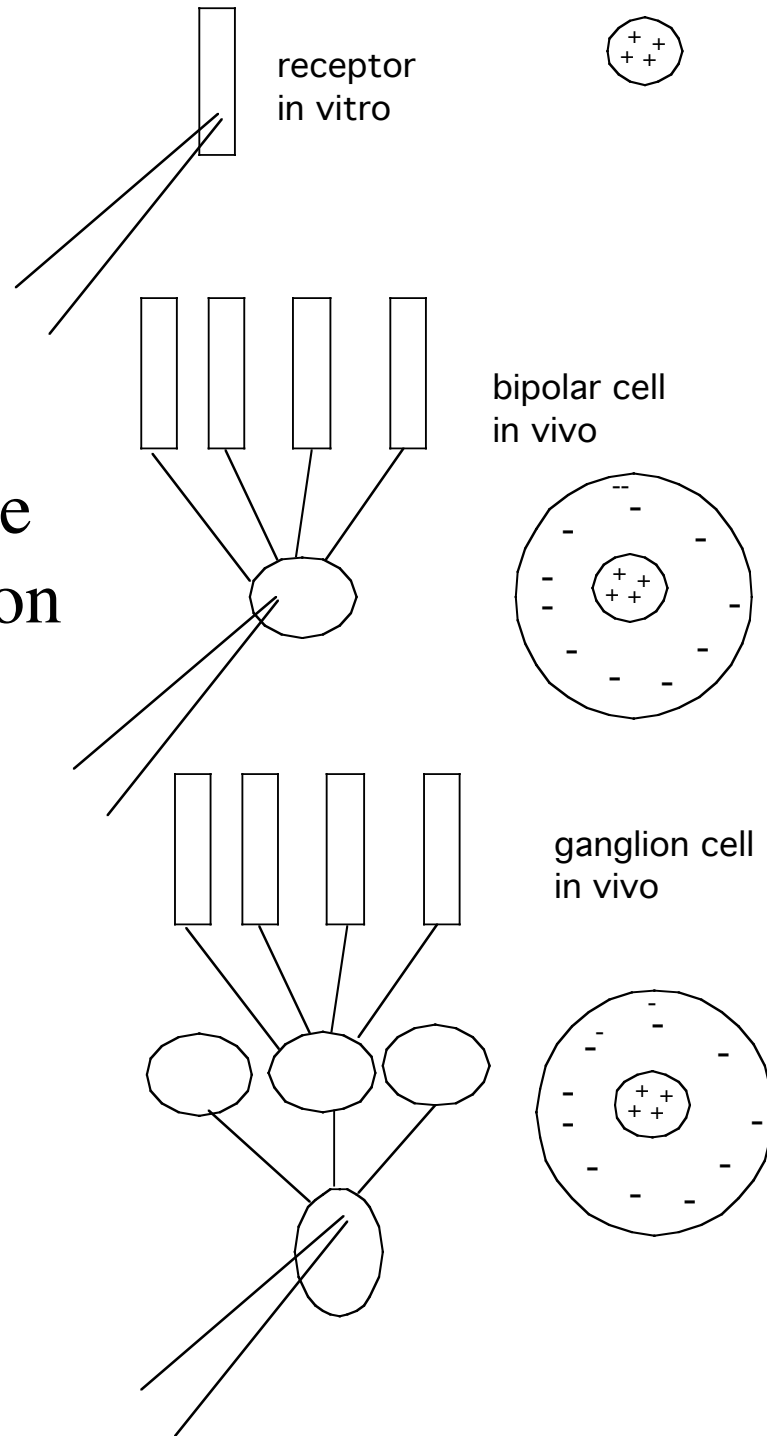


contrast sensitivity

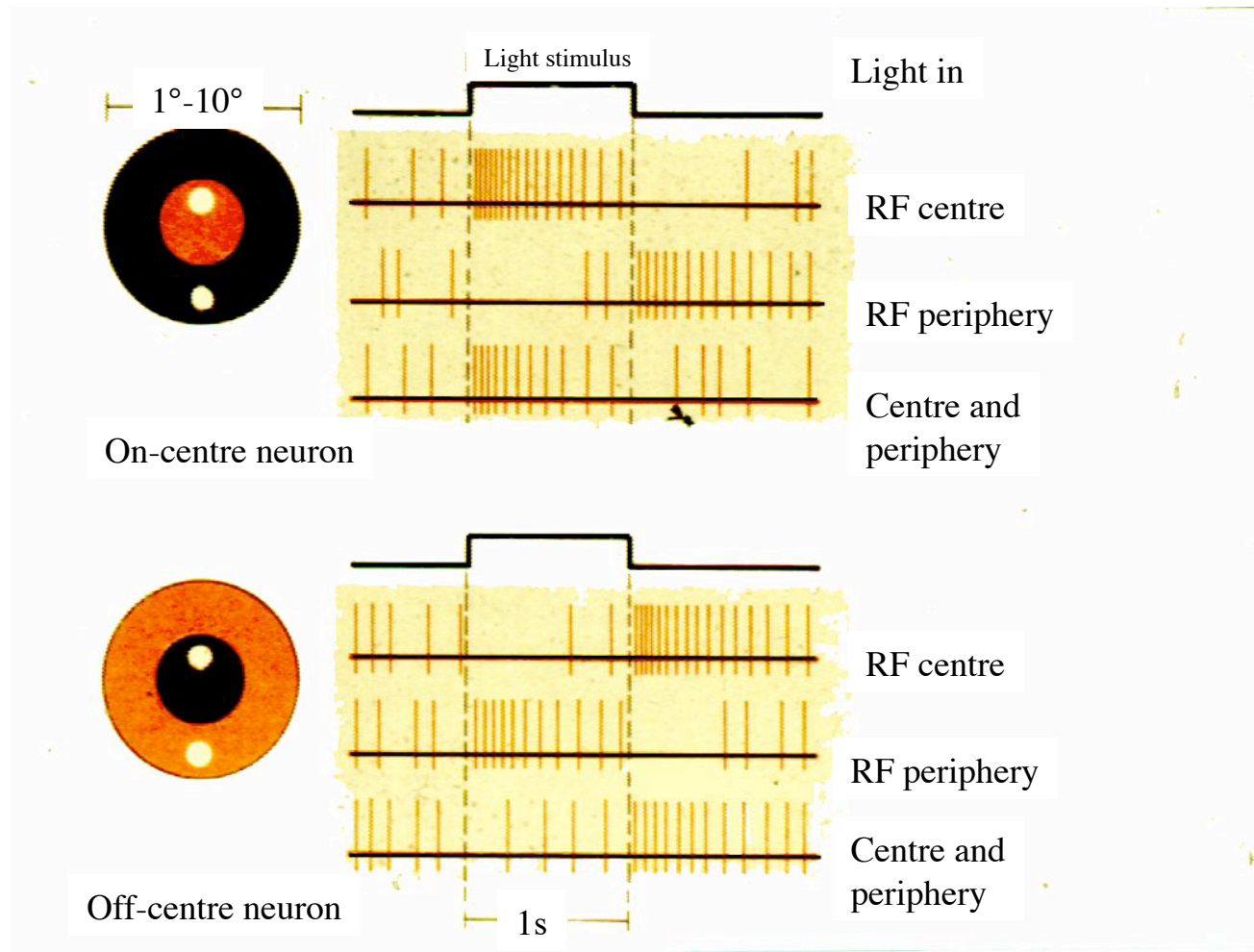
Robert.Hess@McGill.CA

Receptive field

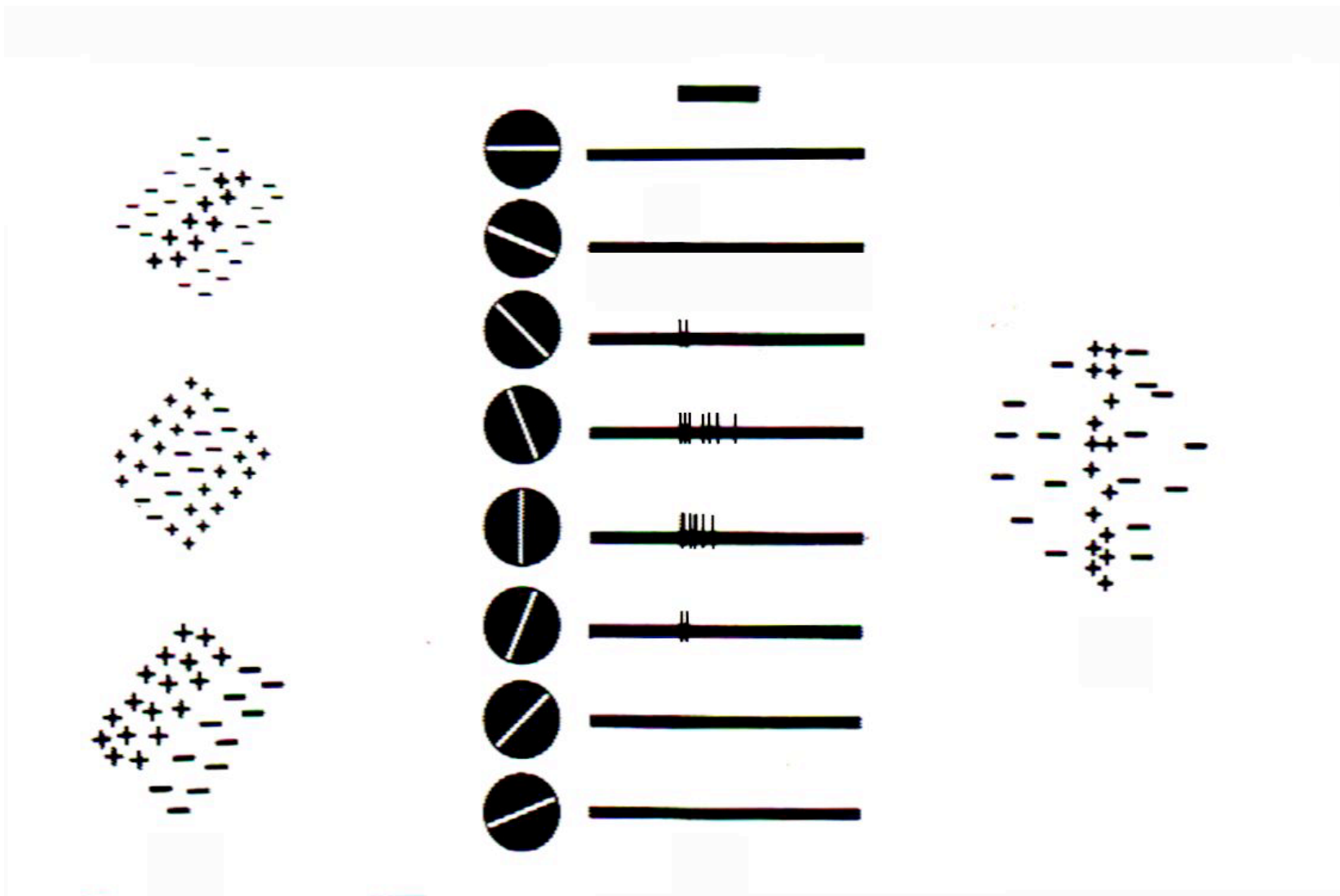
The region of retina over which a stimulus affects the electrical activity of a neuron



