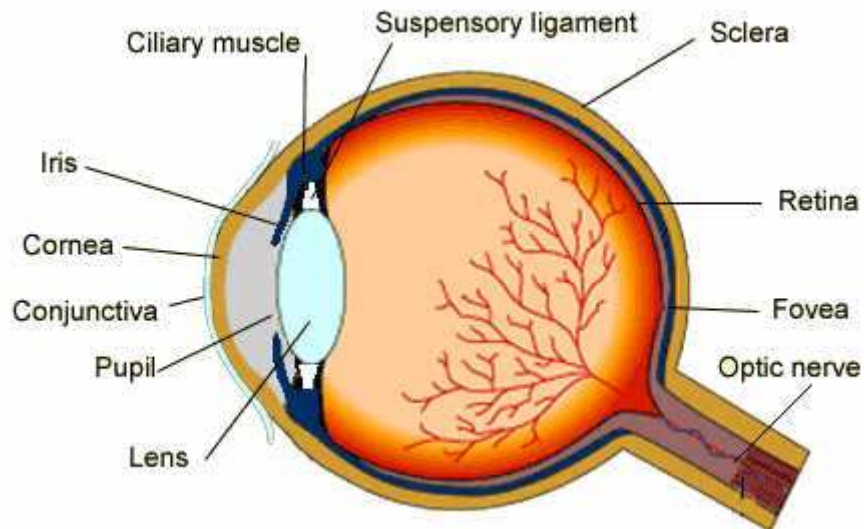


SIGHT

Sight is probably the most developed sense in humans, followed closely by hearing.



The organ of vision is the **eye**. It has a complex structure consisting of a transparent **lens** that focuses light on the **retina**. The retina is covered with two basic types of light-sensitive cells—rods and cones. The **cone cells** are sensitive to color and are located in the part of the retina called the **fovea**, where the light is focused by the lens. The **rod cells** are not sensitive to color, but have greater sensitivity to light than the cone cells. These cells are located around the fovea and are responsible for peripheral vision and night vision. The eye is connected to the brain through the **optic nerve**. The point of this connection is called the "blind spot" because it is insensitive to light. Experiments have shown that the back of the brain maps the visual input from the eyes.

The brain combines the input of our two eyes into a *single three-dimensional image*. In addition, even though the image on the retina is *upside-down* because of the focusing action of the lens, the brain compensates and provides the right-side-up perception. Experiments have been done with subjects fitted with prisms that invert the images. The subjects go through an initial period of great confusion, but subsequently they perceive the images as right side up.

The range of perception of the eye is phenomenal. In the dark, a substance produced by the rod cells increases the sensitivity of the eye so that it is possible to detect very dim light. In strong light, the iris contracts reducing the size of the aperture that admits light into the eye and a protective obscure substance reduces the exposure of the light-sensitive cells. The spectrum of light to which the eye is sensitive varies from the red to the violet. Lower electromagnetic frequencies in the infrared are sensed as heat, but cannot be seen. Higher frequencies in the ultraviolet and beyond cannot be seen either, but can be sensed as tingling of the skin or eyes depending on the frequency. The human eye is not sensitive to the polarization of light, i.e., light that oscillates on a specific plane. Bees, on the other hand, are sensitive to polarized light, and have a visual range that extends into the ultraviolet. Some kinds of snakes have special infrared sensors that enable them to hunt in absolute darkness using only the heat emitted by their prey. Birds have a higher density of light-sensing cells than humans do in their retinas, and therefore, higher visual acuity.

Color blindness or "Daltonism" is a common abnormality in human vision that makes it impossible to differentiate colors accurately. One type of color blindness results in the inability to distinguish red from green. This can be a real handicap for certain types of occupations. To a colorblind person, a person with normal color vision would appear to have extrasensory perception. However, we want to reserve the term "extrasensory perception" for perception that is beyond the range of the normal.