Protective mechanisms of the eye

Most people consider the sense of sight the most important sense.
Our eyes are the first sense we use to perceive our surroundings and to orient ourselves in our surroundings.
Our eyes are reliably protected by a number of mechanisms.

Eye socket

Our eyes are located in eye sockets in our skulls, where they are well protected by the cranial bone. The majority of the eye lies within this bony shell, which protects it against blows and impacts. In addition to the eye's six muscles that can move the eyeball in all directions, fatty and connective tissues are found in the eye socket. These tissue structures cushion the eyes, keep the eyes in place, and soften impacts.

Eyebrows, eyelashes, and tears

If you look at the outside of an eye, you will notice the eyelashes and eyebrows as external parts. They protect the eye by keeping foreign bodies and liquids out. The eyelashes primarily prevent foreign bodies like dust from getting in the eye, while the eyebrows keep liquids like sweat and rain from flowing into the eye. The many tiny hairs of the eyebrow catch small particles and liquids and prevent them from entering the eye. If something nevertheless gets in the eye, the lacrimal glands respond, and tear fluid can flush the foreign body out through the lacrimal duct and into the nose.

Tear fluid and conjunctiva

Even if we're not crying, there is always a thin layer of tear fluid on our eyes. This film of moisture supplies the eyes with nutrients and prevents them from becoming too dry. Blinking, the closing and opening of the eye, ensures a uniform distribution of tear fluid on the eye. We close and open our eyes up to 15 times per minute. This works smoothly thanks to the film of tears.
Tear fluid has another special property: It contains substances that can break down intruders like bacteria. It is said that tears have an antibacterial effect that protects our eyes from germs and cleans them. The conjunctiva themselves serve as passive barriers and ensure that bacteria cannot penetrate deeper into the eyes.

Pupillary light reflex and blink reflex

You can observe an interesting thing when a bright lamp is turned on in a dark room: A person's pupils initially become very small and then slowly become a little larger again. This process is called the "pupillary light reflex." It ensures that exactly the right amount of light enters our eyes. However, it's not actually the pupil that contracts and expands, but rather the iris. With the aid of muscles, the iris continuously regulates the amount of incoming light.
Very bright light can even cause us to close our eyes, like when you look at a white snow-covered surface on a sunny day. This is called the "blink reflex." There are other things that trigger the blink reflex: loud, unexpected noises, like when a dog suddenly barks or something falls to the floor with a bang. If objects like a ball move quickly at us, we also reflexively close our eyes. Closed eyelids protect the eyeball and keep foreign bodies from entering the eye.