Receptive field of a ganglion cell



Orientation tuning



A cortical binocular cell

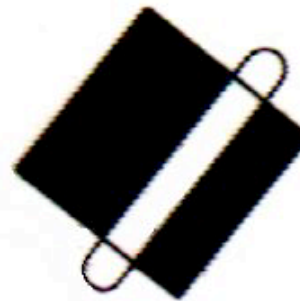
LEFT EYE



HORIZONTAL

VERTICAL

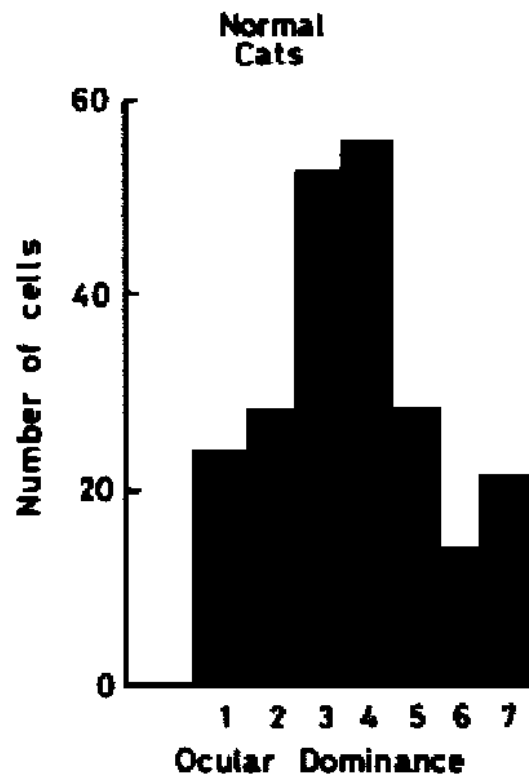
RIGHT EYE



HORIZONTAL

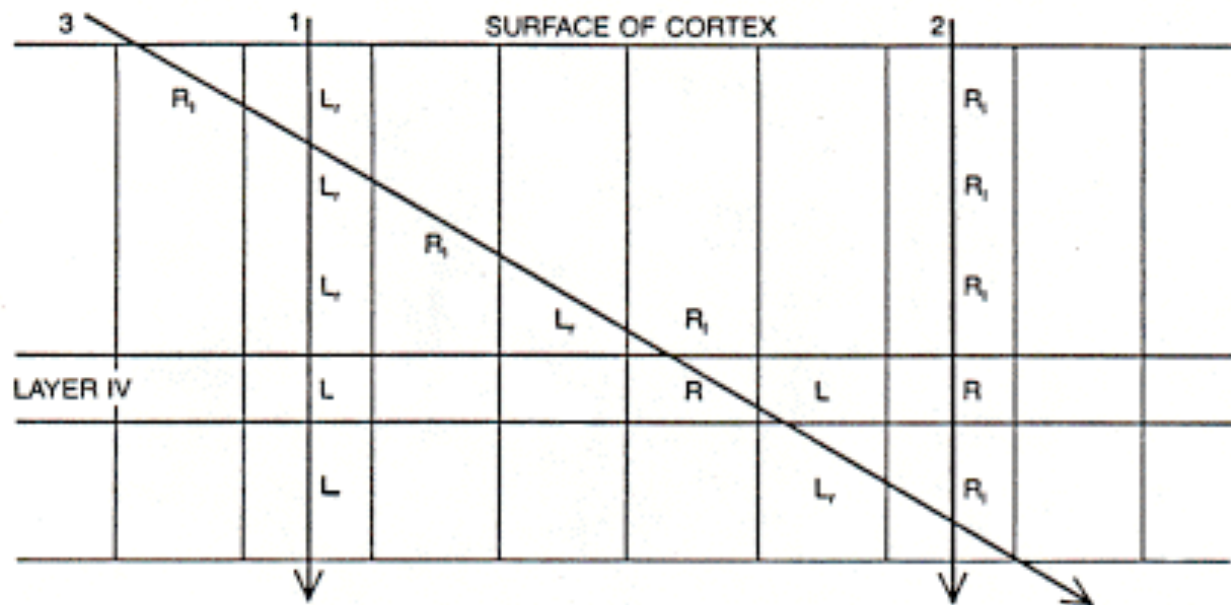
VERTICAL

Ocular dominance

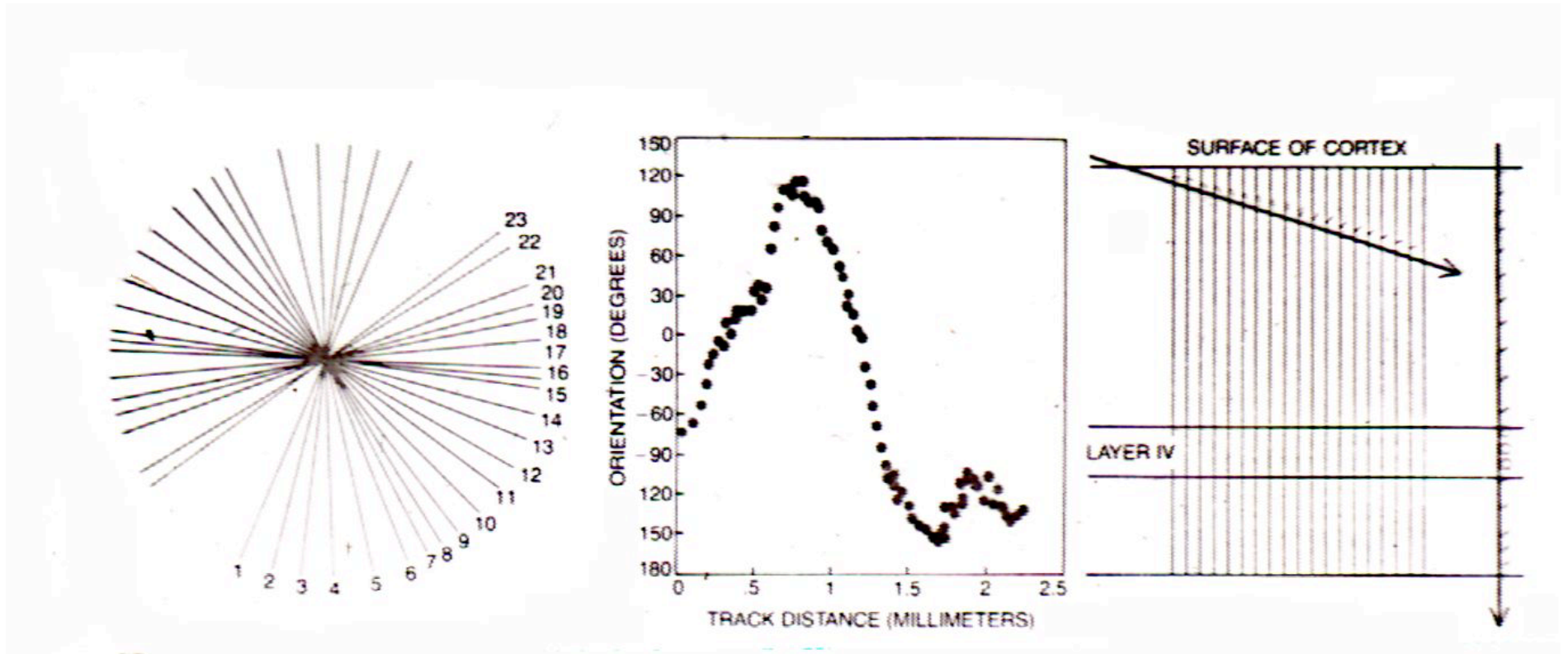


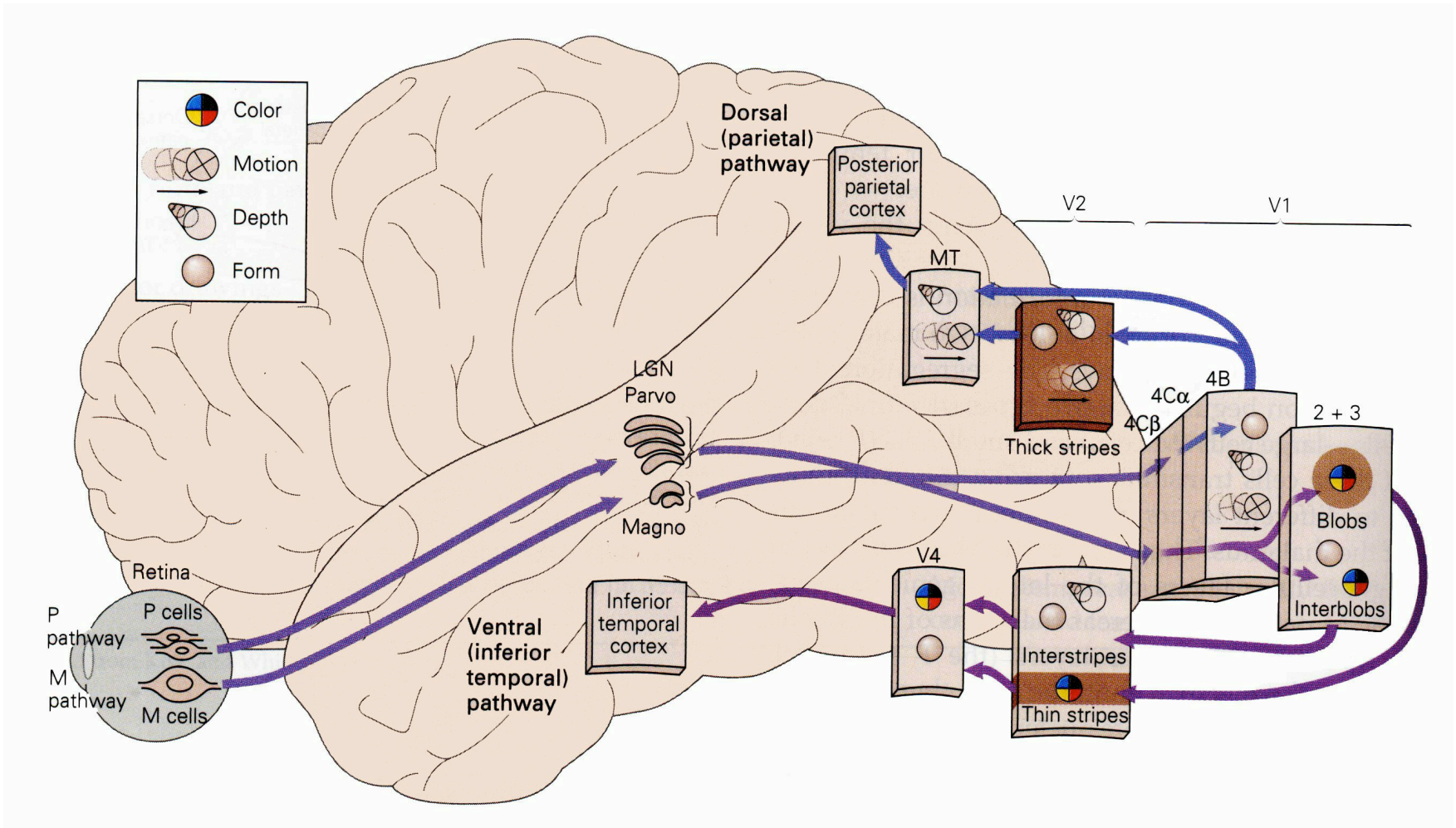
Typical dominance histogram for a normal cat.
(Blakemore from Hubel and Wiesel, *Brit. med. Bull.*)

