

Features of the Human Limbic System

The limbic system includes many structures in the cerebral cortex and sub-cortex of the brain. The term has been used within psychiatry and neurology, although its exact role and definition has been revised considerably since the term was introduced. The following structures are, or have been considered to be, part of the limbic system:

- **Amygdala:** Involved in signaling the cortex of motivationally significant stimuli such as those related to reward and fear in addition to social functions.
- **Hippocampus:** Required for the formation of long-term memories
- **Parahippocampal gyrus:** Plays a role in the formation of spatial memory
- **Cingulate gyrus:** Autonomic functions regulating heart rate, blood pressure and cognitive and attentional processing
- **Fornix:** Carries signals from the hippocampus to the mammillary bodies and septal nuclei.
- **Hypothalamus:** Regulates the autonomic nervous system via hormone production and release. Affects and regulates blood pressure, heart rate, hunger, thirst, and the sleep/wake cycle
- **Thalamus:** The "relay station" to the cerebral cortex

In addition, these structures are sometimes also considered to be part of the limbic system:

- **Mammillary body:** Important for the formation of memory
- **Pituitary gland:** secretes hormones regulating homeostasis
- **Dentate gyrus:** thought to contribute to new memories and to regulate happiness.
- **Entorhinal cortex and piriform cortex:** Receive smell input in the olfactory system.
- **Fornicate gyrus:** Region encompassing the cingulate, hippocampus, and parahippocampal gyrus
- **Olfactory bulb:** Olfactory sensory input
- **Nucleus accumbens:** Involved in reward, pleasure, and addiction
- **Orbitofrontal cortex:** Required for decision making