



Short Commentary

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Brain Hippocampus

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Description

Hippocampus is a complex brain structure embedded deep into temporal lobe. It has a major role in learning and memory. It is a plastic and vulnerable structure that gets damaged by a variety of stimuli. It is a plastic and vulnerable structure that gets damaged by a variety of stimuli. Studies have shown that it also gets affected in a variety of neurological and psychiatric disorders. It is a major component of the brain of humans and other vertebrates. Humans and other mammals have two hippocampi, one in each side of the brain. The hippocampus is part of the limbic system, and plays important roles in the consolidation of information from short-term memory. The hippocampus has been studied extensively as part of a brain system responsible for spatial memory and navigation. Many neurons in the rat and mouse hippocampus respond as place cells: that is, they fire bursts of action potentials when the animal passes through a specific part of its environment.

Hippocampus and memory

Hippocampus plays a vital role in flexible and goal-directed behavior. An intact hippocampal activity is required for forming and reconstructing relational memory (required for remembering arbitrary associations between objects or events) associated with flexible cognition and social behavior.

The role of hippocampus in behavioral inhibition is also well-established in the literature. The link between hippocampus and inhibition has been derived mainly from two basic observations: 1st observation is that damage to hippocampus makes animals hyperactive; and 2nd observation is that damage to hippocampus reduces the learning ability of animals to inhibit responses that they have learned previously.

Hippocampus and learning

Pyramidal cells of the hippocampus play an essential role in classical eye blink conditioning, which is a standard model for studying associative learning. Studies involving delay eye blink conditioning have revealed that pyramidal cells.

What are the functions of hippocampus?

Being an integral part of the limbic system, hippocampus plays a vital role in regulating learning, memory encoding, memory consolidation, and spatial navigation

Know Your Brain: Hippocampus

The hippocampus is found in the temporal lobe below the cerebral cortex. Although we often refer to it in the singular, there are actually two hippocampi—one in each cerebral hemisphere. The term hippocampus comes from the Greek word for seahorse.

The hippocampus is also thought to be important to spatial navigation and orientation. It has been hypothesized that neurons in the hippocampus encode information about our environment in such a way that they create a cognitive map of our surroundings. One well-known study investigated this hypothesis by looking at the brains of a group who are required to have refined navigation skills: cab drivers in London. The hippocampus has many other roles beyond memory and navigation. For example, reduced hippocampal volume has been seen in depressed patients (read more here) and those suffering from post-traumatic stress disorder.

Hippocampus damage

Damage to the hippocampus can also result from oxygen starvation (hypoxia), encephalitis, or medial temporal lobe epilepsy. People with extensive, bilateral hippocampal damage may experience anterograde amnesia: the inability to form and retain new memories.

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