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Empowering Communities...



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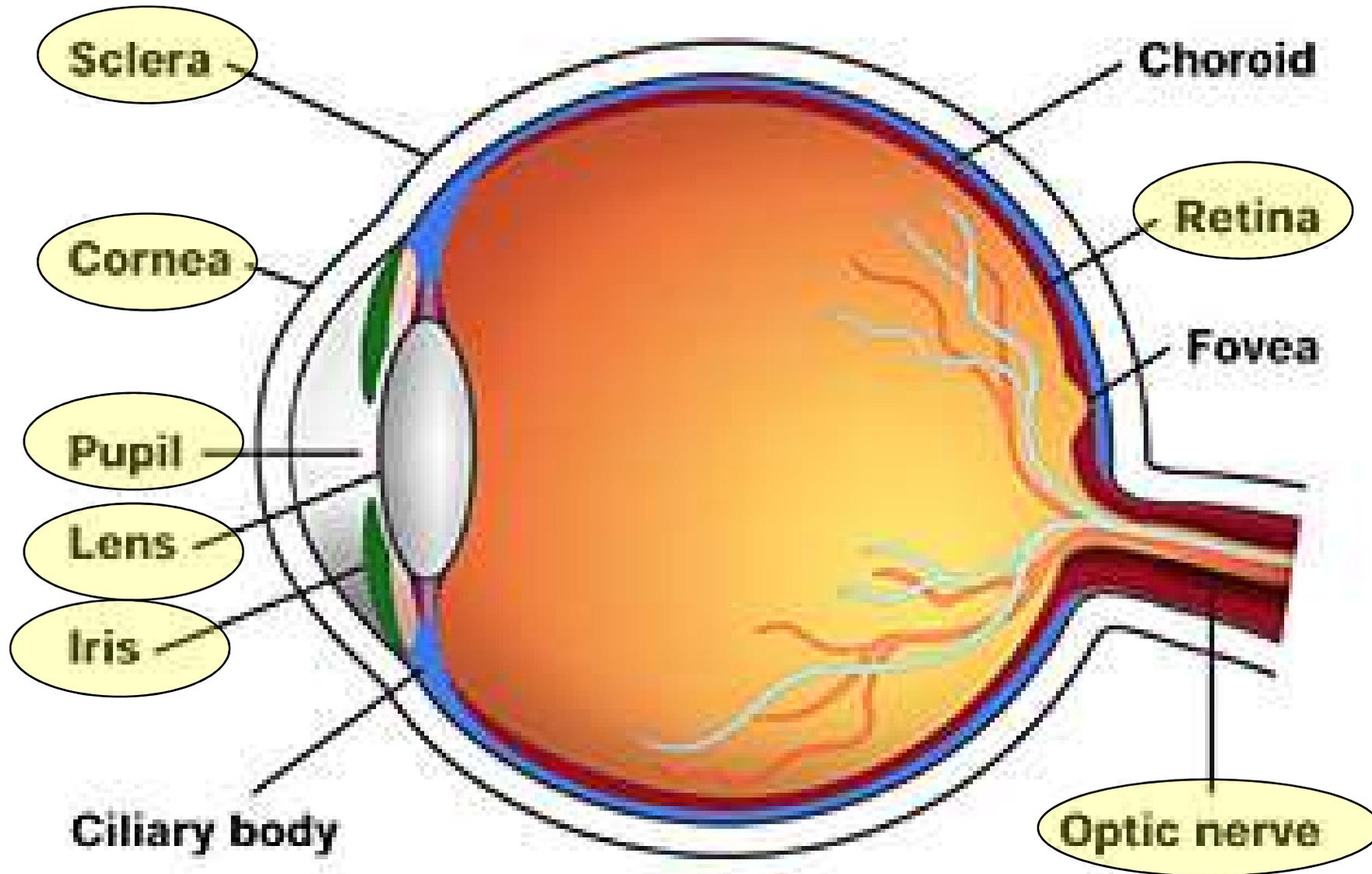
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The Human Eye: Structures

Suman Kumar Mekap
Asst. Professor (Pharmacology)
CUTM, Bhubaneswar



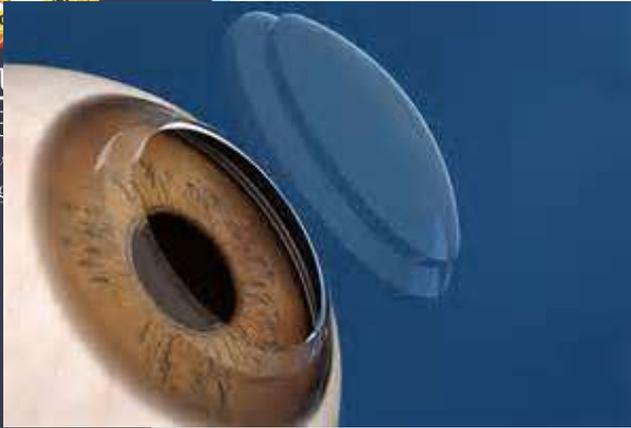
We will look at the following parts:



