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# Space, Time and Others in the bat hippocampus

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## Abstract

The ability of social animals to synchronize their behavior in space and time with others is crucial for their survival and reproduction. Social behaviors, ranging from coordinated courtship displays to more complex behaviors such as cooperation in groups, all involve behavioral synchronization in space and time. However, until very recently it was not known how space and time for others is represented in the brain. We addressed this question by studying neuronal activity in dorsal CA1 (dCA1) hippocampus of Egyptian fruit bats (*Rousettus aegyptiacus*) – highly social mammals that excel in observational-learning and in navigation. I will first present our recent work, which revealed for the first time, an explicit spatial representation of others in dCA1 hippocampus ('Social place-cells'). Then, I will also present new findings on how dCA1 hippocampal neurons encode simultaneously space and time (spacetime), for self and other conspecifics ('Episodic cells'). Taken together, our findings suggests that the hippocampal formation plays an important role in social cognition.

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