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"MAPPING PROTEINS LOCALIZATION IN ADHESIVE SETAE OF GECKOS AND THEIR POSSIBLE INFLUENCE ON THE MECHANISM OF ADHESION"

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INM, Leibniz-Saal, Campus D2 5
Gastgeberin: Prof. Dr. Aránzazu del Campo

The digital adhesive pads that allow gecko lizards to climb vertical surfaces result from the modification of the oberhautchen layer of the epidermis in normal scales. This produces sticky filaments of 10-100 micrometers in length, called setae that are composed of various proteins. The prevalent types, termed Corneous Beta Proteins (CBPs, formerly called beta-keratins), have a low molecular weight (12-20 kDa) and contain a conserved central region of 34 amino acids with a beta-conformation. This determines their polymerization into long (beta-)filaments which aggregate into corneous (beta-)bundles that form the framework of setae. Biomolecular studies show that the prevalent CBPs in the setae of *Gekko gecko* are cysteine-rich and are distributed from the base to the tip of adhesive setae, called spatulae. Although the three-dimensional structure remains undetermined, the molecular analysis of these proteins indicates that most of them are charged positively and some contain aromatic amino acids. These characteristics impedes to setae to stick together losing their adhesive property but also may potentiate the van der Waal interactions responsible for most of the adhesion process in hydrophobic or hydrophilic substrates. It is stressed that not only the nanostructural shape and the high number of setae present in adhesive pads but also the protein composition of setae influence the strength of adhesion to almost any type of substrate. Therefore artificial dry glues mimicking gecko adhesiveness should also consider the chemical nature of the organic polymers utilized to fabricate the future dry adhesives in order to obtain the highest performances.

Wir laden 15 Minuten vor Beginn zu einem Get-together mit dem Referenten ein.

KONTAKT

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