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## Eyes explained

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### Summary

- The iris controls the amount of light entering the eye.
  - The lens has tiny muscles which change its shape and allow it to focus on near or far objects.
  - The image hits the retina and is sent to the brain along the optic nerve.
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The eye is our organ of vision. Its complicated design means that an image can pass through its many layers and end up crisply focused on the back of the eye, called the retina. The retina is covered with light sensitive cells, called rods and cones. Information on shape, colour and pattern is picked up by the retina and carried to the brain via the optic nerve.

### The different parts of the eye

Starting from the front of the eye, the various parts include:

- conjunctiva – the thin membrane covering the eye
- sclera – the whites of the eye
- cornea – the clear front surface (a fixed focus lens)
- aqueous humour – the fluid that fills a small chamber just behind the cornea
- iris – the coloured part of the eye which is a muscular ring
- pupil – the hole inside the iris ring
- lens – the fine focus lens
- vitreous humour – thick, jelly-like fluid that fills the eyeball and keeps it firm
- retina – the curved back layer of the eye covered in light sensitive cells, called rods and cones, that can 'see' shape, colour and pattern
- optic nerve – sends information from the retina to the brain.

### Depth of field

Humans have binocular vision. The right and left eye each see a slightly different view. The brain combines the two views and the result is a three-dimensional image.

### Focusing

The cornea has a fixed focus. Adjustments in focus are made by the lens that sits just behind the iris. It has tiny muscles that change its shape according to how far or near the eye needs to focus.

### Controlling the amount of light

The coloured part, the iris, is a muscular ring or sphincter which controls the amount of light entering the eye. It causes the pupil to dilate (get bigger) in darkness so as to let in more light. In bright light, the iris causes the pupil to constrict (get smaller).

### The blind spot

Where the optic nerve enters the back of the retina, there are no rods or cones. This tiny patch of blindness in both eyes is compensated for by the brain. It processes the image surrounding the blind spot then fills in the blanks accordingly.

You can 'see' your blind spot by drawing two dots on a piece of paper, around 10 centimetres apart. Close your

right eye and look at the dot on the right. Move the paper back and forth until the dot on the left seems to disappear.

### **Tears**

Tears lubricate the eye and stop the surface from drying out. A thin film of tears is swept over the eye surface every time you blink. Stray eyelashes and particles of dust are also collected by the tears and flushed out of the eyes.

### **Common eye complaints**

Some common complaints of the eye include:

- **cataracts** – the lens of the eye becomes cloudy
- **conjunctivitis** – inflammation of the membrane covering the eye
- **glaucoma** – a build-up of fluid inside the eyeball
- **vision problems** – like far or near sightedness.

### **Where to get help**

- Your doctor
- Your local optometrist
- Optometrists Association of Australia Tel. (03) 9663 6833
- Royal Victorian Eye and Ear Hospital Tel. (03) 9929 8666

### **Things to remember**

- The iris controls the amount of light entering the eye.
- The lens has tiny muscles which change its shape and allow it to focus on near or far objects.
- The image hits the retina and is sent to the brain along the optic nerve.

**This page has been produced in consultation with and approved by:**

Royal Victorian Eye and Ear Hospital (RVEEH)

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