



How the Eye Works

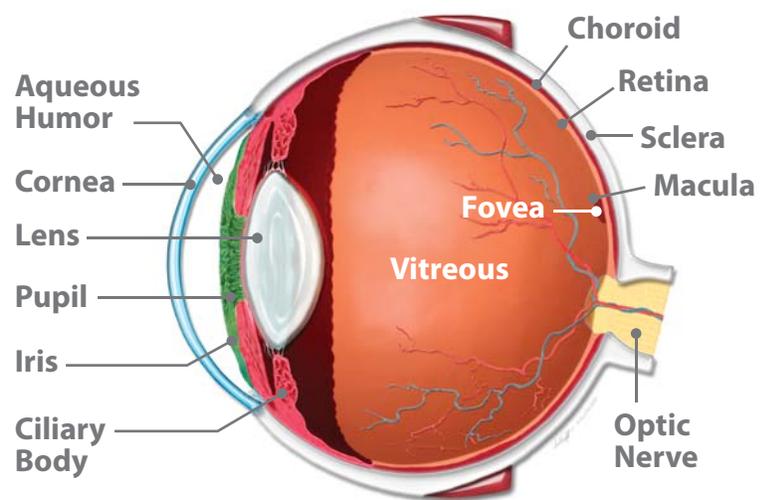
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A snapshot of how the eye works and sees images

The eye is one of the human body's most remarkable parts. Responsible for one of the five senses – sight – the eye is a complex and well-designed sensory organ. As an aid to learning about the world, the eyes are able to view objects near and far, distinguish texture, and see color and dimension. To understand how the eye and brain partner together to process visual images, it's important to know the parts of the eye responsible for creating sight.

The Parts of the Eye and Their Role

- **Aqueous Humor:** A clear, watery fluid filling the space between the lens and cornea that nourishes the cornea, iris and lens and maintains intraocular pressure¹
- **Cornea:** The transparent, front portion of the eyeball that allows light to enter the eye
- **Fovea:** Located in the center of the macula and responsible for clear, fine vision³
- **Iris:** Colored part of eye situated in front of the lens and responsible for regulating the size of the pupil and the amount of light allowed to pass to the retina
- **Lens:** A transparent disc located behind the pupil that focuses light on the retina³
- **Macula:** A small central area of the retina that accounts for the eye's ability to see fine detail and straight-ahead (central) vision
- **Optic Nerve:** The bundle of nerve fibers and cells that relays messages from the retina to the brain³
- **Pupil:** The circular black opening in the middle of the iris that regulates the amount of light allowed to pass to the retina³



- **Retina:** Light-sensitive cells which respond to light and send signals to the brain via the optic nerve; the innermost layer located in the back of the eye
- **Sclera:** A tough outer layer covering most of the eyeball; responsible for the eye's white color²
- **Vitreous:** The transparent gelatinous mass that fills the back of the eye between the lens and the retina²

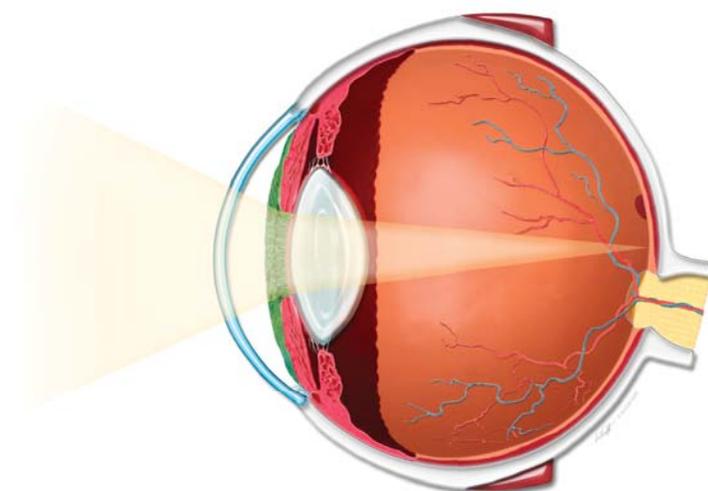
Parts of the Eye: Working Together, Creating Sight

The parts of the eye must work together to create sight. Below is a description detailing how the parts of the eye work together to produce vision.

As light enters the eye through its transparent front portion, called the cornea, it is partially focused and passes through the aqueous humor and the pupil, which will contract or dilate to control the amount of light passing through the lens and onward towards the retina.⁴ The lens, like a camera lens, changes shape to further focus the light to a sharp point on the retina, depending to some extent whether objects are nearby or far away.⁴ The light images travel through a jelly-like material (vitreous) on its way from the lens to the eye's innermost layer, the retina.⁴

The retina receives light images, with the most detailed and color images received in the retina's central macula region.⁴ The light images are converted into electro-chemical signals by the retina's photoreceptors.⁴ Once converted, the optic nerve sends the signals to the brain's visual center for interpretation.⁴ A healthy eye works with the brain to create sight.

With the parts of the eye working in unison, people have the ability to see images and experience the joy of sight.



1. Webster's Online Dictionary, Definition: Aqueous Humor, <http://www.websters-online-dictionary.org/definitions/Aqueous%20Humour> [Accessed January 3, 2013]
2. Emory Eye Center, Ophthalmology Terms, http://www.eyecenter.emory.edu/ophthalmology_terms.htm [Accessed January 3, 2013]
3. National Eye Institute, Diagram of the Eye, <http://www.nei.nih.gov/health/eyediagram/index.asp> [Accessed January 3, 2013]
4. WebMD.com, Your Guide to How the Eye Sees, <http://www.webmd.com/eye-health/amazing-human-eye> (Updated November 3, 2011) [Accessed January 3, 2013]