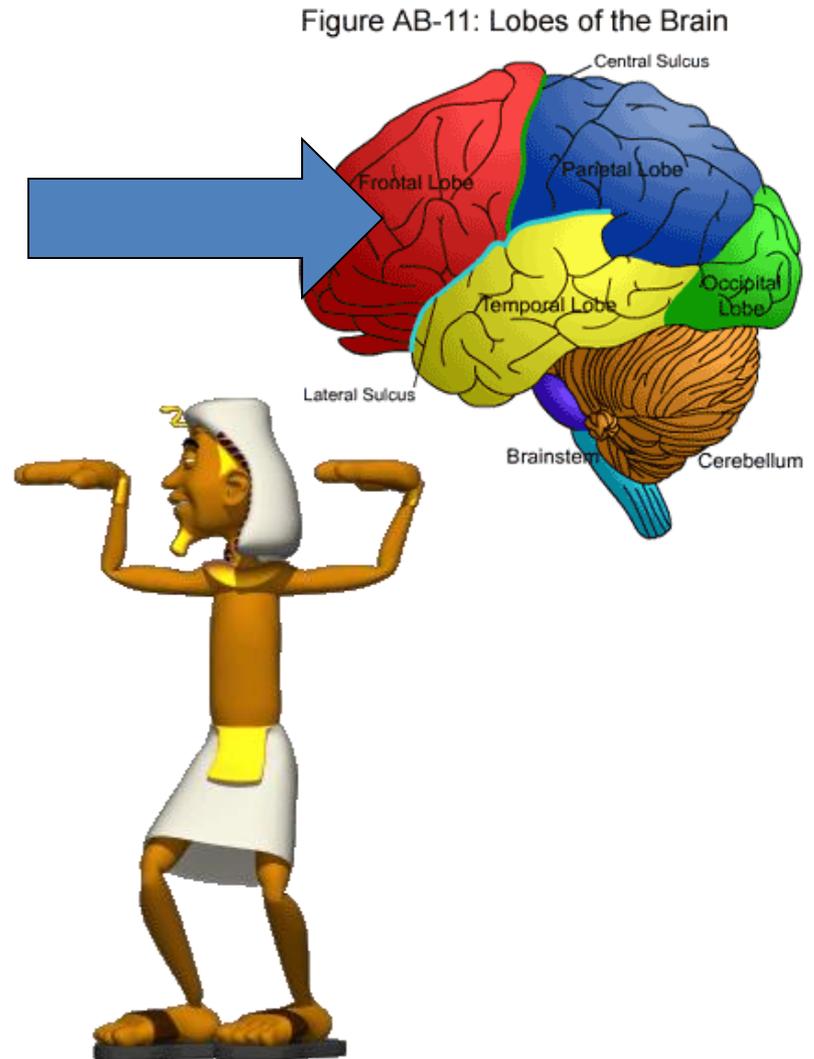


Structure of the Cortex

- frontal lobe: the brain lobe located behind the forehead
 - Deals with:
 - planning,
 - maintaining emotional control
 - abstract thought
 - personality
 - Contains Motor Cortex.
 - Traditionally considered to be the seat of intelligence.



