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Ewww! Don't Touch That!

Article

PART 1

WASHINGTON, D.C. If someone in your home has the sniffles, beware of doorknobs and the TV remote control. A recent study revealed that cold sufferers often leave their germs on common household surfaces like these, where, the study showed, viruses can survive for two days—or longer.

The two-part study, which was designed at the University of Virginia, a school long recognized for its research into a branch of science called virology, endeavored to learn more about germs and lay the groundwork for future research into methods for eliminating the infectious microbes. To conduct their research, scientists tested various surfaces in the homes of several people who were suffering from colds.

In the first part of the study, scientists gathered 30 adults who displayed early symptoms of colds. Subsequent testing revealed that 16 of the 30 had been infected with rhinovirus, the virus responsible for about half of all colds. The 16 participants were asked to list 10 places in their homes that they had touched in the previous 18 hours. Scientists then used DNA tests to hunt for rhinovirus in those locations.

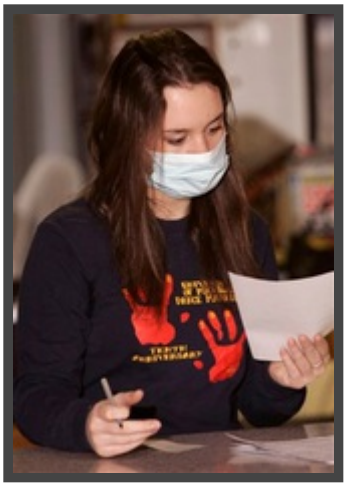


Photo credit and all related images: AP Photo/Carlos Osorio

According to a recent study, face masks can help protect people from catching colds.

Scientists didn't have to search too meticulously to find what they were looking for. Germs ran rampant. All three of the salt and pepper shakers they tested were contaminated with the rhinovirus. So were 8 of 10 bathroom faucets, 3 of 4 dishwasher handles, and 6 of 10 remote controls. In addition, 8 of 14 refrigerator handles, 4 of 7 telephones, 6 of 18 doorknobs, and 3 of 13 light switches tested were also found to be harboring the virus.

"We found that commonly touched areas like refrigerator doors and handles [tested] positive [for cold germs] about 40 percent of the time," said Dr. Birgit Winther, an ear, nose, and throat specialist who assisted with the research.

For the second part of the study, scientists attempted to determine how long the viruses remained live on the household surfaces. To do this, scientists deliberately smeared various household surfaces with participants' mucus and then tested to see whether rhinovirus stuck to their fingers. The participants went about their daily routines, which included turning on lights, answering the telephone, and other common tasks. The study revealed that more than half of the participants got the virus on their fingertips 48 hours after the surfaces had been sullied with the mucus.

To some experts, these results were not surprising. Last year, during the cold and flu season, Dr. Diane Pappas and Dr. Owen Hendley went germ-hunting on toys in the offices of five pediatricians. Their tests uncovered fragments of cold viruses on 20 percent of the toys they tested.

Although these days-old viruses survive on surfaces and are proven to be transferable, are they still potent enough to cause someone to become sick? According to Dr. Paul Auwaerter, an infectious-diseases specialist at Johns Hopkins University, no proof exists that the remnants of older viruses themselves can infect. He acknowledges, however, that

their presence does suggest that it's a risk worthy of concern.

Until further research is done, doctors say that people should take precautions to protect themselves from becoming infected. Some experts recommend the use of hand sanitizers or surgical masks. They point to a University of Michigan study that followed 1,000 students for six weeks. The students were divided into three groups: those who wore masks, those who wore masks and used hand sanitizer, and those who did neither. The two groups who used masks reported 10 percent to 50 percent fewer cold symptoms than the group that took neither preventative measure.

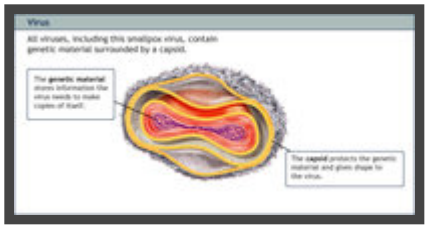
While hand sanitizers and surgical masks appear to help prevent infection, doctors remind that frequent hand washing will go a long way toward impeding the spread of germs in the first place.

The Associated Press contributed to this story.

PART 2

Dig Deeper

Scientists have learned much about viruses and can even make images of them with specialized microscopes. All viruses consist of genetic material contained inside a protective protein coat called a capsid. The protein coat may be a simple tube, such as the coat of an Ebola virus, or have many layers, such as the smallpox virus shown in the illustration.



Credit: Houghton Mifflin Company

Viruses may come in many shapes and sizes, but all viruses consist of a capsid and genetic material. Viruses are able to use living cells to get their DNA copied and so are able to produce new viruses, a characteristic that makes them similar to living things. Also the protein coat is similar to a cell's outer membrane. But viruses do not grow, and viruses do not respond to changes in their environment. Therefore, viruses are not living organisms.

Viruses cannot reproduce by themselves, which is one of the ways they are different from living things. However, viruses can use materials within living cells to make copies of themselves. The cells that viruses infect in order to make copies are called host cells. Despite their tiny size, viruses have the ability to cause a lot of damage to cells of other organisms.

