

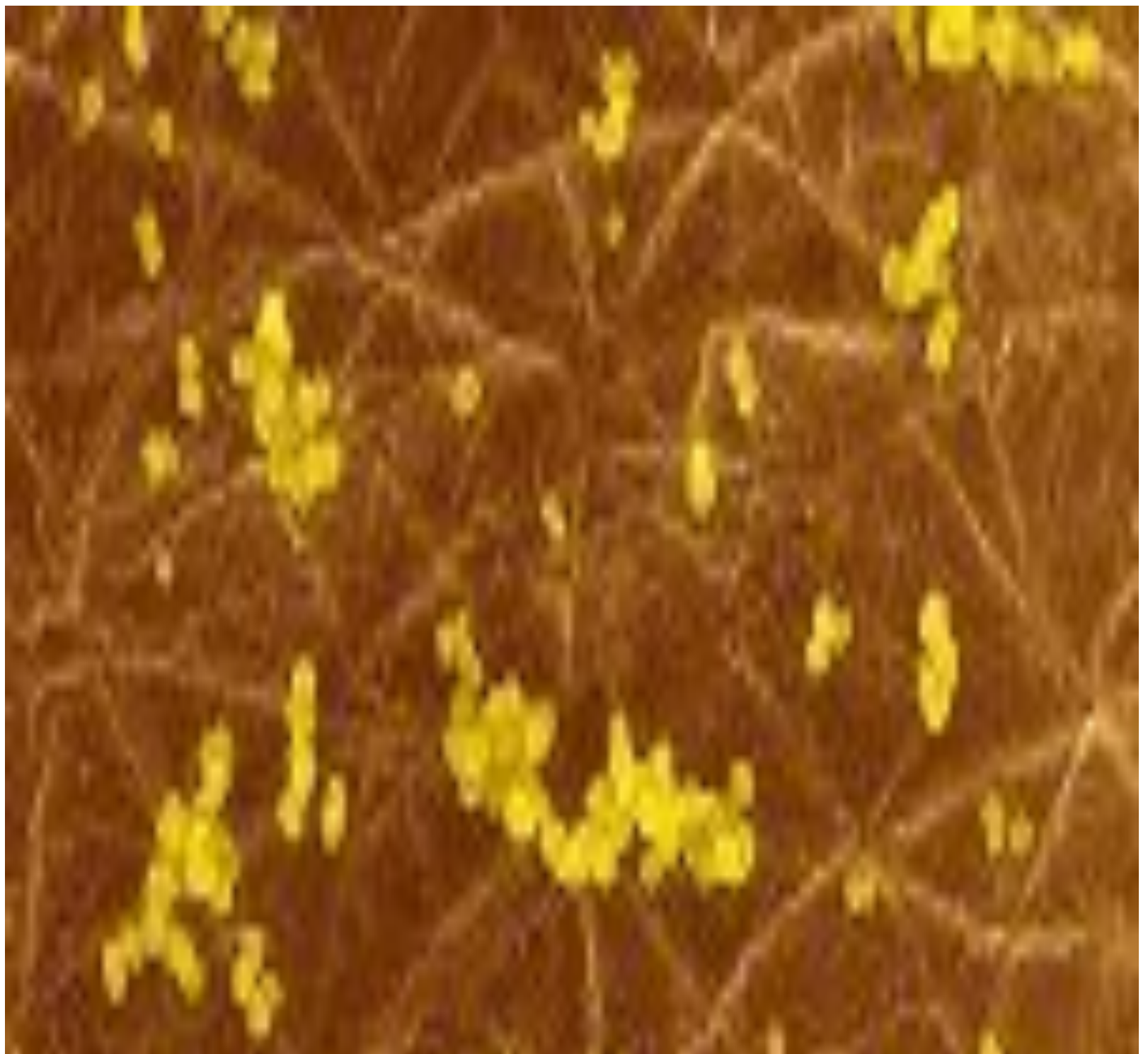
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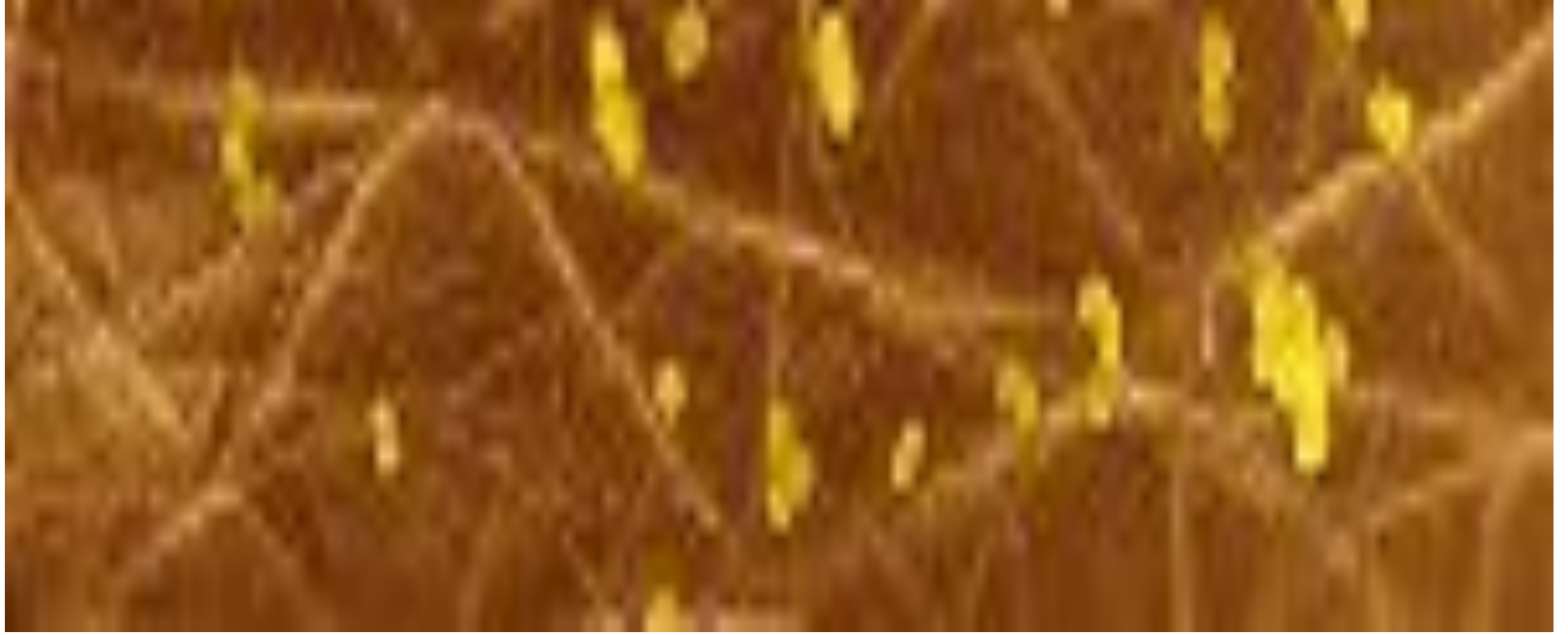


