

## Diencephalon

The brain lies within the cranial cavity of the skull and is made up of billions of nerve cells (*neurons*) and supporting cells (*glia*). Neuronal cell bodies group together as **gray matter**, and their processes group together as **white matter**.

The brain can be divided into four main parts: the cerebrum, diencephalon, brain stem, and cerebellum.

- The **cerebrum** is the largest part of the brain and consists of the **four** paired lobes with the two **cerebral hemispheres**, connected by a mass of white matter called the **corpus callosum**. The cerebrum accounts for about 80% of the brain's mass and is concerned with higher functions, including perception of sensory impulses, instigation of voluntary movement, memory, thought, and reasoning. There are **two layers** of the cerebrum:
  - The **cerebral cortex** is the thin, wrinkled gray matter covering each hemisphere
  - The **cerebral medulla** is a thicker core of white matter
- The **diencephalon** lies beneath the cerebral hemispheres and has two main structures — the **thalamus** and the **hypothalamus**. The walnut-sized thalamus is a large mass of gray matter that lies on either side of the third ventricle. The thalamus is a great relay station on the afferent sensory pathway to the cerebral cortex. The tiny hypothalamus forms the lower part of the lateral wall and floor of the third ventricle. The hypothalamus exerts an influence on a wide range of body functions.
- The **cerebellum** is attached to the brain and features a highly folded surface. It is important in the control of movement and balance.
- The brainstem is the lower extension of the brain where it connects to the spinal cord. It consists of the **midbrain, pons, and medulla**.

**Remember** — Each portion of the brain consists basically of **three** areas:

1. **Gray matter** — composed primarily of **unmyelinated** nerve cell bodies
2. **White matter** — composed basically of **myelinated** nerve fibers
3. **Ventricles** — spaces filled with cerebrospinal fluid