

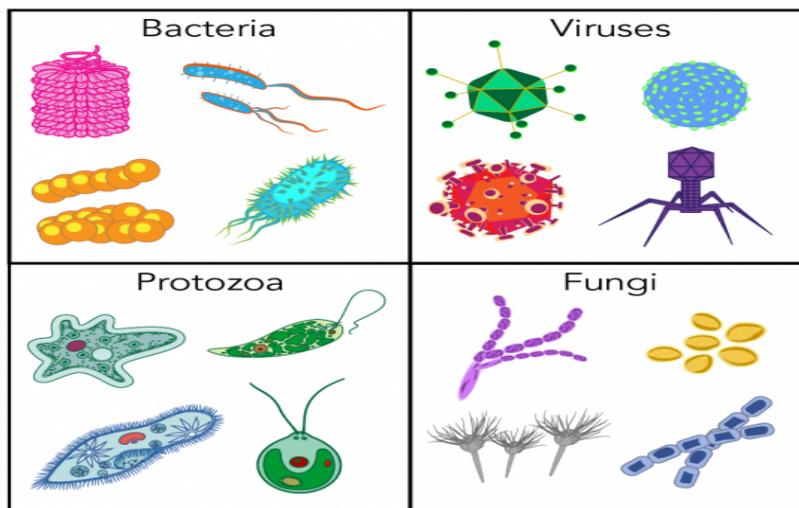
Communicable Disease

► Communicable Disease

- **Communicable diseases spread from one organism to another:** Some types of diseases can be passed on between people. These are called communicable diseases or transmissible diseases. They are caused by many different types of **pathogen** (disease-causing organisms), and are also known as contagious or infectious diseases.
- **Communicable diseases can be transmitted by vectors.** Vectors are often pathogens which can transmit disease from one organism to another. For example, malaria is a communicable disease which can be transmitted by mosquitos (**the vector**).

► Introduction to Pathogens

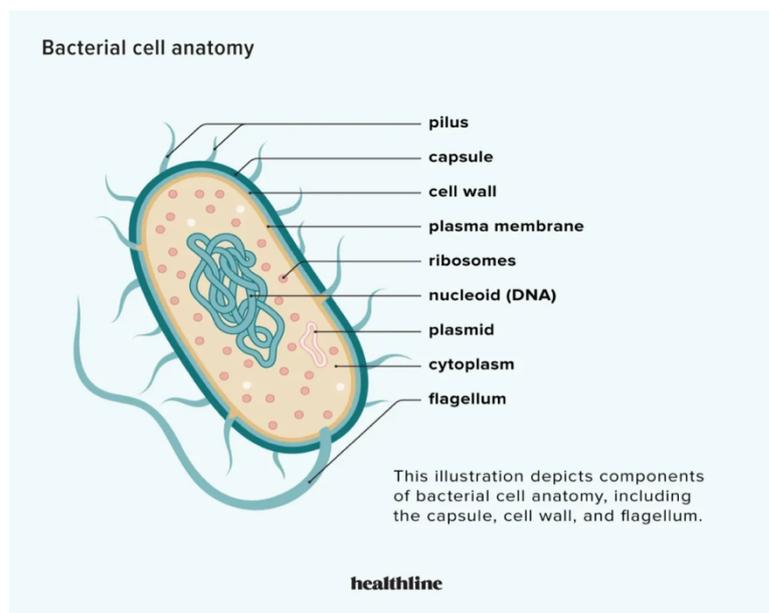
- **Communicable diseases are spread by pathogens.** Communicable diseases can be spread from person to person or animal to person. They are spread by **pathogens**, which are microorganisms that cause infectious disease.
- **Pathogens are microorganisms.** There are many different types of pathogens which can cause different types of disease. **Bacteria**, **viruses**, **protists** and **fungi** can all be pathogens – for example, the **human immunodeficiency virus (HIV)** causes HIV and AIDS.

