

Conspicuous social signaling drives the evolution of chameleon color change

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What drove the evolution of color change in chameleons? Chameleons can use color change to camouflage and to signal to other chameleons, but a new paper published in the open-access journal *PLoS Biology* shows that the need to rapidly signal to other chameleons, and not the need to camouflage from predators, has driven the evolution of this characteristic trait.

The research, conducted by Devi Stuart-Fox and Adnan Moussalli, shows that the dramatic color changes of chameleons are tailored to aggressively display to conspecific competitors and to seduce potential mates.

Because these signals are quick—chameleons can change color in a matter of milliseconds—the animal can afford to make it obvious, as the risk that a predator will notice is limited. This finding means that the evolution of color change serves to make chameleons more noticeable, the complete opposite of the camouflage hypothesis. The amount of color change possible varies between species, and the authors cleverly capitalise on this in their experiments.

Stuart-Fox and Moussalli measured color change by setting up chameleon “duels”: sitting two males on a branch opposite each other and measuring the color variation. By comparing species that can change color dramatically to those that only change slightly, and considering the evolutionary interrelationships of the species, the researchers showed that dramatic color change is consistently associated with the use of

color change as a social signal to other chameleons.

The degree of change is not predicted by the amount of color variation in the chameleons' habitat, as would be expected if chameleons had evolved such remarkable color changing abilities in order to camouflage.

Citation: Stuart-Fox D, Moussalli A (2008) Selection for social signalling drives the evolution of chameleon colour change. PLoS Biol 6(1): e25. doi:10.1371/journal.pbio.0060025 (www.plosbiology.org)

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