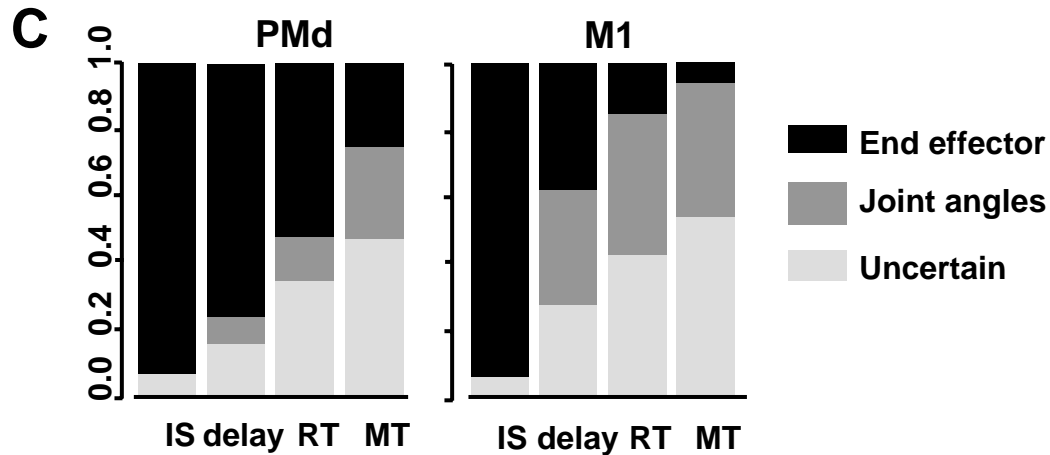
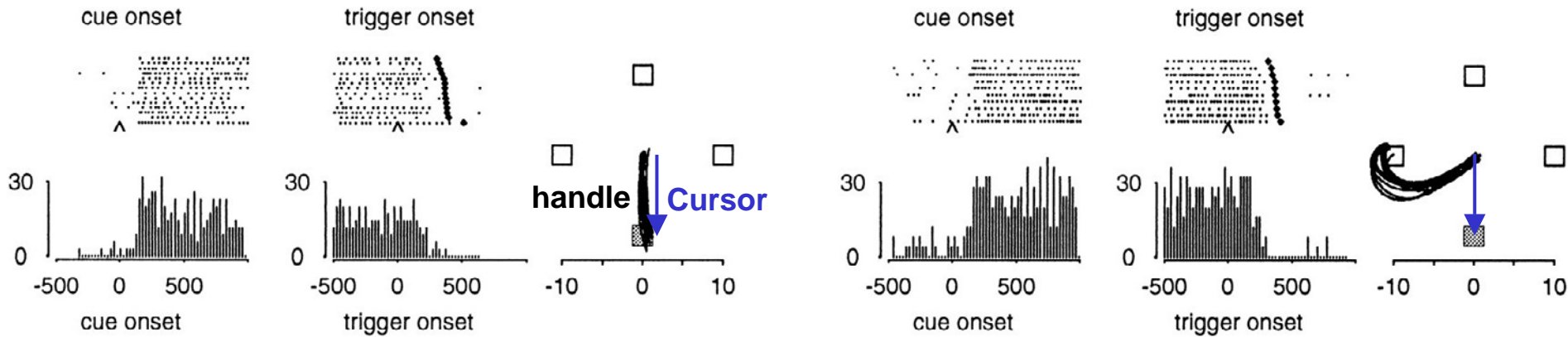


