

A little bit of spit reveals a lot about what lives in your mouth

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Like it or not, your mouth is home to a thriving community of microbial life. More than 600 different species of bacteria reside in this "microbiome," yet everyone hosts a unique set of bugs, and this could have important implications for health and disease. In a study published online in *Genome Research*, scientists have performed the first global survey of salivary microbes, finding that the oral microbiome of your neighbor is just as different from yours as someone across the globe.

The human body harbors ten times more bacterial cells than human cells - a stunning figure that suggests a likely dynamic between ourselves and the bacteria we carry, both in healthy and disease states. The National Institutes of Health recently launched an initiative to categorize the microbiomes of several regions of the body, with early studies focusing on the intestines and skin. It is appreciated that the human mouth, a major entry point for bacteria into the body, also contains a diverse array of microbial species. Yet microbiome diversity between individuals, and how this relates to diet, environment, health, and disease, remains unexplored.

In this study, scientists have conducted the first in-depth study of global diversity in a human microbiome, characterizing the microbial life in human saliva from regions around the world. The researchers, led by Dr. Mark Stoneking of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, have sequenced and analyzed variation in the bacterial gene encoding 16S rRNA, a component of the ribosome, in the salivary "metagenome" of 120 healthy subjects from six

geographic areas. Stoneking and colleagues then compared the sequences they found with a database of 16S rRNA sequences to categorize the types of bacteria present.

The group observed that there is considerable diversity of bacterial life in the saliva microbiome, both within and between individuals. However, they made an unexpected finding when comparing samples from different geographic areas. "The saliva microbiome does not vary substantially around the world," Stoneking described. "Which seems surprising given the large diversity in diet and other cultural factors that could influence the human salivary microbiome." Stoneking explained that this suggests the life inhabiting the mouth of your next-door neighbor is likely to be just as different from yours as someone on the other side of the world.

Stoneking noted that by studying sequences from an easily obtained saliva sample, their work has provided the foundation for future studies exploring the influence of diet, cultural factors, and disease on variation in the saliva microbiome. In addition, the group's findings could help analyze human migrations and populations. While it may not be pleasant to think about the life teeming in your mouth, it is now evident that we will be able to learn a lot about oral health and disease by understanding what is living there.

More info: www.genome.org

Source: Cold Spring Harbor Laboratory

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