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SHORT-SHARP-SCIENCE 5 July 2017

Bad eczema flare-ups may be caused by strains of bacteria





***Staphylococcus* is common on the skin**

DENNIS KUNKEL MICROSCOPY/SCIENCE PHOTO LIBRARY

By **Sam Wong**

Particular strains of *Staphylococcus aureus* bacteria have been linked to skin irritation in children with eczema, suggesting that the microbes that live on our skin play a role in the disorder.

Eczema affects up to 20 per cent of children, periodically causing bouts of dry and itchy skin. The bacterium *Staphylococcus aureus*, which is commonly found on skin, is particularly prevalent in people with eczema, but its exact role in the condition is unclear.

To learn more, [Heidi Kong](#) at the National Institutes of Health in Bethesda, Maryland and colleagues collected samples of bacteria from the skin on different parts of the body in 11 children with eczema. They did this while the skin was healthy, during eczema flare-ups, and after flare-ups, as well as taking samples from seven children who don't have eczema.

The team used a DNA sequencing technique to analyse which species and strains of bacteria were in the samples.

Inflammation reaction

They found that, during severe flare-ups, communities of skin bacteria became dominated by particular strains of *S. aureus*. When children had only mild symptoms or no symptoms, the mix of bacteria present on their skin was more diverse. This finding echoes research on gut microbes, where [greater diversity of bacteria](#) has been linked to better health.

To see what effects these microbes had, they allowed bacteria taken from the volunteers to colonise the skin of mice. *S. aureus* strains from children with more severe eczema caused substantial skin inflammation in the mice, while other *S. aureus* strains only provoked a small reaction.

Understanding the role of bacterial strains in the disease could lead to new treatments. “We are interested in figuring out what these bacterial strains are doing on our patients,” says Kong. “If these are harmful, then finding a way to change what strains are on eczema

patients may be helpful.”

A recent study found that other species of *Staphylococcus* on the skin produce an antimicrobial compound that inhibits the growth of *S. aureus*, and that transplanting these bacteria could have clinical benefits.

Eczema is also linked to a higher risk of developing asthma and hay fever, so it’s possible that targeting skin bacteria to fight the disease could help prevent other conditions.

“This is a crucial area of research, because bacteria such as *S. aureus* have developed a survival strategy which protects them from attack from the body’s immune system as well as increasing their resistance to antibiotics and antiseptics,” says Nina Goad of the British Association of Dermatologists.

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