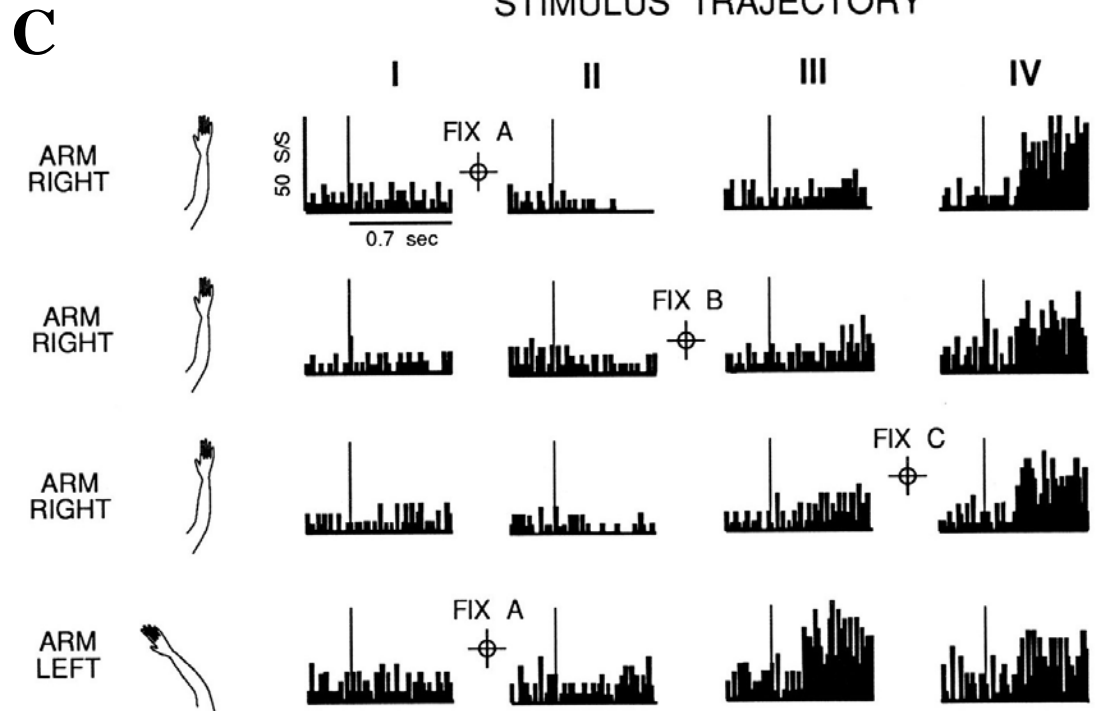
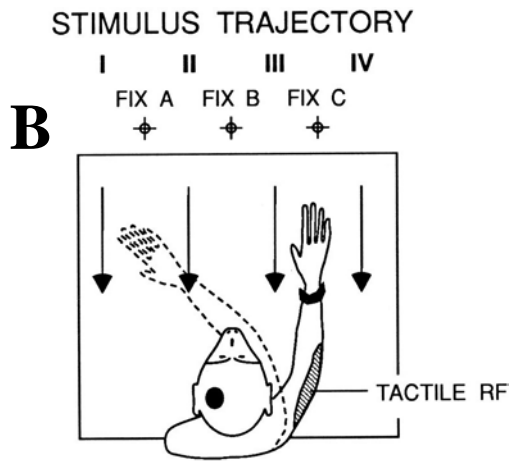
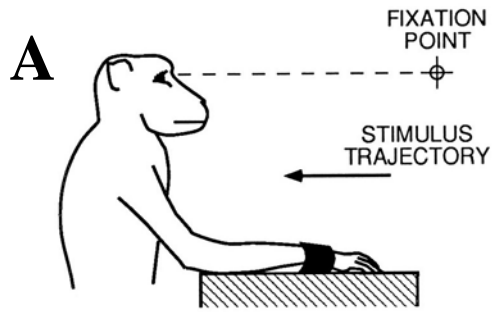
Representing the difference vector in PM

