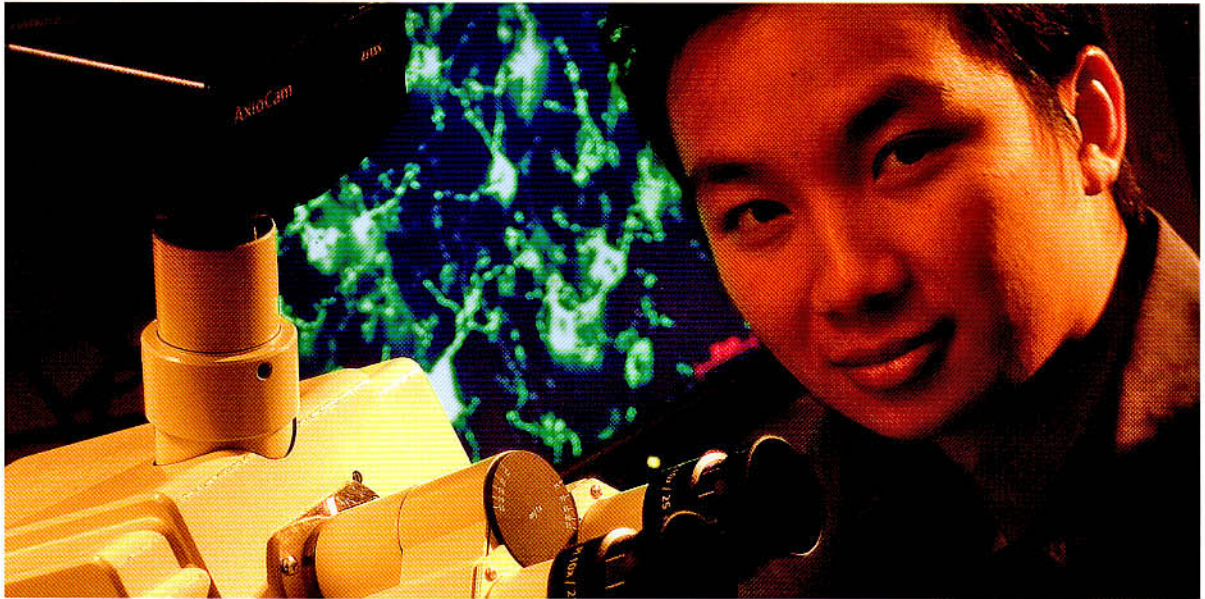


Colour pathways in the retina

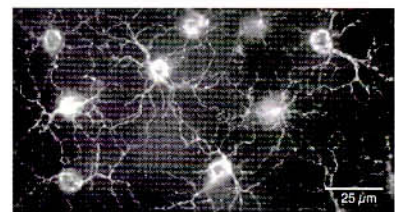
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The first step in the visual process occurs when light enters the eye and activates specialised nerve cells called photoreceptors. The photoreceptors for daytime and colour vision are called cones because of their cone-like shape. Although the properties of the cones are well known, the way in which they are functionally connected to nerve pathways for vision is not clearly understood.

Clinical research has shown that reduced sensitivity to blue light is a feature of the early stages of certain visual diseases (for example glaucoma), so it is important to know how short wavelength sensitive (blue) cones contribute to visual functions such as form, motion and colour perception. We are analysing the

connections of blue cones to other cell types in the retina. The different cell types can be identified with specific antibodies. The figure shows the so-called DB6 cells as seen in a whole mount view. The cell bodies and the dendritic processes of several cells are visible.



The mosaic of DB6 type bipolar cells in the monkey retina



Connections of blue cones in the primate retina. Triple-label for DB6 bipolar cells (upper right), cone photoreceptor synapses (lower right) and blue cone cell membrane (lower left) are combined (upper left) to show that the DB6 cell contacts the blue cone, in addition to other cones in its dendritic field.

Using multiple-label techniques we found that the dendritic processes of these DB6 cells receive input from all cone types including the blue cones. The figure shows the DB6 cell dendrites (red) making contact with the synaptic terminal of a blue cone (blue). These data show that blue cones may contribute to multiple synaptic pathways in the retina.