Brain Area Functions (Part II)

Thalamus, Hypothalamus, Pituitary Gland, and Brainstem

**Thalamus:**

* Processes and relays sensory information (sight, smell, taste, touch, hearing) to various parts of the cerebral hemispheres, which makes you consciously aware of these sensations.
* Plays a major role in regulating arousal and awareness and sleep vs. awake.
* Damage to the thalamus can lead to permanent coma.

**Hypothalamus:**

* Plays a major role in maintaining stable internal body conditions by controlling body temperature, hunger, thirst, fatigue and circadian rhythms.
* The hypothalamus also links the nervous system to the endocrine system by controlling the pituitary gland. Nerve signals from the hypothalamus stimulate or inhibit the secretion of pituitary gland hormones.

**Pituitary Gland:**

* The pituitary gland is a part of the endocrine system. It is a gland about the size of a pea that sits just below the hypothalamus.
* Based on signals it receives from the hypothalamus, the pituitary gland secretes a number of hormones that regulate:
  + Growth
  + Sex organ function (ovaries and testes)
  + Thyroid gland function
  + Metabolism
  + Water regulation and urine production by the kidneys
  + Aspects of pregnancy and childbirth, including uterine contractions and breast milk production.

**The three sections of the brainstem are the mid-brain, pons, and medulla:**

**Mid-Brain:**

* Dorsal mid-brain: auditory reflexes and visual reflexes.
* Ventral mid-brain: major ascending sensory and descending motor pathways connecting the brain and spinal cord.

**Pons:**

* Relay station between the cerebral hemispheres, cerebellum, and spinal cord.

**Medulla:**

* Most evolutionarily ancient part of the brain. As such, the medulla contains control centers for vital body functions like heart rate, blood pressure, breathing, swallowing, and vomiting.
* For example, someone in a coma is still able to maintain these vital body functions if the damage is above the medulla.