PARTS: Cornea

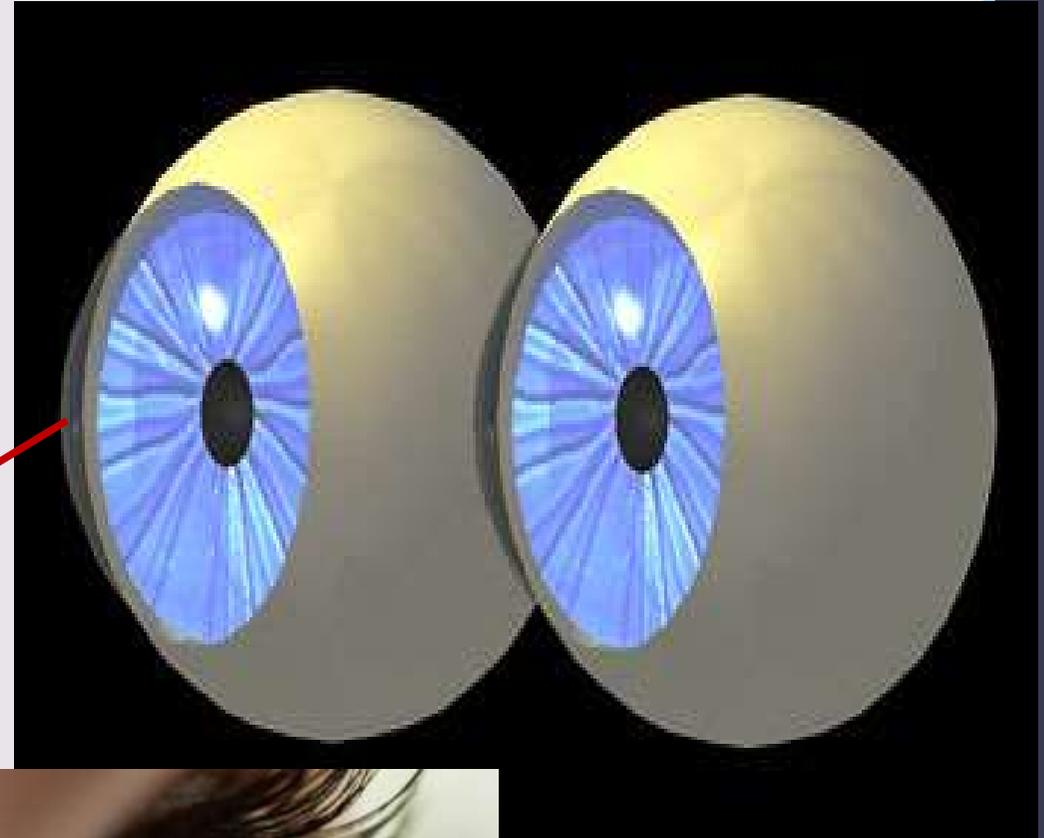


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CORNEA *(clear lens in front of eye)*

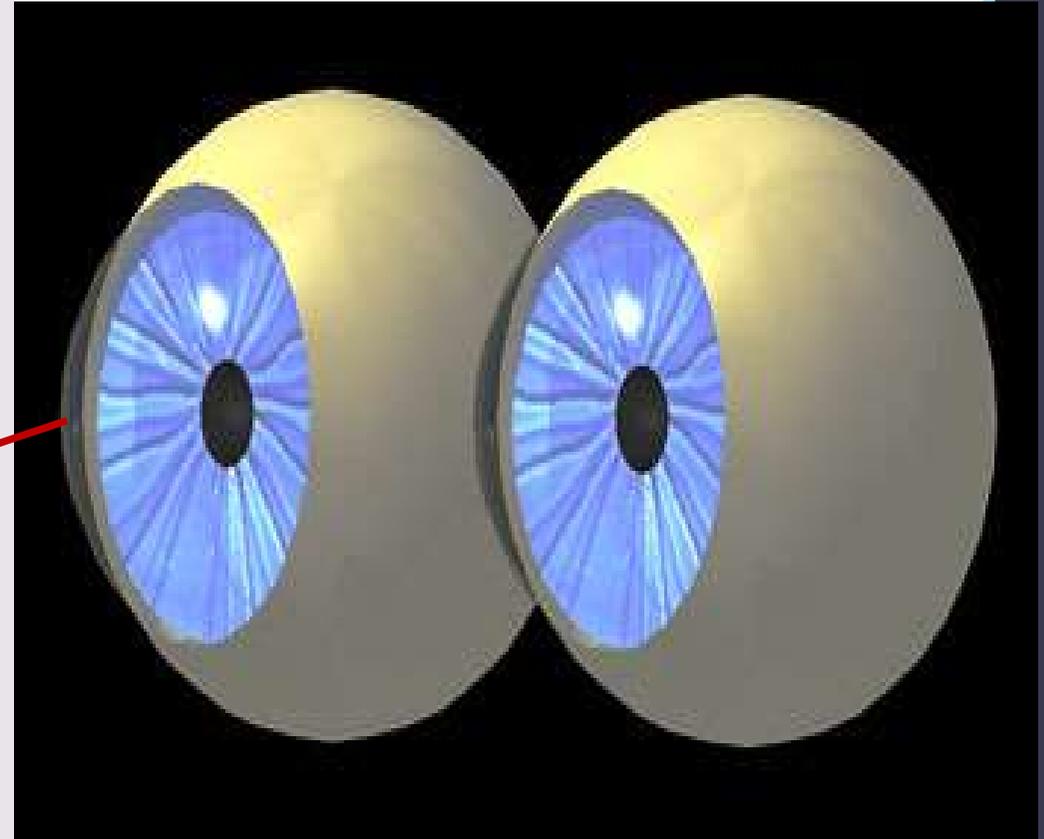
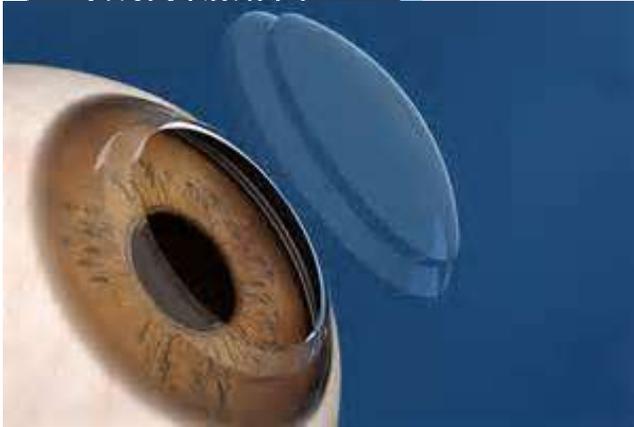
- transparent covering of the front of the eye
- Allows for the passage of light into the eye and functions as a fixed lens.



FUNCTION of Cornea



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**allows for the
passage of light into
the eye and it also
focuses the light**

