

A Focus on Eyes

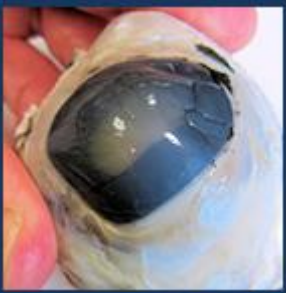


Curricular content:








- SCN 3-11a: By exploring the refraction of light when passed through different materials, lenses and prisms, I can explain how light can be used in a variety of applications. Describes the practical applications of refraction in everyday situations, e.g. in corrective lenses in glasses.
- SCN 3-12a: I have explored the structure and function of organs and organ structures and can relate this to the basic biological processes required to sustain life.


Materials

- Laminated white card / tray to carry out the dissection.
- Laminated protocol
- Sheep eye (from Blades Biological)
- Dissection kit (including scissors, scalpel and forceps)
- Tongs
- Disinfectant
- PPE, e.g. lab coat and gloves
- Disposal bag
- Paper towels
- Plasters (cover any cuts/grazes prior to starting to handle the animal material).

Method

1.	Wash your hands with soap and warm water	
2.	Examine the outside of the eye. Can you identify the sclerotic coat (sclera) and cornea? Can you see the iris and pupil? Note the fat / muscle – consider the function of these.	
3.	Using scissors, cut away the fat and muscle to expose the optic nerve at the back of the eye.	
4.	Holding the eye very firmly with tongs, use a scalpel to make a very small incision in the cornea to allow the aqueous humour to run out. This liquid is mostly water and maintains the shape of the cornea.	

5.	Make an incision in the sclerotic coat in the middle of the eyeball. Take great care – some pressure will be required.	
6.	Now use scissors to cut through the sclerotic coat all the way round the eye until the eye is in 2 halves.	
7.	Covering the front half of the eye is the transparent cornea. It is a tough protective layer. Together with the aqueous humour, the cornea has an important role to play in the refraction of light. It should now be very obvious that the pupil is a hole to let light in.	
8.	It should be possible to pull the iris away from the cornea in one piece. The pupil is the hole in the centre of the iris. The iris controls the size of the pupils.	
9.	The back of the eye is filled with a clear jelly, the vitreous humour, which helps maintain the shape of the eyeball. The lens is a harder jelly lump which can easily be separated from the vitreous humour.	
10.	Once the lens has been removed, its magnifying effect can be demonstrated by placing it on a piece of print. Make sure that learners understand that “magnifying” is not the role of the lens in the eye. This is also a good opportunity to discuss “accommodation” – the ability of the lens to change shape in order to changes its focal length.	
11.	Now that the vitreous humour has been removed from the back of the eye, it is possible to see the blood vessels that form part of the retina. The cells of the retina convert light energy into electrical impulses which travel to the brain via the optic nerve.	

12.	<p>The retina can be moved around, but remains attached at the blind spot. The blind spot corresponds to the optic nerve.</p>	
13.	<p>Clean up:</p> <ul style="list-style-type: none"> - Any instruments used in the dissection should be cleaned using hot water and detergent. - Swab the work area with disinfectant. - Wash your hands with soap and warm water. 	

Video to support the dissection:

[Part 1](#)

[Part 2](#)

[Part 3](#)