

Parts of the Eye and How it Perceives Lights

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Parts of The eye and How it Perceives Light

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An Astounding Book written by The Awesome Kaila
Publishing Company

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Chapter I-

Introduction to eyes

Pg. 1

Seeing the World around You!

There is so much in the world that we have not come to discover.

Everything humans do is felt and comprehended by our senses. One of these senses include seeing.

Not only do eyes perceive everything around you, they are one of the most intricate parts of the body people have. Very few humans actually stop and wonder how they are capable to see things and what causes them to see in the dark and light.

Chapter II-

Different Parts of the Eye and their Functions

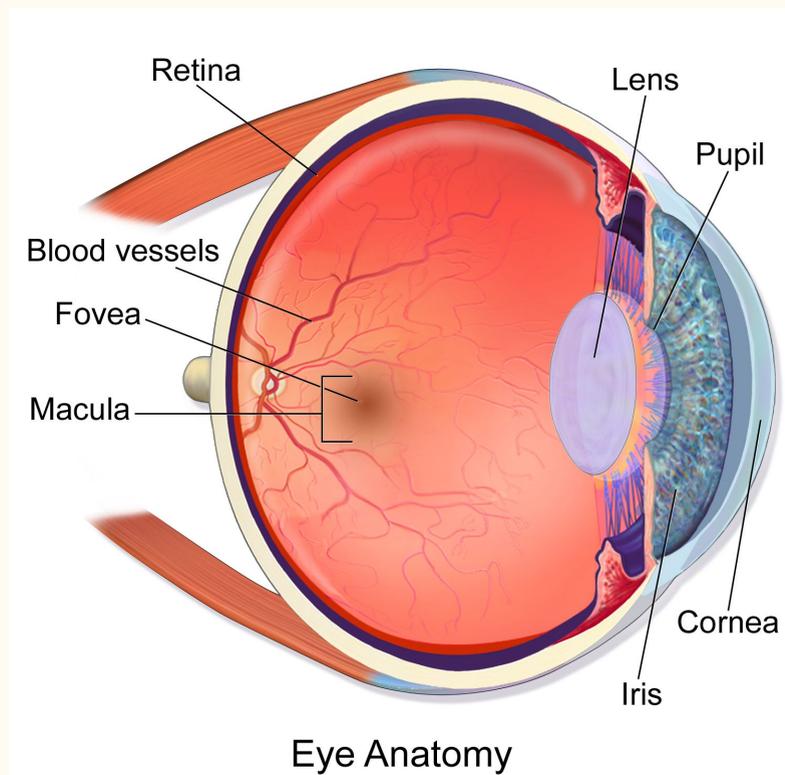
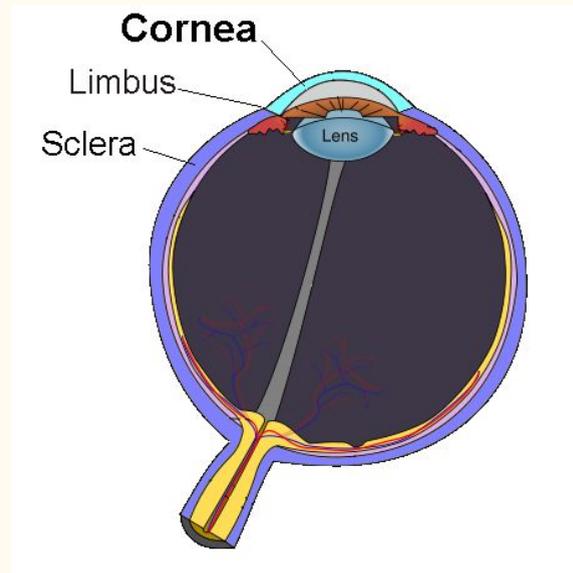
-The most outside part of the eye is the cornea. The cornea is the protective clear section that surrounds the eye and bends light toward the lens and focuses light.

-The pupil is the dark hole where light enters.

-The iris is the muscle, and the colored part, that decides how wide the pupil will dilate.