Ocular dominance columns

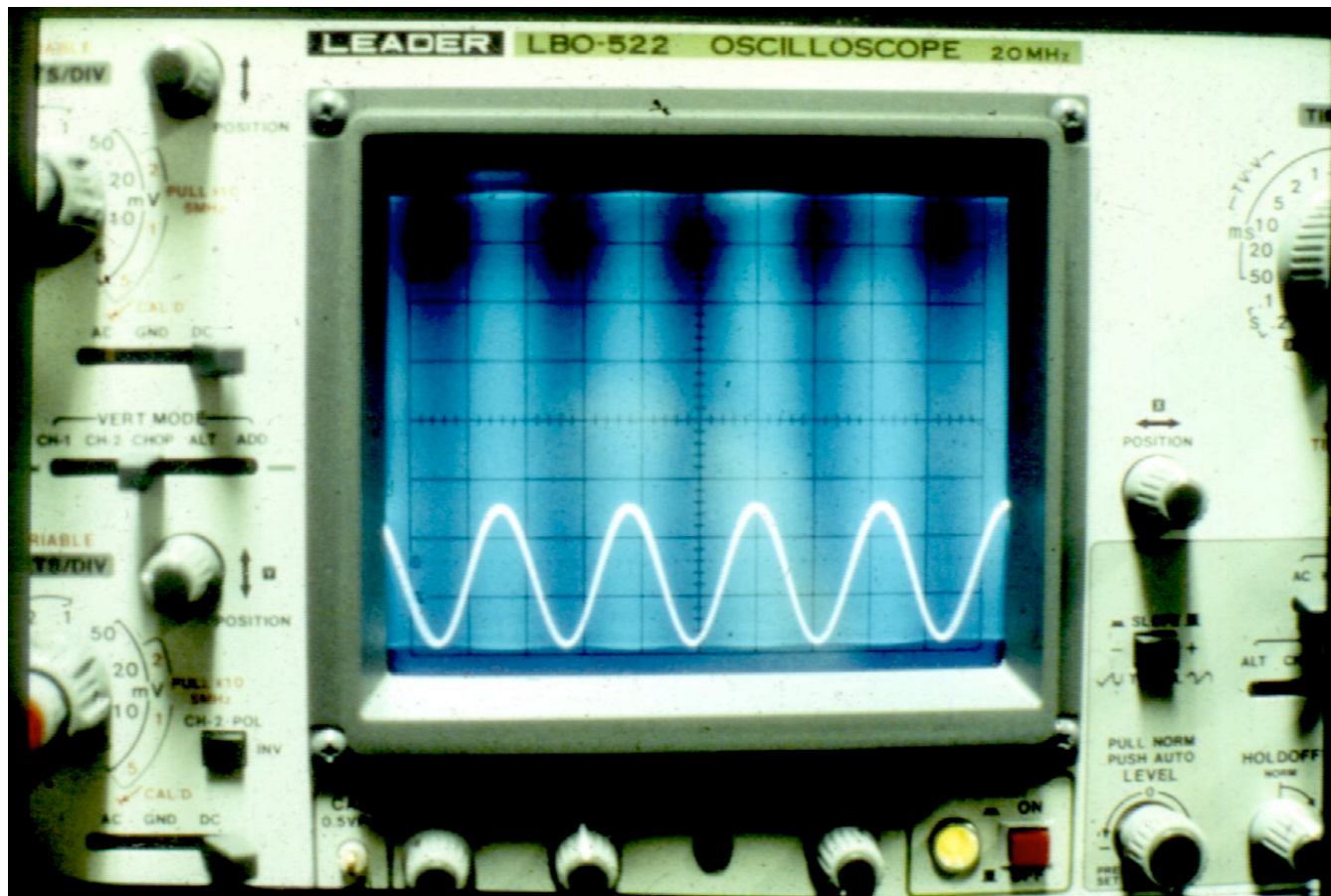


Orientation columns





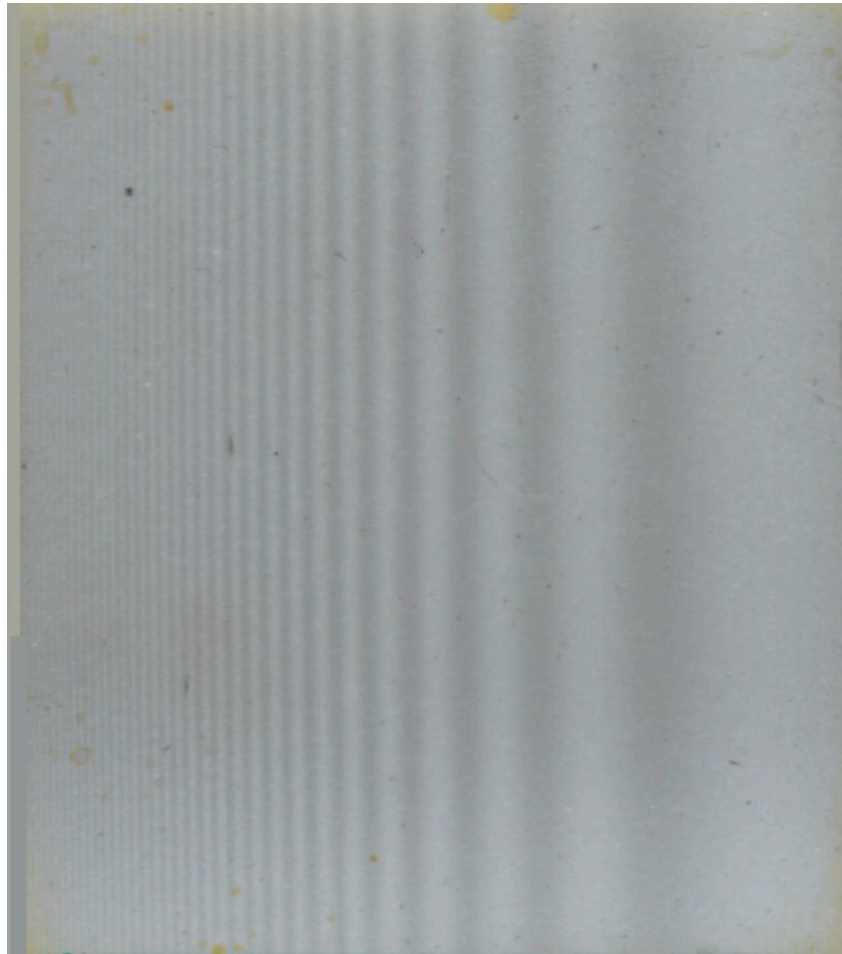
A sinusoidal grating



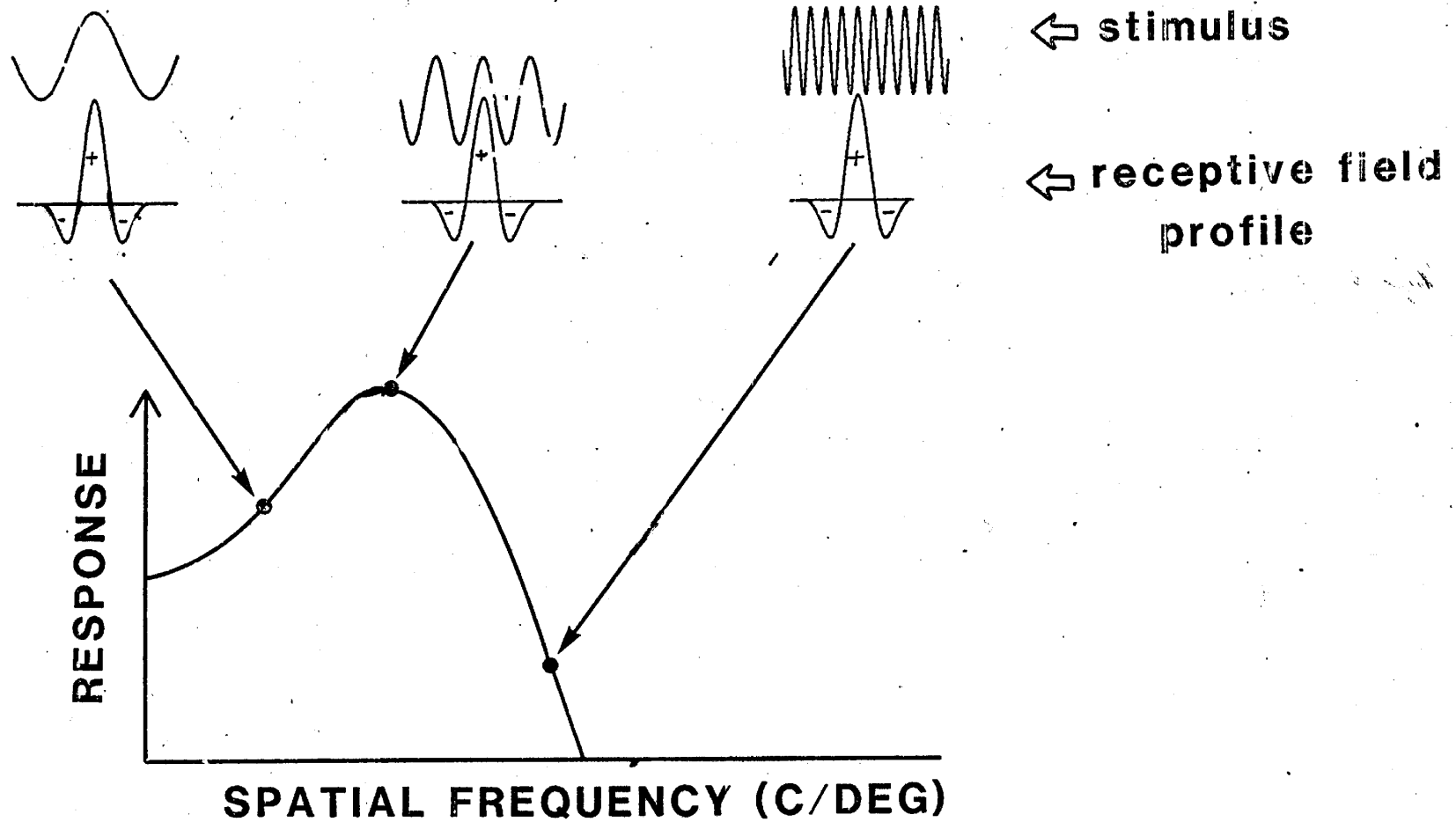
contrast



Spatial frequency

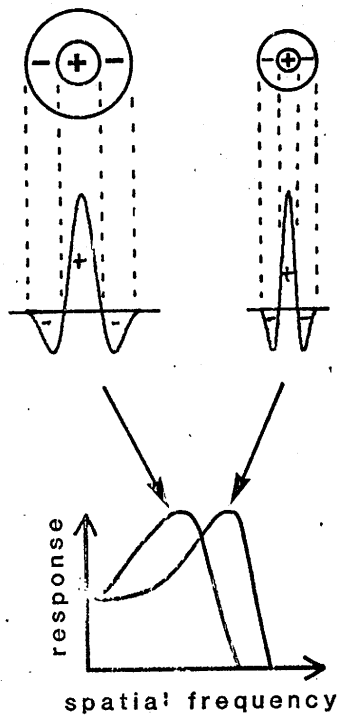


A neuron as a spatial filter

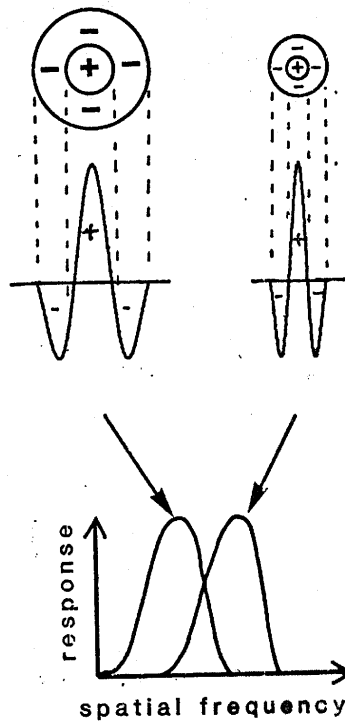


Filtering along the pathway

