## The Optical System of the Human Eye

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The eye is perhaps the most important sensory organ through which man communicates with the external environment and for this purpose it has developed a remarkable visual system in terms of accuracy. The proposed construction presents a cross-section of the eye, with axial length being 24cm corresponding to a 10-fold scale of its actual size. For the simulation of the optical components of the eye appropriate refractive index hydrogels are used. The construction is not static, but dynamic allowing the supervisory functions of the major optical presentation of the eye, such as the adaptation of the crystalline lens for sharp focus onto the retina, as well as the refractive errors.



Axial myopia. The incident ray beam focuses in front of the retina.

Myopia is usually due to an increase in the length of the anteroposterior axis of the eye and it is therefore called **axial myopia**. In addition, it may be due to an increase in the refractive power of the eye due to an increase in the curvature of either the anterior surface of the cornea or the crystalline lens, and it is called **refractive myopia**.



## **Eye Anatomy**

**Cornea**: transparent convex surface that acts as a converging lens. **Aqueous fluid**: fluid that meets the anterior chamber of the eye. **Kore**: Acts as a hole through which light passes. **Iris**: Coloured membrane that acts as a diaphragm. **Ciliary body**: Consists of the radial muscles which modify the curvature of the lens. **Crystalline lens**: Its curvature is adjusted (accommodated). **Vitreous**: Fluid that meets the posterior chamber of the eye. **Retina**: Light-sensitive membrane rich in eye bead cells and cone cells of the eye (nerve endings).



Axial hyperopia. The incident ray beam focuses behind the retina.

Like myopia, hyperopia is distinguished in **axial hyperopia**, where the anteroposterior axis is smaller than normal, usually accompanied by small eye bulbs and in **refractive hyperopia**, where the curvature of any refractive surface of the eye (usually the cornea) becomes shorter than normal.

http://www.iris-pharma.com/eye-structures