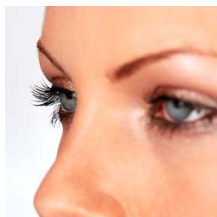


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[11 Amazing Facts and Myths About Eyes](#)

More complex than a photo camera

1. About 80 % of what we perceive comes through the eyes. Our memories are made 80 % by images. The eye comes with information about the depth, distance, shape, color and movement of the objects. 2. The human eye is one of nature's wonders and functions like a photo camera. Only that is much more complex. An adult eye has about 24 mm (1 inch) in diameter and about 12 million photoreceptors (light sensitive cells) and six muscles that move the ocular sphere with such a precision that it allows the eye to follow moving objects. Like a camera, the eye has a diaphragm (called iris), whose opening (called pupil) degree adapts to the brightness of the environment. In weak light, the pupil will be large, to let more light inside. This happens for example in the dark or twilight. In the daylight, the pupil is small. The iris gives the eye's color. The pupil can increase its size also under the effect of strong emotions (fear, sexual turn on). The light rays that cross the pupil have been previously concentrated by the powerful action (till 45 dioptries) of the cornea, a transparent salient layer. The cornea is the front part of the white membrane of the eye, called sclerotica, which is rich in blood vessels. The cornea is devoid of blood vessels. Between cornea and iris-crystalline, there is the watery humour, that cleans and feed the cornea. The crystalline lens is charged with the focusing of the light and its refraction index (between 19 and 38 dioptries) is adjusted by the ciliary muscles. When we look at a remote object, the crystalline relaxes and flattens. When looking at a close object, the crystalline turns convex. 3. After crossing the vitreous humour, the light reaches the retina, a membrane possessing 130 photosensitive rods and 7 million color photosensitive cones. On the retina an upside down image is formed, a photo that is reverted by the brain. The rods and the cones turn the light into electric signals which are transmitted through the ganglionic cells to the optic nerve and from there they reach the brain. Rods are extremely sensitive to light, but they can distinguish only blue and green. The cones distinguish clear and colored images, but they require strong light. That's why in the dark, images are not clear and all appears in blue and green. Rods use vitamin A, that's why carrots, cabbage and other green vegetables benefit the eye. 4. Human eye can detect 10 million color hues, but cannot see ultraviolet or infrared light. Insects can see the ultraviolet light. Birds have yellow fatty filters in their cones that allow them to differentiate hues of green and detect easily homocromous (having the same color with) leaf color mimicking insects, which are practically invisible at just one look for humans. 5. The human eye sees basically three colors: red, green and blue. These are basic colors. The white is a combination of the three, the black is their lack. Yellow, purple or mauve form through the combination of two basic colors; these are called secondary colors. 6. The fore eyeball and the inner eyelids are covered by a transparent layer called conjunctive. While blinking, the conjunctive and the tears (produced by the Harder glands in the inner corner of the eye) moisturize and clean of dirt and dust the cornea. We blink once or twice at 10 seconds, and a blink lasts 0.3 seconds. In 12 hours, we blink 25 minutes. Infants starts blinking at the age of 6 months. Tears drain into the nasal cavity and are more abundant in case of dust or dirt. Strong emotions also cause abundant tearing (weeping). 7. Most cones are agglomerated in a region of the retina called macula lutea ("yellow spot"). That's why to clearly see a thing, we have to move the eyes, so that the projection is formed on macula lutea. Close to macula lutea, there is a blind spot where the optic nerve goes out of the eye. 8. Eyes are protected in bony eyesockets, sheathed with a fatty tissue, so that usually, the socket is more harmed that the proper eye. 9. Because the eyes watch the environment from different angles, they send different information to the brain. The brain "learns" from the first days to assemble the two images,

so that we do not see a double image. But the difference between the two images helps the brain detect the location of the objects in the space and distance. This is the tridimensional vision, provided by binocular sight (when the field of the two eyes interpose). Arboreal and predatory animals need this type of sight for moving on the branches or hunt. Prey animals have usually lateral positioned eyes. Their fields do not interpose (this is monocular vision). They cannot assess distances well, but this way have larger visual fields, overlooking the environment for predators.

10. Why do we see blurry underwater? This has to do with the refraction indexes. Air has the refraction index 1, cornea and water about 1.33. The human crystalline cannot focus properly the light when experiencing the refraction index of the water, that's why we see underwater things as being blurry. The issue is eliminated with diving glasses which put a layer of air before the eyes.

11. These are urban legends about the eye and the eye's functioning, without any scientific support.

a. "The glasses increase the myopia and the hypermetropia because the eyes accustom the them." Myopia (distant range vision impairment) and hypermetropia (short range vision impairment) are determined by the cornea's form and this form is not affected by the use of the glasses.

b. "Reading in dim light harm the eyes". A new research proved this to be false. A poor illumination can cause headaches and harm the already weak eyes, but in fact strengthens the healthy eyes.

c. "Crossing the eyes produce strabismus". The incorrect eyes' posture is the result of developmental impairments. Crossing the eyes for amusement is not dangerous.

d. "The vein of the iris can show a person's health". Similarly to the fingerprints, the veins of the iris are very personal and cannot display the health of the owner.

e. "The blue-eyed ones see better than the brown-eyed ones". The iris color has no link with the visual sharpness.