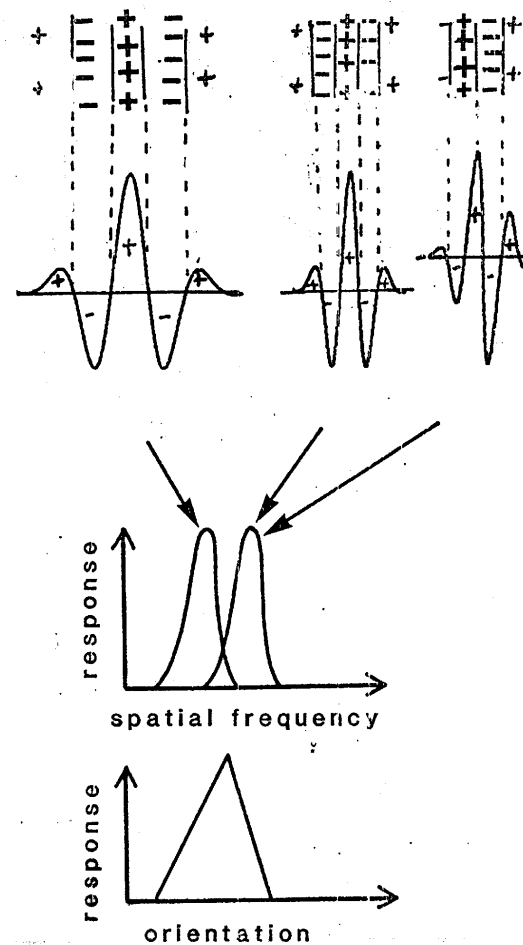
RETINA



LATERAL GENICULATE



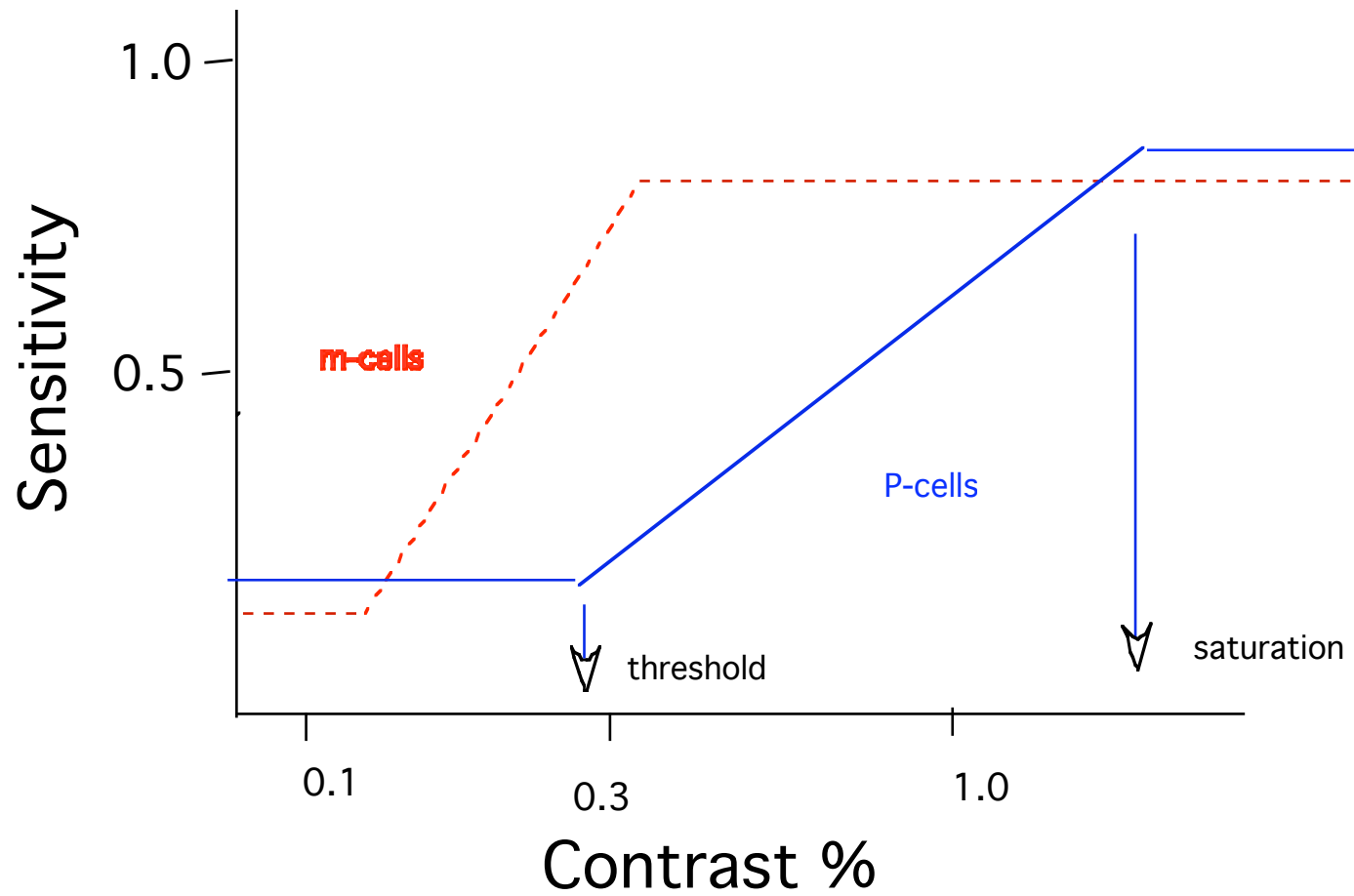
STRIATE CORTEX



A spatial analysis

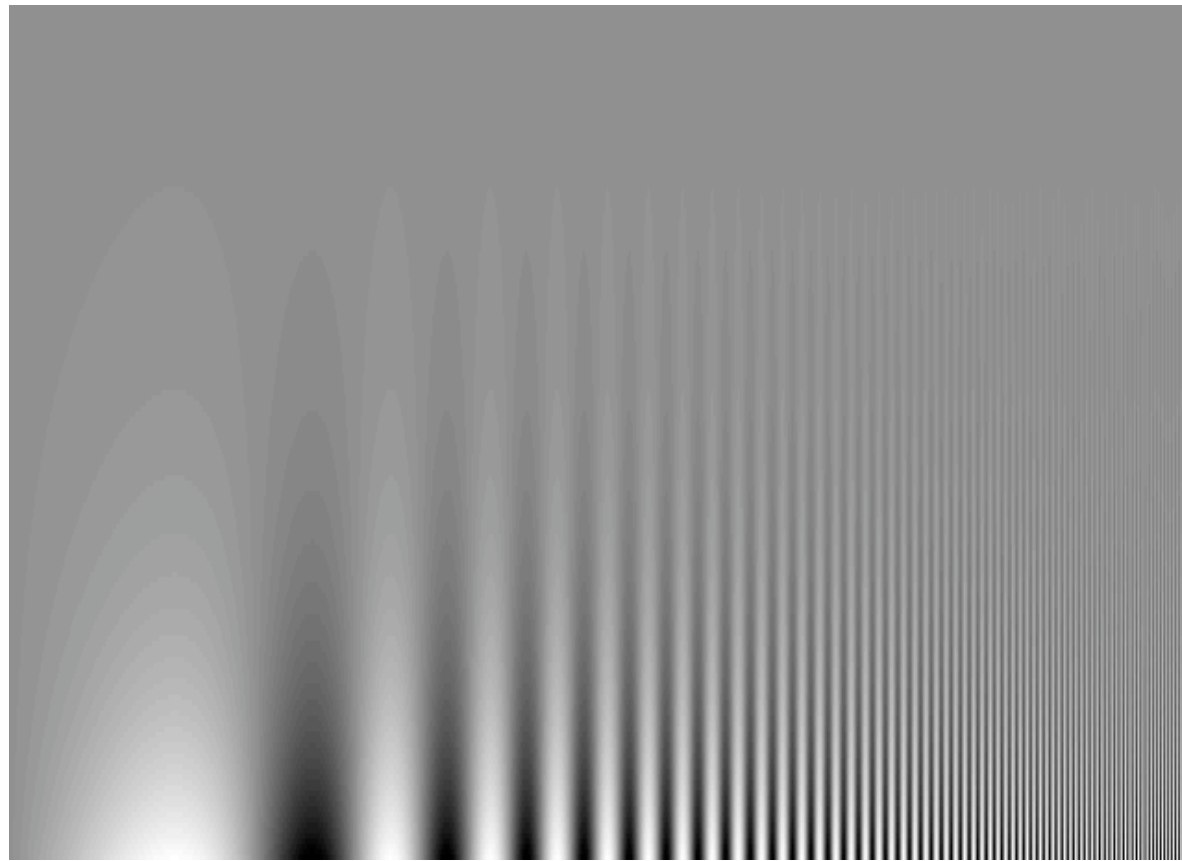


Contrast responses



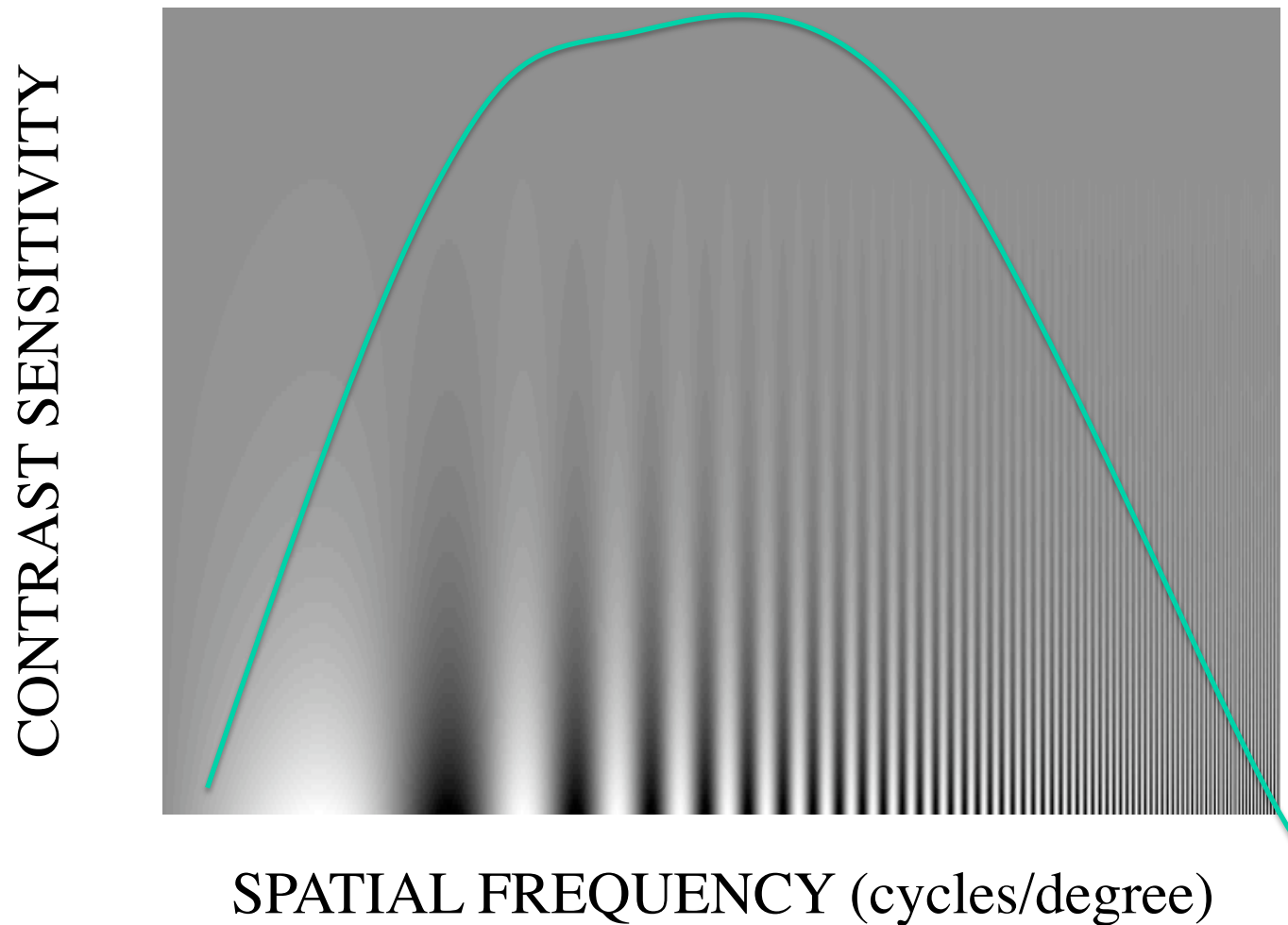
Contrast vs spatial frequency

CONTRAST SENSITIVITY

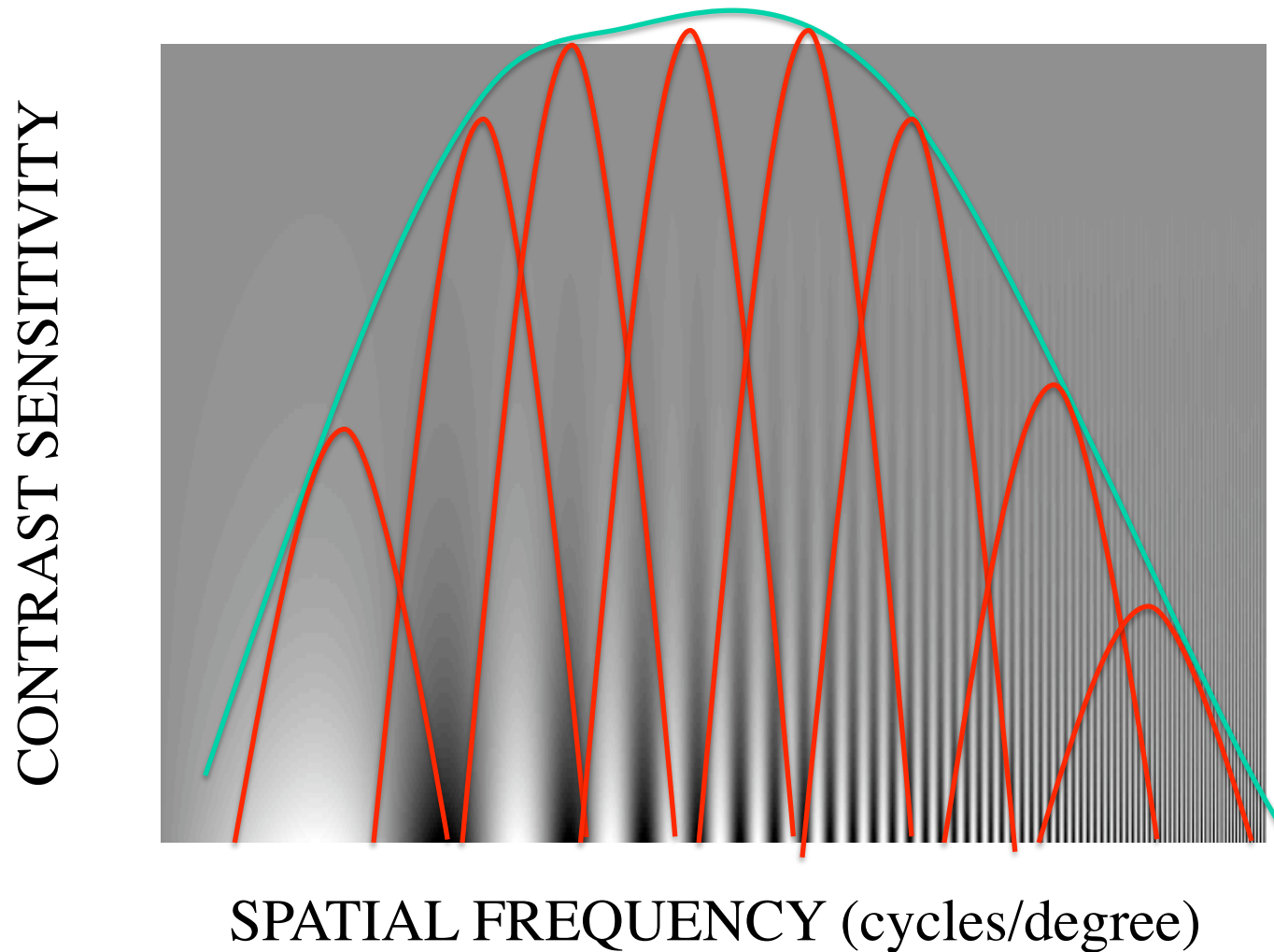


SPATIAL FREQUENCY (cycles/degree)