-The aqueous humor is a fluid like subject underneath the cornea. This component of the eye helps maintain the shape.

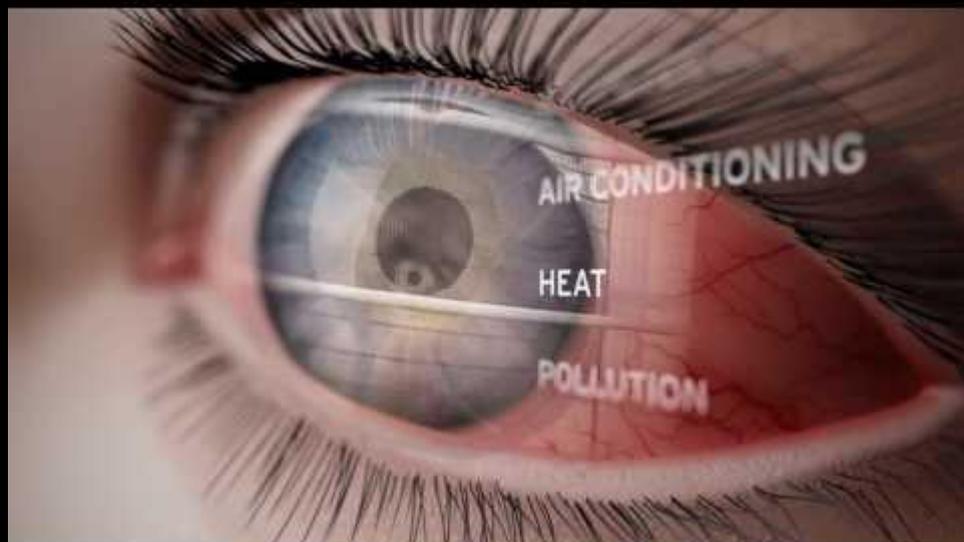
-Behind the aqueous humor is the lens which helps humans see images more clearly.



-The next part of the eye is the vitreous humor. It's a clear jelly like substance.

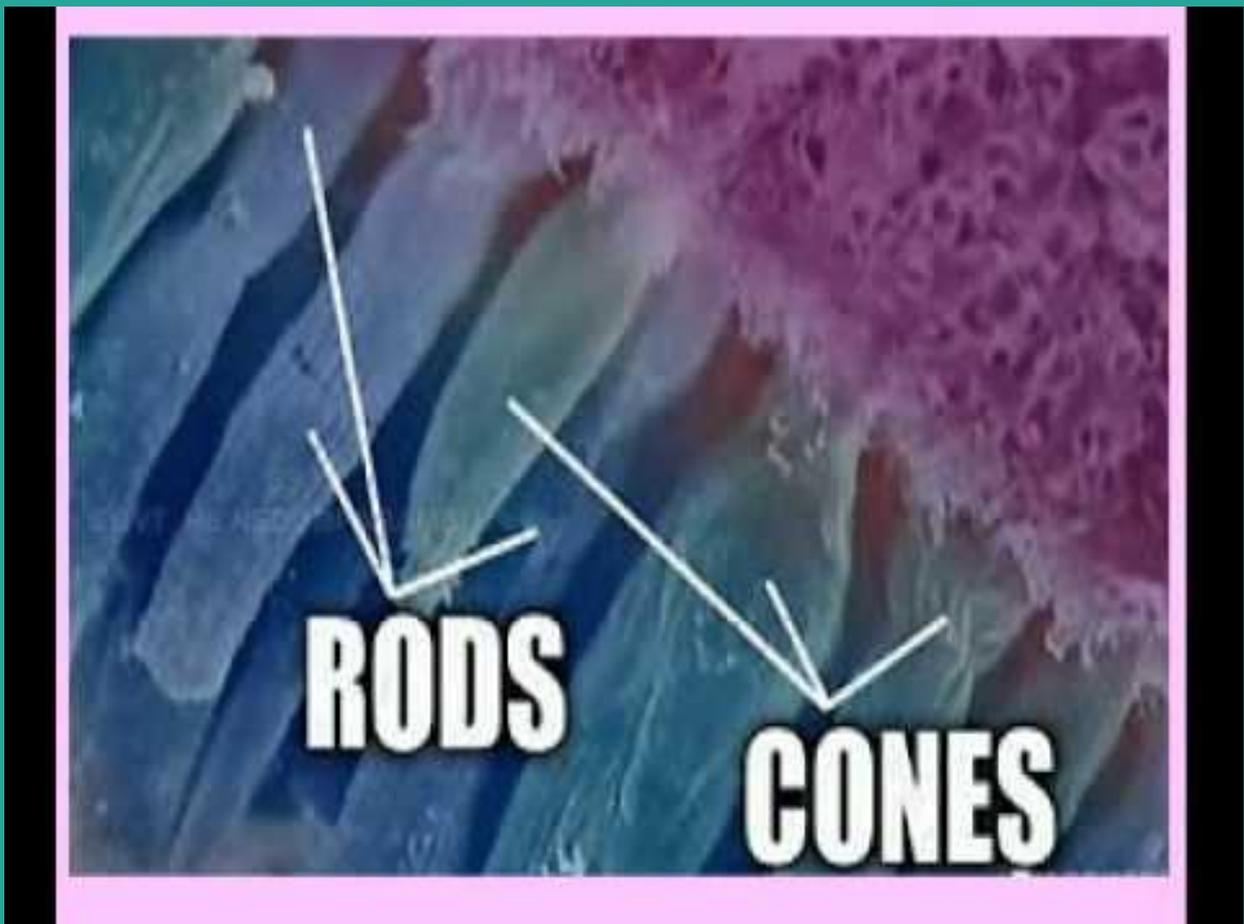
-Even further behind the humor is the retina. The retina is made up of rods and cones

