Camera Eyes

Overview: Your eyes have two different light receptors located on the back of the eyeball. These are the rods, which see black, white and grays, and the cones, which see color. In order to adapt to the dark, our eyes make a chemical called visual purple. This helps the rods to see and transmit what you see in situations where there is little light.

Your pupils also increase in diameter in the darkness. This allows for a slight increase in the amount of light entering your eye. This combination of visual purple and more light makes it possible for you to see in darker situations.

Materials

- dark room
- light switch
- partner
- pencil

Experiment

1. Turn out the light in a darkened room and give your eyes about 5 minutes to get used to the darkness.
2. After your eyes have had a chance to acclimate to the low-light conditions, it's time to get to work. Try to draw a picture of your assistant's eye. Pay particular attention to how the pupil looks in the darkness.
3. Now turn on the light while still observing your partner's eye. What happens to their pupil?
4. Draw another picture of your partner's eye with the lights on. Again, pay special attention to the diameter pupil of the eye.
5. Complete the data table by trying different lighting conditions.

Camera Eyes Data Table

Light Conditions	Draw a Diagram of the Eye

Reading

As you flip the light switch on, your partner's brain realizes that there is a lot of light entering the rods and cones, so it restricts the size of the opening (your partner's pupil) in order to limit the light. You might notice this on a sunny day if you go from a dark movie theater into the bright sun. It can actually hurt for moment, and makes you squint until your eyes have a chance to adjust to the brightness by reducing the size of your pupils.

Exercises

1. How does the pupil adapt to light conditions?
2. What are the two special photoreceptors called and where are they located?
3. Which photoreceptor is used to help us see in the dark?

Answers to Exercises: Camera Eyes

1. How does the pupil adapt to light conditions? (Its diameter increases in the dark to allow in more light and decreases in bright light.)
2. What are the two special photoreceptors called and where are they located? (Rods and cones are located in our eye's retina.)
3. Which photoreceptor is used to help us see in the dark? (rods)