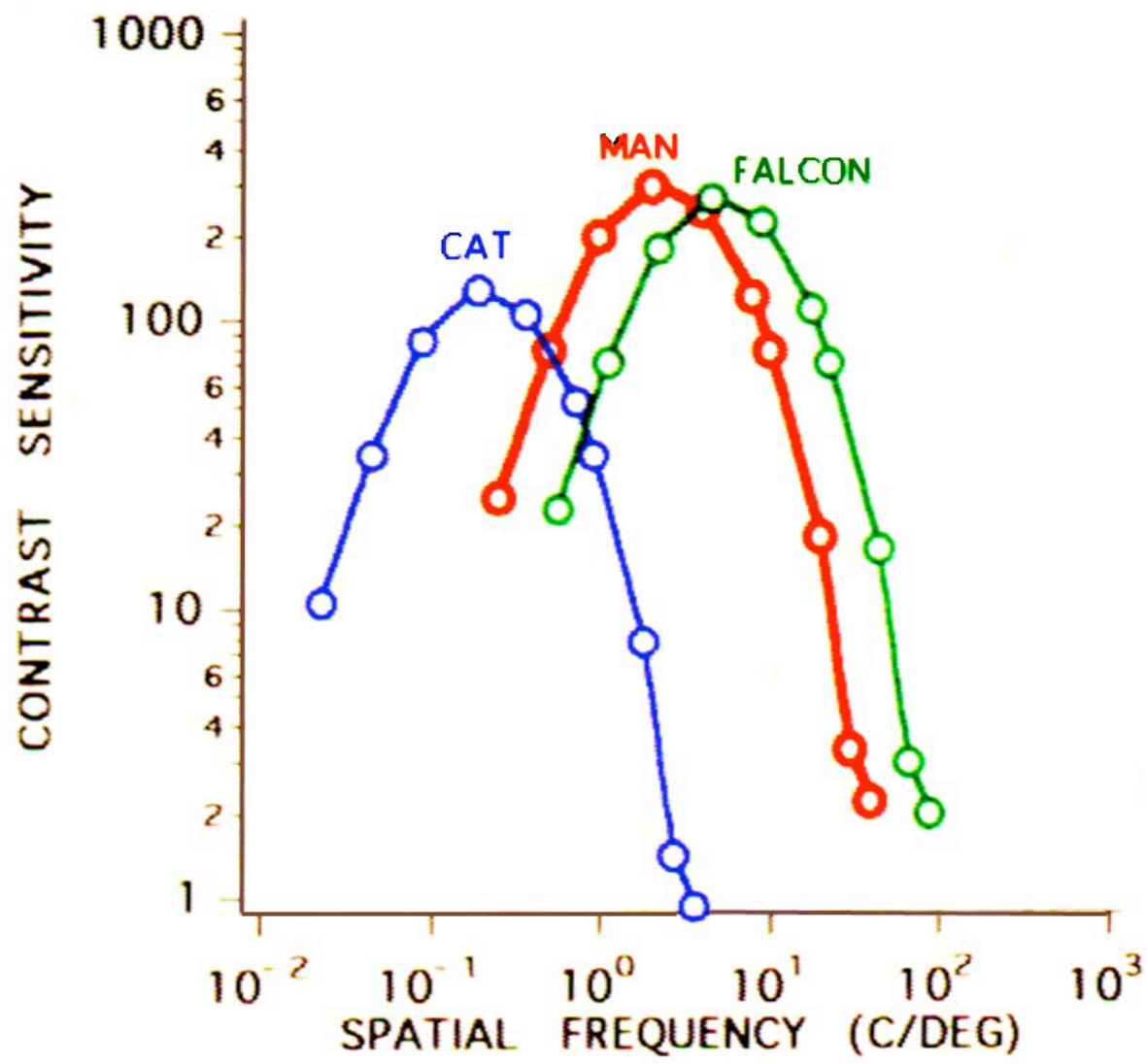
Window of visibility



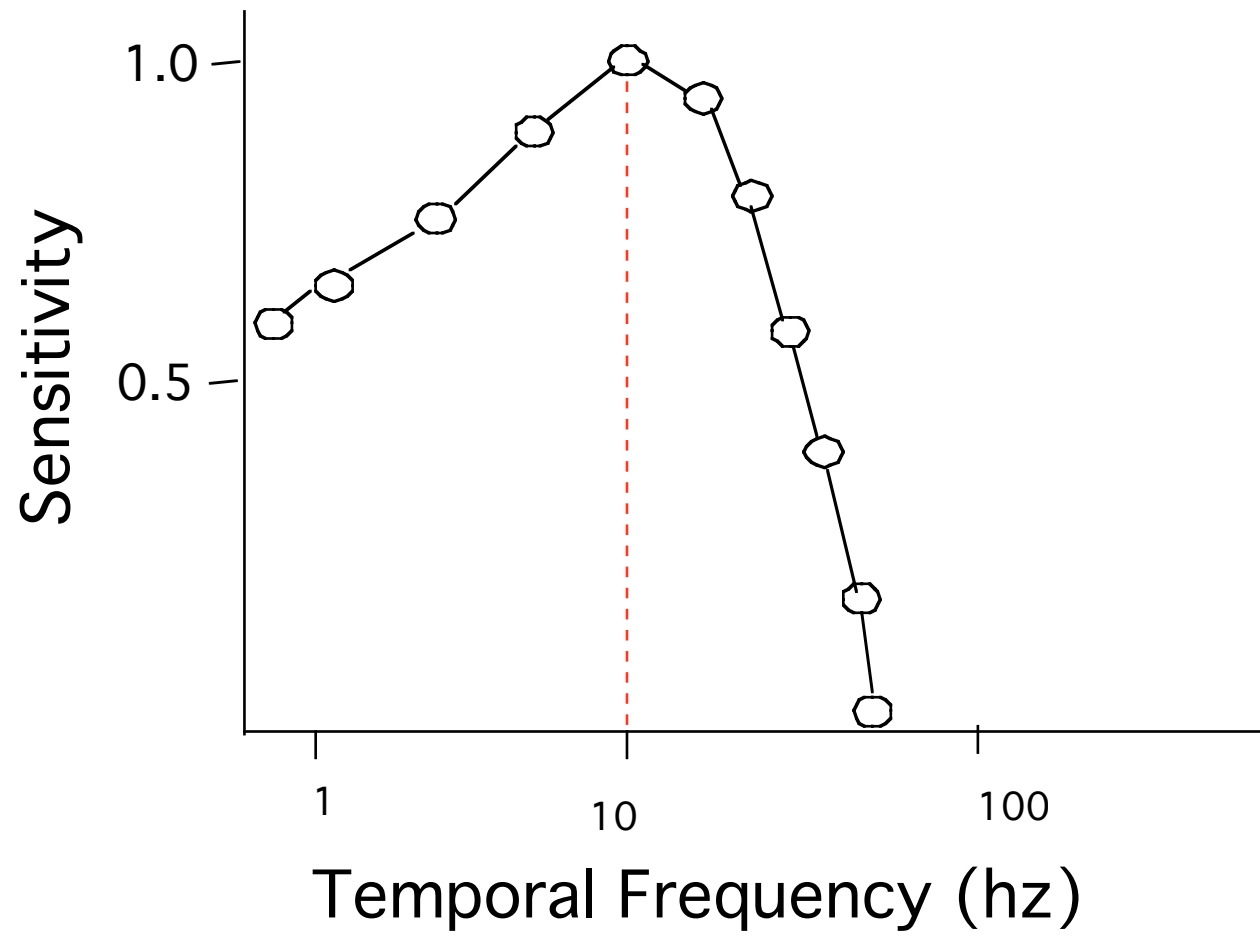
Spatially-tuned channels



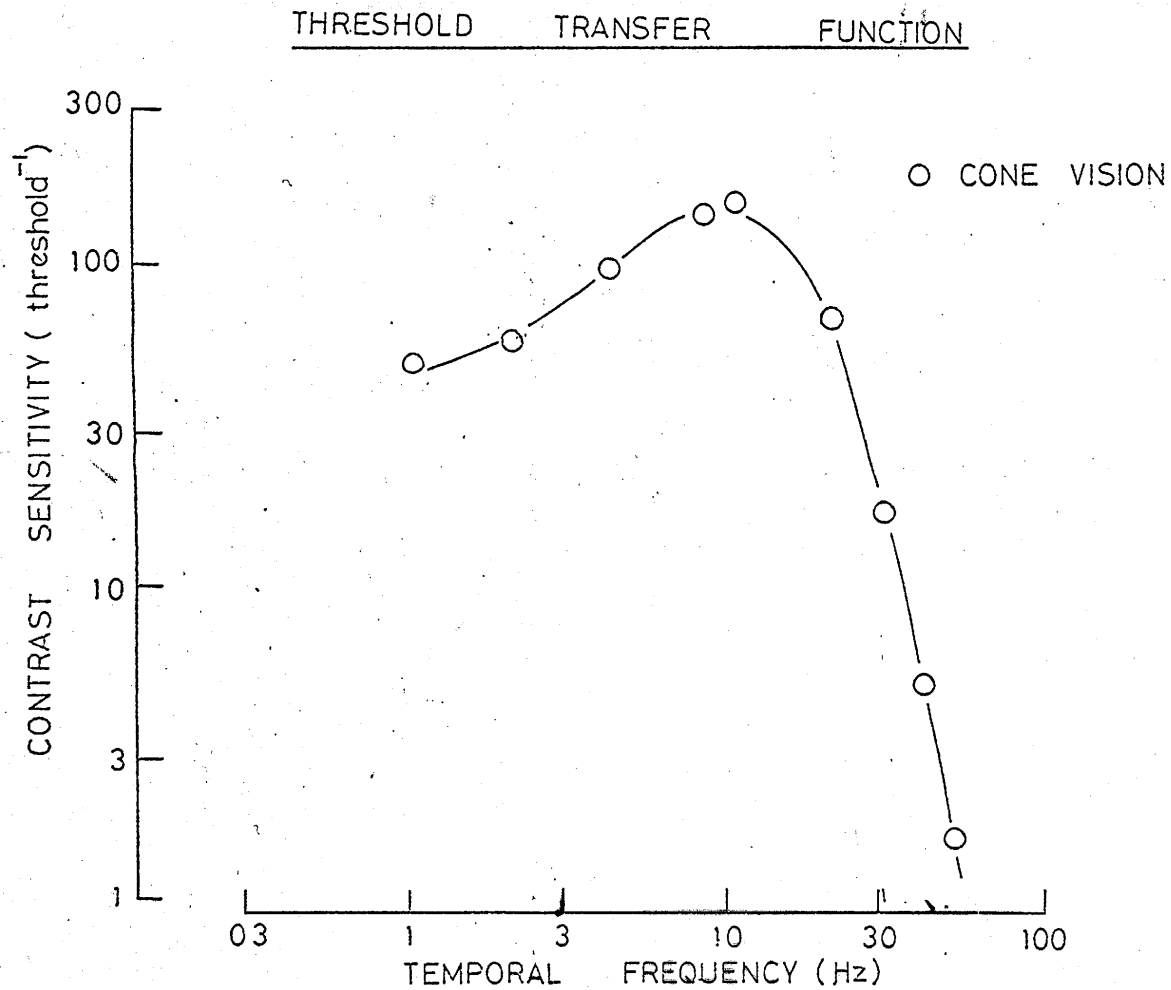
COMPARATIVE SENSITIVITY FUNCTIONS



Temporal response of a neuron

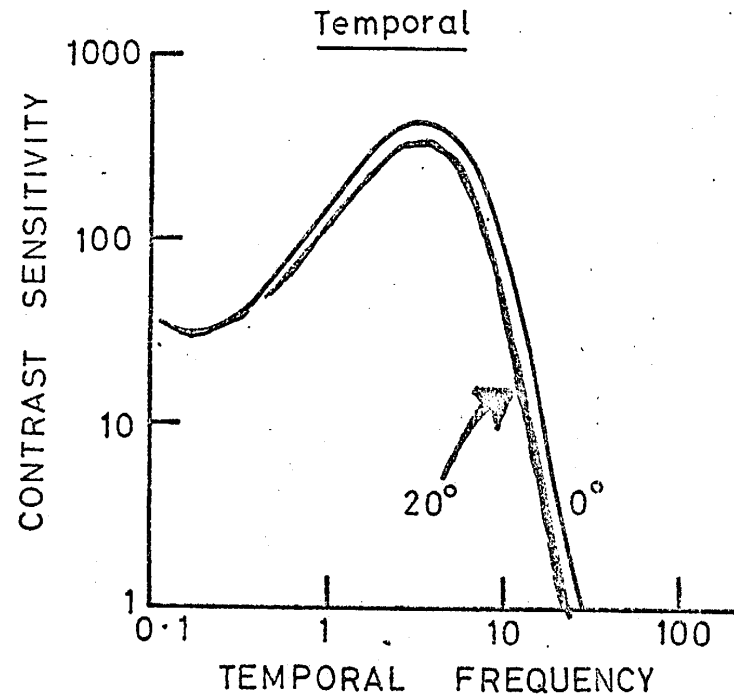
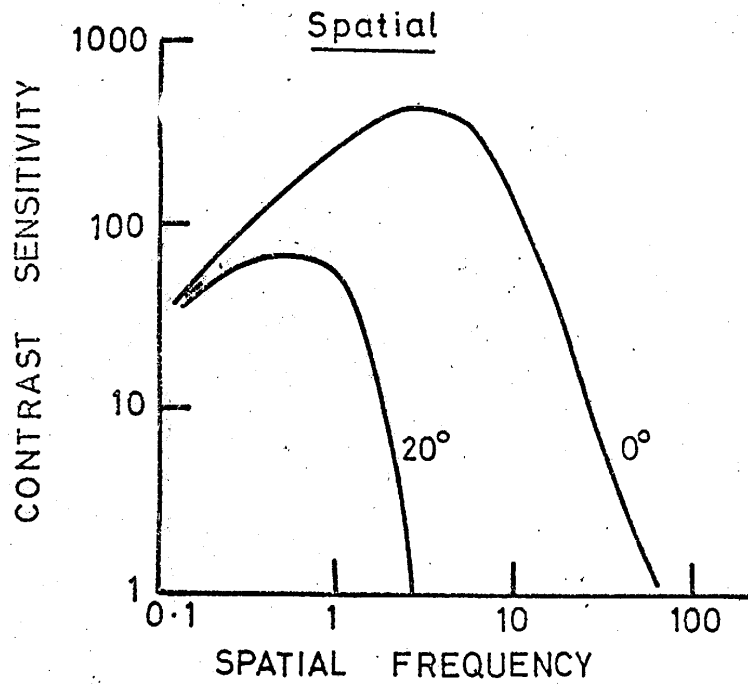


Human temporal sensitivity



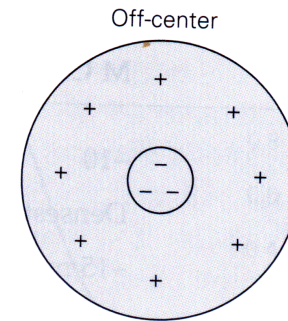
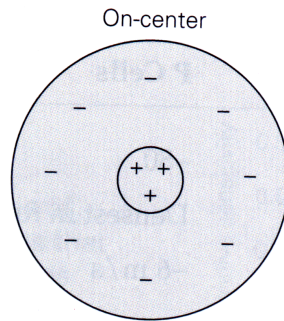
Peripheral sensitivity

EFFECT OF ECCENTRICITY

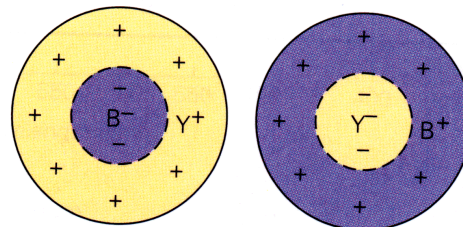
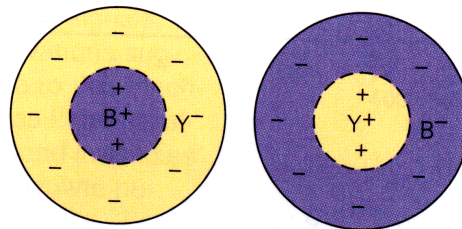
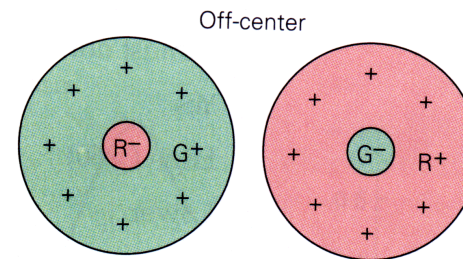
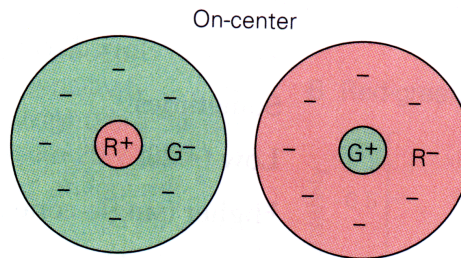


