journal of VISION

Volume 3, Number 9, Abstract 366, Page 366a doi:10.1167/3.9.366 http://journalofvision.org/3/9/366/ ISS

Is there a relationship between spike bursts in the latera geniculate nucleus (LGN) and behavioral events?

David W Royal
Center for Molecular Neuroscience, Vanderbilt Vision Research Center, Vanderbilt University, USA

Gyula Sáry
Dept. of Cell Biology, Vanderbilt University, USA

Jeff Schall
Center for Integrative and Cognitive Neuroscience, Dept. Psychology, Vanderbilt Vision Research Center, Vanderbilt University, USA

Vivien A Casagrande
Vanderbilt Brain Inst., Dept. Cell & Developmental Biology, Dept. Ophthalmology & Visual Sciences, Dept. Psychology, Vanderbilt Vision Research Center, Vanderbilt University, USA

Abstract

Cells in the LGN exhibit two modes of firing, burst and tonic. In the LGN, Sherman (2001) has s that burst mode may be used as a "wake up call" alerting an animal to relevant stimuli that are analyzed further when LGN cells are in tonic mode. In this study we examined the presence of l under different behavioral conditions. Single LGN cells were recorded while monkeys made sacc freely in complete darkness (FREE) or to a target located in the LGN cell's receptive field (GO). in fixation spot color signaled the monkeys to either remain fixated (red) or to shift gaze to the (green). Bursts, defined as a series of spikes having interspike intervals of 4ms or less precede period of silence lasting at least 100ms, were recorded during both the fixation period and sacc period for both the GO and FREE tasks and also following the cue in the GO task. Bursts were s 94% of cells (59/63) recorded in the FREE task and 28% of cells (26/90) in the GO task. Bursts seen in M, P and K (blue-ON) cells. The average number of bursts per second was 0.36 for cells in the FREE task and 0.08 recorded in the GO task. Bursts were seen in all behavioral epochs in tasks and burst number did not differ significantly between epochs. Our results demonstrate tha although a significant fraction of LGN cells burst in the awake state, bursting appears more link behavioral state than to task demands, at least under conditions where monkeys are familiar w task.

History
Received August 22, 2003; published October 22, 2003

Citation
Royal, D. W., Sáry, G., Schall, J., & Casagrande, V. A. (2003). Is there a relationship between spike bursts lateral geniculate nucleus (LGN) and behavioral events? [Abstract]. *Journal of Vision*, *3*(9), 366a, http://journalofvision.org/3/9/366/, doi:10.1167/3.9.366.

Keywords

None

On-Line Presentation

None

Search PubMed for related articles by these authors

Search Journal of Vision for papers that cite this paper

Get citation

---Select Format--- Go Get help with this

© 2003 ARVO