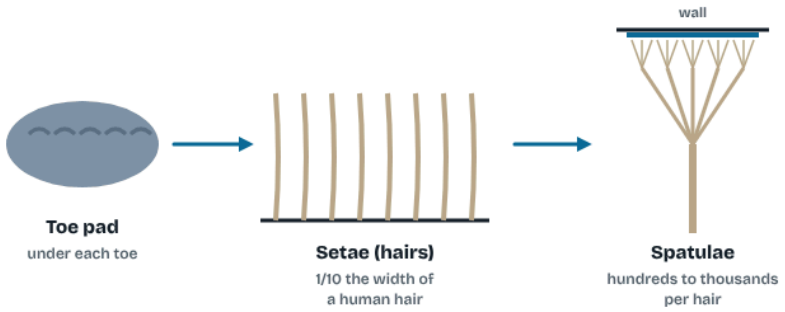
That is why

How do geckos stick to walls?

Millions of tiny hairs with split tips hug the surface so closely that weak pulls between molecules add up.

A Zoom into a toe

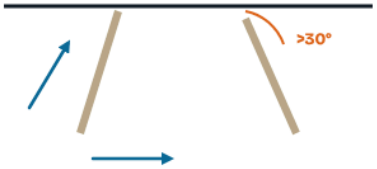


"Like broccoli on the tips of the hairs"

Molecules pulling on molecules

The tips crowd so close to the surface that weak attractions between molecules, van der Waals forces, add up. The same grip worked on water-loving and water-repelling surfaces (just 2% apart): "geometry, not surface chemistry."

B Grip, then peel



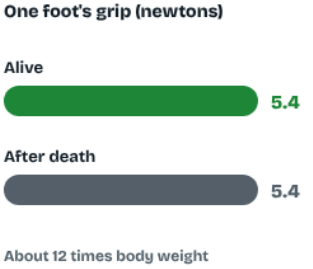
Push in, drag along:
600 times more grip

Tip past 30°: it lets go

1 Toes peel like tape

A gecko lets go by curling its toes back from the tip. Its feet stick and unstick 15 times a second when it runs.

C An effortless grip



2 A huge safety margin

One hair could lift an ant. All ~6.5 million together could hold 133 kg in theory; on glass a gecko may need just 10% of them. And the hairs clean themselves.

The grip is in the shape, and letting go is the clever part.

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