

# Pupil

## Location

Ground floor, All About Us exhibition



## In a nutshell

Our pupil developed to control the light levels into the eye.

## What to do

If you look down the eyepiece you can see a reflection of your own eye. Turn the dial to alter the brightness of the light and see how this affects the size of the pupil.

## Time Required

KS3 & KS4 2 minutes per student.

## What's happening?

The iris is the group of tiny muscles which control the size of the pupil - the hole that lets light into your eye.

In bright light, the pupil gets smaller to limit the light and protect your retina; in dim light, the pupil grows larger to let in as much light as possible. When you move between bright and dim areas, your pupils adjust rapidly to the change in brightness.

Your pupils can also reflect your feelings. When you look at something you like, your pupils may grow larger. When you look at something you don't like, the pupil may shrink.

The pupil is the hole - the organ that controls its size is the iris. The iris is the only internal organ visible from the outside world. It has muscles running around the circumference of the iris (circular muscle fibres) and also across the radius (Radial muscle fibres). When the circular muscles contract the pupil gets smaller; when the radial muscles contract the pupil gets larger.

Dilated pupils can be caused by many things including pleasure, arousal, drugs and alcohol and also brain injuries and disease.

The pupil of your eye is also the source of the red eyes you sometimes see in flash photographs. When the bright light of a camera flash shines directly through the pupil, it can reflect off the red blood of the retina (the light-sensitive lining at the back of your eye), and bounce right back out through the pupil. If this happens, the person in the photograph will appear to have glowing red eyes.

## Curriculum links

Curriculum links	
<b>KS3</b>	<p><b>Science - Light waves</b></p> <ul style="list-style-type: none"> <li>- use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye</li> <li>- light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras</li> </ul> <p><b>English - Reading</b></p> <ul style="list-style-type: none"> <li>- learning new vocabulary, relating it explicitly to known vocabulary and understanding it with the help of context and dictionaries</li> </ul>
<b>KS4</b>	<p><b>Science - Nervous coordination and control in humans</b></p> <ul style="list-style-type: none"> <li>- explain how the structure of a reflex arc is related to its function</li> <li>- <b>(single)</b> explain how the main structures of the eye are related to their functions</li> </ul>

## Relates to:

Workshops & Theme Days	Shows	Trails	Other exhibits
<ul style="list-style-type: none"> <li>Brain Lab (KS3 &amp; KS4)</li> </ul>	<ul style="list-style-type: none"> <li>How my body works (KS3)</li> </ul>		<ul style="list-style-type: none"> <li>Startle</li> <li>Vein viewer</li> </ul>