Types of retinal ganglion cell

A M cells



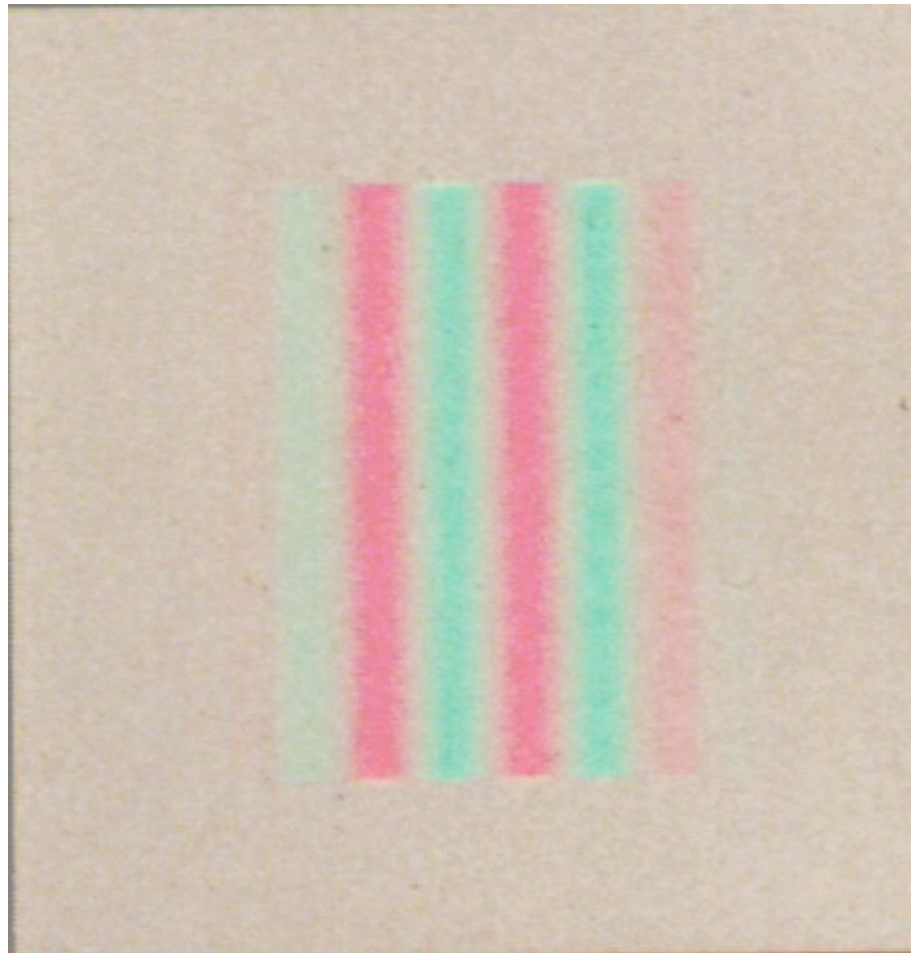
B P cells



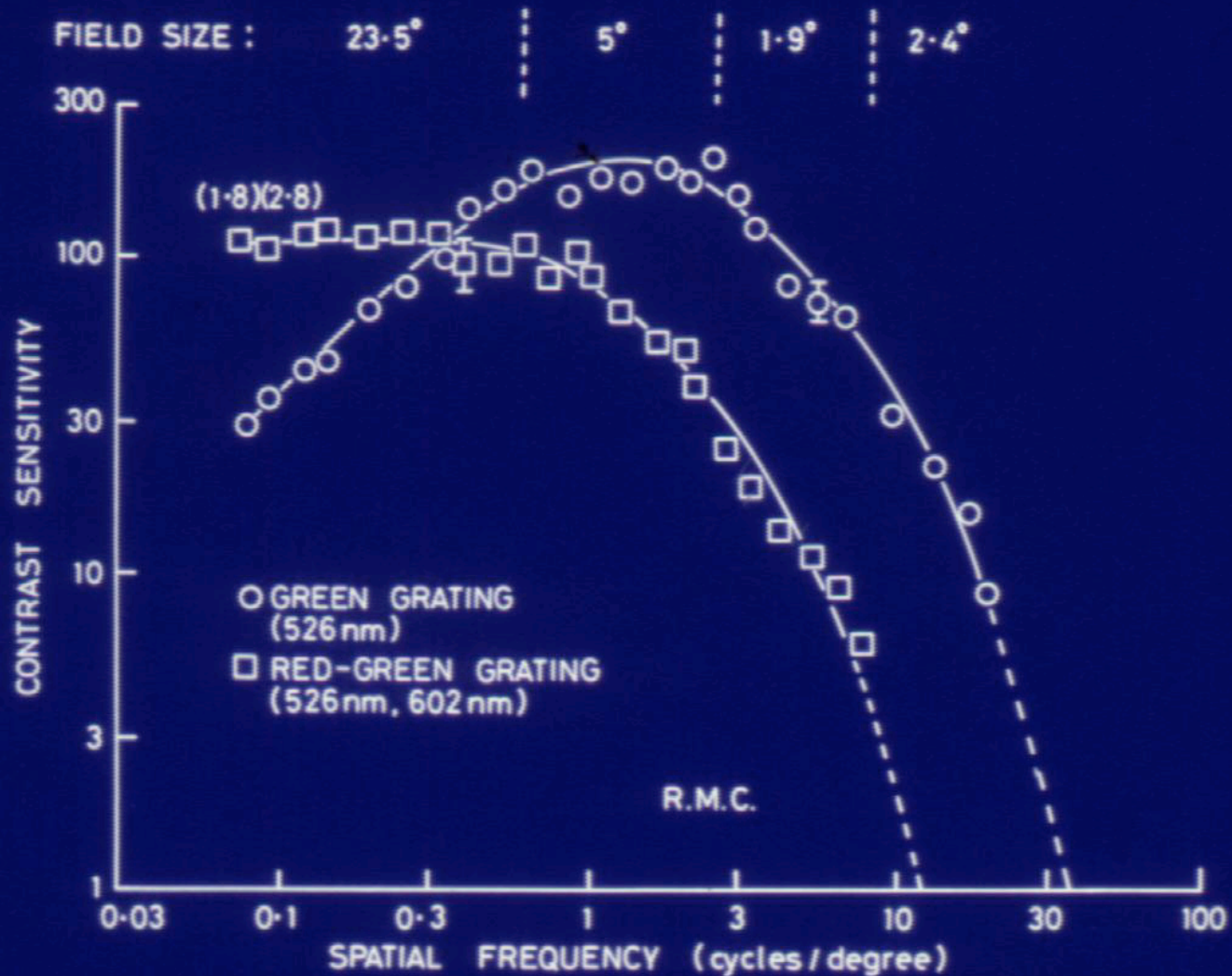
Magno & parvo layers

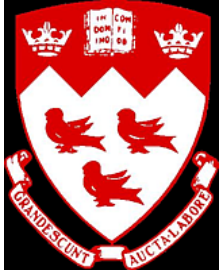


An isoluminant grating



Colour vs luminance CSF





Amblyopia: a new view

AMBLYOPIC PERCEPTION?



IS IT BLURRED?



IS IT OF LOW CONTRAST?



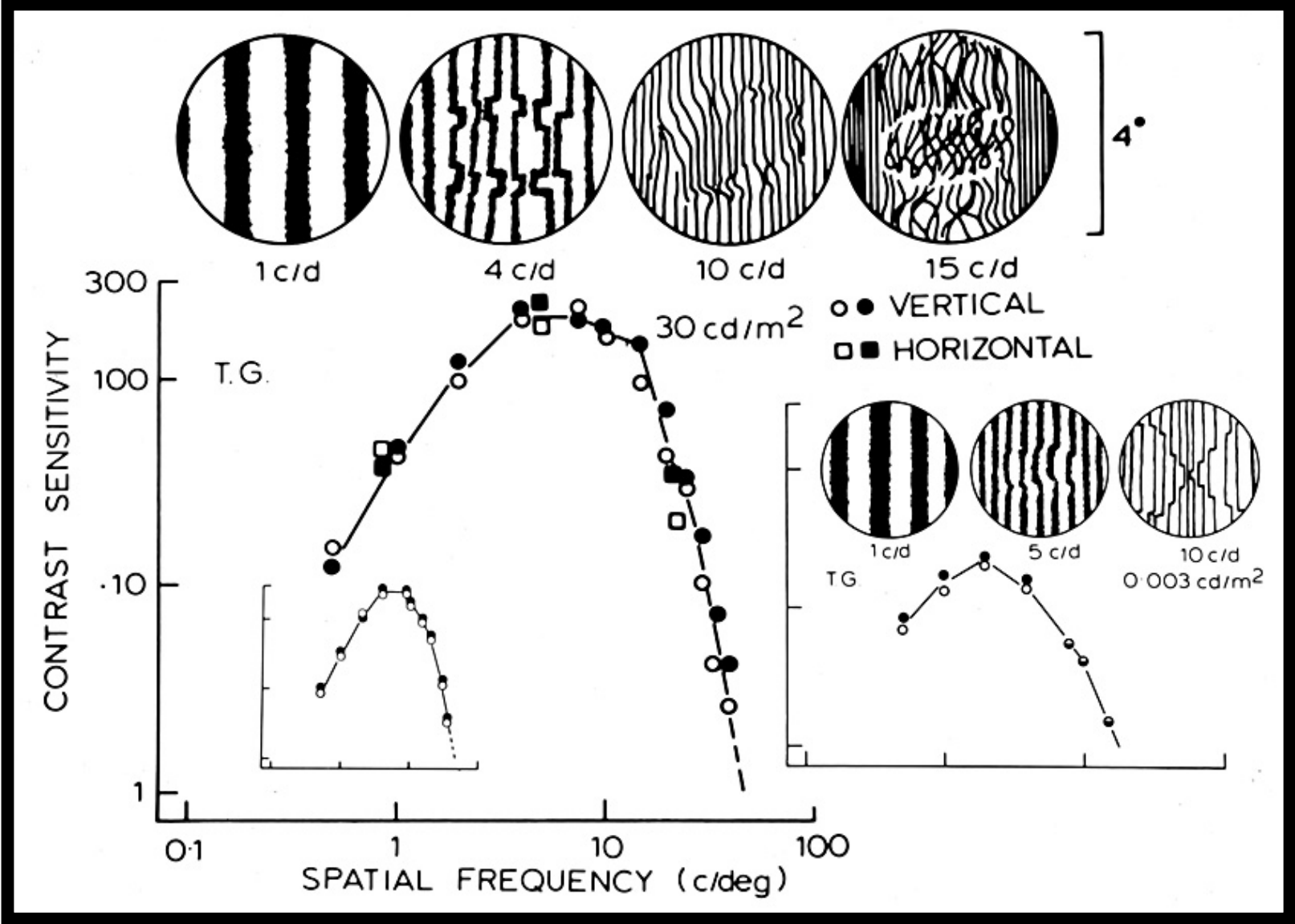
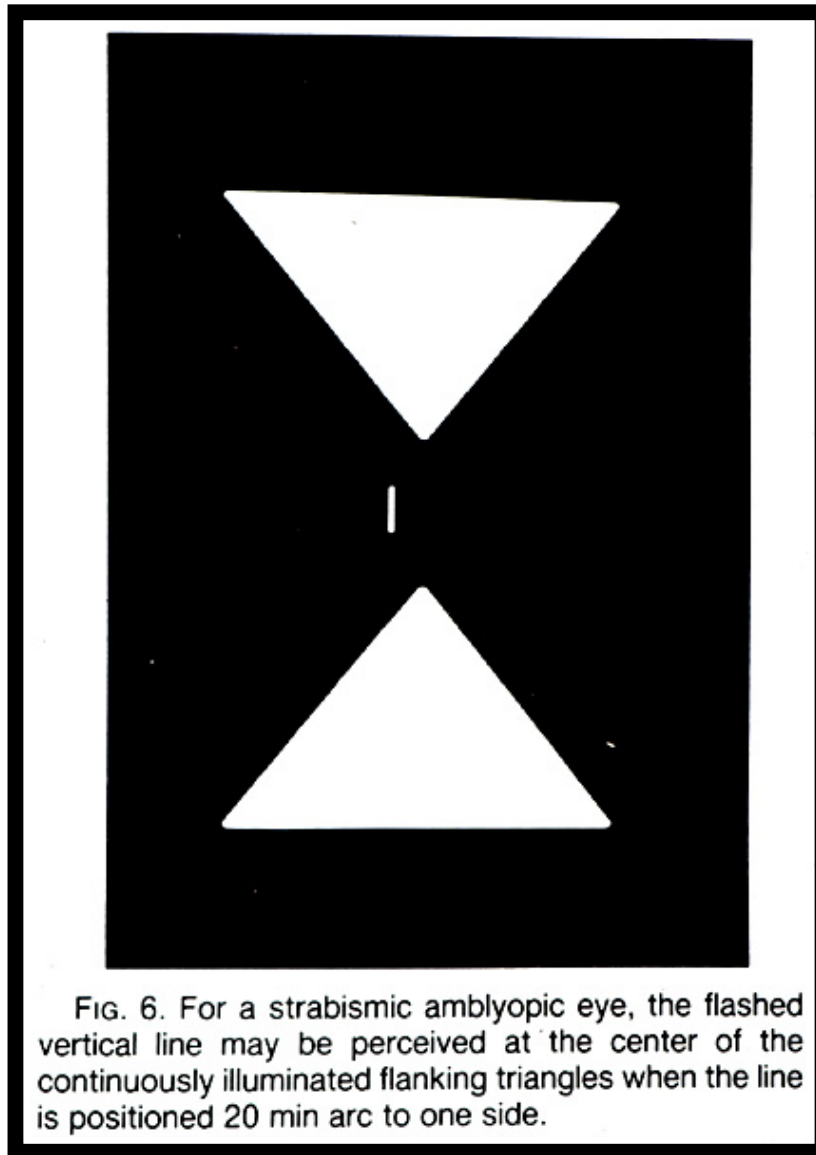
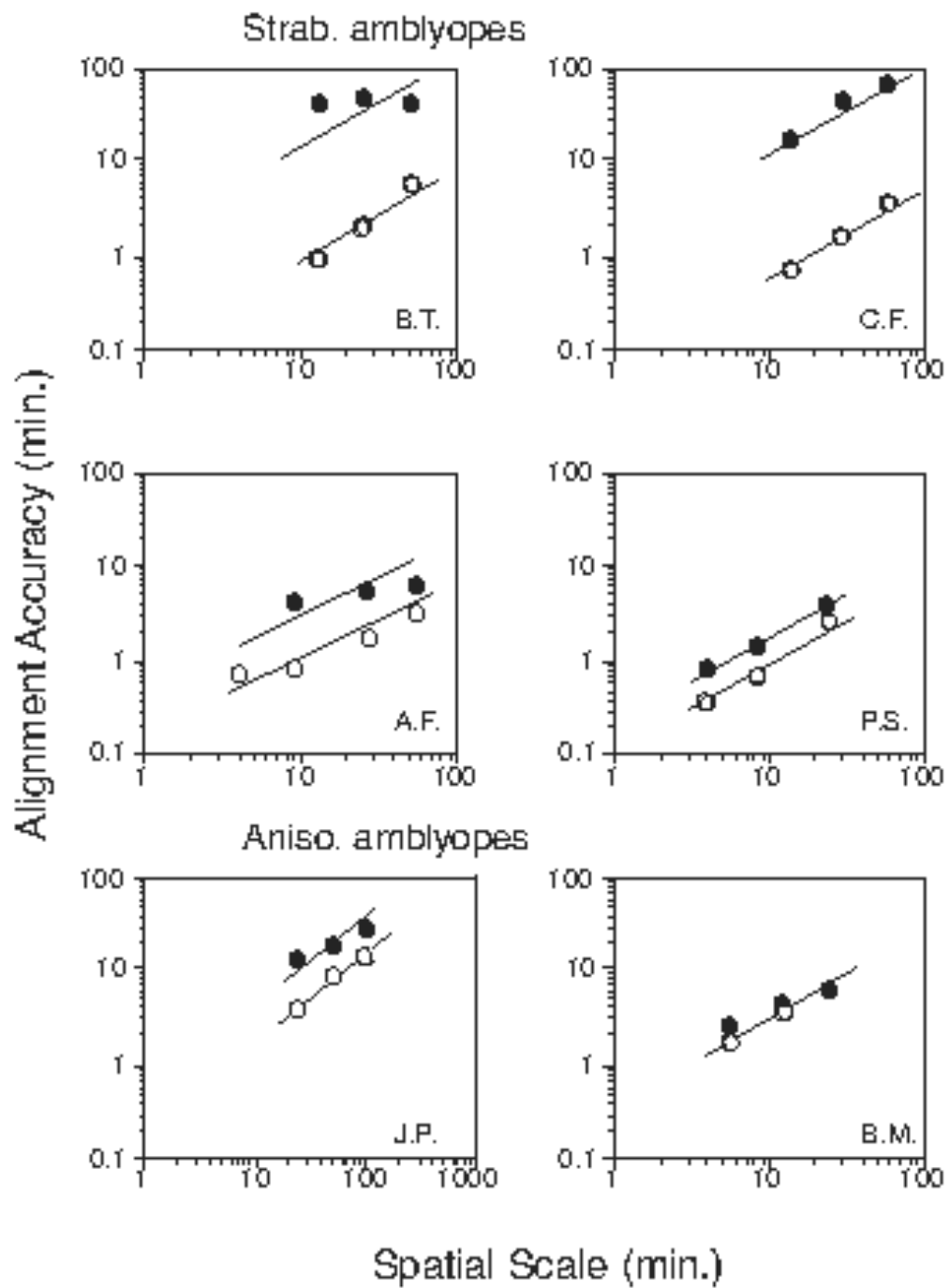




FIG. 7. When monocularly fixating the central line with the strabismic eye, an amblyope *perceived* the left-hand space equal to the right-hand space; physically, the right-hand line was 1° from the fixation target.



