



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. There, the study showed, viruses can survive for two days—or longer.

The two-part study was designed at the University of Virginia, a school long recognized for its research into a branch of science called virology. The study 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.

Scientists didn't have to search too carefully 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 contaminated 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

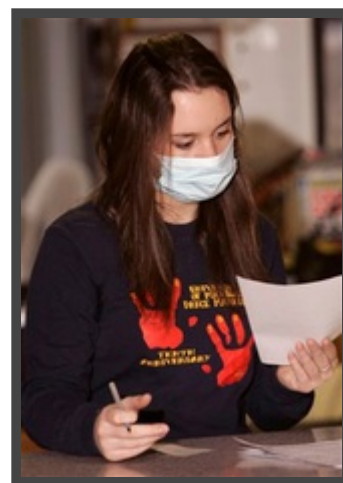


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AP Photo/Carlos Osorio

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

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.

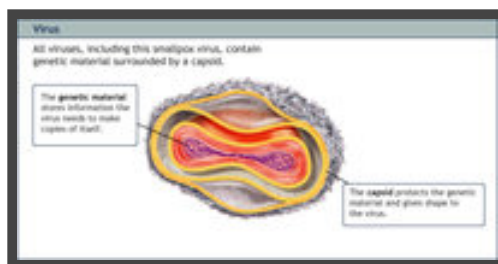
While hand sanitizers and surgical masks appear to help prevent infection, doctors remind that frequent hand washing will go a long way toward preventing the spread of germs in the first place.

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

rampant (*adjective*) happening in an uncontrolled and usually threatening manner

subsequent (*adjective*) coming after an event

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, why did scientists test various surfaces in the homes of people who were suffering from colds?

- (A) They hoped to prepare for a study about how people suffering from colds change their daily routines.
- (B) They wanted to determine whether different types of household surfaces hold on to different types of viruses.
- (C) They wanted to conduct a study on germs and prepare for future research into methods for eliminating them.
- (D) They wanted to determine whether it was household bathrooms or kitchens that were more likely to harbor germs.

Question 2

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

- (A) A study showed that people who used masks reported up to 50 percent fewer cold symptoms than those who didn't wear them.
- (B) A study was conducted to determine whether hand sanitizers and masks are effective against the spread of rhinovirus.
- (C) Virologists discovered proof that even days-old remnants of cold viruses are potent enough to cause infection.
- (D) Scientists smeared various surfaces with mucus and then tested to see if rhinovirus survived on household surfaces.

Question 3

Which is the closest **synonym** for the word *rampant*?

- (A) Impudent
- (B) Unredeemed
- (C) Improbable
- (D) Unrestrained

Question 4

What is the *second* paragraph mainly about?

- (A) The primary reason that the University of Virginia is recognized for its virology research
- (B) The reason that University of Virginia scientists conducted the study in people's homes
- (C) The results revealed by the first part of a two-part study at the University of Virginia
- (D) The process and goals of a study designed by virologists at the University of Virginia

Question 5

The article states:

Until further research is done, doctors say that people should take *precautions* to protect themselves from becoming infected.

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

- (A) Subordinates
- (B) Secretions
- (C) Safeguards
- (D) Supplements

Question 6

Which of these is a statement of opinion?

- (A) People experiencing early symptoms of colds should wear face masks to avoid spreading their germs.
- (B) Virologists found that commonly touched areas tested positive for cold germs about 40 percent of the time.
- (C) Dr. Diane Pappas and Dr. Owen Hendley did a study in which they examined toys in the offices of five pediatricians.
- (D) Scientists used DNA tests to hunt for rhinovirus in places that study participants had touched in the past 18 hours.

Question 7

Which information is **not** in the article?

- (A) The number of doctors who conducted the germ study at five pediatricians' offices
- (B) The number of adults in the study who tested positive for infection with rhinovirus
- (C) The name of the virologist who designed the research study at the University of Virginia
- (D) The name of the doctor who assisted virologists with the University of Virginia study

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 that took neither preventative measure.

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

- (A) Scientifically prove that the cold study was done at a university recognized for its virology research
- (B) Provide scientific proof for the fact that people who used hand sanitizers washed their hands 50 percent more frequently
- (C) Scientifically prove that people who use both face masks and hand sanitizer do not need to wash their hands as much
- (D) Provide scientific proof for scientists' recommendation that people take preventative measures against germs