

As reviewed in Chapter 1, the human brain consists of the following parts:

- Cerebrum (cerebral cortex)
- Diencephalon (thalamus, hypothalamus, and pineal gland)
- Midbrain (also called the mesencephalon, a part of the brainstem)
- Pons (connects to the cerebellum and medulla and is part of the brainstem)
- Medulla oblongata (connects to the spinal cord and is part of the brainstem)
- Cerebellum

The cerebrum is divided into two large hemispheres and is characterized by its convoluted cerebral cortex, which significantly increases the surface area for neurons by folding the tissue into a compact volume. The cerebral cortex is divided into four visible lobes and one lobe that lies deep to the outer cortex.

COLOR the five lobes of the cerebral cortex, using a different color for each lobe:

- 1. Frontal lobe
- 2. Parietal lobe
- 3. Occipital lobe
- 4. Temporal lobe
- 5. Insula: a fifth, deep lobe lying medial to the temporal lobe

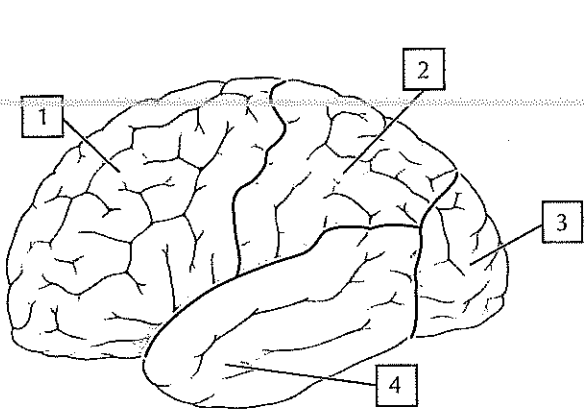
Regions of the cerebral cortex are associated with specific functional attributes. Many of these areas overlap, and some may be more or less developed in individuals with specific talents or with specific deficits, either from congenital anomalies (birth defects) or from pathology, such as a stroke.

COLOR the following functional regions of the cerebral hemisphere, using a different color for each region:

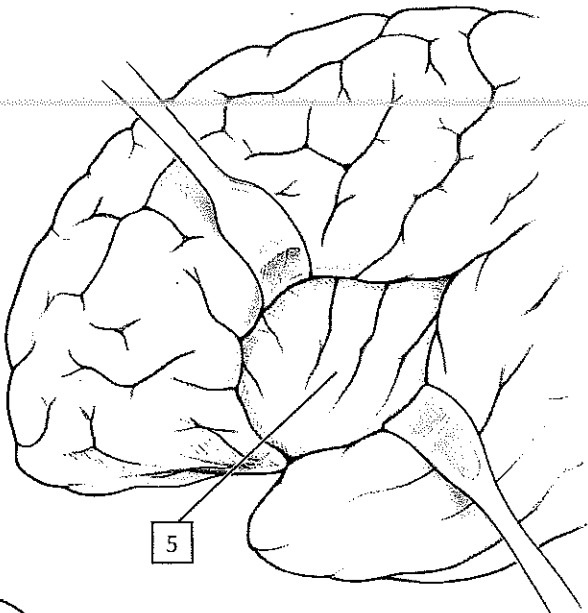
- 6. Primary motor cortex (just anterior to the central sulcus)
- 7. Primary somatosensory cortex (just posterior to the central sulcus)
- 8. Primary visual cortex
- 9. Primary auditory cortex

The fold of cortical tissue just anterior to the central sulcus is the **precentral gyrus** of the frontal lobes. The primary motor cortex is located in this gyrus, and the human body is represented topographically over this cortical area. That is, the cortical neurons concerned with certain motor functions associated with a region of the human body, such as the thumb, can be identified in a particular region of the precentral gyrus. To represent this topographical relationship, a motor homunculus ("little man") is drawn over the motor cortex (see part **E**), and the size of each body part is representative of the portion of the cortex devoted to innervating this body part. Note that the motor cortex is disproportionately large for the face, oral cavity, and hand. The sensory cortex (see part **D**) is especially large over the face and hand.

