

REPRINTED FROM: NEUROSCIENCE ABSTRACTS
SOCIETY FOR NEUROSCIENCE, 5TH ANNUAL MEETING
NEW YORK CITY 1975. PRINTED IN THE U.S.A.

ROLE OF INFERIOR TEMPORAL CORTEX IN PERCEPTUAL EQUIVALENCE OF STIMULI IN THE LEFT AND RIGHT VISUAL FIELDS. Lynne Seacord*, Charles G. Gross, and Mortimer Mishkin. Dept. Psychol., Princeton Univ., Princeton, N. J. 08540, and N.I.M.H., Bethesda, Md. 20014

Most neurons in the inferior temporal (IT) cortex of the rhesus monkey have large receptive fields that extend well across the vertical meridian into both visual half-fields (Gross et al, J. Neurophysiol., 1972). The responsiveness of these IT neurons to stimuli in their ipsilateral half-field depends on the splenium and anterior commissure (Gross et al, Fed. Proc., 1974), the same commissural pathways that support interocular transfer of discrimination habits in chiasm-sectioned monkeys. Since IT neurons have the same trigger features in both half-fields, and are also binocular, they may provide the neural convergence that underlies the interocular transfer. To test this possibility, monkeys were trained to a stringent criterion with one eye and then tested for transfer to the same criterion with the other eye on each of several pattern discrimination problems. Prior to any training, five experimental monkeys received bilateral IT lesions combined with midsagittal section of the optic chiasm, while ten controls received either the bilateral IT lesion alone, the chiasm section alone, or no surgery. Only the experimental monkeys showed impaired interocular transfer, as measured by a) initial errors on the transfer tests, b) total errors on the transfer tests, and c) savings scores. Presumably, IT neurons mediate interocular transfer by providing perceptual equivalence for patterns in the left and right visual fields, and, by implication, perhaps for patterns in different parts of the same field as well.