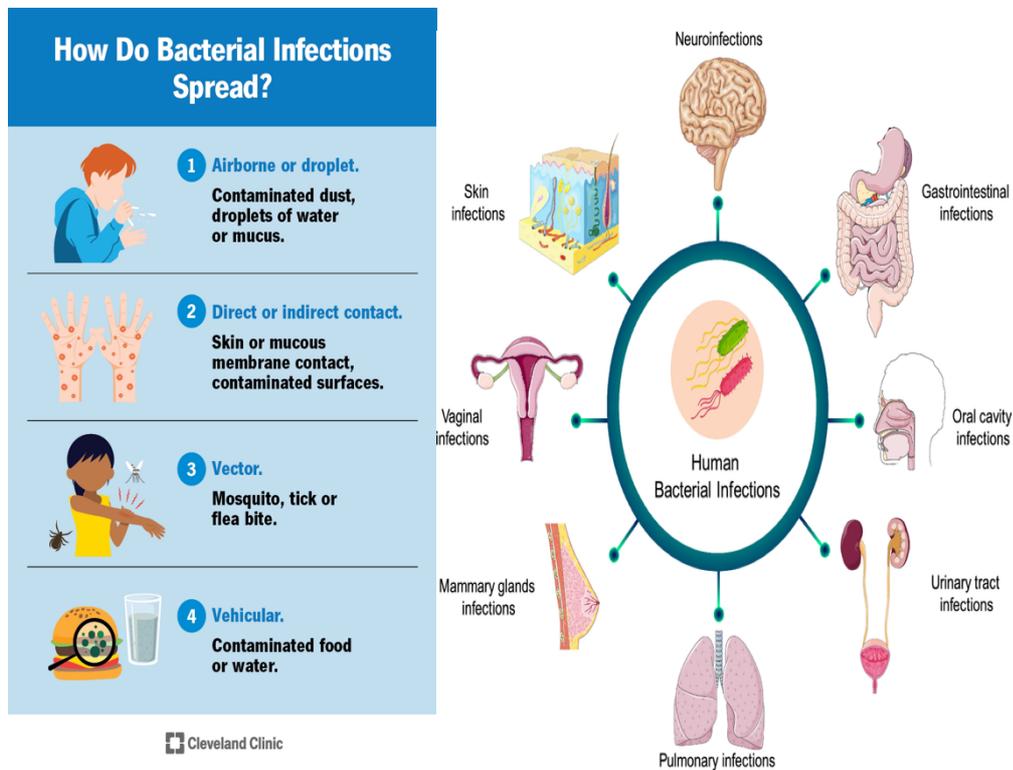


1- Bacteria

Bacteria are prokaryotes and **prokaryotic cell** does not contain a nucleus.

- **Prokaryotic cells:** Prokaryotes cells are smaller and more simplistic than eukaryotic cell, and do not contain a **nucleus**. Bacterial cells therefore do not have a nucleus, and are about **1/100th the size** of normal body cells. Instead they have genetic material in a loop, and also have smaller rings of DNA called **plasmids**.
- **Similarities to plant and animal cells:** Animal, plant and bacterial cells all have a cytoplasm and a cell membrane. In addition to the cell membrane, bacterial cells have a cell wall which surrounds the cell membrane.
- **Spread disease using toxins:** Bacteria spread diseases by producing **toxins**. These toxins damage human tissues and make us feel ill. Bacteria can cause disease by reproducing within the human body very quickly.

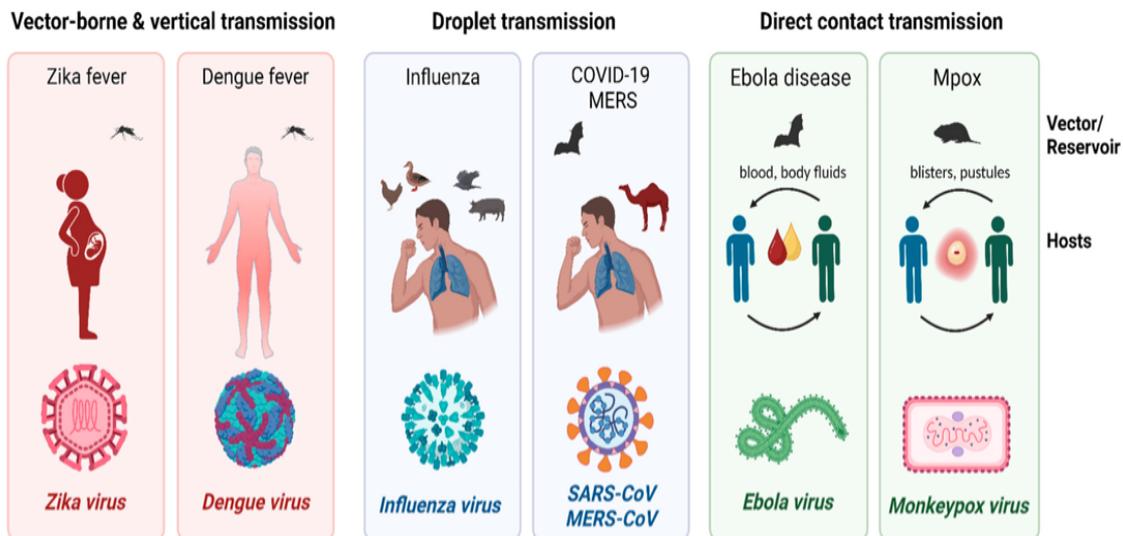
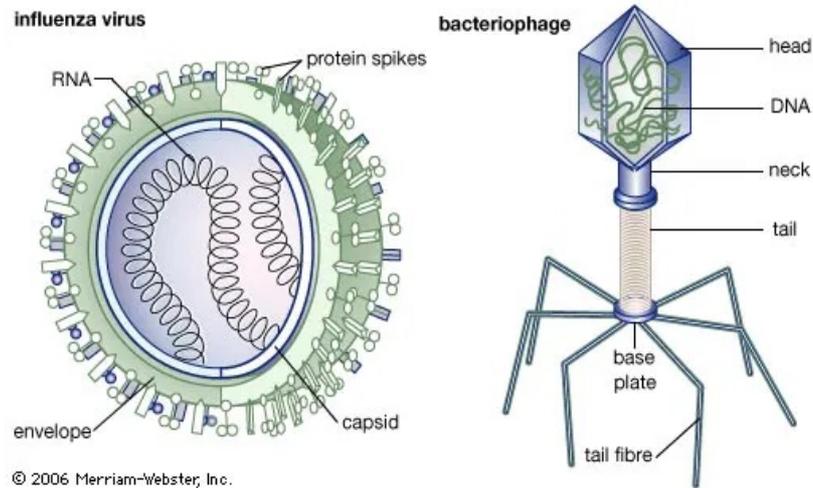