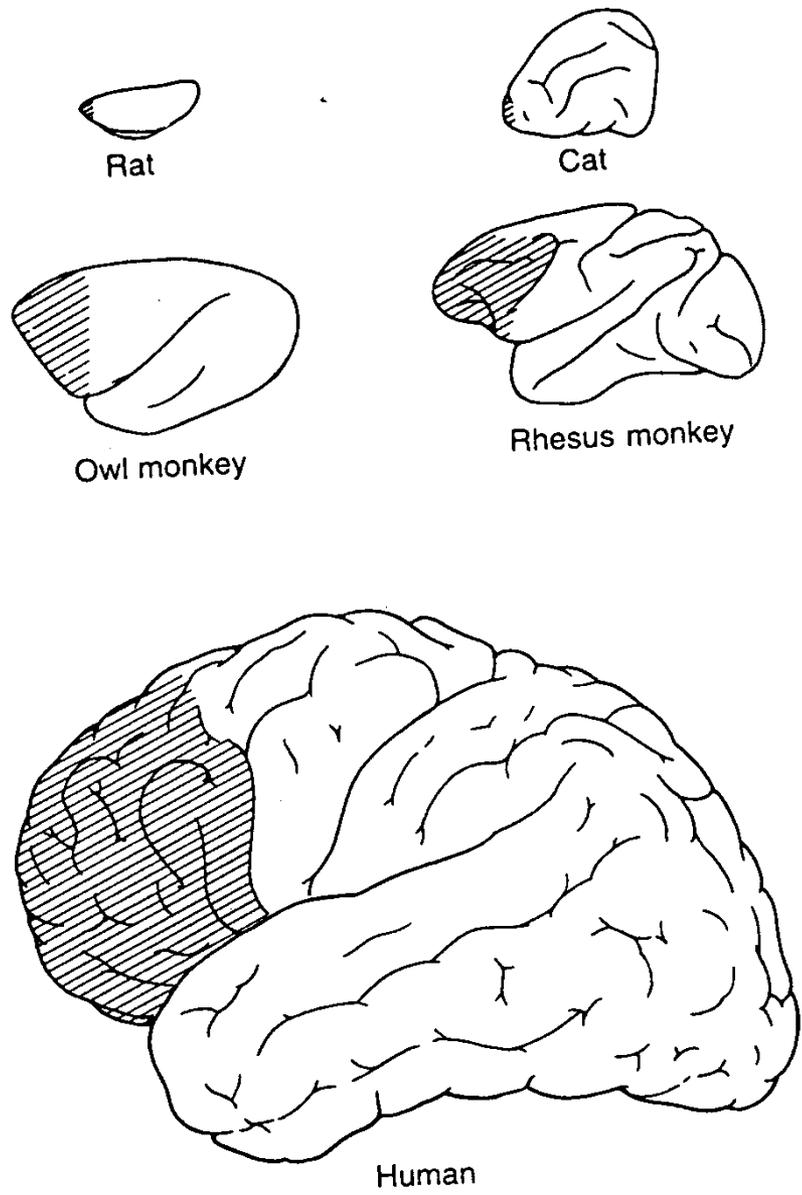
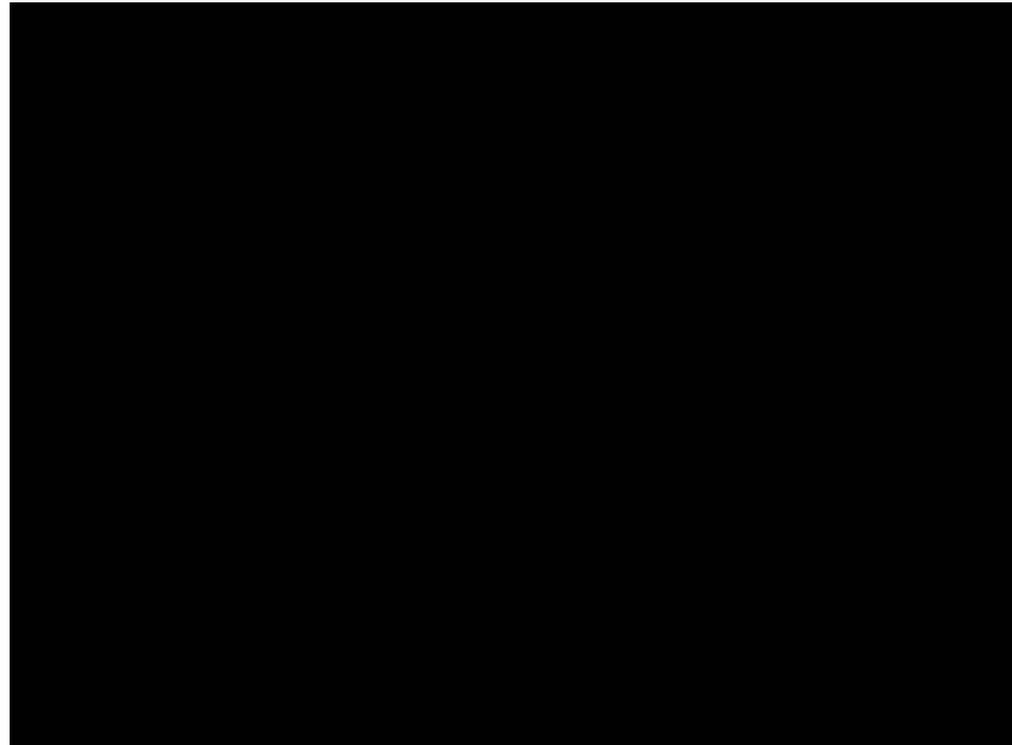
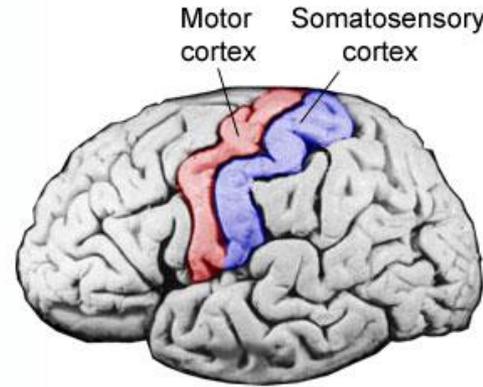


FIGURE 53-4
Proportion of the brain taken up by the frontal association cortex (hatched area) in five species.

