

# Hippocampus Encyclopedia Article

## Hippocampus

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The cerebral structure known as the limbic system is composed of the **hypothalamus** and other subcortical structures, such as the hippocampus, the amygdala, portions of the **basal ganglia**, etc. Different areas of the hippocampus respond to most sensory stimuli such as olfactory, tactile, and visual sensations. These sensory signals are transferred from the hippocampus to other cortical and basal structures, triggering basic behavioral responses such as pleasure, anger, fear, sexual drive, or curiosity. Some hippocampal areas are associated with attention and the learning process in both animals and humans, and determine the degree of importance or priority of a given sensation to other areas of the **brain**. In animals, this brain structure is crucial to the decision-making process, such as food choice, recognition of dangerous situations, mating-related identification, inviting smells, and behavior. In humans, the hippocampus is associated with the ability of verbal symbolism recognition, symbolic thinking, decision-making, capability of learning and remembering new data, and the transformation of short-term memory into long-term memory.

Clinical observation shows that lesions of the hippocampus negatively affect this memory consolidation process and its surgical removal impedes the learning of new information or even the ability to remember names, although older memories and learned information anterior to the hippocampus' removal remain intact. The gradual deterioration of the ability to consolidate short-term into long-term memory that occurs during the **aging process** is an example of the role of the hippocampus as a mediator of this process. Brain autopsy in cadavers of elderly people show the presence of a great number of beta-amyloid plaques in the **cerebral cortex**, hippocampus, and other brain structures, which indicates neuronal **death**. Loss of **neurons** in the hippocampus due to aging or disease is believed to be the cause of many elderly people's difficulty to learn and/or remember recent events, although they often retain the ability to remember in detail facts, names, and data of decades ago.