

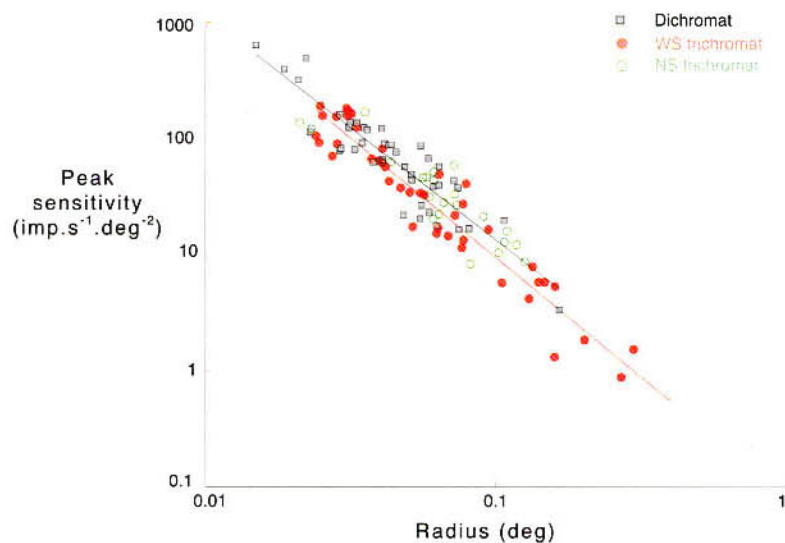


Visual acuity and colour vision

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The most common form of colour vision deficiencies affects the red-green colour dimension. Study of dichromatic "severe red-green colour blind" humans suggests that high-acuity achromatic ("black and white") form vision is unaffected, or even enhanced, in the absence of red-green colour vision. We compared the sensitivity to achromatic stimuli of individual neurones in dichromatic and trichromatic primates. The results showed almost identical acuity and contrast sensitivity in all individuals, regardless of their colour vision status. The results are consistent with the hypothesis that signals for red-green colour vision are carried as an "extra dimension" in the nerve pathways designed for high-precision spatial vision.



Sensitivity and acuity of receptive fields in parvocellular-pathway neurones of marmosets. The data from dichromatic marmosets shows almost complete overlap with that from trichromatic animals with 7 nm (NS) or 20 nm (WS) separation between red and green cone pigment spectral peaks. From Blessing et al., 2004.