Colour vision and the genetics of colour vision defect

Title	Colour vision and the genetics of colour vision defect
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Abstract	Colour vision is one of the visual functions which is very important in daily life. The phenomenon of normal colour vision has been explained briefly in order to understand colour vision defects.The theory of colour vision has been proposed for a long time by Young and Helmholtz. According to this theory there are three kinds of cones in the retina, namely red, green, and blue cones. Each cone has maximum absorbance for red, green, and blue colours respectively, but their absorbance curves overlap each other.The absence of the function of red, green, and blue cones will cause red blindness (pro tanopia) , green blindness (deuteroanopia), and blue blindness (tritanopia) respectively. On the other hand, partial disturbances of red, green, and blue cones give rise to red weakness (protanomaly), green weakness (dcuteroanomaly), and blue weakness (tritoanomaly).The great majority of colour defects are hereditary or genetic diseases. Congenital red and green blindness are X-linked recessive diseases. The location of red and green colour vision genes and their alleles (genes for red and green colour vision defects) are in the end of the long arm of chromosome X. The two genes arc very close to each other. Congenital blue colour defect, on the other hand, is an autosomal recessive disease, and the location of the gene is at the end of the long arm of chromosome 7.Key Words: ophthalmology - colour vision defects - X-linked recessive diseases - autosomal recessive diseases - gene locations
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