Abstract View

EXTRARETINAL MODULATION OF CELLS IN THE LATERAL GENICULATE NUCLEUS (LGN)

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To determine if LGN cells are modulated by task demands we recorded from single LGN cells while the monkey either fixated a target (NO-GO) or made a saccade to a target (GO). Color change at the fixation point indicated trial type, GO or NO-GO. Targets were presented at variable lengths of time (500+ ms) after the color change either within or outside the receptive field. 46% (60/130) cells (26 P cells, 11 M cells, 23 unclassified) showed either a significant increase (27%) or decrease (15%) in spontaneous activity after cue but before target onset. Pre-target modulation of LGN activity stayed on until target onset and did not correlate with degree of micro-saccade activity, amount of reward (signaled by the length of the color change period), latency and degree of neural response to the target. The latency of onset of the pre-target modulation was longer than the latency of responses to the target in the cell's RF (178 ms vs. 40 ms; t test, $p<0.05$). Although the behavioral relevance of these changes remain to be determined, the long latency to onset and the absence of direct visual stimulation is suggestive of cortical feedback. Findings support the conclusion that a subset of LGN M and P cells exhibit a previously unreported form of extraretinal modulation.

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