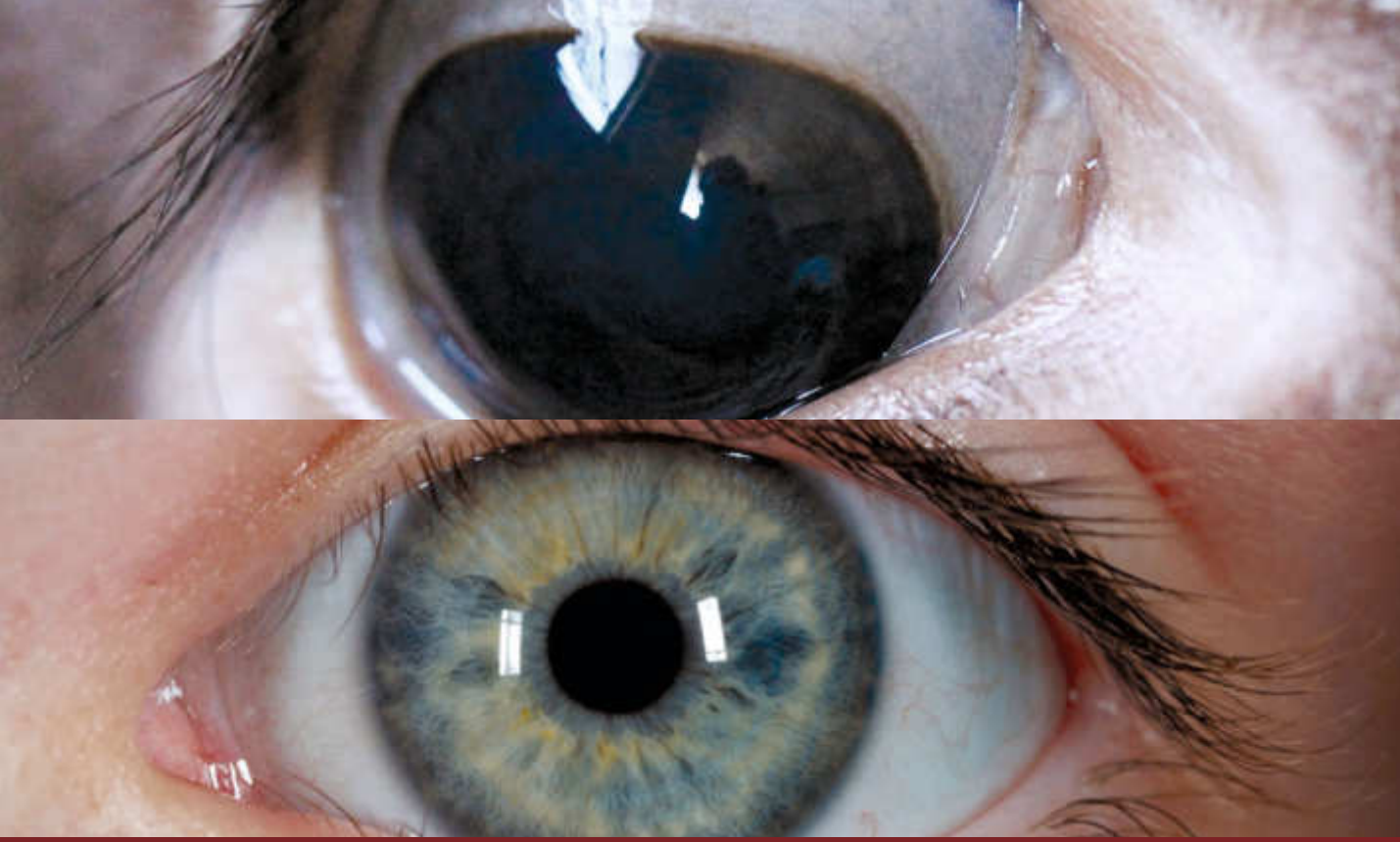

10 The language of our eyes

Of hidden meanings behind our look

To some extent, we understand the eye language of our closer animal cousins. This allows us to communicate many simple emotions across different species. The great apes, being our closest cousins on the tree of life, are able to recognize more of these than other animals.

G. Glaeser, H.F. Paulus, *The Evolution of the Eye*,
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The language of our eyes

Sibirian tiger *(Panthera tigris altaica)*

More than mere visual organs

Eyes are primarily visual organs for capturing photons and converting them into electrical signals that are then transferred to the brain. However, eyes also have the capacity of transmitting signals that induce emotional states in higher animals like mammals and birds. For instance, the cuteness of children or animals causes humans to spontaneously engage their attention and in protective measures (see page 199). Eyes are especially important in the transmission of such signals. The question of oculesics (the language of eyes) is somewhat more complicated. According to physiognomy, features of our body – in particular, our face, posture, gestures, countenance, and eyes – reflect our emotional state. An insight into human nature largely depends upon the understanding of this subtle language.

The color of the iris

There is a remarkable variability in iris colors among Europeans. Since the iris itself is largely unpigmented, blue is the base tone in most cases. The coloring is caused by a thin layer of pigment on the back of the iris, and shows itself most strongly in babies of a light skin color, as the pigment melanin that is responsible for different eye colors is lacking in young infants. Babies from Africa or Asia are usually born with dark-brown eyes. Young house cats are also born with light-blue eyes and attain their final eye color only after three months. Genetic research suggests that all humans originally had brown eyes, and that blue eyes have appeared only several thousands of years ago as results of a mutation. In general, a lack of pigments in the skin of humans is advantageous in regions of only moderate sunlight, since it assists the body in producing the essential vitamin D.

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Crying

Humans are the only mammals to lose more tear fluid than usual during crying. Usually, tear fluid serves to keep the eyes moist, to facilitate the movement of eyelids, and to wash away disruptive particles. The secretion of tear fluid increases during crying by a factor of 400. It is also believed that African Elephants shed tears out of joy or grief. However, the proverbial crocodile tears are definitely caused by something else (see page 201).

Ring-tailled Lemus *(Lemur catta)*

False eyes can be life-saving

Many butterfly species, like the South American morpho pictured here, exhibit circular patterns on their wings that are strikingly similar to eyes. Among the group of satyrines, these false eyes appear in varying numbers, mostly on the bottom sides of the wings. Their purpose is to draw the attention of attacking predators (birds and lizards in particular) away from the insect's body. The false eyes are usually found towards the outer edges of the wings, so that, in case of an attack, only the least essential parts are damaged. In fact, it can be observed that injured butterflies are most often damaged at the back edges of their wings. The specimen on the right page must have been attacked by a bird aiming at the posterior

M. Stevens **The role of eyespots as anti-predator mechanisms, principally demonstrated in the Lepidoptera** (2005): Biol. Rev. 80 (4): 573–588

Blue morpho *(Morpho peleides)*

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false eye, but has nevertheless survived the encounter due to its deceptive camouflage.

Satyrine *(Nymphalidae)*

Gossamer-winged butterfly *(Chilades pandava)* with a „false head"

False eyes under water

Angler *(Antennarius sp.)*