

Calcium -- the secret to honeybees' memory

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Long-term memory formation in honeybees is instigated by a calcium ion cascade. Researchers writing in the open access journal *BMC Biology* have shown that calcium acts as a switch between short- and long-term storage of learned information.

Jean-Christophe Sandoz led a team of researchers from the CNRS, the Université de Toulouse and the French [Calcium](#) Research Network, who carried out the neurological honeybee experiments. He said, "By modulating the intracellular calcium concentration in the insects' brains, we've been able to demonstrate that, during olfactory conditioning, Ca²⁺ is both a necessary and a sufficient signal for the formation of protein-dependent long-term memory".

Sandoz and his colleagues studied a learned behaviour in the [bees](#), extension of the proboscis in response to olfactory stimuli associated with food. Three days after decreasing calcium levels during learning, the bees stopped responding to the odor, and three days after increasing calcium during learning, bees' response to the odor were stronger. In addition, the researchers found that the increased memory performance in bees induced by increased calcium depended on protein synthesis. According to Sandoz, "We have found here that the modulation of calcium during learning affects long-term memory specifically while leaving learning and short-term memory intact".

Source: BioMed Central ([news](#) : [web](#))

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