0 degree mapping

90 degree mapping

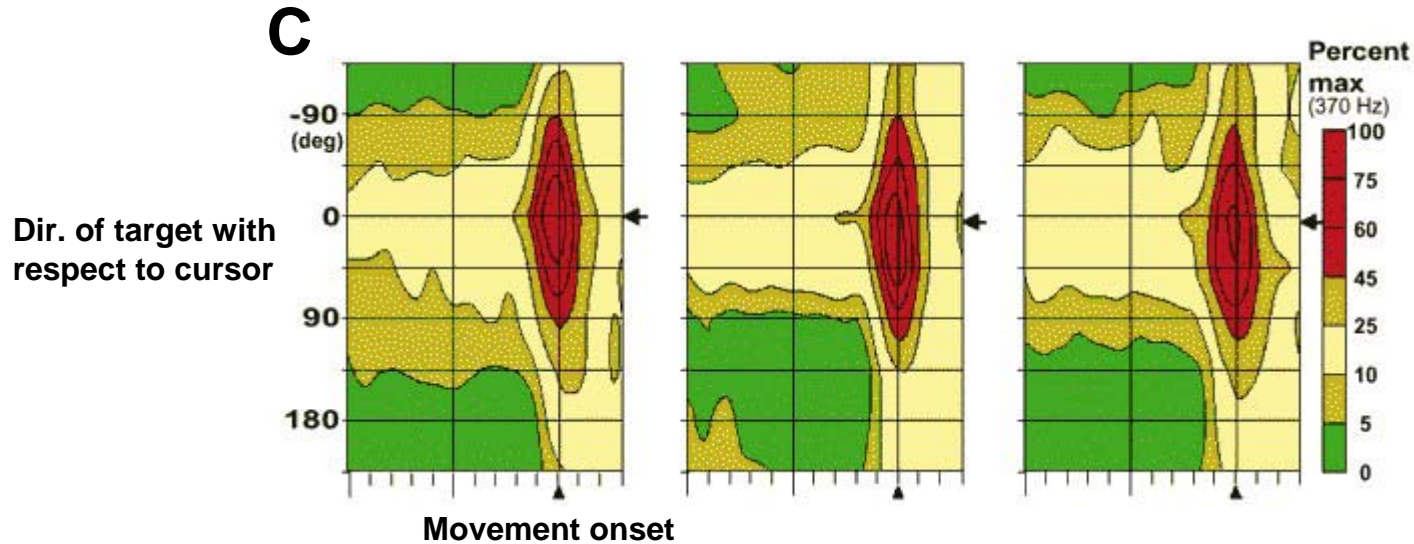
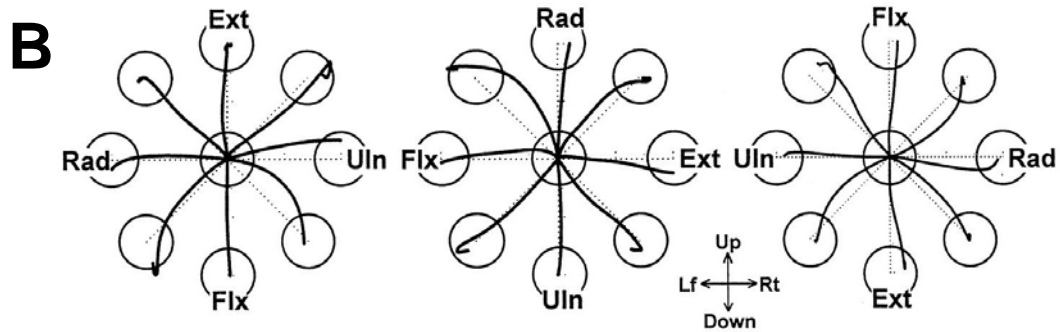
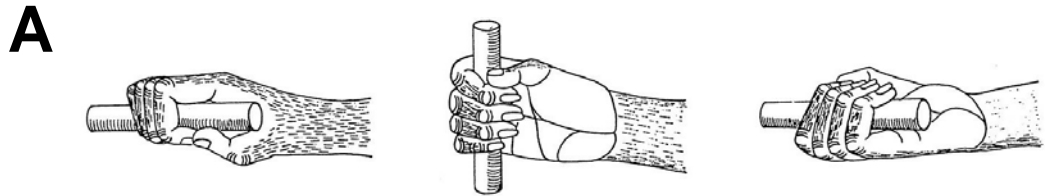