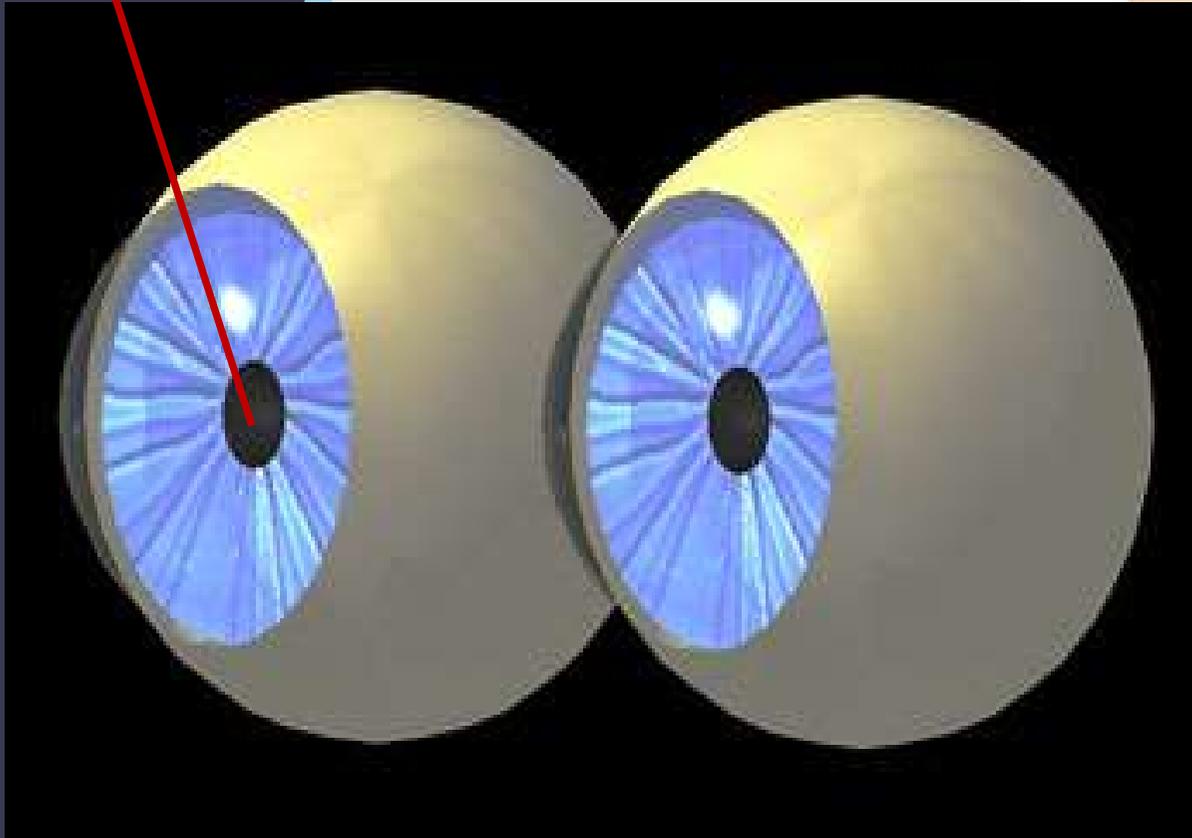
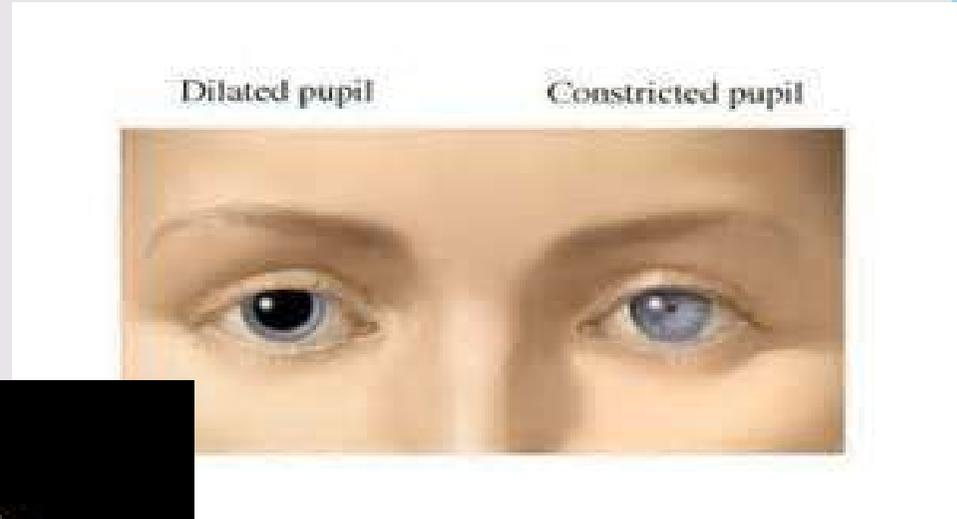


PARTS: Pupil

PUPIL (*black hole*)

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- black hole in iris
- where light enters



Pupil size is controlled by iris muscles

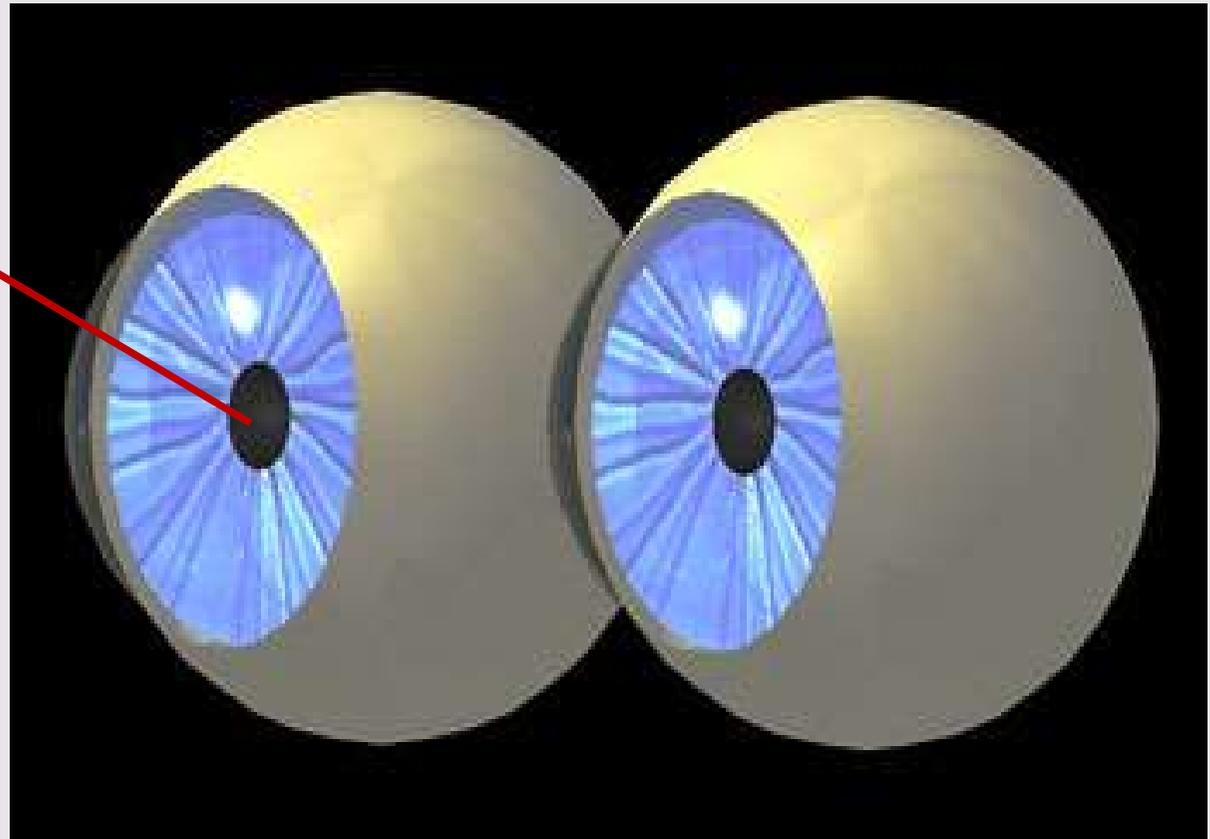
FUNCTION of Pupil



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**the hole where light enters
into the eye**



