

Are colour oil droplets the basis of the pigeon's chromatic space?

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Variable proportions of four kinds of cones with different coloured oil droplets, are distributed in all retinal quadrants. Pigeons can learn and generalize colour recognition in any portion of their visual field. Since they possess trichromatic vision, yet only one cone photopigment has yet been described, it was postulated that colour vision must be mediated by the cut-off filter properties of these coloured oil droplets. A study was conducted wherein behavioural data of colour discrimination, obtained in a sort of matching experiment, were compared with the spectral properties of oil droplets measured in the same bird. In the "red" zone of the spectrum, the best colour discrimination of the pigeon was found to coincide with the steepest slope of the absorption spectra of its own red droplets (590-600 nm). Behavioural data in the "blue" zone are not conclusive. Oil droplets absorption spectra in this zone suggest that colour discrimination for shorter wavelengths might be related to