The Brain
Brain Structures

1. Hindbrain
2. Midbrain
3. Forebrain
4. Cerebral Cortex (part of forebrain)
Hindbrain

• Structures on top of our spinal cord.
• Controls basic biological structures.

The brain in purple makes up the hindbrain.
Medulla Oblongata

- Connects the brain to the spinal cord.
- Involved in control of
  - blood pressure
  - heart rate
  - breathing
  - swallowing

Disorders affecting region: stroke
Pons

• Located just in front of the medulla.
• Connects brainstem with cerebellum.
• Connects higher brain functions and the body.
• Involved in REM sleep, relaxation, vision, taste and coordination.
• Also involved in facial expressions.
• Pons = yawns

In Latin it means “bridge”

Disorders affecting region:
stroke
sleep disorders
Cerebellum

- Bottom rear of the brain.
- Coordinates fine muscle movements, balance and posture.
- Relies on information from the eyes to coordinate voluntary movements.
- Responsible for motor (procedural) memory, and implicit memory.

Disorders affecting region: stroke
Midbrain

- Coordinates simple movements with sensory information.
- Most important structure in Midbrain is the **Reticular Formation**: controls arousal and ability to focus our attention.

If Destroyed

Disorders affecting region:
- schizophrenia
- sleep disorders
- schizophrenia

A cat with a cut reticular formation lapses into a permanent coma.
Brain Stem

- **Midbrain** (Essentially, the parts we have just discussed, minus the cerebellum)
- **Pons**
- **Medulla**

1. Ascending and descending neural cables run through it
2. Contains reflex centers that are associated with respiration and CVS.
Forebrain

• What makes us human.
• Largest part of the brain.
• Made up of the Thalamus, Limbic System and Cerebral Cortex.
Thalamus

- Sensory switchboard of the brain.
- Receives sensory signals from the spinal cord and sends them to other parts of the forebrain.
- Every sense except smell.
The Limbic System

- Expands on the more basic functions of the brain stem.
- Involved in instinctive behaviors and deep-seated emotions such as:
  - Sex
  - Anger
  - Pleasure
  - General survival
Hippocampus

- Involved in the conscious processing and storage of explicit & declarative memories.
- Connects present with prior memories
- Damage to the area can prevent a person from forming new memories, even though memories from before the damage remain intact.

Disorders affecting region:
- Alzheimer’s Disease
- mania
A Damaged Hippocampus
Hypothalamus

- Maybe most important structure in the brain.
- Links nervous system and endocrine system via the *pituitary gland*
- Controls and regulates
  - Body temperature
  - Sexual Arousal
  - Hunger
  - Thirst
  - Endocrine System

*Remember the 4 F's kids!*