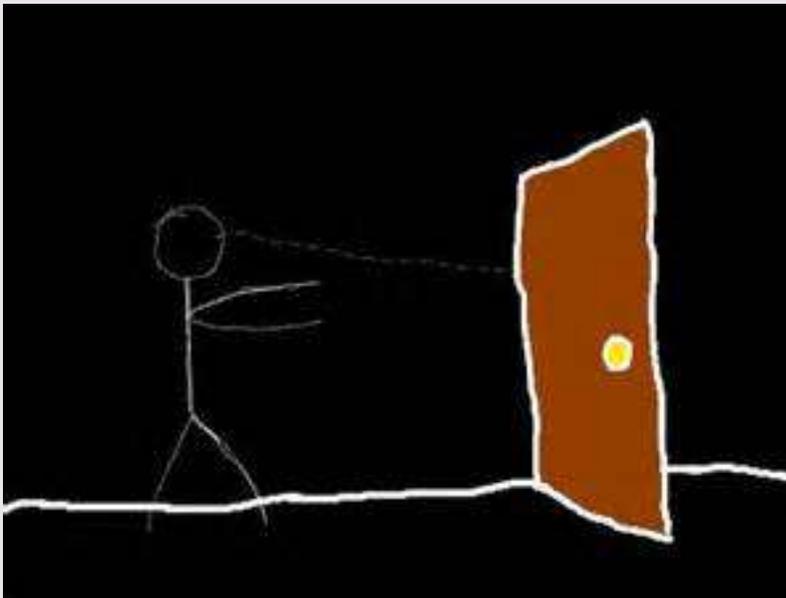


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THE EYE: PUPIL

When the eye needs **more light** to enter (when it is dark), **the pupils get larger**; allowing more light to enter the eye





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THE EYE: PUPIL

When the eye needs **less light** to enter (when it is very bright), **the pupils get smaller**; allowing less light to enter the eye





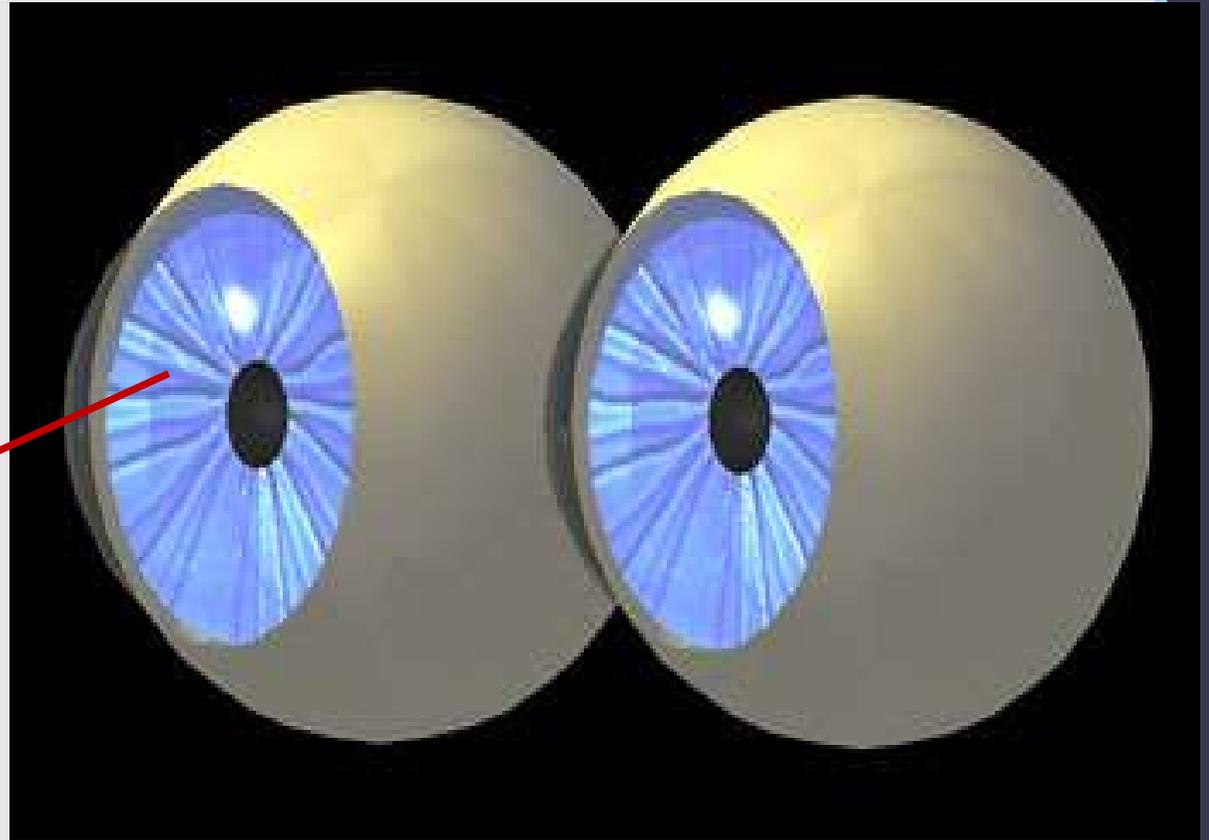
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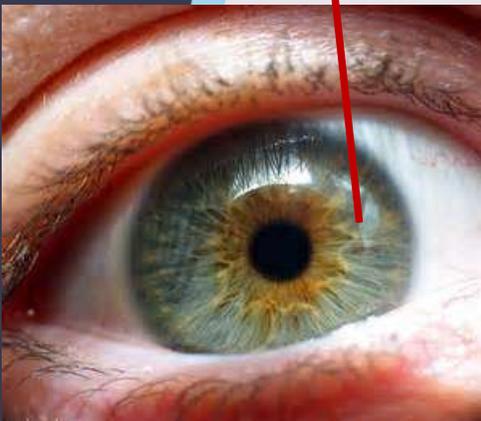
PARTS: Iris

IRIS (*colored part*)