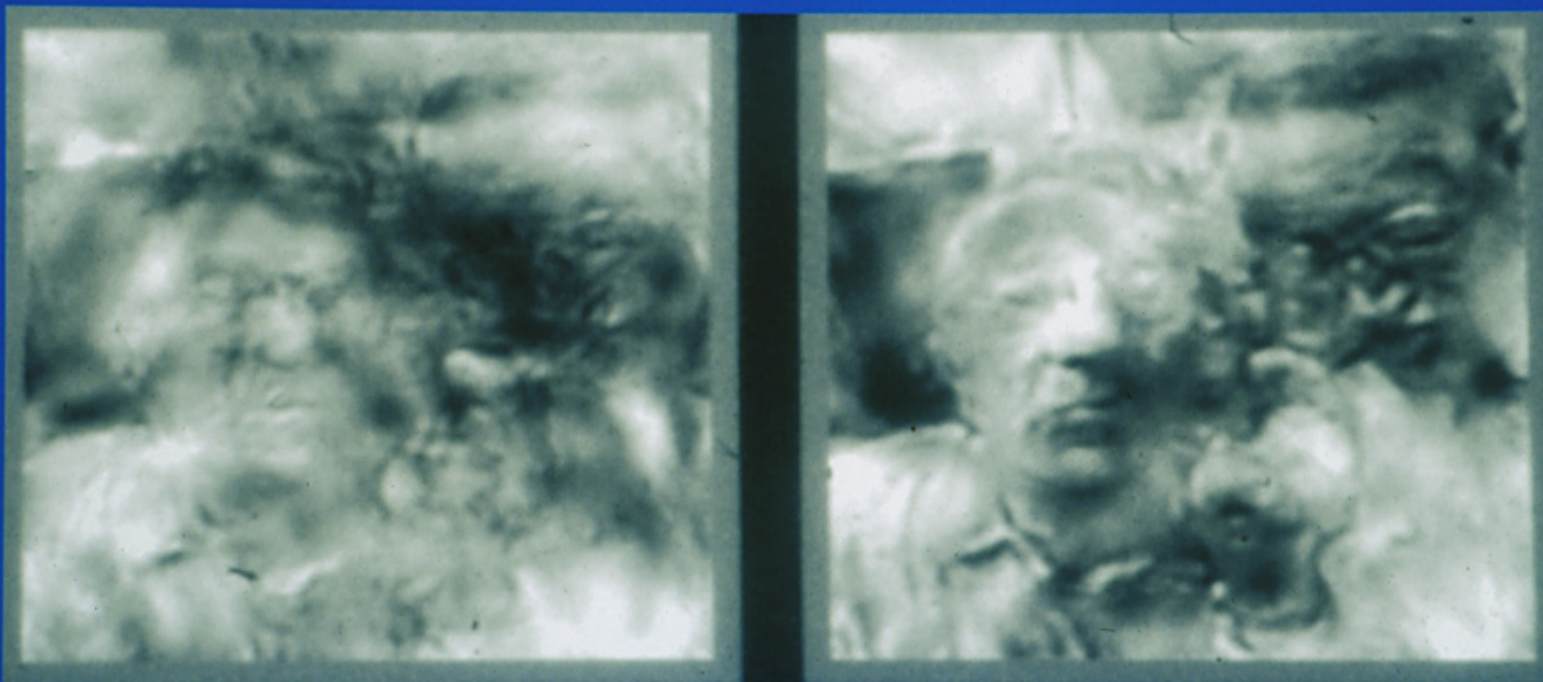


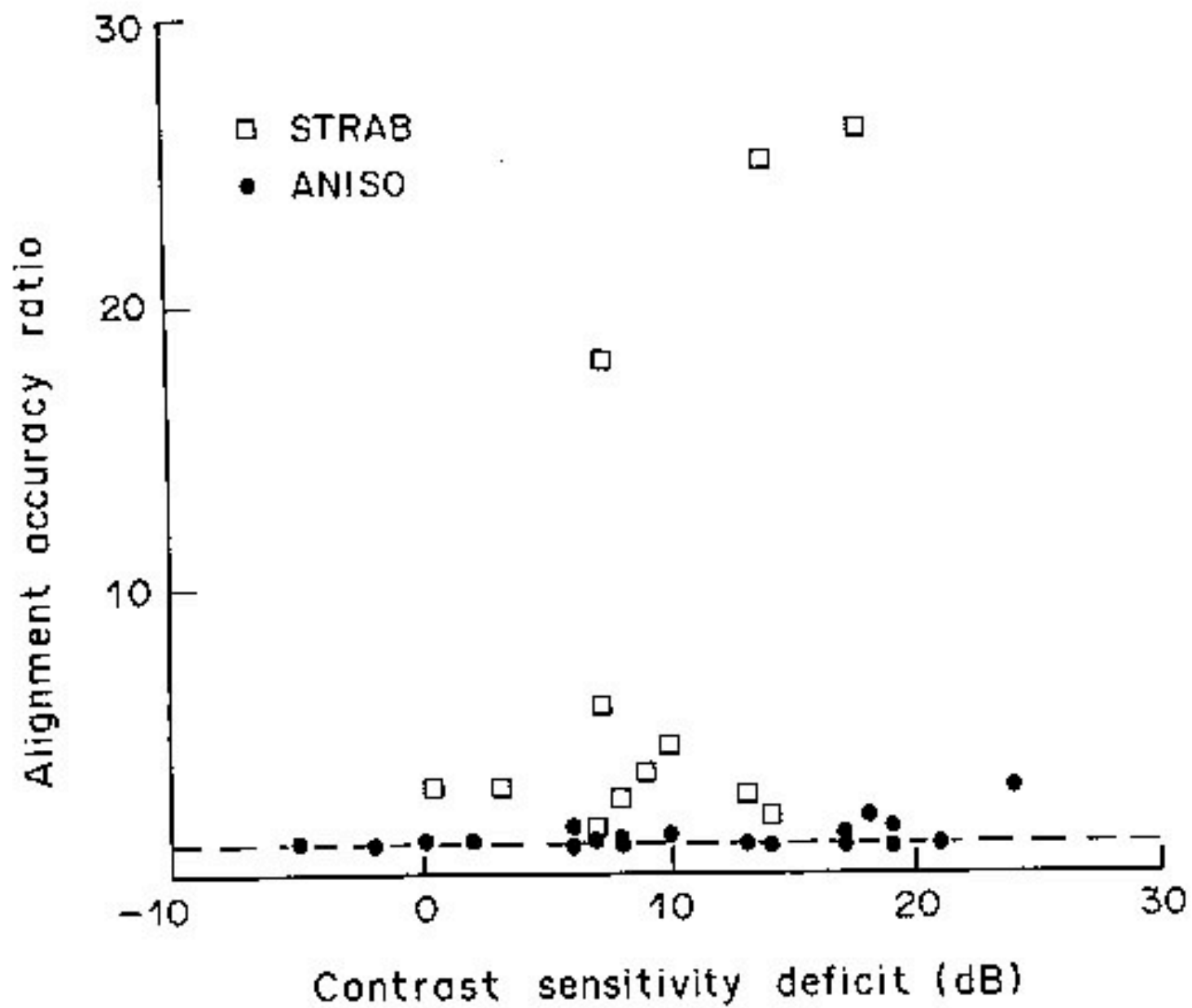


DISTORTED LIKE THIS?

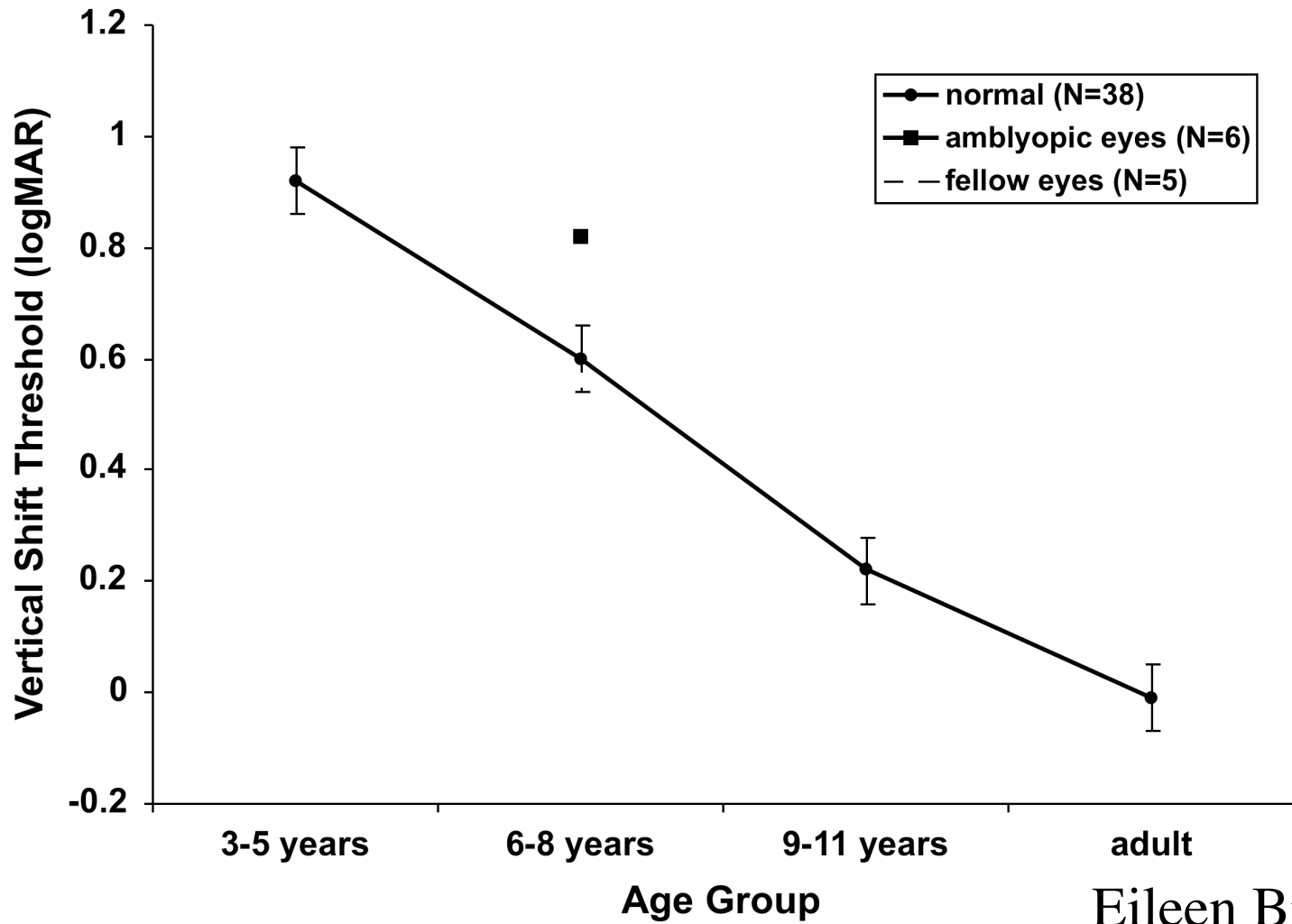


DISTORTED LIKE THIS !

