

Danger changes how rat brain stores information

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The male rat brain changes how it stores information depending on whether the environment in which it learns is safe or dangerous, according to new research published in *eNeuro*.

Emotionally charged information, such as danger, is processed by the amygdala. Although this brain region is typically not involved in the acquisition of harmless information, Nathan Holmes and colleagues previously showed that the amygdala is sensitive to the context in which

[rats](#) learn an association between two neutral stimuli, a sound and a light. This learning was revealed when one stimulus was subsequently paired with a mild foot shock: rats exhibited freezing when finally tested with both stimuli, indicating that they had associated the stimulus that was not paired with a shock with the stimulus that was.

Using a similar approach in this study, the researchers demonstrate that the perirhinal cortex—a region in the medial temporal lobe—was involved in consolidating the association between the two stimuli when the rats were trained in a safe and familiar [environment](#). On the other hand, the basolateral complex of the [amygdala](#) was involved in consolidating the same association when it was learned in a context where the rats had been previously shocked, thereby rendering the environment dangerous at the time of learning. This same region was also required for consolidation when the environment was safe at the time of learning, but rendered dangerous immediately after training.

More information: Danger changes the way the mammalian brain stores information about innocuous events: a study of sensory preconditioning in rats, [DOI: 10.1523/ENEURO.0381-17.2018](https://doi.org/10.1523/ENEURO.0381-17.2018)

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