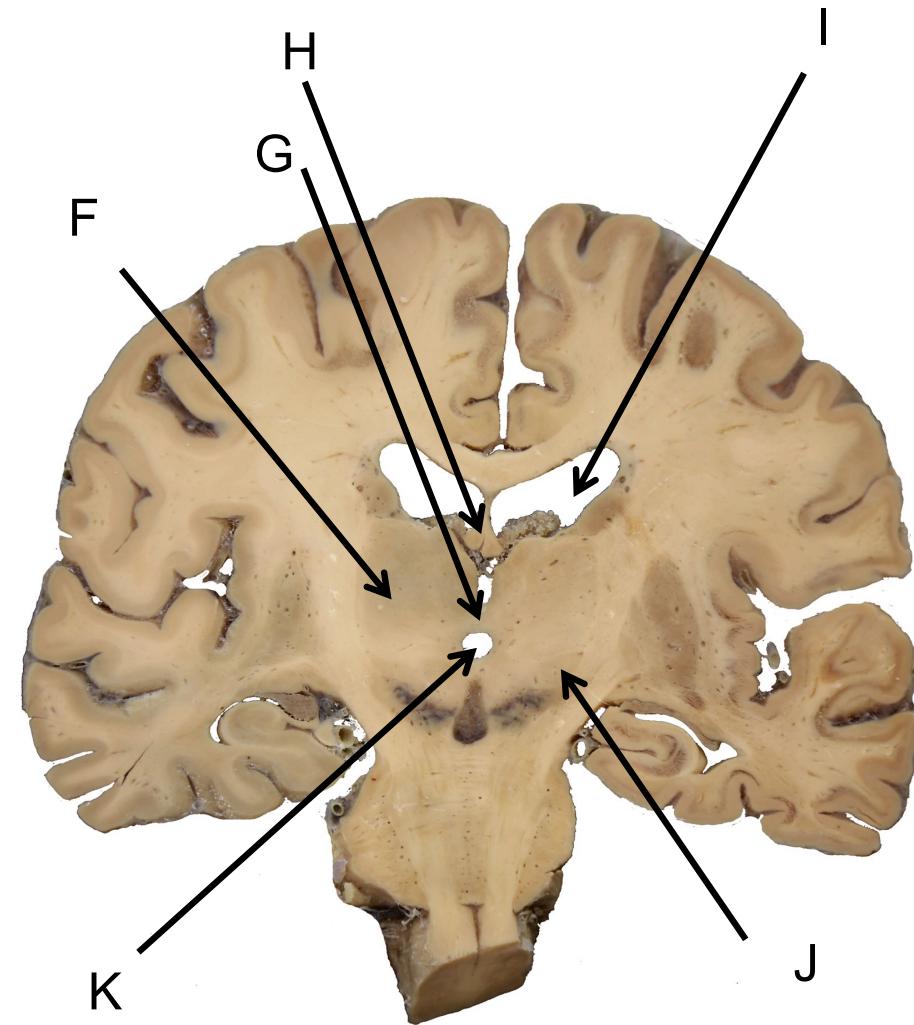
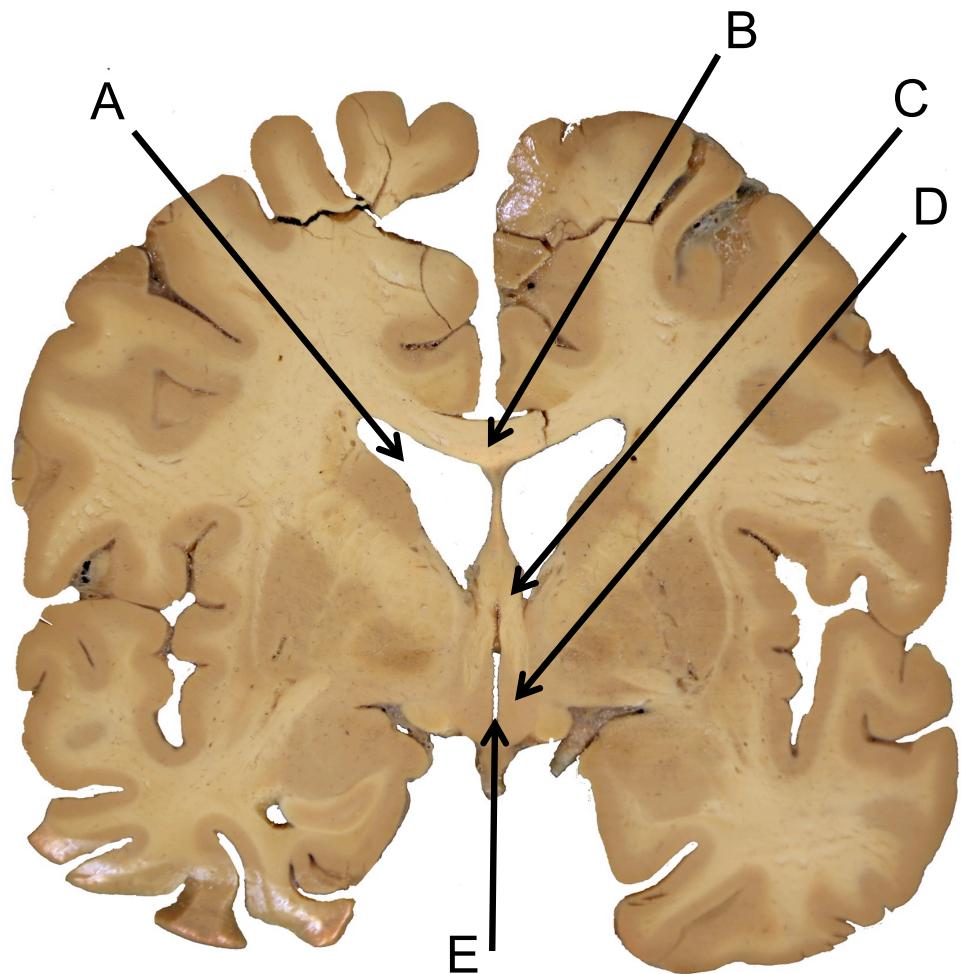


medial geniculate nucleus
lateral geniculate nucleus

Question

Match the letters below to the following structures, letters may be used more than once.

1. Corpus callosum
2. Fornix
3. Hypothalamus
4. Lateral ventricle
5. Massa intermedia
6. Thalamus
7. Third ventricle
8. Ventral thalamus



Answer

1. B
2. C,H
3. D
4. A, I
5. G
6. F
7. E, K
8. J