

Accepted Manuscript

Title: Driving and Regulating Temporal Association Learning
Coordinated by Entorhinal-Hippocampal Network

Author: Takashi Kitamura

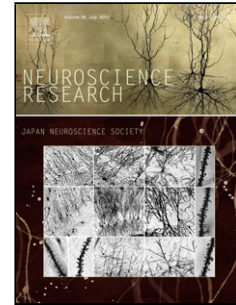
PII: S0168-0102(16)30227-9
DOI: <http://dx.doi.org/doi:10.1016/j.neures.2017.04.005>
Reference: NSR 4036

To appear in: *Neuroscience Research*

Received date: 22-10-2016
Revised date: 16-3-2017
Accepted date: 12-4-2017

Please cite this article as: Kitamura, Takashi, Driving and Regulating Temporal Association Learning Coordinated by Entorhinal-Hippocampal Network. *Neuroscience Research* <http://dx.doi.org/10.1016/j.neures.2017.04.005>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Driving and Regulating Temporal Association Learning Coordinated by Entorhinal-Hippocampal Network

Takashi Kitamura^{1, 2, †}

1. Department of Psychiatry, University of Texas Southwestern Medical Center, Dallas, Texas, 75390, USA

2. Department of Neuroscience, University of Texas Southwestern Medical Center, Dallas, Texas, 75390, USA

†To whom correspondence should be addressed: Takashi.Kitamura@UTSouthwestern.edu

Highlights

Entorhinal-hippocampal network is crucial for temporal association learning.

Entorhinal cortex layer III is crucial for driving temporal association learning.

Island Cells in entorhinal cortex layer II control temporal association learning.

Timing-related hippocampal CA1 activities may bridge temporal gap between two events.

Prefrontal cortex may coordinate with entorhinal cortex for temporal association learning

Abstract

Episodic memories shape future behaviour and by aiding adaptive behaviour, are therefore important for survival in nature. Entorhinal cortex (EC)-hippocampal (HPC) networks have a crucial role in the formation of episodic memory, which consists of associations of space, objects, individuals and time. Neural circuits have been identified in the EC-HPC networks that provide spatial, contextual and object information. However, the specific neural circuits that allow animals to associate two temporally segregated events, called temporal association learning, are still nebulous. In this review, I will review recent experimental evidence concerning the role of the EC in temporal association learning, with an emphasis on the neural circuits functioning to drive and regulate the temporal associations between events, and focusing on the trace fear conditioning paradigm in rodents. Then, I will discuss hippocampal activity during the trace

Download English Version:

<https://daneshyari.com/en/article/5739041>

Download Persian Version:

<https://daneshyari.com/article/5739041>

[Daneshyari.com](https://daneshyari.com)