

• Yoshikazu Shinoda (Tokyo Medical and Dental Univ.)

Neural Organization of Initiation of Saccades and Smooth Pursuits

When a novel object appears in the visual field, an animal moves its eyes and head to that object (saccade), and follows that object (smooth pursuit) to keep that target on the fovea. For these eye and head movements, the central nervous system has to synthesize the motor commands for control of eye and neck movements based on the visual information. This sensory-motor transformation of signals from a retinal coordinate to oculomotor and neck motor coordinates is one of the main themes for systems neurophysiology.

This talk will first summarize our findings on the neural circuits of motor outputs for saccades, smooth pursuits and neck movements, and then neural mechanisms of initiation of saccades for express and memory-guided saccades. Recent findings on the functional roles of the frontal eye field will be discussed in relation to smooth pursuits and suppression of saccades.

• Gregory DeAngelis (Washington Univ., St. Louis)

The Role of Cortical Area MT in Stereopsis : Neurons, Columns, and Perception

Binocular disparity provides a powerful source of information about the location and shape of objects in three-dimensional (3D) space. Neurons that respond selectively to binocular disparity are found in many areas of visual cortex, but the functions of these different areas in stereopsis are poorly understood. I will describe experiments which suggest that extrastriate area MT plays an important role in stereoscopic depth perception. Specifically, I will show that: 1) MT contains a columnar architecture for binocular disparity, 2) microstimulation of disparity columns in MT can bias depth judgements, 3) single MT neurons are, on average, as sensitive to weak depth signals as the monkey, and 4) that fluctuations in response of MT neurons are correlated with fluctuations in behavioral choice.