Study Shows Thousands of Bacteria Live on Common Objects

Cell phones and shoes host thousands of mysterious microbes.

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In soil, on surfaces, inside humans and on their skin—bacteria can be found everywhere. Now, new findings published in the journal Peer J reveal that thousands of different microbes live on cell phones and shoes, including obscure ones that scientists know very little about, reports the University of California, Davis.

For the largest study of its kind, researchers sampled microbes from spectators at sporting events across the United States between 2013 and 2014. Volunteers swabbed the cell phones and shoes of almost 3,500 people and sent samples to a laboratory for processing.

Next, investigators amplified and sequenced DNA from samples and used this information to identify major groups of bacteria that they uncovered.

Findings showed that shoes and cell phones from the same person consistently had distinct communities of bacteria. Microbes on cell phones were similar to those found on people, while shoes contained microbes specific to soil. (Microbes on shoes were also more diverse than those on cell phones.)

Scientists found no definite microbial trends across regions. In some instances, they noted major distinctions between specimens collected at different events in the same city, while sometimes samples from distant cities shared similarities.

Researchers were most surprised to find that a good quantity of bacteria originated from a group science categorizes as “microbial dark matter.” (These bacteria are difficult to grow and study in lab settings and have been likened to the invisible dark matter that astronomers believe makes up most of the universe.)

Many of these particular microbes are located in remote or extreme environments, such as boiling acid springs and nutrient-poor underground aquifers. But some were discovered in over 10% of samples taken.

Scientists discovered two dark microbe groups—Armatimonadetes and Patescibacteria—in about

50% of swabs, most often in specimens from shoes versus those from phones.

“A remarkable fraction of people are traveling around with representatives from these uncultured groups on commonplace objects,” said David Coil, PhD, a researcher at the University of California Davis Genome Center, and the study’s first author.

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