



Talks by rising stars of neuroscience

## **A metabolic function of the hippocampal sharp wave-ripple**

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The hippocampal formation has been implicated in both cognitive functions as well as the sensing and control of endocrine states. To identify a candidate activity pattern which may link such disparate functions, we simultaneously measured electrophysiological activity from the hippocampus and interstitial glucose concentrations in the body of freely behaving rats. We found that clusters of sharp wave-ripples (SPW-Rs) recorded from both dorsal and ventral hippocampus reliably predicted a decrease in peripheral glucose concentrations within ~10 minutes. This correlation was less dependent on circadian, ultradian, and meal-triggered fluctuations, it could be mimicked with optogenetically induced ripples, and was attenuated by pharmacogenetically suppressing activity of the lateral septum, the major conduit between the hippocampus and subcortical structures. Our findings demonstrate that a novel function of the SPW-R is to modulate peripheral glucose homeostasis and offer a mechanism for the link between sleep disruption and blood glucose dysregulation seen in type 2 diabetes and obesity.

Event link:

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