

S5 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 attack the cells of living organisms. They inject their genetic material right into the cell and take over. They use the cell to replicate the virus and attack more cells, making the host very sick.

Are viruses alive?

There are different schools of thought as to whether a virus can be described as “living”. It is often argued that they are “non-living” as they are unable to reproduce without a host. Viruses also differ from living organisms in that they do not metabolise 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.

How do viruses spread?

Viruses are very small and lightweight. They can spread in numerous ways:

- through the air (when a person coughs or sneezes)
- through water
- through touching food
- through contact with another person
- through insect bites
- through animals

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.
- Avoid contact between your hands and areas of your face, such as your mouth, nose, or eyes.
- Make sure food is well-cooked, especially meat.
- Take vitamins each day.
- Get plenty of sleep and exercise. This helps to strengthen your immune system to fight off viruses.

How are viruses treated?

Not much can be done to treat a virus. 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 caused by a virus with a lytic cycle show symptoms much faster than viruses with a lysogenic cycle.