

What Makes Geckos Sticky?

Scientists say it's more than fancy footwork!

By Nelida Gonzalez Cutler

(SAN FRANCISCO, September 20) They run across ceilings. They zip up and down walls. What kind of crazy glue keeps geckos from tumbling down? For centuries, scientists were stumped. Now researchers at the University of California, Berkeley, and Lewis and Clark College in Portland, Oregon, have solved the mystery. They not only discovered the secret behind the geckos' ability to dangle from walls, they've copied it!

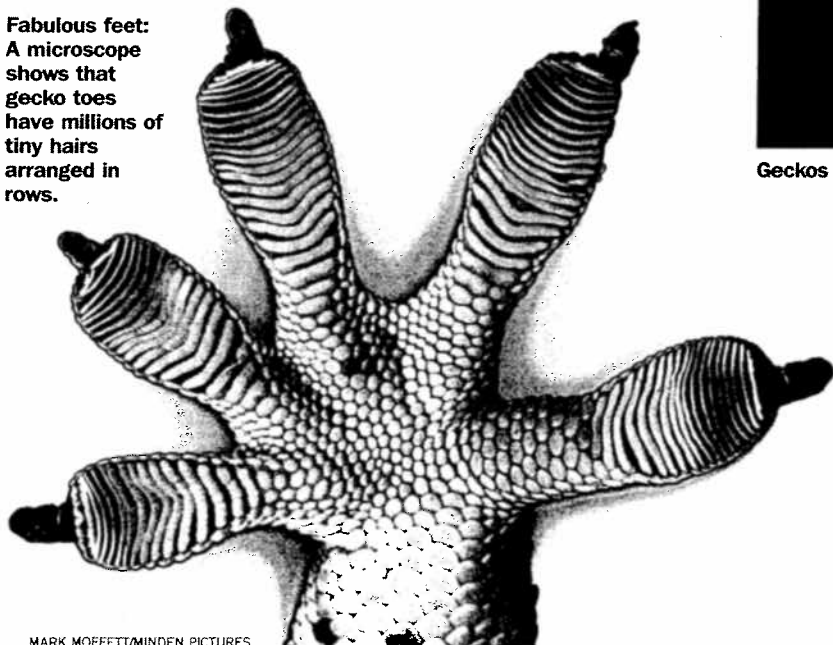
Figuring Out the Glues...Er, Clues

Scientists say what makes geckos stick isn't tacky glue or suction, it's geometry. "We've solved the puzzle of how geckos use millions of tiny foot hairs to adhere to even smooth surfaces such as polished glass," says scientist Kellar Autumn.

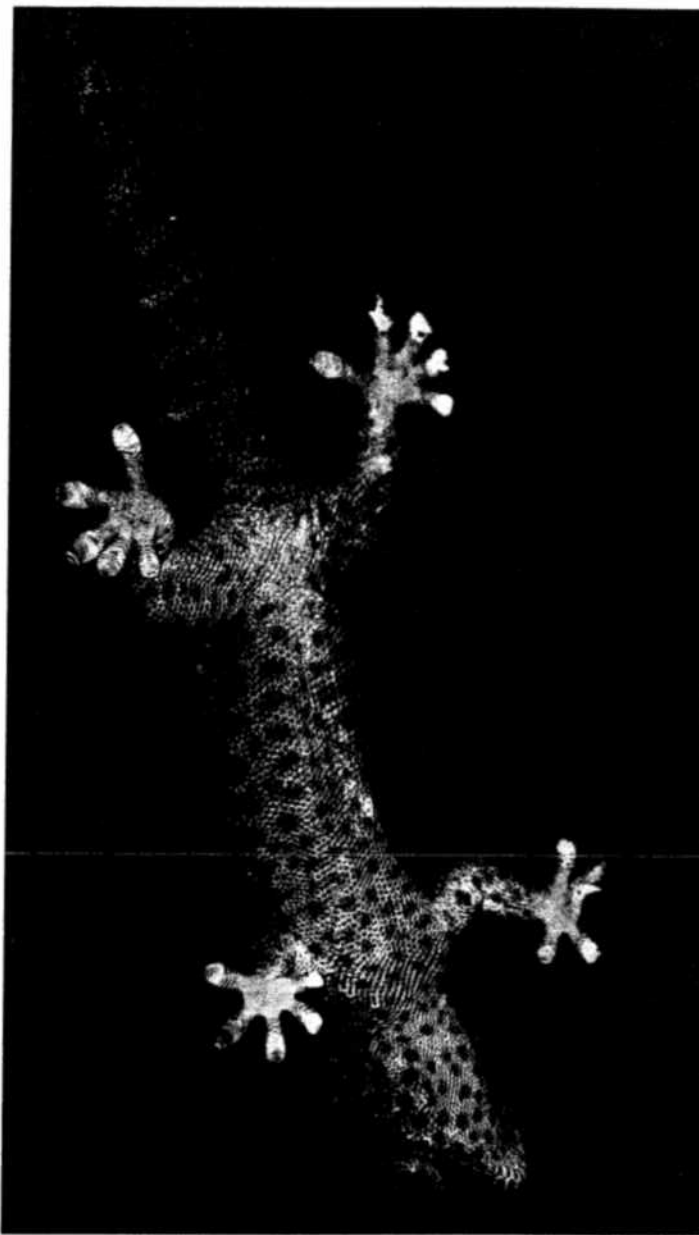
Gecko feet are covered with millions of tiny hairs called setae (see-tee), which split into hundreds of even tinier branches. Each gecko foot has as many as one billion of these split ends. Researchers found that the angle the toe hairs make with a surface allows them to stick.

As scientists watched films of geckos in action, they noticed that geckos curl and uncurl their toes to get them to stick to surfaces. "The gecko has this really unique way of taking its feet off the wall—it peels its toes like tape," says Autumn.

Fabulous feet: A microscope shows that gecko toes have millions of tiny hairs arranged in rows.



MARK MOFFETT/MINDEN PICTURES



Geckos can stick to anything! This one clings to a glass wall.

JONATHAN SEARL/EPFLUTERS/STIMPEX

Putting Geckos to Use

Why the big interest in gecko "glue"? Researchers believe that a human-made version would be an ideal dry adhesive. This unusual glue could be useful underwater or in space. A month ago, researchers announced that they had made artificial hair tips that stick almost as well as the geckos' own. "Now we've got to make billions of them to get significant adhesive force," says engineer Ron Fearing.

One thing is certain, it'll be a super glue: A million tiny setae, covering an area the size of a dime, would be strong enough to lift a 45-pound child!