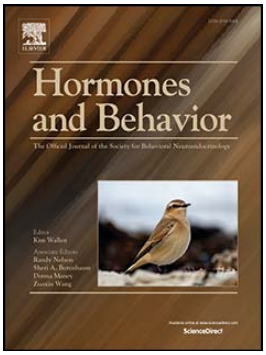

Luteinizing hormone acts at the hippocampus to dampen spatial memory

Veronica Burnham, Christopher Sundby, Abigail Laman-Maharg, Janice Thornton

PII: S0018-506X(16)30212-4
DOI: doi: 10.1016/j.yhbeh.2016.11.007
Reference: YHBEH 4136

To appear in: *Hormones and Behavior*

Received date: 10 May 2016
Revised date: 7 November 2016
Accepted date: 9 November 2016

Please cite this article as: Burnham, Veronica, Sundby, Christopher, Laman-Maharg, Abigail, Thornton, Janice, Luteinizing hormone acts at the hippocampus to dampen spatial memory, *Hormones and Behavior* (2016), doi: 10.1016/j.yhbeh.2016.11.007

Luteinizing Hormone acts at the hippocampus to dampen spatial memory

Veronica Burnham, Christopher Sundby, Abigail Laman-Maharg, and Janice Thornton

Department of Neuroscience, Oberlin College, 119 Woodland St, Oberlin OH 44074, USA

Corresponding Author:
Janice Thornton, Ph.D.
Office phone: 440.775.8341
Email: jan.thornton@oberlin.edu

Abstract

Luteinizing hormone (LH) rises dramatically during and after menopause, and has been correlated with an increased incidence of Alzheimer's disease and decreased memory performance in humans and animal models. To test whether LH acts directly on the dorsal hippocampus to affect memory, ovariectomized female rats were infused with either the LH-homologue human chorionic gonadotropin (hCG) or the LH receptor antagonist deglycosylated-hCG (dg-hCG). Infusion of hCG into either the lateral ventricle or the dorsal hippocampus caused significant memory impairments in ovariectomized estradiol-treated females. Consistent with this, infusion of the LH antagonist dg-hCG into the dorsal hippocampus caused an amelioration of memory deficits in ovariectomized females. Furthermore, the gonadotropin-releasing hormone antagonist Antide, failed to act in the hippocampus to affect memory. These findings demonstrate a significant role for LH action in the dorsal hippocampus in spatial memory dysfunction.