Here is a video to see the functions of different parts of the eye! : <http://youtu.be/gvozcv8pS3c>



Chapter III

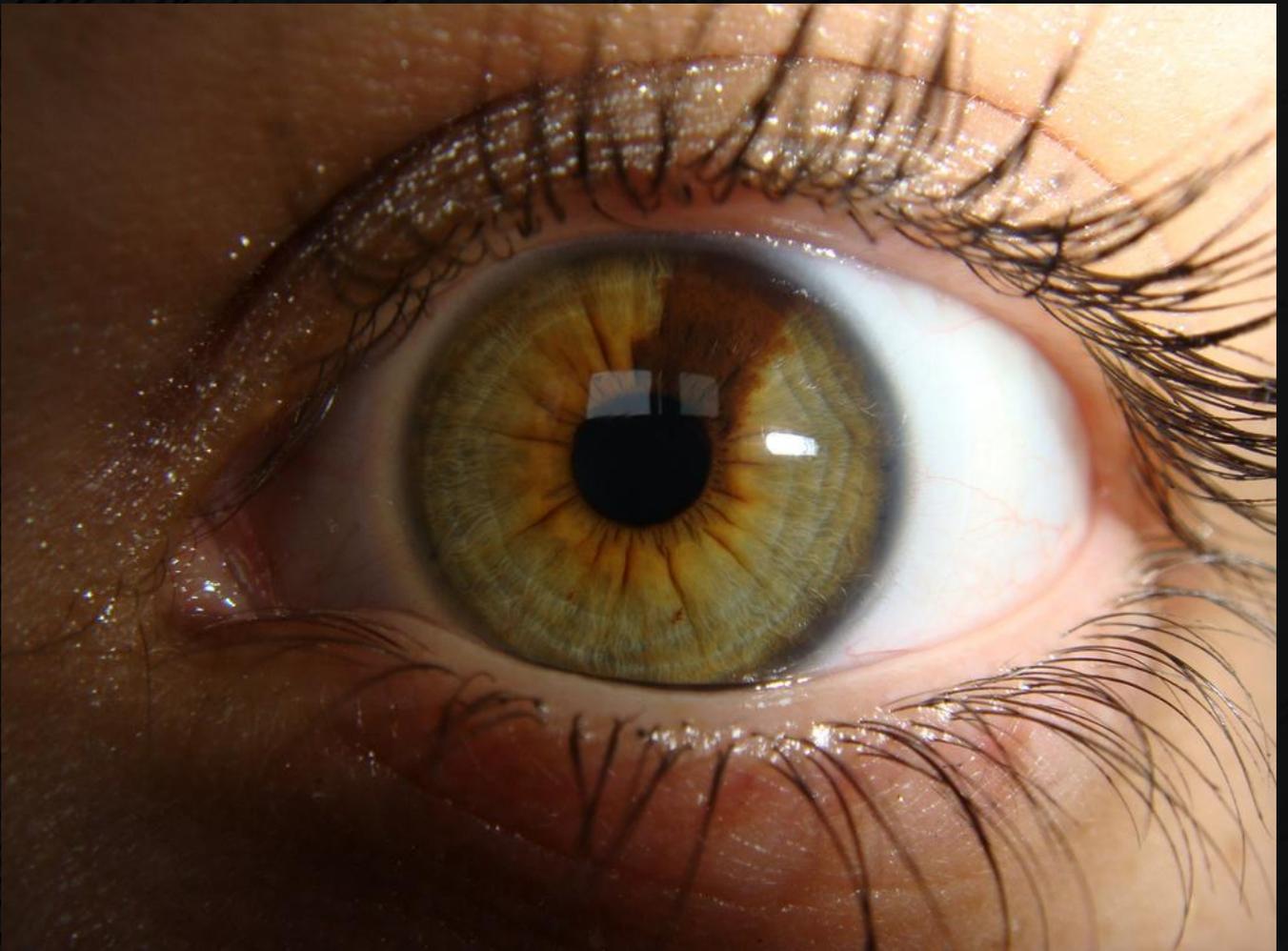
Rods and Cones



What is the purpose of The Rods and Cones?

The retina is lined with rods and cones. These two different parts of the eye are responsible for very important roles. The rods are in control of humans being able to see in bright and dark light. On average the human eye contains