

INSIDE JEB

Shedding skin renews gecko's grip



Grazed knees are a fact of life for most kids, but human skin heals gradually and scabs are soon gone. Geckos, on the other hand, shed their skin all at once, repairing scrapes and tears at the same time. So when Rishab Pillai from James Cook University, Australia, noticed damage on the toe pads of velvet geckos, he was curious to find out how breaks in the adhesive skin on gecko soles affects their ability to cling to surfaces and whether sloughing their skin and rejuvenating adhesive structures restores their sticking powers.

Pillai housed 27 geckos – including northern velvet geckos (*Oedura castelnaui*), ocellated velvet geckos (*Oedura monilis*) and doddier Kristin's spiny tailed geckos (*Strophurus krisalys*) – in plastic enclosures that would be gentle on their feet. Then, he photographed the reptiles' right feet – front and back – with

help from Jendrian Riedel (Bielefeld University, Germany) and Lin Schwarzkopf (James Cook University) to calculate each gecko's sticky surface area. Next, he periodically checked the adhesive strength of the reptiles' feet over 30 days as the animals walked on horizontal glass by giving them a gentle tug backwards – resulting in wear and tear to the soles of their feet – until the geckos eventually discarded their aged skin. Sure enough, the geckos' ability to cling on declined after each tug and Pillai could see damaged areas that were no longer sticky on the animals' toes.

Once the reptiles had renewed their skin, Pillai allowed them to scamper around their enclosures for several weeks to find out how normal wear and tear affected their adhesive strength and, sure enough, it took less of a toll than tugging

repeatedly had. Finally, Pillai checked the geckos' adhesion within a few days of them replacing their skin again and this time the reptiles' stickiness recovered almost perfectly.

So, shedding their skin replaces damaged sticking structures that allow geckos to get a grip on any surface, and Pillai and his colleagues are keen to find out how clambering on more rugged surfaces might impact the reptiles' extraordinary stickability in the run up to getting a new skin.

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