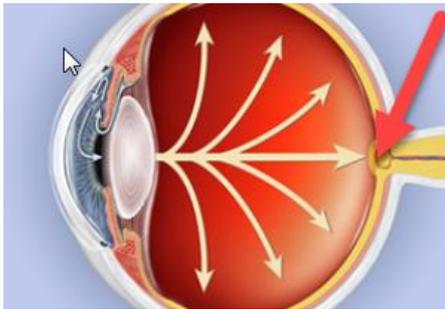
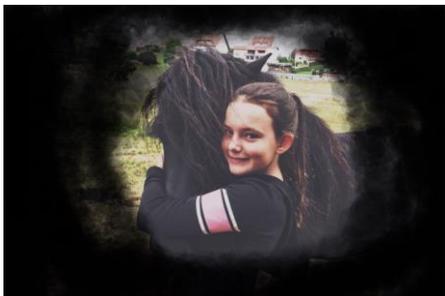


Glaucoma

Glaucoma is the term for a group of diseases which damage the eye's optic nerve and lead to vision loss and blindness. Glaucoma affects roughly 2% of all people aged over 40. Due to its slow progression, around half of them are not aware of the disease.



Picture 1: In glaucoma, pressure inside the eye bulb increases and damages the optic nerve (red arrow)¹



Picture 2: Impaired vision of a glaucoma patient

Glaucoma is a leading cause of vision impairment and vision loss in the elderly. It is estimated, that 70 million people globally suffer from such damage to the optic nerve. The risk of developing glaucoma increases with age. Anyone over 60 years of age is at risk. Symptoms result from damage to the optic nerve - a bundle of more than 1 million nerve fibers that connect the eye with the brain. This damage can be caused by a variety of factors. The most common of these is an increase in pressure within the eye bulb, which is caused by a fluid imbalance in the front part of the eye around the iris. But impaired circulation in the eye can also lead to optic nerve damages.

Without treatment, people with glaucoma will slowly lose their peripheral (side) vision. If glaucoma remains untreated, people may fail to see objects to the side and out of the corner of their eye. They seem to be looking through a tunnel. Over time, straight-ahead (central) vision may decrease until no vision remains. Once diagnosed, glaucoma can be treated in several ways, e.g. by lowering the eye pressure with special eye drops. But such therapies can only slow progression of the disease and not restore lost vision.

IOB has chosen glaucoma as priority focus area. It aims to develop artificial retinas that can be used to test glaucoma models in the petri dish. Such models will help to better understand the causal mechanisms of optic nerve damage and develop new, causal therapies.

¹ Picture sourced and modified from: <https://www.glaucoma.org/glaucoma/anatomy-of-the-eye.php>