- colored part of eye
- controls light entering



The iris is a colored, circular muscle





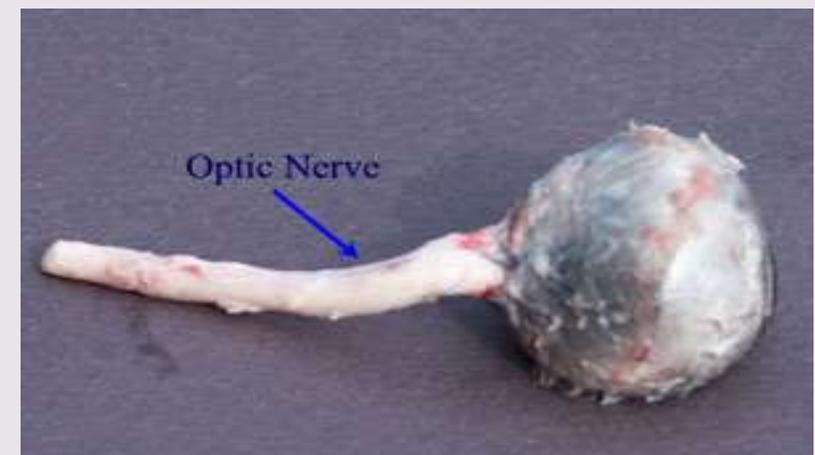
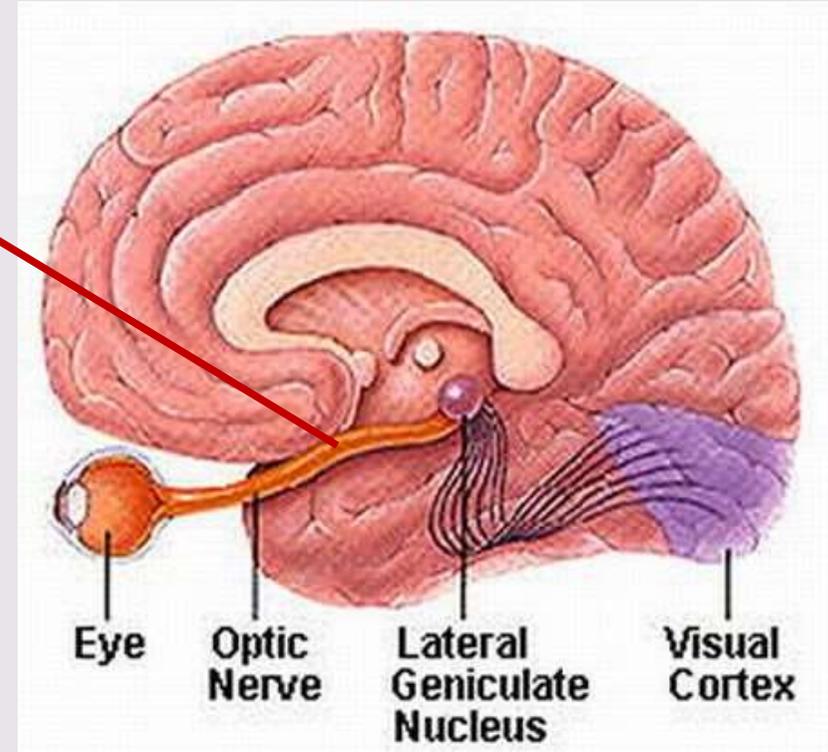
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PARTS: Optic Nerve

OPTIC NERVE

- Transmits electrical impulses from retina to the brain
- Creates blind spot
- Brain takes inverted image and flips it so we can see



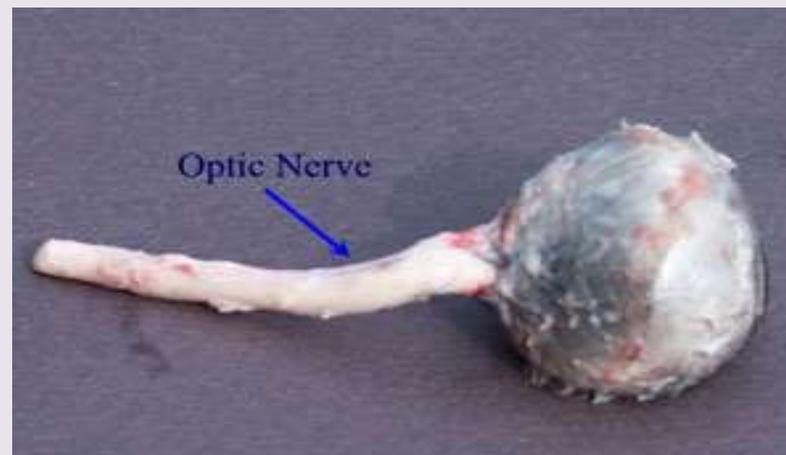
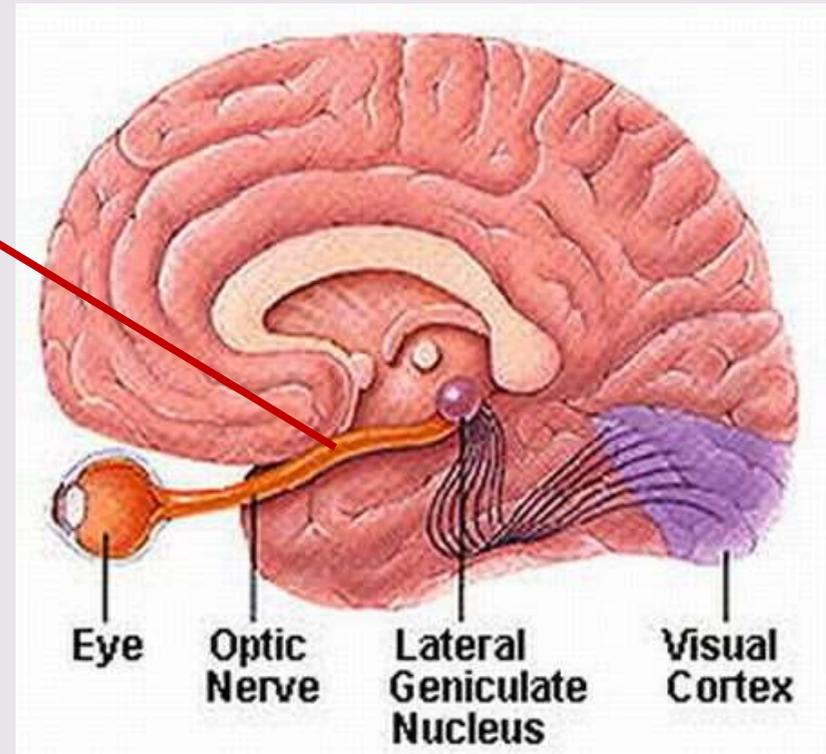
FUNCTION of Optic Nerve



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**Transmits
electrical
signals
from retina
to the
brain**





