

The Five Kingdoms of Living Organisms

Kingdom Monera



This kingdom includes the simplest and smallest living organisms. The organisms are single-celled known as bacteria.

The bacteria have the following characteristics:

- They are unicellular (single celled) organisms
- The bacteria are grouped according to their shapes which can be rounded, coiled or rod-shaped.
- They have no true nucleus. Their genetic material is not enclosed by the nuclear membrane.

Useful and Harmful aspects of Monera

Some people may tend to fear bacteria, because they only imagine that bacteria cause harm. However biological studies show that bacteria can be both harmful and useful in nature.

Bacteria are harmful because:

1. They cause diseases e.g. tuberculosis and cholera in humans.
2. Action of bacteria on food makes it rot.

Bacteria are useful because:

1. They help in the process of decomposition by breaking up organic wastes.
2. They contribute to soil fertility by fixing nitrogen which is important for plant growth.
3. Some bacteria are used in treatment of sewage.
4. Some bacteria are used in industry e.g. in making of food like yoghurt.

Kingdom Protocista

This kingdom consists of single celled and simple multicellular organisms that possess a true nucleus unlike monera.

Examples are:

1. Amoeba: does not have a permanent shape. It moves by use of pseudopodia (pseudo- means false while podia – is to do with limb). It causes dysentery in man.

2. Paramecium: is oval shaped. It moves by use of hair-like structures called cilia. It feeds on other microorganisms e.g. bacteria.
3. Plasmodium causes malaria in humans.

Kingdom Fungi



Kingdom fungi include mushrooms, yeast and moulds. Some fungi grow in wood and soil, and develop from tiny spores. Fungi have a nucleus and their cells have a cell wall made up of a substance known as **chitin**. They do not make their own food; instead feed on the decomposing organic matter of animals and plants.

You may already be aware that some types of fungi like mushrooms are grown and eaten while others like puff balls are poisonous. This informs you that fungi can be useful or harmful in nature.

Useful Aspects of Fungi

1. Fungi keep soil fertile by recycling organic material through decomposition.
2. Some fungi are food for humans, for example, mushrooms.
3. Manufacture of medicine, for example, antibiotic Penicillin

Yeast is a type of fungus used in baking of bread and brewing of beer in industries.

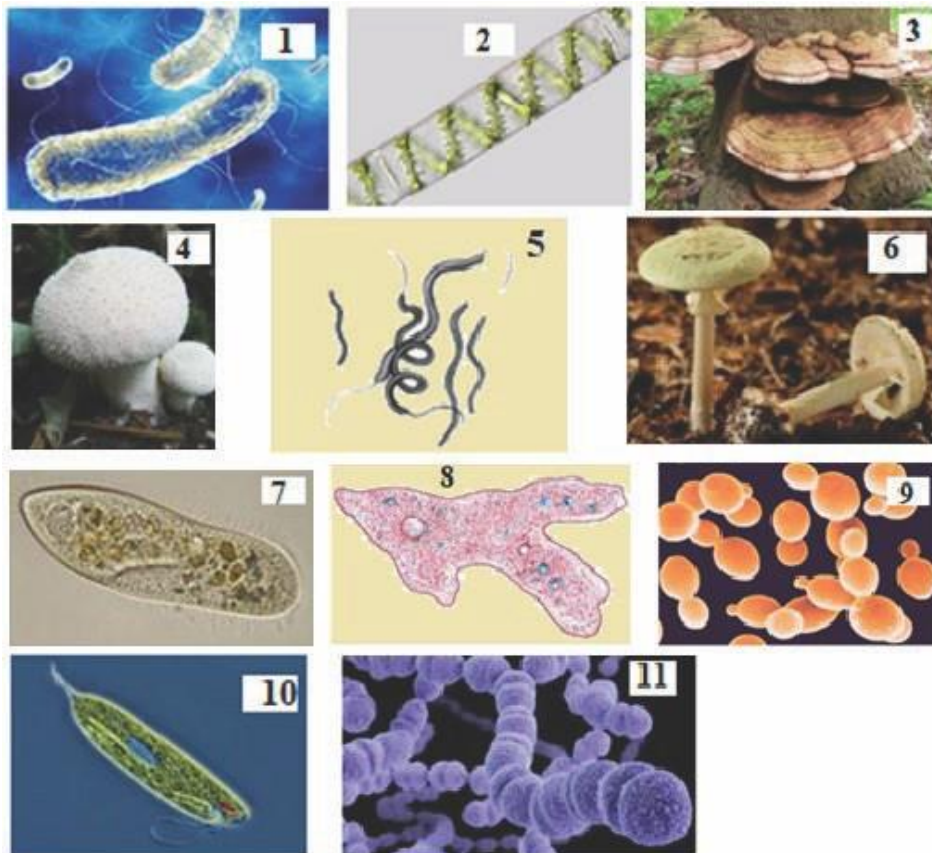
Harmful Aspects of Fungi

1. They cause diseases e.g. ringworm, candida, athletes' foot (in animals), potato blight and leaf rust in coffee.
2. Fungi like moulds when they grow on food they cause food spoilage.

Activity 3.3: Sorting and identifying organisms in kingdom monera, protocista and fungi

What you need

1. Pictures or specimens (bracket fungus, amoeba, *bacillus*, spirogyra, puff ball, streptococcus, mushroom, paramecium, yeast, *spirilla*, euglena)



2. Group names (bacteria, fungi, protists)
3. Characteristics of different organisms (single celled, multicellular, nucleus is not surrounded by a membrane, nuclear membrane present, cell wall made up of chitin, feed on decomposing matter).

What to Do

1. Sort the organisms in the pictures according to their different groups using the common characteristics. Fill in the table below.

Pictures	Group name	Characteristic(s)

2. Construct a flow chart for any four organisms based on the characteristics you have stated in the table above.

Project work: Making Yoghurt

In groups of 4 to 6 make yoghurt at school. Use the Internet, cookbooks or ask your teacher to assist you:

- *Determine the materials to use.*
- *Identify the conditions.*
- *Develop the procedure.*

Write a report including the materials used, explaining the important steps followed and the description of the product. State the living organisms involved in the process. Mention the nutrients found in yogurt and their importance to man.

An example of the format of how a scientific report should be presented or written is given below:

Title: (This should accurately describe the experiment).	
Your name:	
Lab Partners: (Who helped you with the experiment? List their full names).	
Date:	
Class:	
Purpose: (It is either a single sentence or a paragraph summarizing why the experiment was performed or product was made).	
Hypothesis: (Predict the outcome(s) of the experiment, use the format “If...then...because”. E.g. “If we leave windows open at night then mosquitoes will enter the house because they are attracted by the scent from humans”).	
Materials: (What equipment and materials did you need for this lab assignment? Describe how any equipment was connected. List the name and amount of each item used.)	
Procedures: (What steps did you take to accomplish this lab assignment?)	
Data Recording: (Record the data that is required at each step of the lab: tables, charts, graphs, sketches, etc.)	
Analysis: (Explain your data in words.)	
Discussion: (Discuss what happened in the lab. Give details on anything that went wrong).	
Conclusion: (What did you learn? What conclusions can you draw from the results of this lab assignment? Compare the results of the experiment with your hypothesis.)	