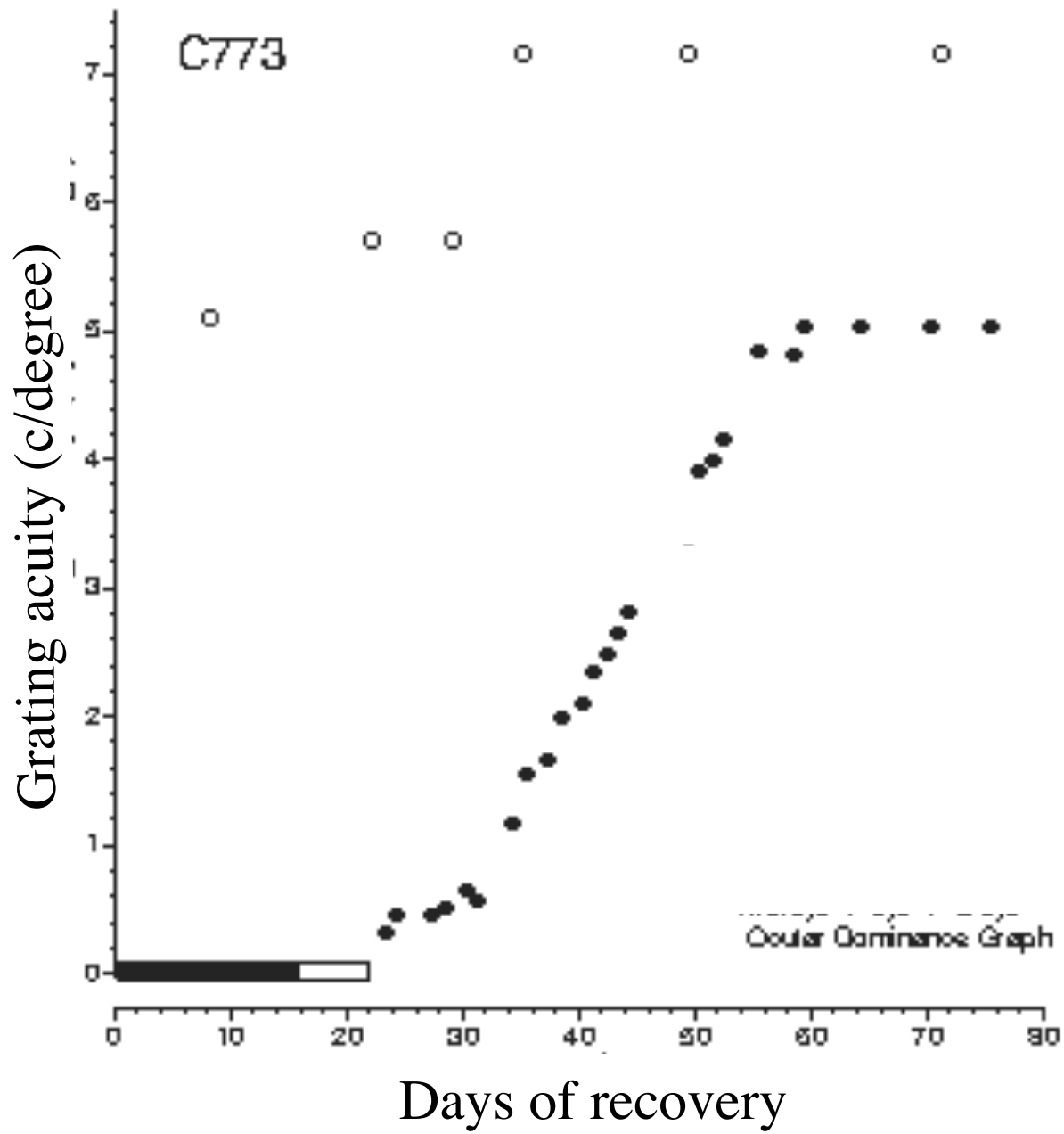




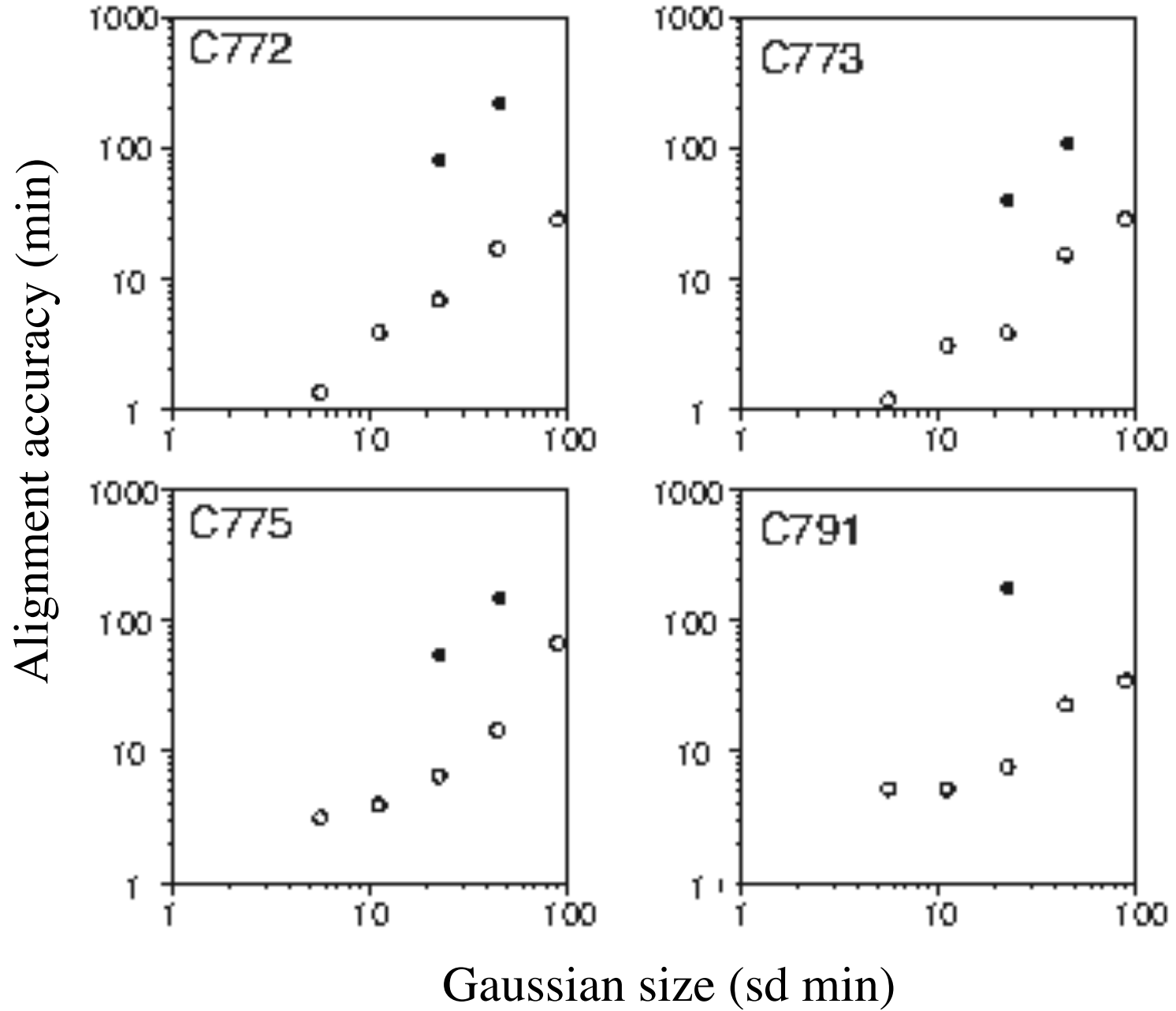
Visual Development



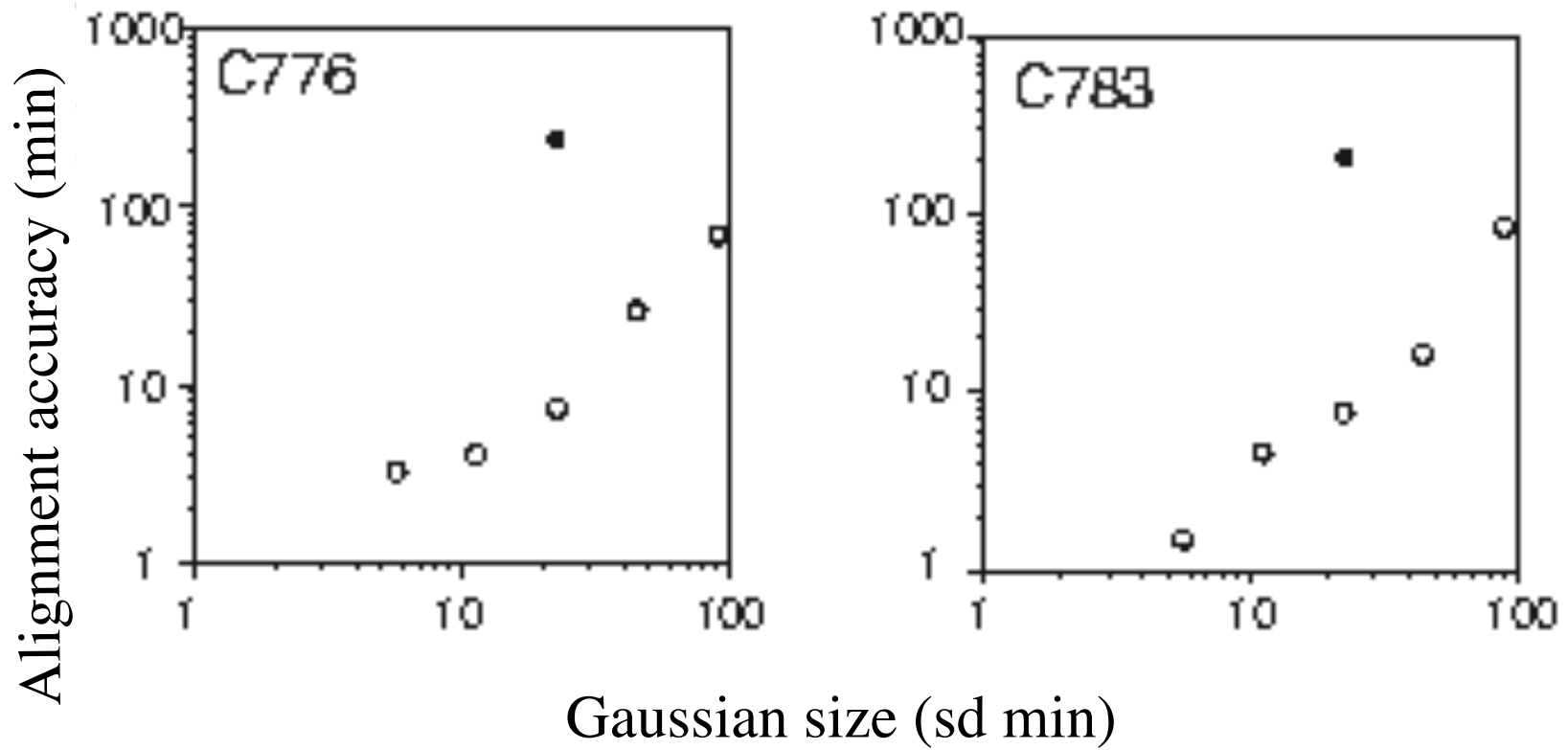
Eileen Birch



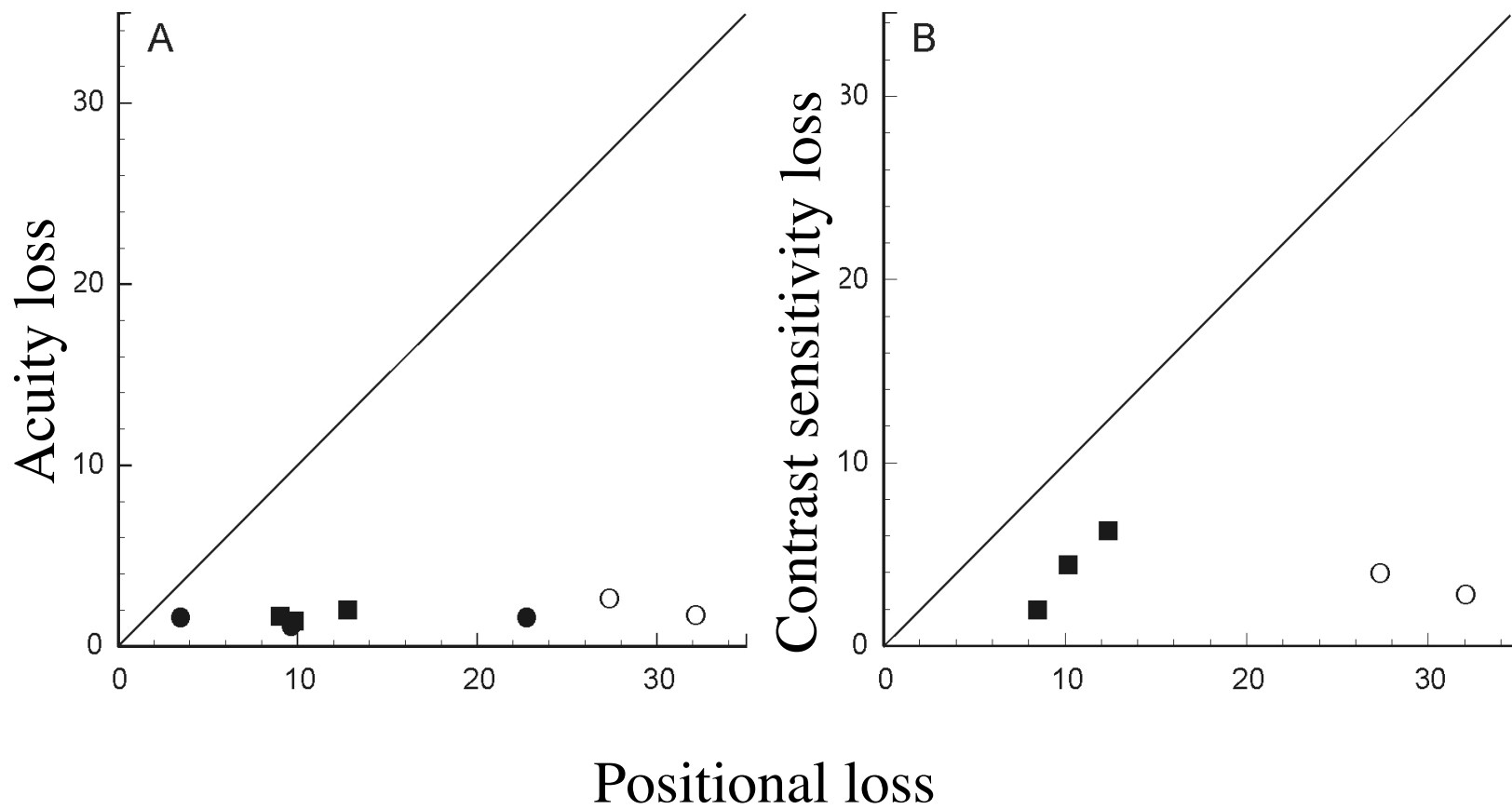
Monocular deprived cats



Strabismic cats



Unrelated to visibility loss



Stimuli: positional sensitivity



Amblyopes

