

Iris is an anatomical structure that performs the function of a diaphragm in the visual system of the eye. It usually occupies most of the visible part of the eye. In addition to the main function – not to let light pass by the pupil, iris can play many different roles due to the great variability of its coloration. Iris can be part of a camouflage or aposematic color, play a different role in intra- or interspecific communication. In some species, its color changes depending on age, season, biological cycles, or even quickly become marked in response to stimuli. Geckos (Gekkota) are distinguished by a particularly large variety of iris color. And in many of them, the iris pattern resembles branching veins. What significance and evolution history this pattern has is of interest. I used various models of evolutionary reconstruction in the R program to study the evolution of veined pattern of coloration of the iris, as well as phylogenetic comparative methods and binary character evolution model to identify its connections with the fusion of life and the contrast in brightness between the eye and the eye ring. It was revealed that the veined pattern is an ancestral condition for geckos and is present in most modern species. Most precisely, the evolution of the vein pattern is described by all rates different (ARD) model. veined pattern is associated with a nocturnal lifestyle, and presumably appeared after the transition of the ancestors of geckos to a nocturnal lifestyle in the Cretaceous period. The veined pattern tends to disappear in groups with a diurnal lifestyle. In total, the ARD model indicates 33 independent cases of disappearance and 2 secondary appearances of a veined pattern, one of which is probably false and caused by an error in the source data. It has been shown that the loss of the veined pattern causes a huge increase in the rate of acquisition and loss of the cathemeral and crepuscular lifestyles. At the same time, the positive relationship between the lost veined pattern and the number of diurnal species is rather weak. Based on this, the assumption is made that the loss of the veined pattern has a destabilizing effect on the lifestyle in evolutionary terms, thus contributing to its rapid change in all directions. It has also been shown that the brighter the iris is in relation to the eye ring, the more likely it is to match the appearance with the veined pattern. It has been suggested that a dim iris surrounded by a bright eye ring plays both a signaling role for relatives and a cryptic for predators. Bright iris takes over, presumably, takes over the function of the eye ring as a simple bright signaling device and loses a complex veined pattern. It is also assumed that the veined pattern can develop on the basis of the iris venous network. Further histological studies are required to verify this. The revealed patterns confirm the great importance and diversity of the roles of iris coloration in geckos and also suggest its significant role in evolution. Further studies of the role of the iris pattern in

geckos may be promising, as they can complement our understanding of the significance of this important and little-studied structure.