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Is Your Skin Crawling?

Article

WASHINGTON, D.C. (Achieve3000, June 19, 2009). There's a zoo living on your skin—a bacterial zoo, that is. Scientists always knew that healthy skin had bacteria. But a recent study showed that this bacterial community is larger and more assorted than they realized.

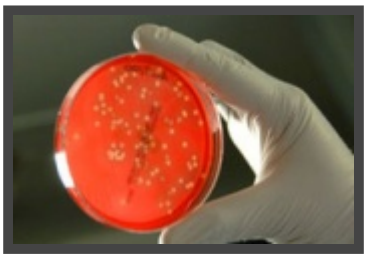

Photo credit: Julia Segre / National Human Genome / Research Institute

Scientists always knew that bacteria lived on healthy skin. But a recent study showed that this bacterial community is larger and more assorted than scientists realized.

Trillions of bacteria, fungi, and other microbes coexist on the skin and even in the digestive tract. That's not a bad thing. "[Bacteria] keep your skin moist and make sure if you get a wound that [dangerous] bacteria [from outside the body] don't enter your bloodstream," said Julia Segre, a genetics specialist at the National Institutes of Health (NIH). Most of the body's bacteria are actually good, she said. "We take a lot for granted in terms of how much [our body's bacteria] contribute to our health."

Officials from the NIH wanted to find out more about the bacteria that live in different areas of the human body. They also wanted to learn which bacteria help maintain good health. That is why the organization launched the "Human Microbiome Project." For the project, scientists recruited 10 volunteers and took samples of bacteria from 20 parts of their bodies. The samples contained 112,000 bacteria. Scientists studied these bacteria and found that they could be grouped into 1,000 strains, or species. That's hundreds more than scientists thought existed on human skin.

Scientists also found that the human body is home to several ecosystems. Each ecosystem supports different kinds of bacteria. A person's body is like Earth, where different living things live in different locations. The moist underarm is like a rainforest. The dry inside of the forearm is a desert. Each ecosystem harbors distinctly different bacteria suited to its environment. In fact, the bacteria under two unrelated people's underarms are quite similar. But the bacteria on one person's underarm and forearm are very different.

The number of different types of bacteria also differed, depending on the location. In the study, the forearm had an average of 44 species of bacteria. But behind the ears only had an average of 19 species. It's not yet clear how many of these bacteria naturally exist on the body. People can also pick up bacteria from doorknobs and other places. When researchers re-checked five of the volunteers a few months after the first study, the bacteria in some spots, such as the nostril, were about the same. Other spots, including the forearm, had changed quite a bit.

Some of the bacteria found on the skin were good for the body. Other bacteria were types that could cause disease. For example, one good type of bacteria is Staph epidermidis. It is found all over the body. Staph epidermidis helps protect us from bad bacteria called Staph aureus. That type of bad bacteria can cause skin problems.

The NIH study could help scientists answer some important questions. One question is: how do the bacteria found on the skin of people with skin diseases such as eczema or psoriasis differ from the bacteria on healthy skin? Another question is: are antibacterial soaps OK to use, or do they kill too many of the good bacteria?

"In trying to get rid of the bad guys, are we getting rid of the good guys?" asked Dr. Marin Blaser, who researches infectious diseases.

Scientists hope that future studies will answer these questions. For now, Segre says, it's important to remember that the bacteria on our skin have a purpose. In many cases, it's a good purpose.

"I'm a mother of two small children; I believe very strongly in [staying clean and] washing your hands," Segre said. "[But] we have to understand that we live [together] with bacteria and [that] they are part of us … and not just … bad … and smelly."

The Associated Press contributed to this story.