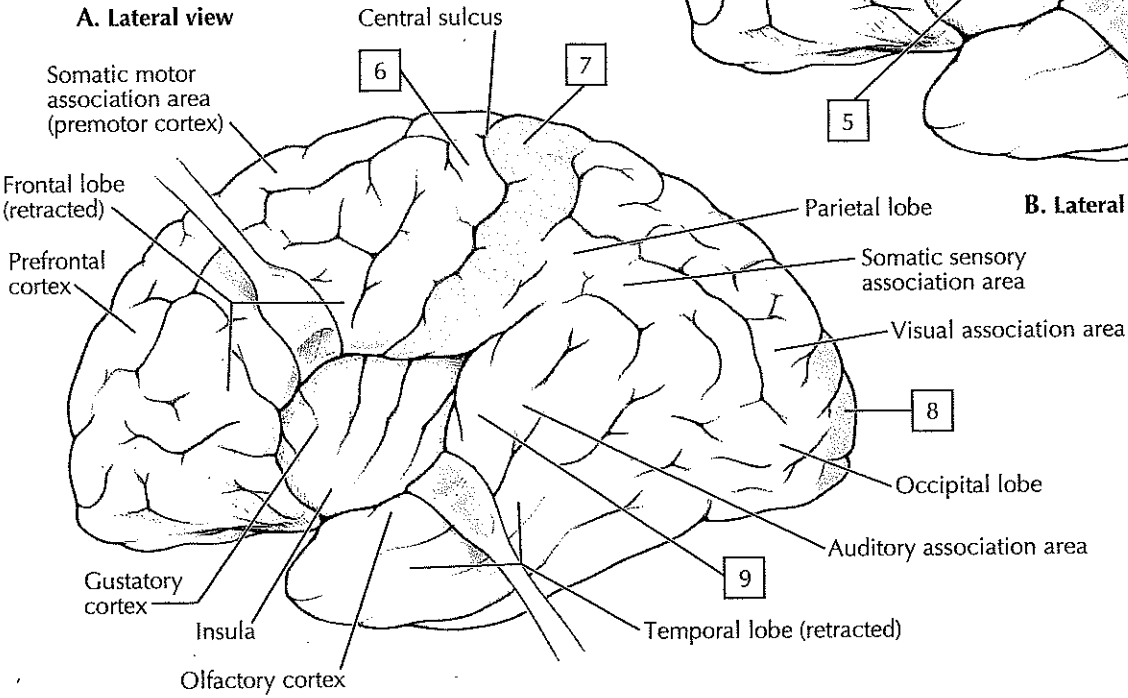
The **postcentral gyrus** of the parietal lobe is the primary sensory cortex and represents the cortical area devoted to sensory function. Similar to the motor cortex, a sensory homunculus can be represented over this cortical region.



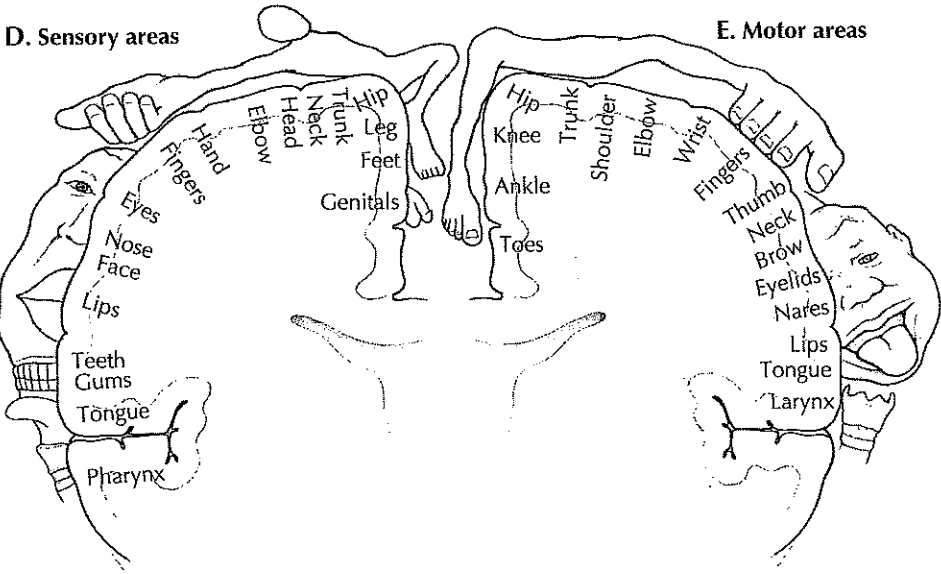
A. Lateral view



B. Lateral view



C. Cerebral hemispheres



D. Sensory areas

E. Motor areas