ten million rods and seven million cones. The cones help us perceive color. The three main colors humans see are red, green, and blue. All of the other colors the brain mixes and we see differently. The outer segment of rods are long and thin, whereas the outer segment of the cones are well shaped.

Chapter IV
How The Eye Perceives Light



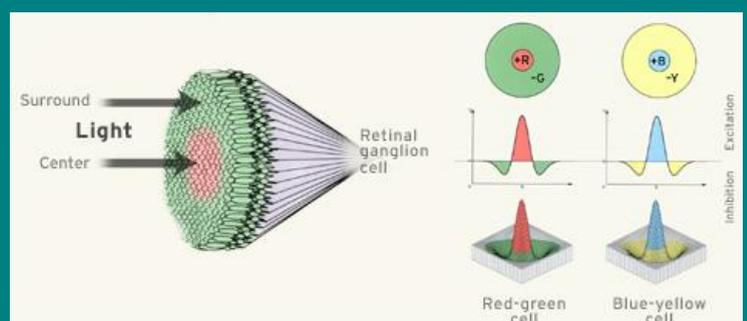
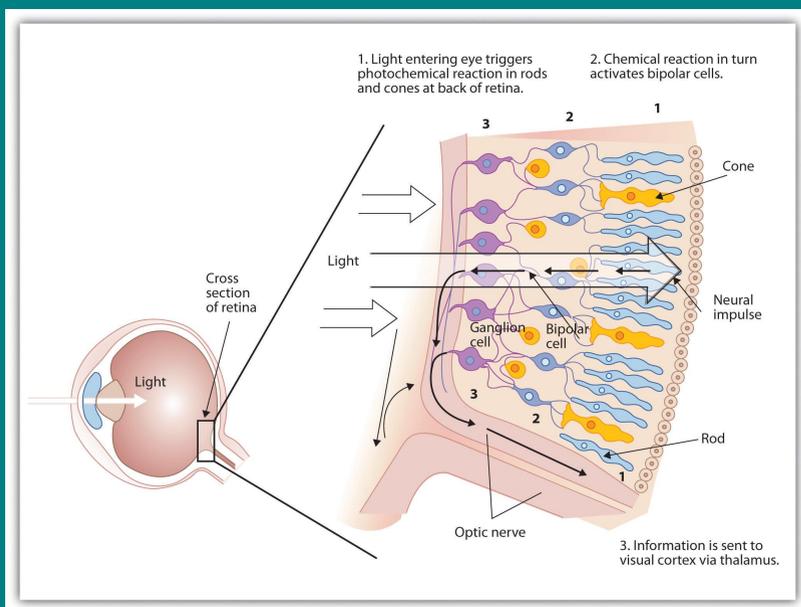
How the eye Perceives Light