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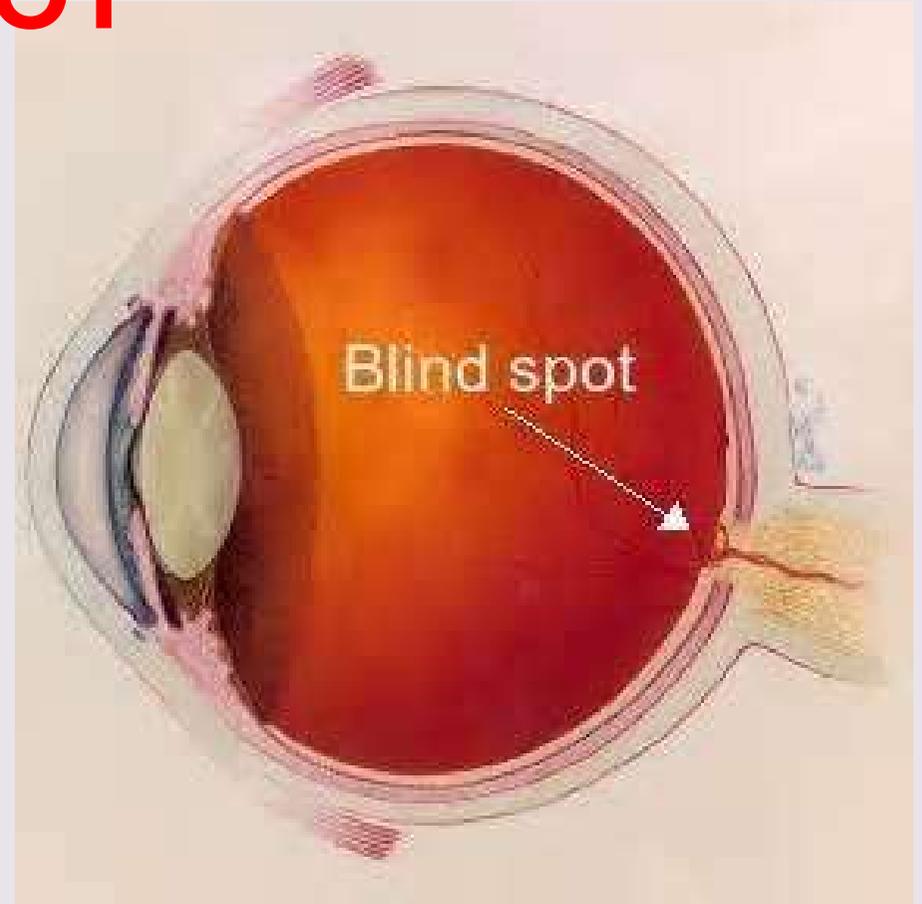
PARTS: Blind Spot

