

Associative Learning Signals in the Monkey Medial Temporal Lobe

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A critical function of the medial temporal lobe is the ability to successfully acquire new declarative information about facts and events that includes new associations between initially unrelated items (associative learning). A major goal of my lab is to understand the brain basis of new associative learning. I will first summarize the studies we have done characterizing the patterns of neural activity seen as monkeys learn new associations on-line. These studies have shown that neurons throughout the medial temporal lobe signal new learning with changes in their stimulus-selective response properties. More recent studies have revealed that these changes in stimulus-selective responses reflect the animal's behavioral learning strategy. A surprising new finding shows that hippocampal neurons also provide a powerful signal of trial outcome, differentiating between trials that are correct or wrong. I will discuss the possible role of these signals in a feedback process by which information about behavioral outcome can be used to strengthen correct performance and modify error performance.