Research points to genes that may help us form memories

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Gene expression within neurons is critical for the formation of memories, but it's difficult to identify genes whose expression is altered by learning. Now researchers have successfully monitored the expression of genes in neurons after rats were exposed to auditory fear conditioning, in which a neutral auditory tone is paired with electric shock.

Six hours after fear conditioning, neurons in the auditory thalamus region of the brain increased expression of genes important for regulating protein production, maturation, and degradation. Also, the expression of genes involved in neuronal development was altered in neurons in the auditory cortex region of the brain.

"The findings in this study can lead to further elucidating molecular mechanisms of memory formation. Particularly important is the possibility that molecular approaches might in the near future be useful in the development of therapeutic agents that can be targeted to functionally identified brain circuits for the treatment of memory-related diseases," said Dr. Raphael Lamprecht, co-author of the *Journal of Neurochemistry* study.

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