BLIND SPOT

On retina where
optic nerve
leads back
into the brain

No rod or cone
cells

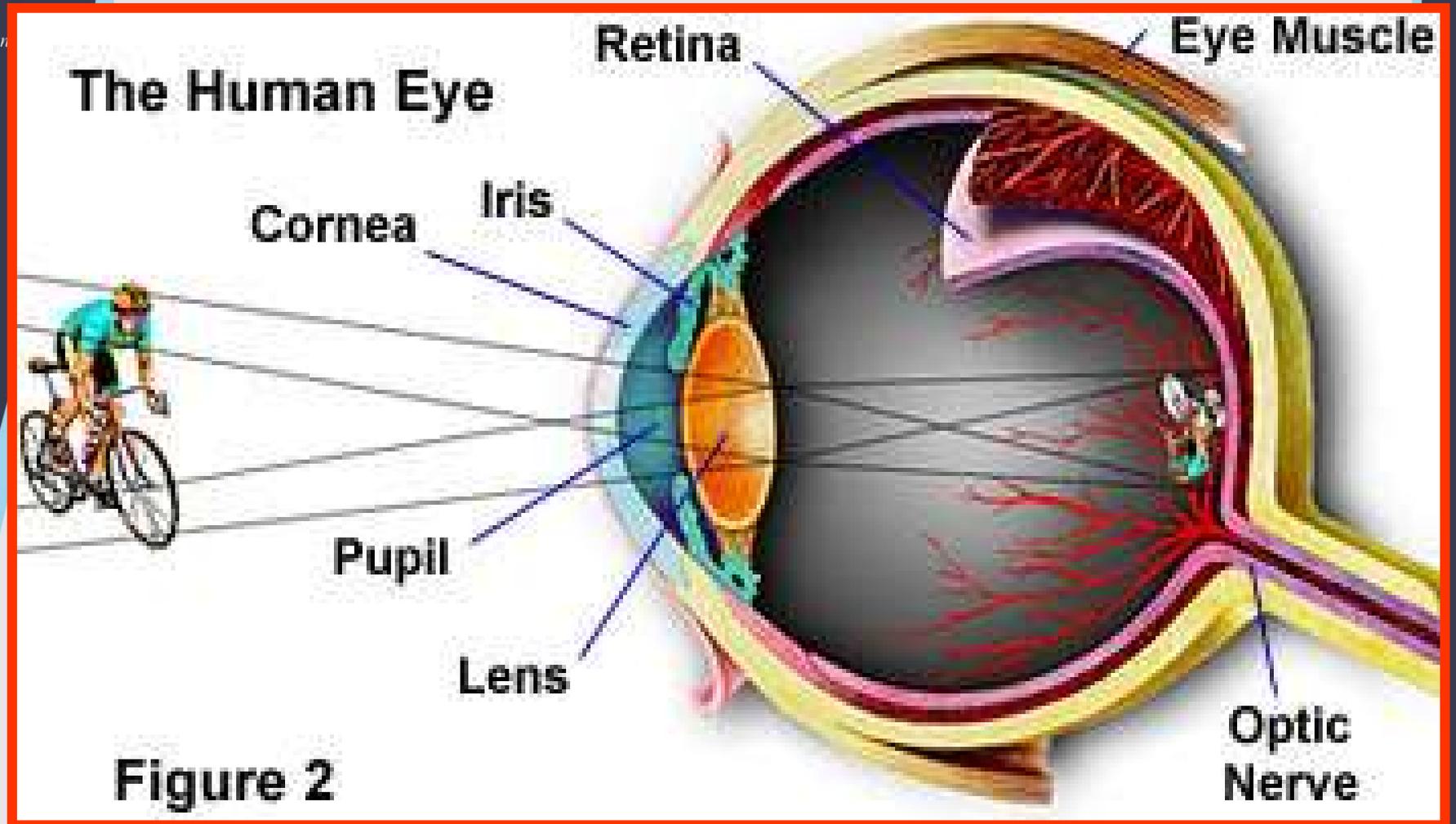
Other eye
compensates
for this area





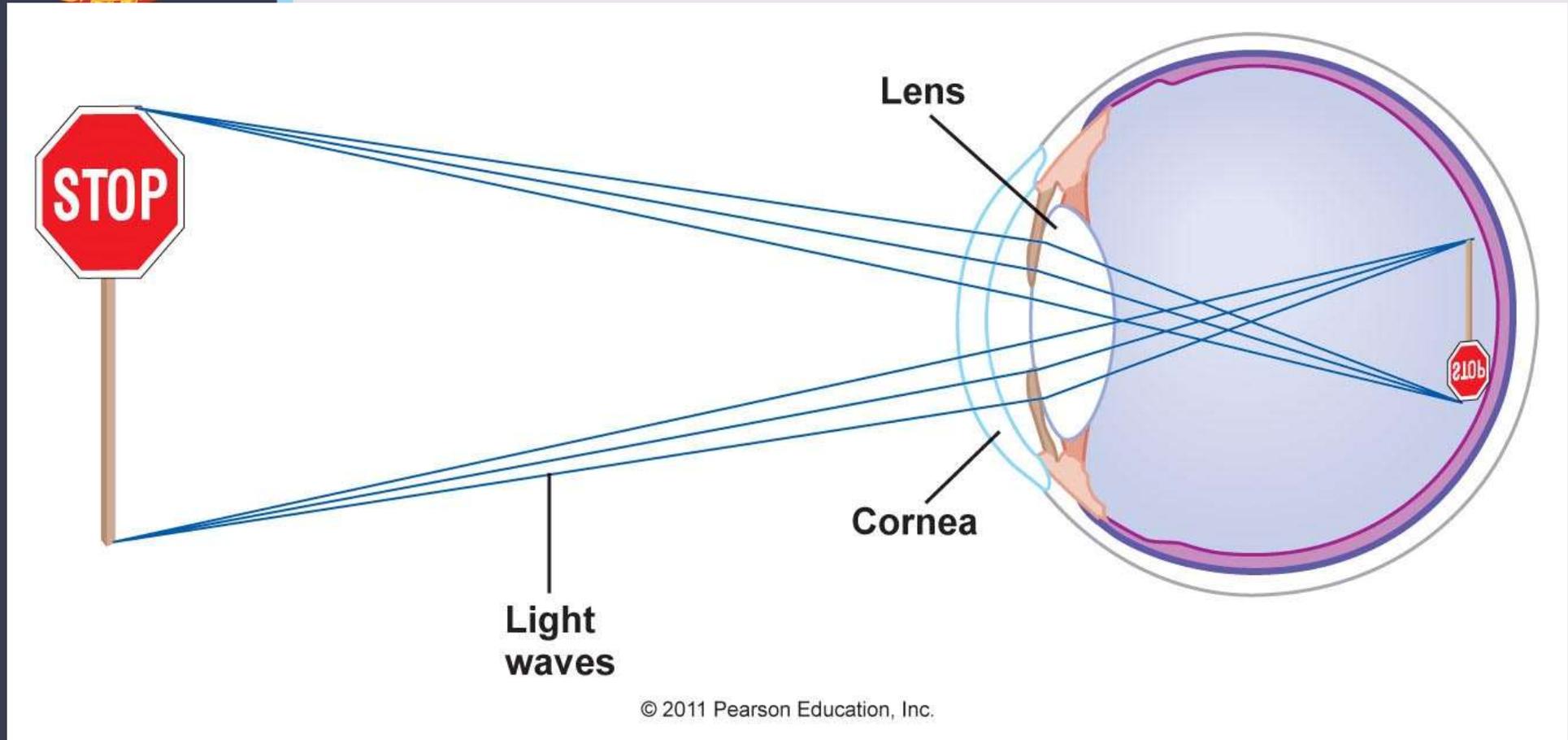
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Your 2 Lenses: Cornea and Lens



There are two lenses in your eye, the cornea and the lens.

The cornea, the front surface of the eye, does most of the focusing in your eye

The lens provides adjustable fine-tuning of the focus



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FUNCTIONS:

How Your Lens Focuses

Your lens has a *small depth of field*

You can't see something close and far with both objects in focus at the same time

Hold out your thumb about a foot away from your eye

Then, alternately focus on thumb and me (right above your thumb)

Note that you cannot see *both* me *and* your thumb sharply (in focus) at the same time