In order for the eye to see images, there has to be some light. When light enter the cornea, it bends the light, striking the retina. Since the rods and cones are in the retina, when they are struck with light a series of chemical reactions take place.

Take note that the outer segment of the rods and cones are photosensitive, which means they react to light and or electrical impulses. The photosensitive chemicals that surround the rods are called rhodopsin, and color pigments for cones. (Here is where it gets a little complicated.)

Once light hits the photosensitive chemical around the rods, it produces the chemical rhodopsin. The rhodopsin chemical produced is made up of scotopsin and 11-cis-retinal. In the 11-cis-retinal portion of the rhodopsin, the chemical changes into all- trans retinal. The 11-cis-retinal is an angulated molecule, this simply means it is full of angles. The all-trans retinal is a straight molecule, an unbranched open shape.

The difference of the shape of the molecules produced create an unstable chemical reaction. This chemical reaction, keep in mind, only happens in a trillionth of a second. Then, the electrical impulses produced go to the ganglion cell; which is located on the outer surface of the retina. They, then, travel down the optic nerve and head into the brain. Once at the occipital lobe, the back of the brain, the light is perceived .



Chapter 4

-Fun Facts-

- Humans can see visible light. These visible light wavelengths are about 400-700 nanometers.
- A single eye can see candle light from fourteen miles away.
- Humans have binocular vision (both images from each eye come together to form one image). This is tested by how much you can see without moving your head.
- The blind spot is where there are no cones and rods, due to the presence of the optic nerve.
- Apes and humans are the main animals that can see color.
- The more colorful the animal, the more likely they are able to see color instead of black and white.
- Birds and fish have eyes on the side of their heads so their field division (what one is able to see) is larger.
- Bees have compound eyes. This simply means they have multiple lenses.
- The image projected on the back of the eye is upside down.

Here Is a Fun Video about the Eyes to Watch!!!

Just Click the Picture To Get to the Video with this Image

<https://google.discoveryeducation.com/player/view/assetGuid/DA7C6419-0EC8-456E-87B9-0E315476A93C>

The Sense of Sight  



Having two eyes that face forward help us view the world in three dimensions.

[View Video Segment ▶](#)

Our Eyes are one of the most amazingly designed body parts. We must try our hardest to treat these objects with incredible care. We should also be thankful for our eyes and realize how important and essential they are to everyday life.

QUIZ

Fill in the bank

1. What is the job of the Cornea?
-----.

2. What is the name of the muscle that controls how big the pupil dilate? -----

3. The ----- is lined with rods and ----- .
The ----- help us see in the dark while the
cones let us see ----- .

4. Describe photosensitive, and where this is found
in the eye.

5. Are the visible light wavelengths humans can see
1,000 nanometers? Yes/No -----

Bonus Question:

What two chemicals make up rhodopsin?

----- and -----.

Resource List

Health.howstuffworks.com

Google.com (for definitions)

www.thefreedictionary.com

google.disscoveryeducation.com

Answer Sheet

1. The cornea is the outer clear protective section of the eye that bends light toward the lens.

2. Iris

3. Retina, cones.

Rods and color

4. The outer segment of the rods and cones are photosensitive, which means they react to light and or electrical impulses.

5. No

(Bonus Question)

6. scotopsin and 11-cis-retinal.