

Eye (biophysics)/Principle of vision

The eye is a **combined optical system** with a variable focal length. The resulting image is *reduced, inverted and real*.

- when the beam enters the eye, the light passes **through the cornea** and **ocular fluid**
- variable opening in the **iris** controls the intensity of incident light
- after passing through the **lens** (the largest refractive index of all parts of the eye) the light spreads **with the vitreous** (smallest refractive index)
- the image formed on the **retina**, in which there are two types of cells:
 1. rods (perceive light intensity)
 2. cones (perceive colors)

Here are the endings of the of the optic nerve, that carry sensations to the brain.

- two main points are used to orient the eye doctor on the retina:
 1. **yellow spot (macula lutea)** – the place of greatest eye sensitivity
 2. **blind spot (discus nervi optici; papilla nervi optici)** – place where the optic nerve enters the eye, i.e. a place where there are no sticks or suppositories
- the emergence of a *sharp image* is made possible by **accommodating ability of the lens**, which is held by the ciliary muscle, which changes the curvature of the optical surfaces as needed (at a long distance, less curvature and vice versa):
 - when looking at a **far point** (infinity) the accommodation of the eye is *minimal*
 - when looking at the **near point** (up to 15 cm), the accommodation of the eye is *maximum*
- **Conventional visual distance** = 25 cm.

Links

Related articles

- Biochemistry of the vision process
- Trichromatic Vision
- Eye (biophysics)
- Eye (biophysics)/Eye defects
- Ocular muscles
- Eye (histology)
- Retinal detachment

Source

- Holešov. *Ladislava Jaroše Gymnasium* [online]. [cit. 2009-05-23]. <http://www.gymhol.cz/projekt/fyzika/07_soustavy/07_soustavy.htm>.

External links

- Kyplová Jaroslava: Biophysics visions. Multimedia support for the teaching of clinical and medical fields :: Portal of the 1st Faculty of Medicine of Charles University in Prague [online] 2/19/2008, last update 2/19/2008 [cit. 2011-12-22] Available from WWW: <<https://portal.lf1.cuni.cz/clanek-809-biofyzika-videni>>. ISSN 1803-6619