Some viruses stay inside their host cells. Others use the host cell as a factory that produces new viruses one at a time. These viruses may not be as harmful to the infected organism because the host cell is not destroyed. A host cell does not often benefit from providing living space for a virus. The virus uses the cell's material, energy, and processes. In many cases, after a virus has made many copies of itself, the new viruses burst out of the host cell and destroy it.

Harmful viruses cause huge problems. Viruses that cause diseases such as polio, smallpox, diphtheria, or AIDS have had a major impact on human history. About 25 million people died of influenza in an outbreak that occurred just after World War I.

Plant viruses can stunt plant growth and kill plants. When plant viruses invade crop plants, they can cause much economic damage, decreasing food production. Plants, animals, bacteria, and all other living things are capable of being infected by viruses.

Today, scientists are discovering ways to use viruses in a positive way. Scientists use viruses to insert certain pieces of genetic material into living cells. For example, the portion of genetic materials that allows some marine organisms to produce a chemical that glows can be inserted into tissue samples to help scientists study the samples.

Dictionary

host cell *(noun)* a cell that a virus infects and uses to make copies of itself

impede *(verb)* to hinder

meticulously *(adverb)* with extreme care and precision

sully *(verb)* to make dirty

virology *(noun)* a science that deals with the study of viruses and diseases caused by viruses

virus *(noun)* a nonliving, disease-causing particle that uses the materials inside cells to make copies of itself

Activity

PART 1

Question 1

According to the article, what is one reason why virologists at the University of Virginia wanted to study rhinovirus germs?

(A) The scientists wanted to understand why university students are more likely to catch colds than employees in large offices.

(B) The scientists wanted to lay the groundwork for future research into methods for eliminating the infectious microbes.

(C) The scientists wanted to test various brands of hand sanitizers to determine which was the most effective against cold symptoms.

(D) The scientists wanted to determine if a home's kitchen area is the most likely place to be contaminated with rhinovirus germs.

Question 2

Which of these had **not** yet happened when this article was written?

(A) Virologists conducted a study to determine the effectiveness of surgical masks and hand sanitizers against rhinovirus.

(B) Virologists deliberately smeared various surfaces with mucus to see how long rhinovirus germs survived on household surfaces.

(C) Virologists discovered how to completely isolate and eradicate the germs responsible for the spread of rhinovirus.

(D) Virologists discovered that toys in the offices of pediatricians are likely to be contaminated with fragments of rhinovirus.

Question 3

Which is the closest **antonym** for the word *impede*?

(A) Retaliate

(B) Fluctuate

(C) Stipulate

(D) Facilitate

Question 4

What is the *fourth* paragraph mainly about?

(A) The statistics from the first part of the virologists' study of household surfaces

(B) The household surfaces on which scientists could not find any rhinovirus germs

(C) The reasons why rhinovirus germs are most commonly found on door handles

(D) The common traits of the participants in the first part of the virologists' study

Question 5

The article states:

> **Although these days-old viruses survive on surfaces and are proven to be *transferable*, are they still potent enough to cause someone to become sick? According to Dr. Paul Auwaerter, an infectious-diseases specialist at Johns Hopkins University, no proof exists that the remnants of older viruses themselves can infect.**

Look at the passage above and think about the article. Which would be the closest **synonym** for the word *transferable*?

(A) Malleable

(B) Gullible

(C) Insensible

(D) Communicable

Question 6

Which of these is a statement of opinion?

(A) It makes the most sense for doctors to recommend that people with a cold wear surgical gloves to prevent the spread of rhinovirus.

(B) A recent study revealed that the germs left by cold sufferers on common household surfaces can survive for many days.

(C) It was during the first part of the study that scientists gathered 30 adults, finding that 16 of them had been infected with rhinovirus.

(D) A recent study endeavored to learn more about germs and lay the groundwork for future research into methods for ridding of the infectious microbes.

Question 7

Think about the following sentence: **"Children, especially those who are of school age, are very likely to come in contact with rhinovirus germs."**

In which paragraph would the author most likely place this sentence?

(A) Paragraph 6

(B) Paragraph 3

(C) Paragraph 4

(D) Paragraph 7

Question 8

The article states:

> **[Scientists] point to a University of Michigan study that followed 1,000 students for six weeks. The students were divided into three groups: those who wore masks, those who wore masks and used hand sanitizer, and those who did neither. The two groups who used masks reported 10 percent to 50 percent fewer cold symptoms than the group who did not take any preventative measures.**

The author's purpose for writing this passage was to _____.

(A) Provide scientific justification as to why scientists recommend that people make efforts to protect themselves against the spread of rhinovirus

(B) Describe to readers some cold symptoms that could be easily avoided if one chose to take the necessary precautions and preventive measures against them

(C) Convince readers that college students, especially those in colder climates, are at the highest risk of contracting rhinovirus

(D) Explain how surgical masks and hand sanitizers successfully work as preventive measures in 10 percent and 50 percent of the study population, respectively