The limbic system facilitates memory storage and retrieval, establishes emotional states, and links the conscious, intellectual functions of the cerebral cortex with the unconscious, autonomic functions of the brain stem. While the sensory cortex, motor cortex, and associated areas of the cerebral cortex allow you to perform certain tasks, the limbic system makes you want to do those tasks.
The **amygdala** receives processed information from the general senses (your eyes, skin, tongue, etc.) and mediates the proper emotional responses.

Output from the amygdala to the prefrontal cortex involves conscious responses, such as telling someone you love them or controlling your anger.

**FUN FACT:** The amygdala has 22 distinct regions!
The hypothalamus regulates autonomic nervous functions, emotions and behavior, food consumption, circadian rhythm, and body temperature. It also produces hormones that influence the pituitary gland and regulate endocrine functions.

Output from the amygdala to the hypothalamus influences visceral and somatic motor systems, which creates emotional responses like making your hair stand on its end, making your heart race, or even inducing vomiting.

**FUN FACT:** The hypothalamus is about the size of an almond. Yum!
Found in the medial temporal lobe and consisting mostly of gray matter, the *hippocampus* is the memory-forming center of your brain. It learns the sensory input in relation to the experience and then plays the memory back repeatedly to the cerebral cortex, forming a long-term memory in a process called *memory consolidation*.

**FUN FACT:** The structure is named for its resemblance to the curved tail of the seahorse-like mythological creature, the hippocamp(us). The creature’s top half is a horse and the bottom half is a long, scaly eel or fish tail.
A *gyrus* is a convolution, or fold, in the brain that increases surface area, thereby increasing the number of neurons and the amount of gray matter.

The *cingulate gyrus*, a large arch-shaped structure, plays a role in expressing emotions through gestures.
The dentate gyrus, located above the hippocampus, contributes to memory and possibly depression.

**FUN FACT:** The word comes from the Latin gyrus meaning “circle,” “circuit,” or “career,” and Greek gyros meaning “ring” or “circle.”
The *septal nuclei* are patches of gray matter found in the thin membrane that separates the cerebral hemispheres. They are involved in feelings of pleasure.

**FUN FACT:** There are no pain receptors in the brain!
The *fornix* is a fiber tract connecting the hippocampal gyrus with the mamillary body and thalamus. Its exact role in brain physiology is not entirely clear, although it has been shown that cutting the fornix along its body can cause loss in recall memory.

**FUN FACT:** *Fornix* is Latin for “arch” or “vaulted chamber.” Not only are there other fornices in the body, but the word is also used to describe the triumphal arches constructed during the Roman Republic era.
The *anterior commissure* is a bundle of white fibers that connects the two hemispheres of the brain. It also contains decussating fibers from the olfactory tracts.
The *indusium griseum* is a thin layer of gray matter that is in contact with the upper surface of the corpus callosum and is continuous with the cingulate gyrus.

**FUN FACT:** Humans experience about 70,000 thoughts each day!
**Mammillary bodies** act as relay stations in the olfactory pathways and are associated with the memory of smell. The axons from cells of the olfactory tract separate into three bundles—the lateral, intermediate, and *medial olfactory striae*, all terminating (for the most part) in Broca’s area, which is located in the frontal lobe. Unmyelinated axons pass upward to an *olfactory bulb* and are responsible for smell.

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