2- Viruses

- **Viruses are not living cells:** Viruses are not cells, nor are they living organisms. Viruses are basically biological structures which are made up of genetic material surrounded by a **coat of proteins and lipids**. They are **smaller** than bacteria and come in a variety of shapes and sizes.
- **Invade host cells:** Viruses are constantly invading host cells, which can be in any living organism, inside which they reproduce making them parasitic. Before the host can detect the virus as **foreign** and respond with an immune response, the virus may have reproduced and spread for example, in the influenza virus that causes the flu.
- **No cell organelles:** Viruses have no nucleus, no ribosomes, and none of the membrane bound organelles. Viruses don't have a normal nucleus, but they do carry **genetic material (both DNA and RNA)**.
- **Replicate itself rapidly:** viruses replicate itself very rapidly using **host cell machinery** and make copies to spread infection

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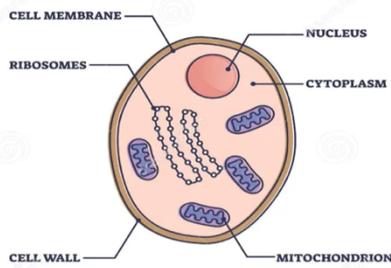


3- Fungi

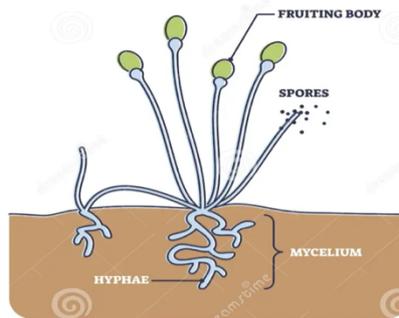
- **Structure:** Fungi are neither plants nor animals but they are eukaryotic organisms. Some fungi are **Single celled organism**. Examples include Mucor, which has the typical fungal **hyphae** structure, and yeast is single-celled.
- **Unicellular or multicellular:** Fungi include organisms like mushrooms, which are multicellular, and yeast are unicellular. Fungi get their nutrition by breaking **down dead or decaying matter**.
- **Cell wall composition:** Fungi differ from plant cells in two ways – first they do not have chloroplasts because they do not photosynthesis, and second their cell wall is made out of **chitin** (not cellulose like in plants).
- **Causing infection.** Many fungal cells can join together to form long threads called **hyphae** which contain many nuclei and are organised into mycelium. These hyphae can grow on organisms and cause infection. Fungi make and release **spores**, which can lead to spread of fungi across the organism. Fungi infect mould bread in a similar way.

FUNGI

A BASIC FUNGAL CELL



MULTICELLULAR FUNGUS



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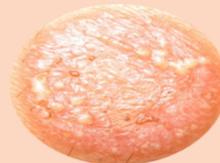
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Types The Fungal Infection

