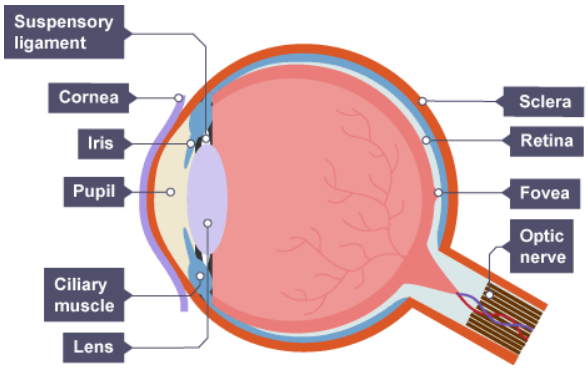
15. Eye



sensory receptor

Cornea: Refracts light into eye

Iris: Controls how much light enters **pupil** (hole)
Coloured ring of circular/longitudinal muscle

Lens: Refracts/focusses light on retina
Changes shape to accommodate

Sclera: Tough white outer layer – protects eye from injury

Retina: Covered in light sensitive receptor cells: rods & cones
Rods: detects light intensity – *side*
Fovea:
Cones: detects colour of light – *middle*

Optic nerve: Carries electric impulses from receptors to brain

Light enters eye: through pupil
Iris alters pupil diameter

Bright light
Circular: contract
Longitudinal: relax
Pupil constricts/smaller – less light enters eye

Dim light
Circular: relax
Longitudinal: contract
Pupil diameter widens – more light enters eye

Accommodation
Cornea refracts light rays – brings them together on retina
Image flipped/smaller
Lens can be made thinner/thicker to make clearer

Near
Ciliary muscle: contracts
Suspensory ligaments: slacks
Lens – thick / more rounded – light refracted more
Focal length: shortened

Distant
Ciliary muscle: relax
Suspensory ligaments: tightens
Lens – thin / less rounded – light refracts less
Focal length: lengthened

16. eye defects

cataracts
Cloudy patch on lens – stops light entering normally / blurred vision / colours less vivid / difficulty seeing in bright light
Replace lens with artificial

long-sightedness
Lens wrong shape – doesn't bend light enough / eyeball too short
Light from near objects focussed behind retina
Convex lens: converge light rays

short-sightedness
Lens wrong shape – bends light too much / eyeball too long
Light from distant objects focussed in front of retina
Concave lens: diverge light rays

colour blindness
cones in retina don't work properly
Can't fix – cone cells can't be replaced

17. How to correct: