

**The Scientist: NewsBlog:**

Skin microbes mapped

Posted by [Elie Dolgin](#)

[Entry posted at 13th November 2008 08:42 PM GMT]

[Comment on this blog](#)

Beauty may be skin deep, but our body's outer coating has an ugly side, too: microbes. Researchers reported at the *American Society of Human Genetics meeting* in Philadelphia today (Nov. 13) that they have drawn up a head-to-toe map of the microorganisms crawling on our skin.

"The skin is two square meters of ecosystems comprised of a variety of habitats and niches, and each of these habitats harbors its own microflora," said [Elizabeth Grice](#), a genomicist at the NIH's National Human Genome Research Institute.

Earlier this year, Grice and her colleagues charted the microbial communities inhabiting the inner elbows of five healthy people ([Genome Res, 18:1043-50, 2008](#)). Now, her team has expanded their exploratory skin scan to include 21 locations across the entire bodies of 10 people.



Skin bacteria cultured on blood agar

For one week, her 10 volunteers washed with Dove soap -- a mild disinfectant with no anti-bacterial compounds -- and then refrained from showering or hand-washing for 24 hours before skin samples were scraped from all over the body.

The researchers sequenced the 16S ribosomal RNA genes of each body part's sample to create a near-complete human skin microbe map. Although they found a high degree of variation between people, there was a consistent hierarchy of [microbial diversity](#) between skin sites. "We've seen sites with three species, and we've seen sites with 300," Grice told *The Scientist*.

The skin sites richest in microbes included the belly button, the buttocks, and inside of the forearm, the area between the fingers, and the gluteal crease (aka butt crack). The least diverse sites included the back, behind the ear, the toe web, the side of the nose, and the sternum.

Grice suspects that the low diversity sites may be too specialized or secluded to establish a rich assortment of microbes. What makes the belly button and the butt so inviting, however, remains to be seen. "We just haven't worked it out yet," Grice said.

Grice's team tended to find the same genera of bacteria thriving in the same habitats over and over again. In oily areas, [Propionibacteria](#) prospered; in moist environments, [Corynebacteria](#) and [Staphylococcus](#) dominated; while in drier parts of the body, the bacteria was more of a hodgepodge of different species.

This body-wide microbe survey provides a baseline to further understanding human skin diseases, Grice said. "It may be that the unique subsite community combined with genetic risk factors may explain why some diseases manifest at certain sites" across the body. Further, changes in the species or relative abundance of bacteria may be characteristic of diseases including [eczema](#), [psoriasis](#), and acne, she noted.

The next step, Grice said, is to perform metagenomic assays of the genes expressed at each skin site to gain insights into how the skin [microbiome](#) functions all over the body.

*Image courtesy of Bill Branson, NIH*

### [Rate this article](#)

---

Rating: **5.00**/5 (2 votes )

[Comment on this blog](#)

---