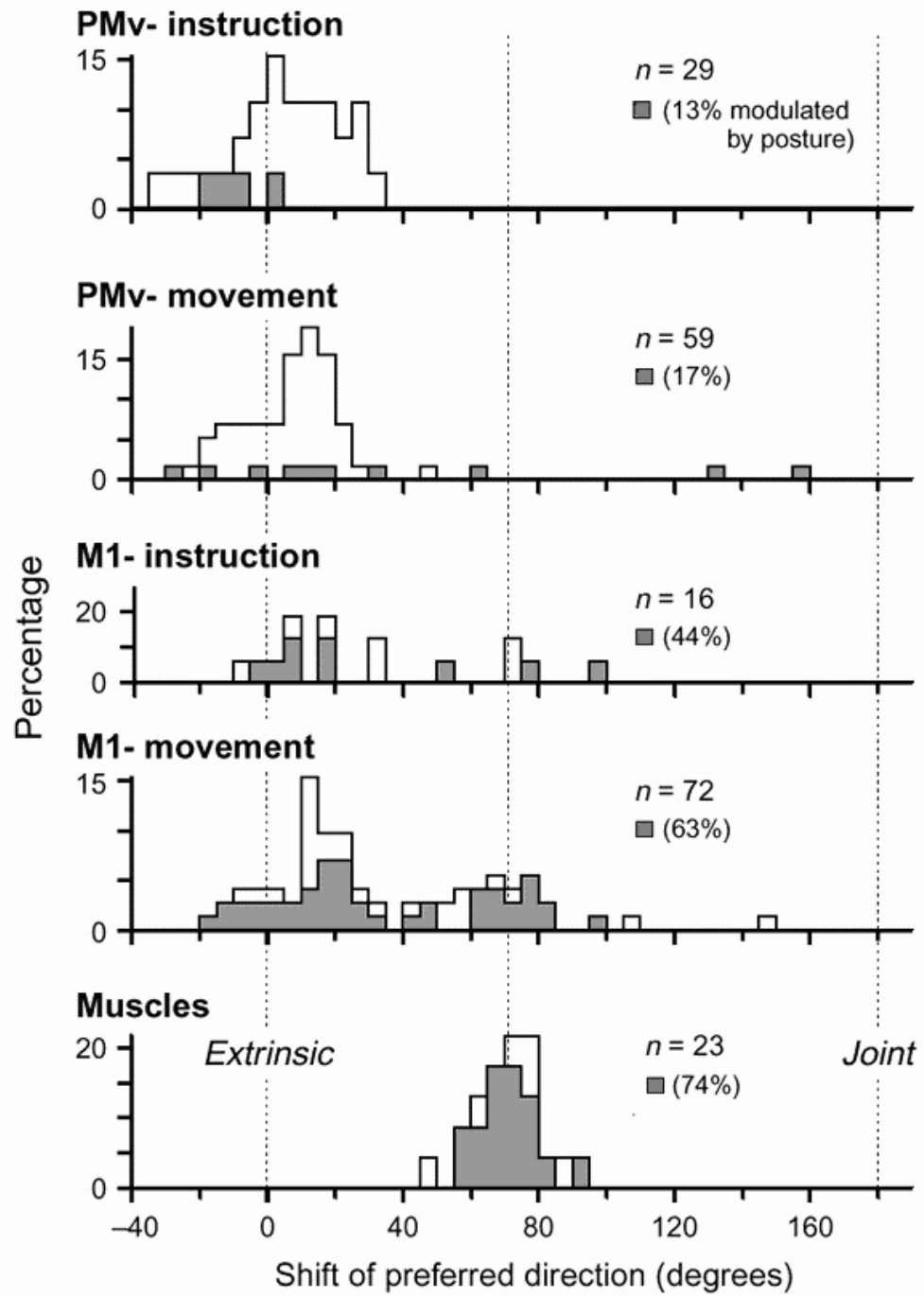
Representing the difference vector in PM: effect of gaze



Hand centered activity fields in PMv. On each trial, the monkey fixated one of three lights and a robot advanced a stimulus along one of four trajectories. **A.** Experimental setup. **B.** The stimulus trajectories and the tactile activity field of a PMv neuron. The experimenters tested the activity of this cell while the animal fixated the different lights, with its hand in one of two places, and the stimulus advancing along the four different trajectories. **C.** The cell shows its greatest discharge rate for trajectory IV when for hand locations to the right, but does so for trajectory III for hand locations to the left. The cell's activity does not vary significantly with eye orientation but it does vary with hand location. (Grazziano et al. 1997)

