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

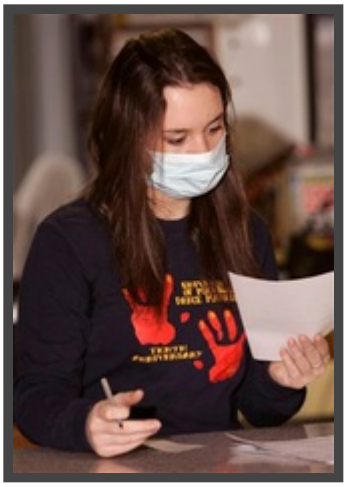


Photo credit and all related images: AP Photo/Carlos Osorio

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

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. Testing later revealed that 16 of the 30 had been infected with rhinovirus. This virus is 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 unchecked. 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. Winther is 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. They then tested to see whether rhinovirus stuck to their fingers. The participants went about their daily routines. These routines 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? Dr. Paul Auwaerter is an infectious-diseases specialist at Johns Hopkins University. According to Auwaerter, 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.

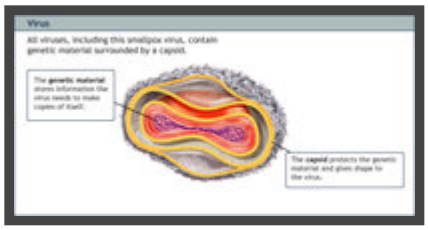
While hand sanitizers and surgical masks appear to help prevent infection, doctors remind that frequent hand washing will go a long way toward preventing the spread of germs in the first place.

The Associated Press contributed to this story.

PART 2

Dig Deeper

Scientists have learned much about viruses. They can even make images of them with special microscopes. All viruses are made of genetic material. This material is 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. It can also have many layers, such as the smallpox virus shown in the picture.



Credit: Houghton Mifflin Company

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

Viruses cannot reproduce by themselves. This 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. Viruses are tiny. But they 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. It allows the virus to produce new viruses one at a time. These viruses may not be as harmful to the infected organism. That is 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 changed human history. About 25 million people died of influenza in an outbreak that happened just after World War I.

Plant viruses can stunt plant growth and kill plants. Sometimes crop plants get viruses. This can cause much damage, decreasing food production. A lot of people will lose money. Plants, animals, bacteria, and all other living things can be infected by viruses.

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

Dictionary

deliberately *(adverb)* on purpose

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

potent *(adjective)* strong; powerful

precaution *(noun)* action taken to avoid risk or injury

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) To determine whether germs live longer on bathroom doorknobs or on refrigerator handles
- (B) To determine whether more people catch germs at doctors' offices or in their homes
- (C) To learn more about germs and prepare for future research into methods for eliminating them
- (D) To learn more about how various types of hand sanitizers remain on different surfaces

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) Scientists smeared various surfaces with mucus and then tested to see if rhinovirus survived on household surfaces.
- (C) A study was conducted to determine whether hand sanitizers and masks are effective against the spread of rhinovirus.
- (D) Virologists discovered proof that even days-old remnants of cold viruses are potent enough to cause infection.

Question 3

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

- (A) Intentionally
- (B) Indifferently
- (C) Immortally
- (D) Improperly

Question 4

What is this article mainly about?

- (A) Doctors think that frequent hand washing would prevent the spread of germs, even without the use of sanitizers.
- (B) A two-part study was designed at the University of Virginia, where other germ studies have been done.
- (C) A study revealed that cold sufferers often leave germs on household surfaces, where the germs survive for days.
- (D) Scientists found evidence that household surfaces were harboring rhinovirus, despite the use of hand sanitizers.

Question 5

The article states:

All three of the salt and pepper shakers they tested were *contaminated* with the rhinovirus.

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

(A) External

(B) Incensed

(C) Infected

(D) Exempt

Question 6

Which of these is a statement of opinion?

(A) Doctors should urge all cold sufferers to wear face masks so others don't catch their germs.

(B) The study aimed to prepare for future research into methods for getting rid of infectious germs.

(C) Some experts suggest the use of hand sanitizers or face masks to prevent the spread of colds.

(D) The study revealed that rhinovirus lingered on surfaces hours after they were contaminated.

Question 7

Which question is **not** answered by the article?

(A) What position does Paul Auwaerter hold at Johns Hopkins University?

(B) What cold symptoms did the 30 adults gathered for the cold study display?

(C) What were 16 of the 30 participants in the University of Virginia study asked to do?

(D) What university did a study to test the effectiveness of precautions against colds?

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 people who use both face masks and hand sanitizer do not need to wash their hands as much

(B) Provide scientific proof for scientists' recommendation that people take preventative measures against germs

(C) Scientifically prove that the cold study was done at a university recognized for its virology research

(D) Provide scientific proof for the fact that people who used hand sanitizers washed their hands 50 percent more frequently