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Photopic Spectral Sensitivity and Wavelength Discrimination in the Horse (*Equus caballus*)

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A number of studies have demonstrated that horses have chromatic vision and are able to distinguish colours from grey, independent of brightness. Anatomical and physiological data support the view that they are dichromats. In two experiments we provide behavioural evidence for their dichromacy. In the first we measured photopic spectral sensitivity. Using a spatial two alternative forced choice task, two horses were required to discriminate a coloured circular patch on an achromatic background from a blank field over a range of wavelengths .

The obtained spectral sensitivity function was consistent with the presence of two cone classes with predicted spectral peaks at 429 nm and 545 nm, respectively. In the second experiment we obtained wavelength discrimination functions. The same animals were required to make discriminations between a series of standard wavelengths and a series of comparison wavelengths across the spectrum. The resultant wavelength discrimination function showed a single minimum at approximately 480 nm, which is also consistent with the view that horses are dichromats. Key Words: Horse, colour vision, spectral sensitivity, wavelength discrimination