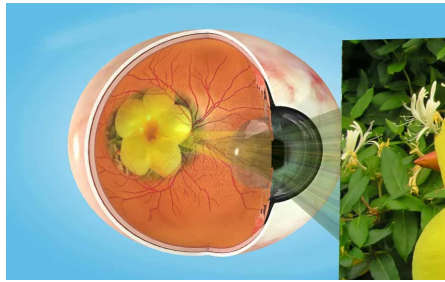


## COLOUR VISION

### Q How does colour vision work?

A The ability to see colour adds an extra dimension to the way that we see the world. In fact, physically there is no such thing as colour. Colour is simply the way that we perceive different wavelengths of light.



Colour vision starts with the absorption of light by small cells known as cones which form part of the retina at the back of the eye. The normal retina contains three types of cones; some cones which respond best to short wavelength light (blue), some that respond best to medium wavelengths (green) and some that respond best to longer wavelengths (red). The signals from the cones are coded and then sent to the brain where the relative amount of red, green and blue light coming from an object is analysed and assigned a colour perception. Individuals with normal colour vision can discriminate over five million different colours and shades.

### Q Colour vision deficiencies?

A Approximately 1 in 12 (8%) males and 1 in 200 (0.5%) females are born with cones which are different to normal.

Very occasionally, people are born with only one type of cone (cone monochromats). These individuals are colour blind – that is they cannot tell the difference between any two colours.

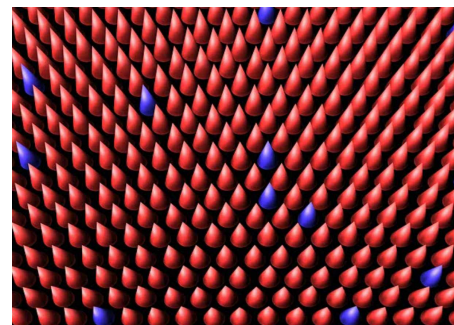
More commonly, people are born with two types of cones (dichromats). It may be the blue

cone that is missing (tritanopia), the green cone (deuteranopia) or the red cone (protanopia). These individuals are referred to as 'colour deficient' as they are not able to tell the difference between a wide range of colour combinations. For example, a protanope will not be able to tell the difference between green, yellow or red. Some colours may also look rather dim compared to somebody with normal colour vision.

The most common form of colour vision deficiency is where all three cone types are present but one type is different from normal (anomalous trichromats). It may be the blue cone that is different (tritanomaly), the green cone (deuteranomaly) or the red cone (protanomaly). These individuals are also referred to as colour deficient although they will not confuse such a wide range of colours as those who are missing a cone (dichromats). This type of colour vision deficiency can range from very mild to almost as severe a dichromacy.

### Q How do I know if I have a colour vision defect?

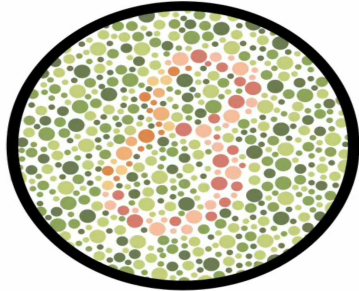
A While some people with colour



vision deficiencies notice that their colour vision is different to other

people's, most are unaware of the condition until they are tested. Your optometrist will be able to test your colour vision and advise you on the implications if you are found to have a colour vision defect.

**Q Will it get worse?**



A No – congenital colour vision defects are stable throughout life.

**Q Is there a cure?**

A There is currently no cure for congenital colour vision deficiencies. It is simply not possible to repair or replace the cones in the retina. However, most people with colour vision deficiency do learn to adapt to their condition. You will usually find a way of compensating for your difficulty with colours.

**Q What effect will it have on everyday activities?**

A Most colour vision defects have very little effect on everyday activities. You may have some difficulty matching certain colours or using colour coded schemes. However, some occupations do require good colour vision so if you have a colour vision deficiency, it would be worth checking that your colour vision will be good enough to meet the requirements.

Jobs where colour vision is particular important include some positions in the armed forces, customs and excise officers, fire service officers, hospital laboratory technicians,

pharmacists, electricians, those involved in aviation (such as pilots and air traffic controllers), those involved in paint, paper, or textile manufacture, railway drivers and maintenance staff.

If your child has colour vision deficiency, they may struggle at school unless the teacher is made aware of the problem. Many learning materials are colour coded, and your child may fall behind if their learning environment is not adapted accordingly.