urban
skin & hair clinic



Athlete's Foot



Ringworm



Jock Itch



Yeast Infections



Nail Fungus

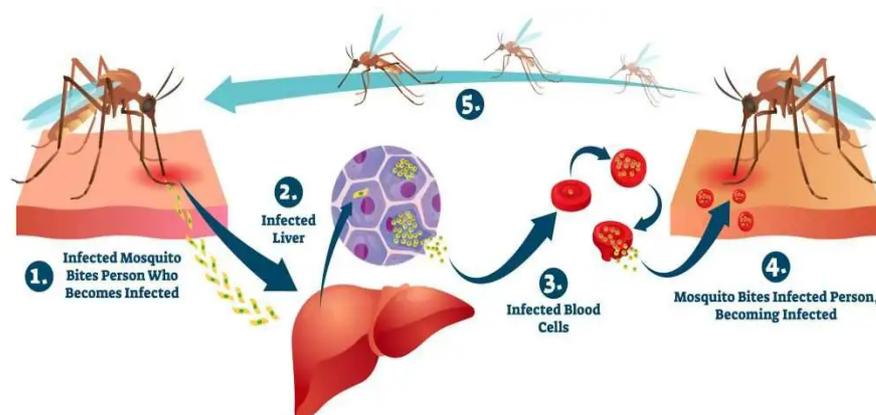
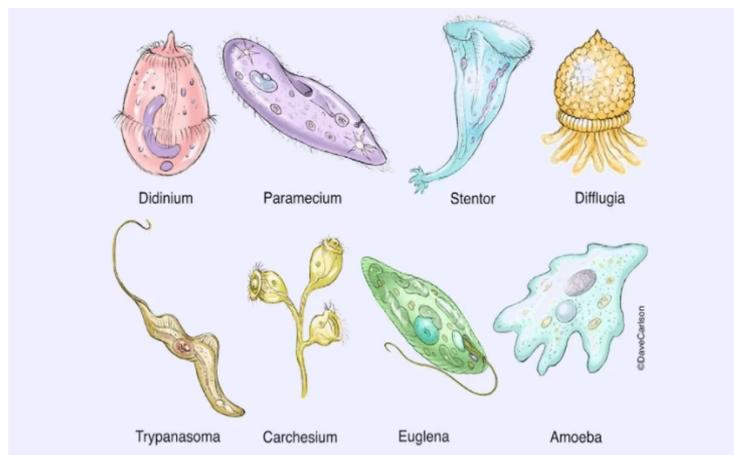


Scalp Ringworm

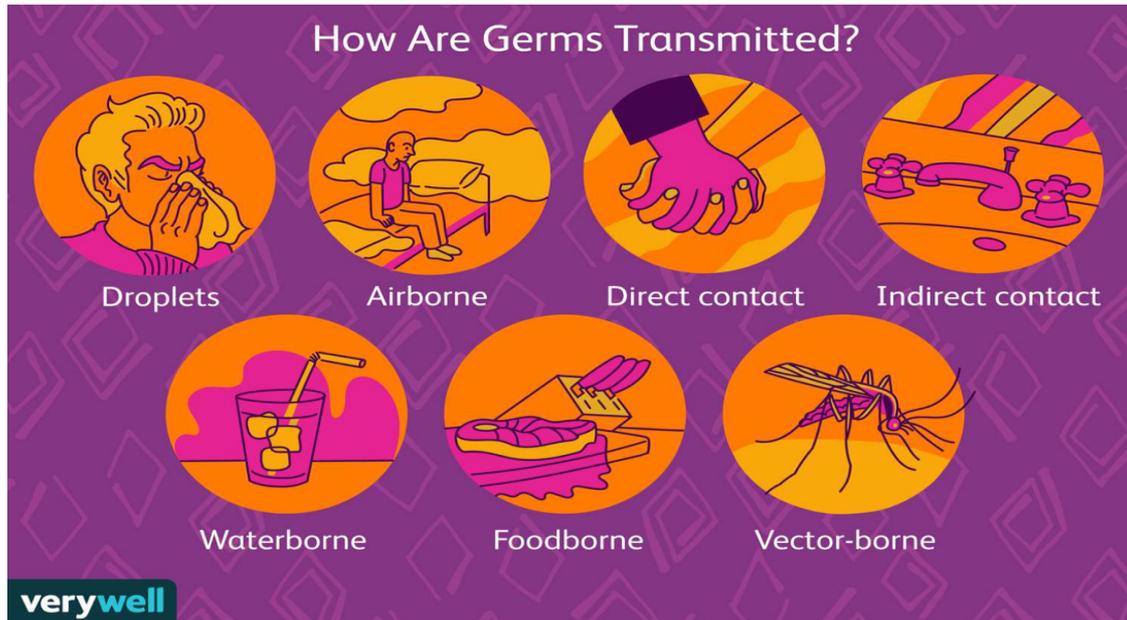
4- Protists

• **Protists are an ‘other’ group.** Everything which doesn’t fit into animals, plants and fungi will be classified as **protists**. Protists are difficult to classify as different organisms resemble other microorganisms, for example, some are very similar to bacteria and others to fungi. Some are similar to animal cells like **Amoeba** that live in ponds and others are more like plants like **Chlorella** that have chloroplasts.

• **Many parasites are protists.** Many protists are **parasites**, which are organisms that live inside or on the surface of other organisms and gain benefit whilst sometimes causing damage. The parasites often use **vectors** to transport from organism to organism. For example, the protist Plasmodium Protozoa causes **malaria**, and uses mosquitos as a vector.



► Pathogens Spread by Different ways



► Prevention from infection