Structure of the Cortex

Figure F-3: Motor and Somatosensory Cortex



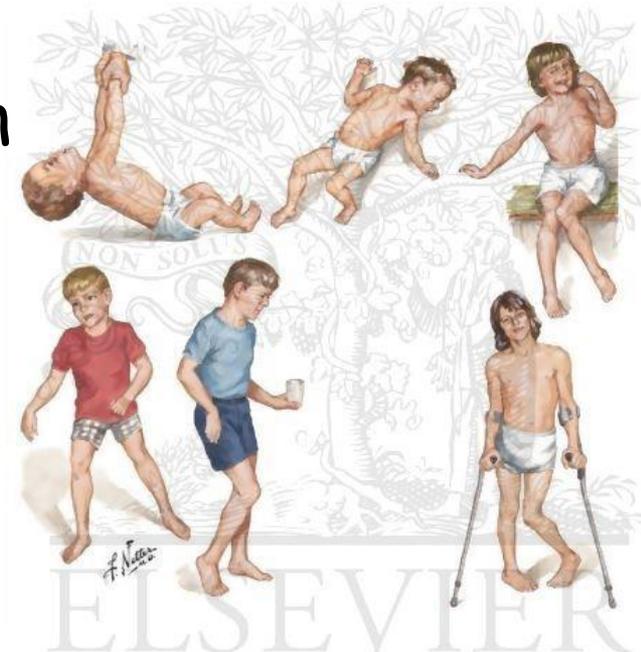
- motor cortex: the gyrus immediately in front of the central sulcus

- controls fine movements and is organized by body part (just like the sensory cortex)
- Man asked to keep hand opened when motor cortex was stimulated was not able to - his hand formed a fist.

Probe the
Brain activity

Cerebral Palsy

- A group of neurological disorders that appear in the first years of life and result in the inability to control movement and posture.
- Is typically non-progressive
- 75% of cases are due to motor cortex damage.
 - Lack of muscle coordination
 - Stiff or tight muscles
 - Walking on toes
 - Tremors
 - Difficulty with precise movements



Cerebral Palsy

- Severity depends on the degree of damage to the motor cortex.
 - Mild = slightly awkward movements
 - Severe = inability to walk, control facial muscles



- A form of CP may also result from damage (holes,) in the white matter, disrupting the flow of nerve signals (neural impulses.)



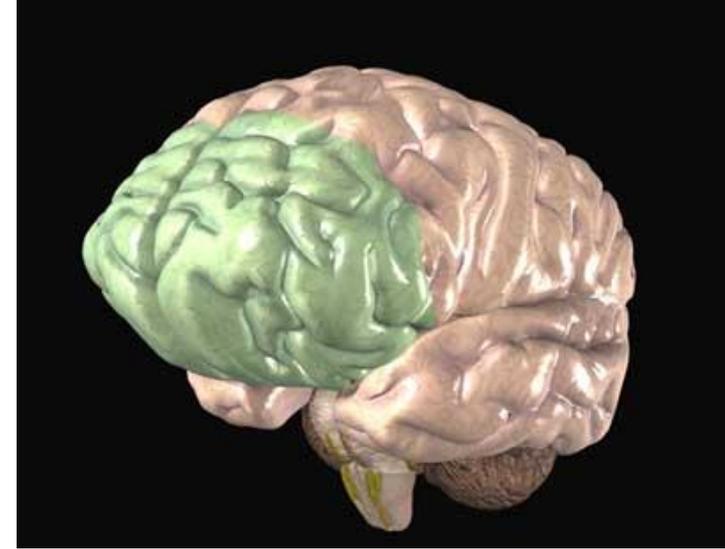
- This happens because white matter is "in charge" of transmitting signals to muscles.

KEY POINT

- sensations reach perception only if received and processed by a cortical area.
 - ▶ Motor cortex
 - ▶ Somatosensory cortex
 - ▶ Prefrontal cortex
 - ▶ Auditory Cortex
 - ▶ Visual Cortex

Pre-frontal cortex

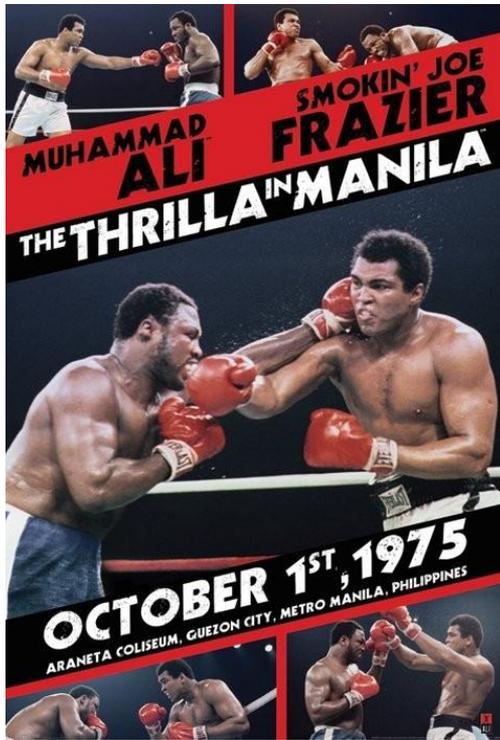
Functions carried out by the pre-frontal cortex area are "executive functions"



- abilities to differentiate among conflicting thoughts,
- determine good and bad, better and best, same and different.
- future consequences of current activities,
- working toward a defined goal,
- prediction of outcomes,
- expectation based on actions,
- social "control" (the ability to suppress urges that, if not suppressed, could lead to socially-unacceptable outcomes).

Some context:

Famous boxing match "Thrilla in Manila"



Some more context:

Some girl is interested in Penny's boyfriend. (Penny is driving.)



Frontal lobe damage

The strange case of Phineas Gage

