

# Biology for Kids

## Viruses

### What are viruses?

Viruses are very small particles that can infect animals and plants and make them sick. Viruses are made up of genetic materials like DNA and are protected by a coating of protein.

Viruses hijack the cells of living organisms. They inject their genetic material right into the cell and take over. They then use the cell to make more viruses and take over more cells.

### Are viruses alive?

Scientists differ on whether viruses are actually alive or not. Many people say they are non-living because they cannot reproduce without the aid of a host. Viruses also do not metabolize food into energy or have organized cells, which are usually characteristics of living things.

### Characteristics of Viruses

- They do not have an organized cell structure.
- They have no cell nucleus.
- They typically have one or two strands of DNA or RNA.
- They are covered with a protective coat of protein called the CAPSID.
- They are inactive when not inside a living cell, but are active when inside another living cell.

### Why are viruses bad?

When viruses invade a body's cells and begin to multiply, they make the host sick. Viruses can cause all sorts of diseases.

### How do viruses spread?

Viruses are very small and lightweight. They can float through the air, survive in water, or even on the surface of your skin. Viruses can be passed from one person to another by shaking hands, touching food, through water, or through the air when a person coughs or sneezes.

Viruses can also be passed on by insect bites, animals, or through bad food.

### Examples of Viruses

There are many viruses that can infect people and make them sick. One of the most common is influenza which causes people to get the flu. Other diseases caused by viruses include the common cold, measles, mumps, yellow fever, and hepatitis.

## **How to Avoid Getting Infected**

There are things you can do to help reduce your chance of getting infected by a virus. Here are a few examples:

- Wash your hands (probably one of the most important ones).
- Don't put your hands or fingers in your mouth, nose, or eyes. Rubbing your nose or eyes can cause a virus on your hands to infect your body.
- Make sure your food is well-cooked, especially meat.
- Take your vitamins each day.
- Get plenty of sleep and exercise. This helps to strengthen your immune system to fight off viruses.

## **How are viruses treated?**

There is little that doctors can do to treat viruses. In most cases our body's immune system fights off the virus. Scientists have developed vaccines that help our bodies to build up immunity to a specific virus. One example of a vaccine is the flu shot. The flu shot helps the body to develop its own defenses against the flu called antibodies.

## **Interesting Facts about Viruses**

- Viruses are not classified in any of the five kingdoms of living things. This means they are not bacteria, fungi, protists, plants, or animals.
- Most viruses are so small they cannot be seen with an optical microscope.
- The word "virus" comes from the Latin word "virulentus" meaning "poisonous."
- Viruses can sometimes attack and kill bacteria.
- The first human virus discovered was the yellow fever virus in 1901 by Walter Reed.
- A virus that contains RNA instead of DNA is sometimes called a retrovirus.
- There are two main types of reproductive cycles for viruses: the lytic cycle and the lysogenic cycle.
- Diseases that are caused by a virus with a lytic cycle show symptoms much faster than viruses with a lysogenic cycle.