The difference vector in PM: effect of arm orientation





Effect of arm orientation on tuning of M1 cells

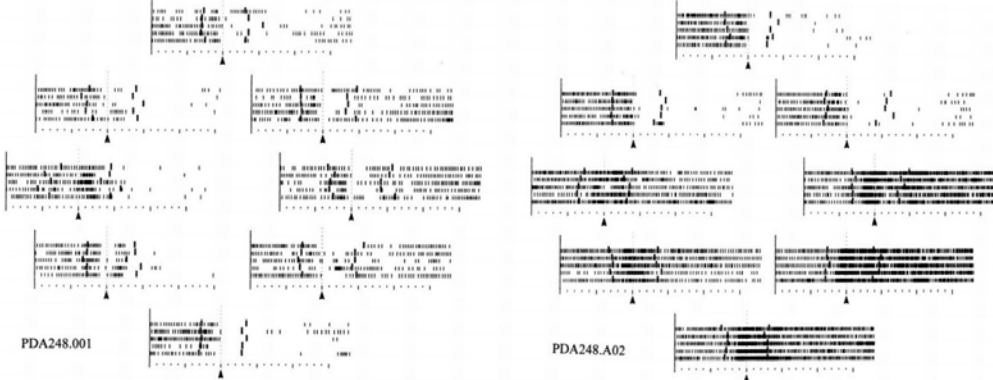
NATURAL ARM ORIENTATION

ABDUCTED ARM ORIENTATION

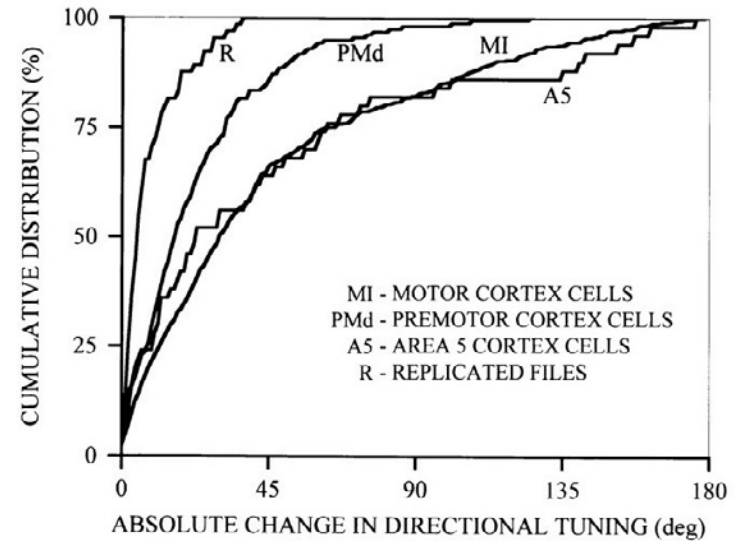


NATURAL

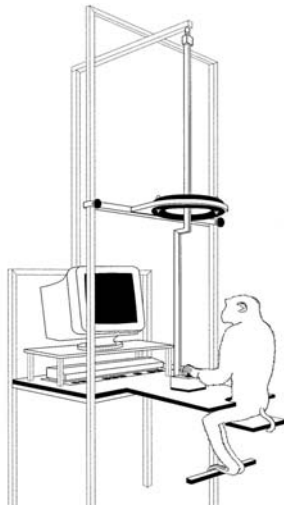
ABDUCTED



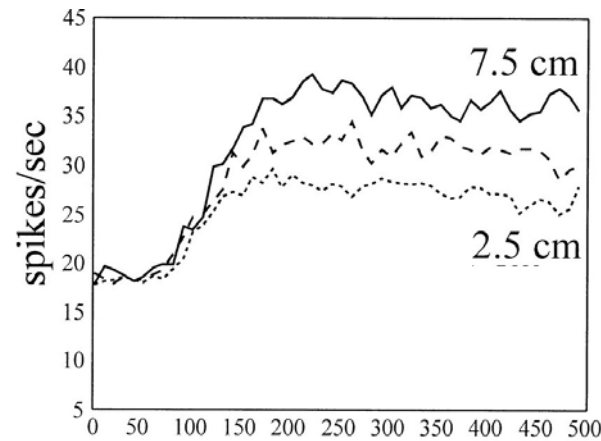
CHANGE IN DIRECTIONAL TUNING: RT+MT



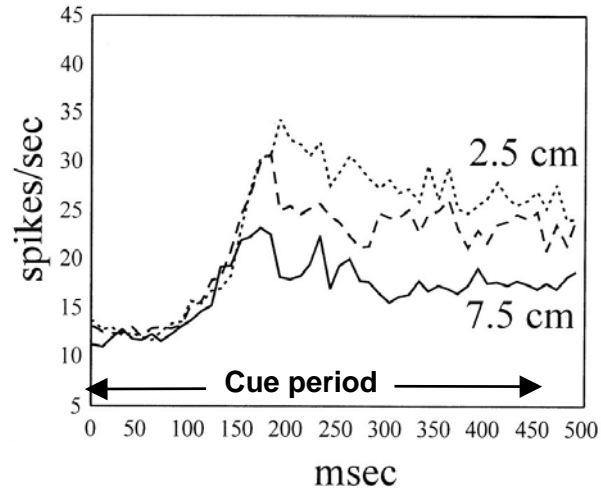
Coding the direction and amplitude of the difference vector in PM



Discharge along preferred direction



7.5 cm preferred amplitude



2.5 cm preferred amplitude

Coding the difference vector without visual information

1. Wise et al. (1986): Recorded PM neuron activity as monkey performed spontaneous movements of the arm in the dark.
2. Graziano et al. (1994): when they placed items near a monkey's arm, the activity evoked in PM neurons persisted even when the monkey could not see them. This kind of activity presumably supports reaching in the dark.

