

Jan 24 (13:40–17:15)

· Kenji Kawano (Electrotechnical Laboratory)

The Role of the MST Area in Ocular Tracking

"Ocular tracking" is the eye movement that prevents excessive retinal image motion and facilitates vision. Recent behavioral studies have shown that several kinds of such tracking responses operate in machine-like fashion with ultra-short latencies. We recorded single unit activities in the cortical area MST (medial superior temporal) of monkeys during such short-latency ocular tracking responses, the ocular following responses elicited by sudden planar movements of a large textured scene and the disparity vergence responses elicited by sudden changes in the horizontal binocular disparity of the scene. The close relationship between neuronal responses and ocular responses were observed. Together with the deficits observed when neurotoxic agents were injected locally, the results indicate that these responses are mediated by a pathway that includes the MST.

· Edward L. Keller (Smith-Kettlewell Eye Research Institute)

From Space to Time: Information Coding in the Saccadic Eye Movement System

Over the past 20 years we have made significant progress in understanding the distributed spatial (place) coding of visual target locations in higher level brain regions such as the cortical frontal eye fields (FEF) and the superior colliculus (SC). We have also gained considerable insight into the organization of the motor output circuits for the generation of saccadic eye movements, where the neural discharge is primarily temporally modulated. This talk will focus on the neural circuits in between which must transform the spatially coded information about target location into the temporally coded discharge used by the motor output circuits. Recent findings on the operation of SC and cerebellar circuits which play a crucial role in the transformation will be reviewed as well as the connections of these two structures to the brainstem burst generator.