

Your Skin a Zoo of Microbes, Study Reveals

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Human skin teems with a zoo of strange microbes in colonies that are nearly unique from person to person and many of which are practically unknown to science, new research finds. Some of the [bugs](#) are permanent residents, while others come and go.

Like explorers in uncharted land, New York University scientists armed with molecular-detecting devices swabbed the forearms of six healthy subjects, three men and three women.

The researchers also re-swabbed four subjects 8 to 10 months later to measure changes in [bacteria](#) over time. Though the samples came from just a handful of subjects, the swabs provided enough [bacteria](#) for three years of lab work, results of which are detailed in the Feb. 5 online edition of the *Proceedings of the National Academy of Sciences*.

Genetic analyses of the samples revealed a total of 182 species of [bacteria](#), some of which have never been described by scientists. Roughly half of the bacteria belonged to four genera—a broader biological classification than species—long considered more or less permanent residents in human [skin](#), including [Staphylococcus](#) and *Streptococcus*, the bacterium that causes strep throat.

Nearly three-fourths of the total [microbial species](#) were unique to individual subjects, and only four of the species dwelled on all subjects.

The body-specific findings suggest each individual provides a unique [habitat for microbes](#).

"This is a surprise," said lead researcher Zhan Gao of New York University's School of Medicine. "But many things affecting the skin affect bacteria, such as the weather, exposure to light, and cosmetics use."

Certain species stick around for the long term, while others appear to be just visiting and come and go.

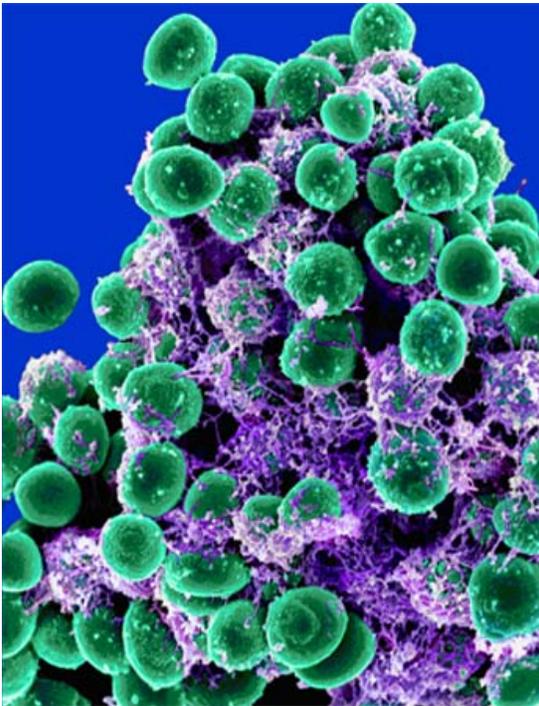
"The evidence suggests that the major residential organisms are present for decades, if not for life," said Gao's co-author Martin Blaser.

"As for the transients, I think we will find that there are different categories ranging from very transient--hours/days, to less transient--weeks/months. That is my hunch, but that will have to be studied more fully," Blaser told *LiveScience*.

Three bacterial species shun females and only live on male subjects: *Propionibacterium granulosum*, *Corynebacterium singulare* and *Corynebacterium appendixes*. The sample is too small to draw firm conclusions, but the scientists suggest [skin](#) attributes such as acidity might differ between men and women and lead to sex-specific bacterial residents.

A map of [microbes](#) that hide out on people's skin could help scientists understand the relationship between certain bacterial populations and [disease](#), and Blaser said that project is in the works

He said: "We plan to ask the question: Are the microbes in diseased skin, in certain diseases like psoriasis or eczema, different than the microbes in normal skin?"



Scanning electron microscopy of *Staphylococcus epidermidis* cluster. Credit: Michael Otto/NIH