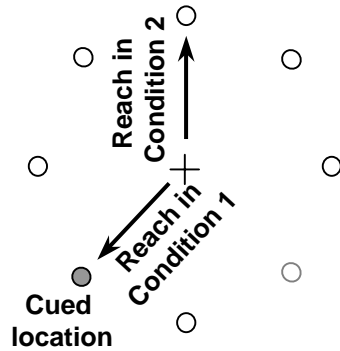
Effect of gaze:

To a first approximation, the difference vector should not depend on the orientation of the eye. In support of this prediction, neurophysiological studies based on qualitative examination have reported that activity fields in PM appeared to be gaze independent.

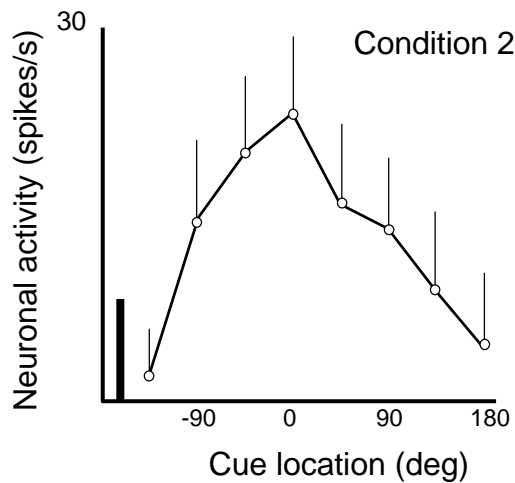
Psychophysical studies indicate that movement accuracy depends on target location in fixation-centered coordinates. Quantitative examination of those activity fields, however, has consistently revealed significant, if modest, effects of gaze angle in PM.

Effects of sensory cues that instruct a movement

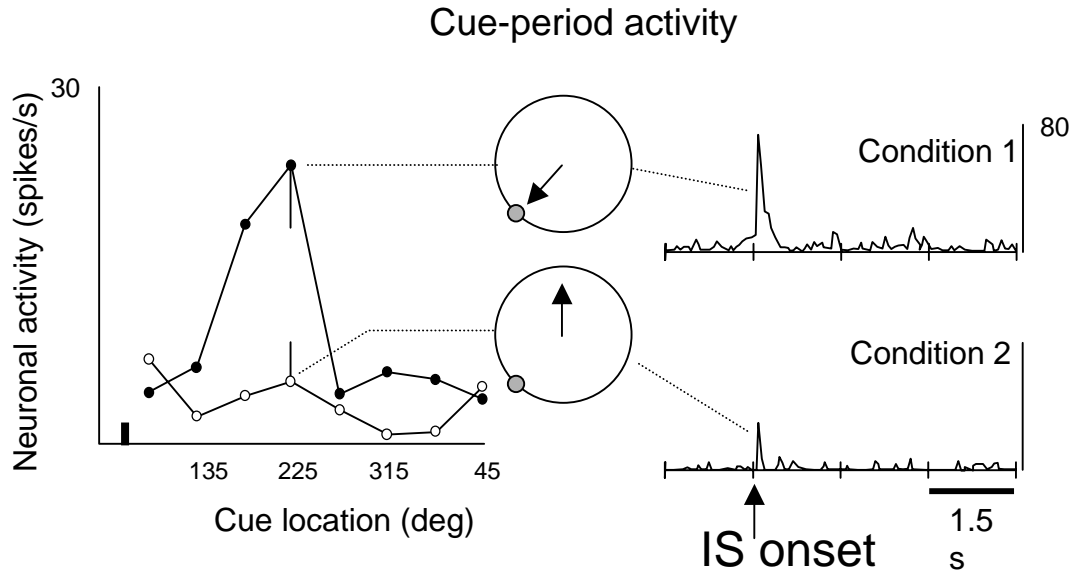
A



B



C



D

