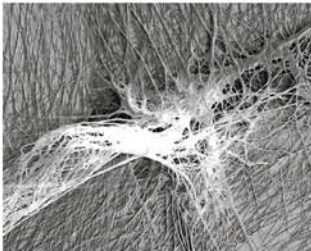




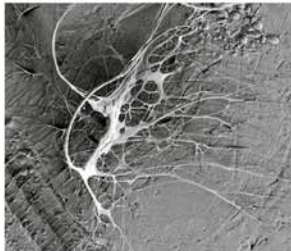
The House Spider's Sticky Secret



American house spider



Scaffolding silk



Gumfoot silk

THE American house spider (*Parasteatoda tepidariorum*) produces a web with adhesion that can be **strong enough** to stick to a wall or **weak enough** to detach from the ground and thus act as a spring-loaded trap for walking prey. How does the spider produce both strong *and* weak anchors for its web with a single type of glue?

Consider: The spider anchors its web to a wall, a ceiling, or a similar surface by weaving highly adhesive patches of silk called scaffolding discs, which are strong enough to withstand the impact of flying prey. Researchers at the University of Akron, Ohio, U.S.A., have discovered that, on the other hand, the patches of silk that are attached to the ground—called gumfoot discs—have an entirely different architecture, or construction. With far fewer attachment points than scaffolding discs, gumfoot discs allow the web to detach with ease and yank off the ground any prey that has walked into it.

According to a news release from the University of Akron, the researchers who uncovered this wonder of nature “are already working toward developing a synthetic adhesive that mimics this intelligent design strategy employed by the house spider.” Scientists hope to create an adhesive that can be used both for common bandages and for treating bone fractures.

What do you think? Did the house spider’s ability to produce weak and strong anchors with the same glue come about by evolution? Or was it designed? ■

Spider: © Premaphotos/Alamy; discs: Adapted by permission from Macmillan Publishers Ltd: NATURE COMMUNICATIONS: Cobweb-weaving spiders produce different attachment discs for locomotion and prey capture, 2012

