

# Viruses

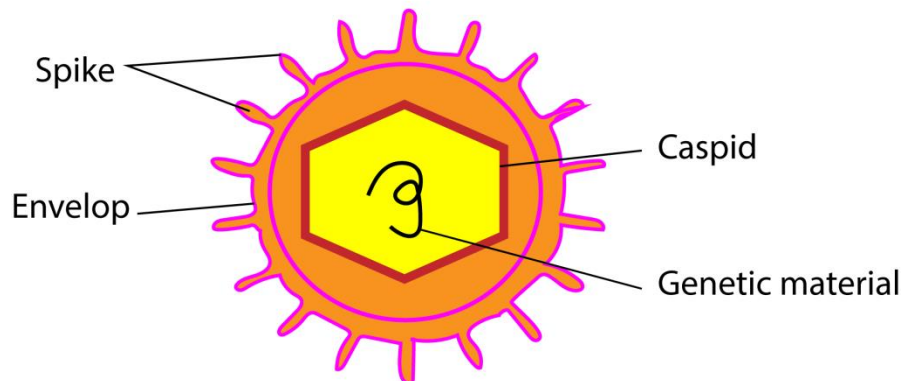
## Specific objectives

1. Describe the general structure of a virus
2. Explain characteristic of viruses
3. Describe economic importance of viruses
4. Outline methods of preventing the spread of viruses.

Viruses cannot be classified into any Kingdom because, they are on the borderline between living and non-living things. Viruses are smaller than bacteria and cannot be seen with a light microscope. Viruses are living thing because they contain nucleic acid in form of DNA or RNA.

Viruses are made of two components, that is nucleic acid and protein coat. Most viruses are found in animal cells and those that attach bacteria are called bacteriophage. Viruses have a variety of shapes; i.e. spherical such as poliomyelitis, straight rods such as tobacco mosaic (TMV), or flexible rods such as potato viruses.

## Simplified diagram of a virus



## Transmission of viruses

Viruses cannot reproduce outside animal cell and for this reason are referred to as *obligate parasite*. Viruses infect body cell, incorporate their DNA into the host DNA and manipulate the cell to synthesize the amino acids for viruses. Sometimes incorporation of Virus DNA into host DNA or **transduction** result into new characteristics in the hosts such as antibiotic resistance in bacteria.

**Transduction** in bacteria refers to the process by which DNA is transferred from one bacterium to another by a microphage (bacteriophage or virus, e.g. HIV). The genetic material microphage (a vector) is incorporated into the DNA of the bacterium so that the bacterium now functions as a machine that manufacture the phage amino acids

Related to transduction is Transformation; a process by which bacterial DNA is changed as a result to direct uptake and incorporation of foreign DNA its surrounding through the cell membrane.

Economic importance

1. Viruses cause diseases to plants such as tobacco bright and tomato mosaic by (TMV)
2. Viruses cause diseases to animals as rabies, flue, polio, HIV and cancers.
3. May lead to antibiotic resistance by bacteria.
4. Used in genetic engineering.

Control of the spread of viral disease

1. Burning infected plants
2. Abstinance or use of a condom to prevent HIV
3. Quarantine for highly infectious virus such small pox.
4. Vaccination

NB. Viral diseases are difficult to treat because viruses are continuously mutating.

Viral diseases to plants

- curly top
- mosaic
- psorosis
- spotted wilt

Examples of viral diseases in animals

sinusitis,

**the common** cold.

Influenza

Pneumonia

HIV

Exercise

Viruses resemble living organisms because they possess

A. a nucleus

B. Genetic material.

C. a cell membrane.

D. oxidative enzymes.

Answer: B