



The Eye and Color Vision

Sensory organs provide a link between a human and the environment and this process is called sensory perception. Perception involves everything a person sees, hears, smells, tastes and

touches. The eyes are sensory organs responsible for sight and color vision. These complicated organs are connected to their own dedicated part of the brain called the visual cortex. Since vision is so important the eyes are highly protected by being safely surrounded by solid bones of the skull, called the eye socket. The sclera, or white of the eye, is another outer protective layer made of collagen and elastic tissue.

The iris of the eye is the colored part; eye color is genetic so it is inherited from parents. The iris of the eye contains muscle tissue that controls the pupil, the dark spot in the middle of the eye. The pupil responds to the brightness of light. If you walk into bright sunlight, the pupil closes to protect the eye from the brightness but opens wide in dim light to allow a person to see as best they can. The cornea of the eye is a clear covering over the iris and pupil. Besides protection, the cornea changes the direction of light waves as they enter the eye through a process called refraction.

Next light passes through the lens of the eye just like it passes through a camera lens. The lens focuses the pattern of light onto the retina inverted, that is, upside down. Even though the image is upside down, the brain processing knows how to interpret everything correctly.

The retina is a layer of inner tissue of the eye that collects an image and sends it to the brain for processing through the optic nerve. The retina has cells that respond to light; these cells are called photoreceptors. There are two kinds of photoreceptors, rods and cones. Rods function mostly in dim light and contribute to black-and-white vision. Cones, on the other hand, are responsible for seeing colors.

There are between 6 and 7 million cones on the retina. Some cones are sensitive to red, some to green, and a small number to blue wavelengths. These are the additive primary colors and all other colors are a combination of these primary colors. So the cones are responsible for color vision in humans. The cones send signals to the visual cortex which deciphers colors.