You focus on one or the other by changing the bulge of your lens



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Focusing Problems

HYPEROPIA

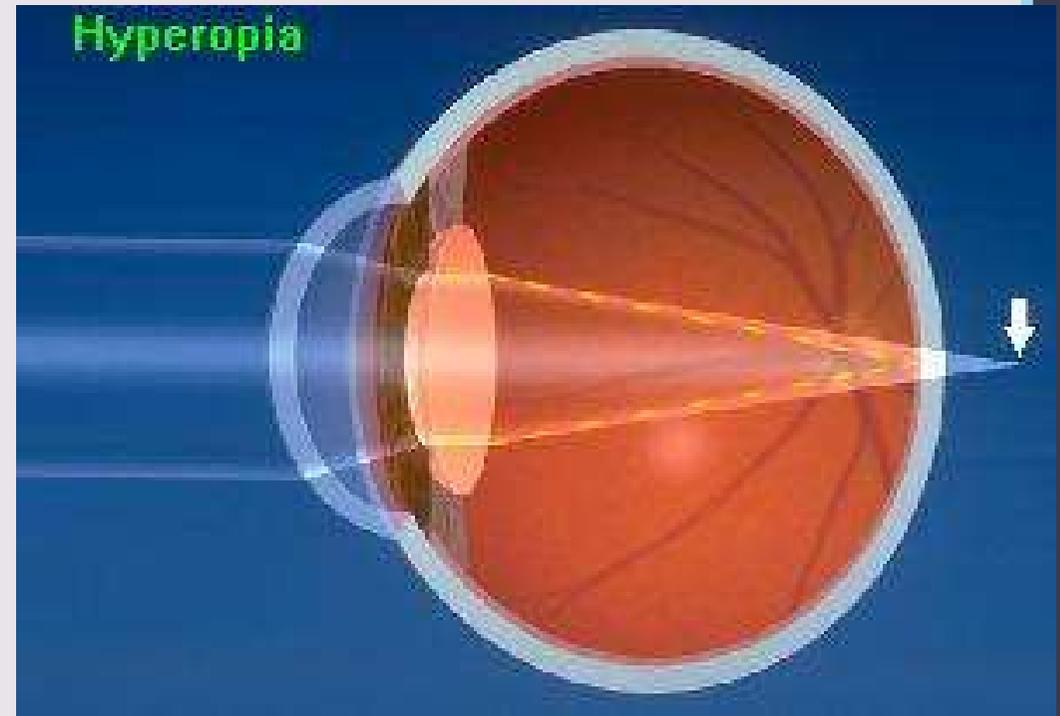
Far-sightedness

Problem seeing close objects

Distance between lens and retina too small

Light focused behind retina

Corrected with converging lenses



Diseases of the Eye



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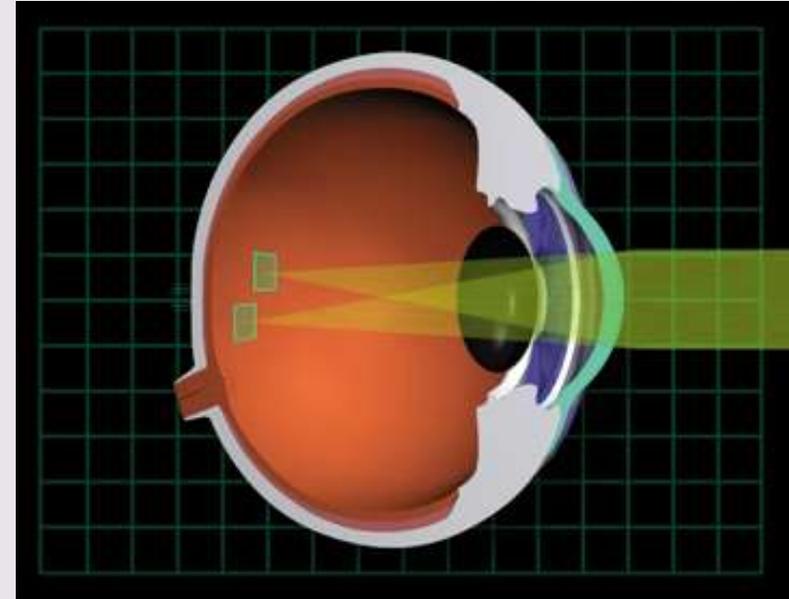
ASTIGMATISM

Eye cannot focus an object's image on a single point on retina

Cornea is oval instead of spherical

Causes blurred vision

Some types can be corrected with lenses





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Diseases of the Eye

GLAUCOMA

Group of diseases

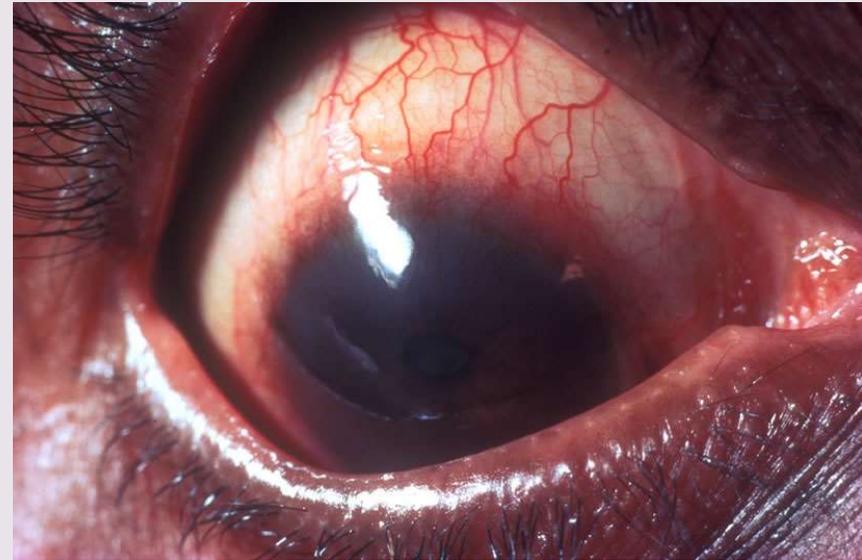
Affects optic nerve -
pressure

Loss of ganglion
cells

Gradual loss of sight
and eventual
blindness

Check eyes
regularly

Can be treated





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Diseases of the Eye

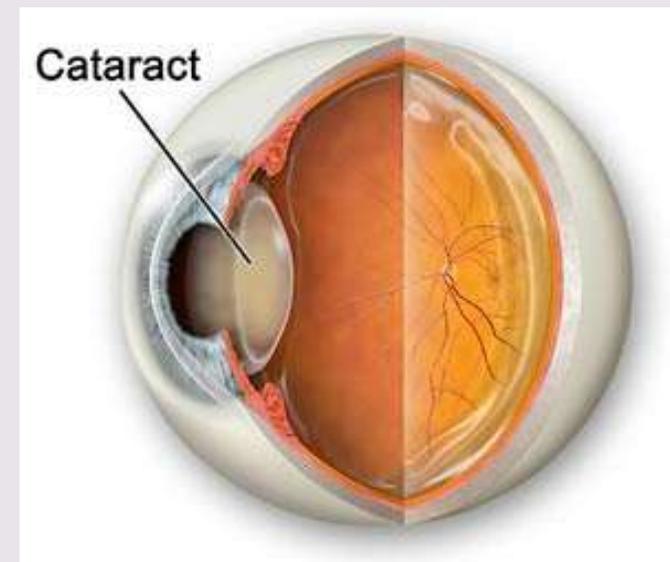
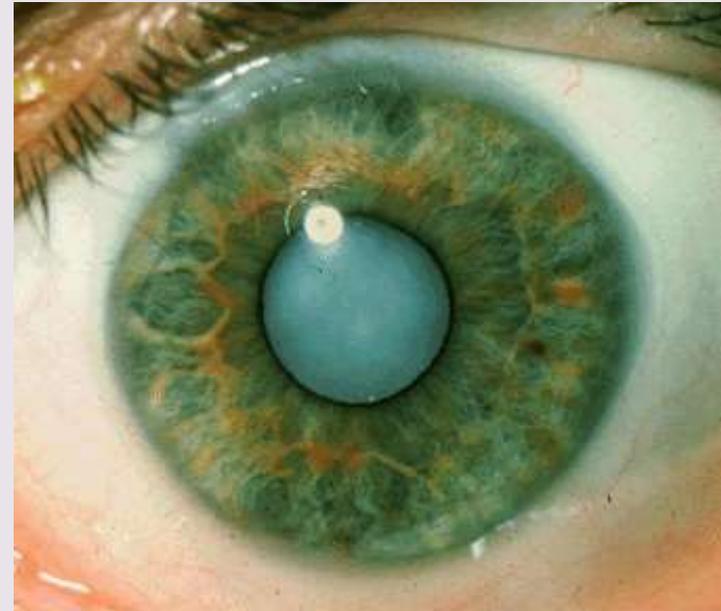
CATARACTS

Clouding forms in lens due to denaturing of lens protein

Obstructs passage of light

Caused by age, chronic exposure to UV, or due to trauma

Removed by surgery





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Vision Correction

CONTACT LENSES

Artificial lens placed
over cornea

Same as glasses

Corrects for both
near and far-
sightedness

Also used for
cosmetic
purposes (eye
colour, Hollywood)