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Dictionary

coexist *(verb)* to exist together at the same time

digestive tract *(noun)* the tube that takes food all the way through the body

fungus *(noun)* a tiny living thing that grows on plants or animals

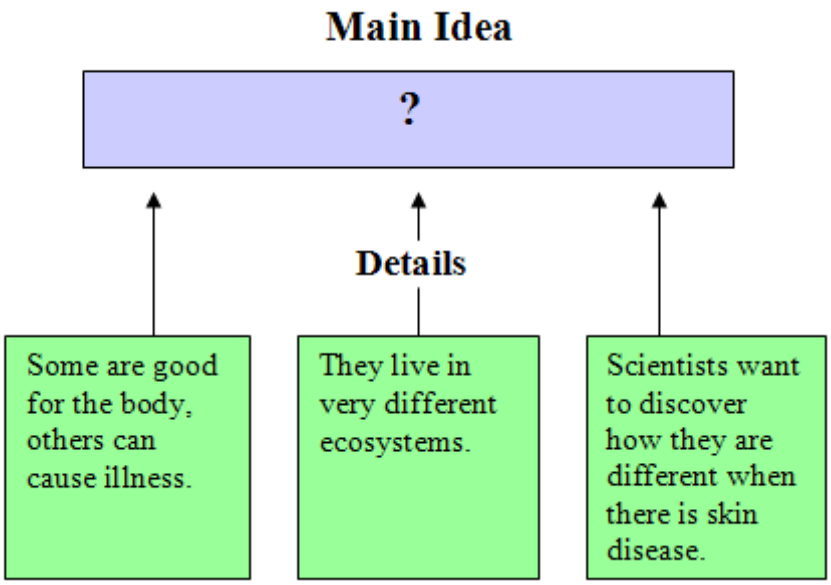
microbe *(noun)* a living thing that is too small to see with the eyes alone

microbiome *(adjective)* having to do with a group of living things that exist in a certain environment, on a very small scale

Activity

PART 1

Question 1



Based on the article, which best replaces the question mark in the diagram above?

- (A) The NIH is looking into the safety of antibacterial soaps for people who suffer from skin diseases.
- (B) The NIH genetics specialist stated that bacteria can be dangerous if it enters the bloodstream.
- (C) The NIH recently found that there are 1,000 species of bacteria living on human skin.
- (D) The NIH recruited volunteers to collect samples of bacteria from 20 different locations.

Question 2

According to the article, why do different bacteria live on different parts of the body?

- (A) The bacteria live in specialized ecosystems, just as animals and plants on Earth do.
- (B) The bacteria are unrelated and could cause serious disease or skin problems when mixed.
- (C) The bacteria must move from people to objects and then back to different people.
- (D) The bacteria are traveling from one part of the body to another, looking for bad bacteria.

Question 3

Which means almost the **same** as the word *coexist?*

- (A) Grow stronger
- (B) Live together
- (C) Die quickly
- (D) Stay apart

Question 4

Based on the article, which is most likely to happen?

(A) Scientists will discover that every species of bacteria is harmful to the skin in large quantities.

(B) Scientists will decide that it's far too difficult to study the differences among trillions of tiny bacteria.

(C) Scientists will look for ways to decrease harmful bacteria on the skin while keeping the good bacteria.

(D) Scientists will suggest that people stop washing their hands in order to protect the bad bacteria.

Question 5

The article states:

The *moist* underarm is like a rainforest. The dry inside of the forearm is a desert. Each ecosystem harbors distinctly different bacteria suited to its environment.

Which would be the closest **antonym** for the word *moist?*

(A) Tropical

(B) Irrigated

(C) Dry

(D) Fertile

Question 6

The article states:

For the project, scientists recruited 10 volunteers and took samples of bacteria from 20 parts of their bodies. The samples contained 112,000 bacteria. Scientists studied these bacteria and found that they could be grouped into 1,000 strains, or species. That's hundreds more than scientists thought existed on human skin.

Why did the author include this information?

(A) To describe the groups of Staph bacteria discovered by the Human Microbiome Project

(B) To explain the reason for starting the Human Microbiome Project

(C) To explain an important finding of the Human Microbiome Project

(D) To describe the species of bacteria destroyed by the Human Microbiome Project

Question 7

Which of these is **most** important to include in a summary of this article?

(A) The bacteria on the human body can protect wounds from dangerous bacteria.

(B) The bacteria that exist on human forearms thrive in a dry environment.

(C) Scientists recruited volunteers who carried a large supply of healthy bacteria.

(D) Scientists learned there are about 1,000 species of bacteria living on human skin.

Question 8

This article is placed in a group of news called "Health." In which other group would this article fit best?

(A) Space Travel

(B) Science Scene

(C) Business News

(D) Famous People