The kingdoms of living organisms

LESSON OBJECTIVES

By the end of the lesson;

- **All the learners should be able to list the main features used to place organisms into the kingdom Animal or Kingdom Plant. C**

- **Some of the learners should be able to list the main feature used to place used to place all organisms into one of the five kingdoms: Animal, Plant, Prokaryote, Fungus, Protoctist. B**

Task: Use one of the mnemonics you can remember to list the seven levels of classifying organisms.

- **K**ingdom
- **P**hylum
- **O**rder
- **F**amily
- **G**enus
- **S**pecies

LO-List the main features used to place organisms in kingdom animals , plants, prokaryote, protoctist, fungus. B

The Kingdoms.

Organisms can only be placed into one of the **five** kingdoms namely;-

1. **Animal**

2. **Plant**

3. **Prokaryote** – are unicellular or single –celled organisms that do not have a nucleus, no mitochondria, chloroplasts or any other membrane –bound organelles
4. **Protoctist** - single celled organisms with a nucleus and membrane-bound organelles.
5. **Fungus** - unicellular or multi-cellular organisms that produce spores.

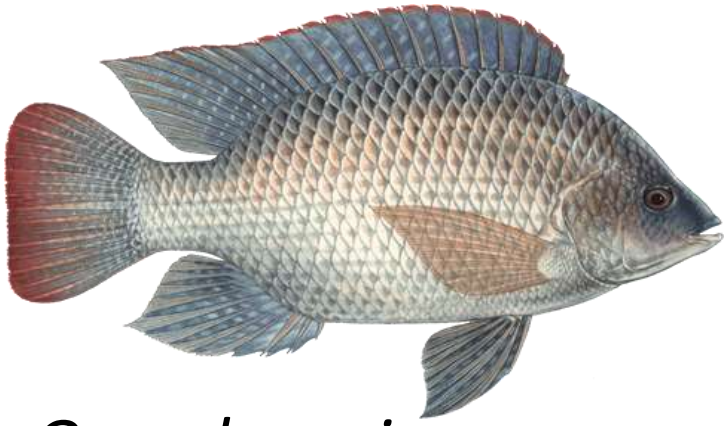
Task: You are going to group your cards into 5 kingdoms using the definitions and your own knowledge!

LO– list the main features used to place organisms into the kingdom plants, animals. C

Kingdom Animal.

Scolopendra gigantea

Danaus plexippus



Oreochromis aureus

Panthera pardus

LO– list the main features used to place organisms into the kingdom: plant, animal. C

Kingdom Plant.

Mangifera indica

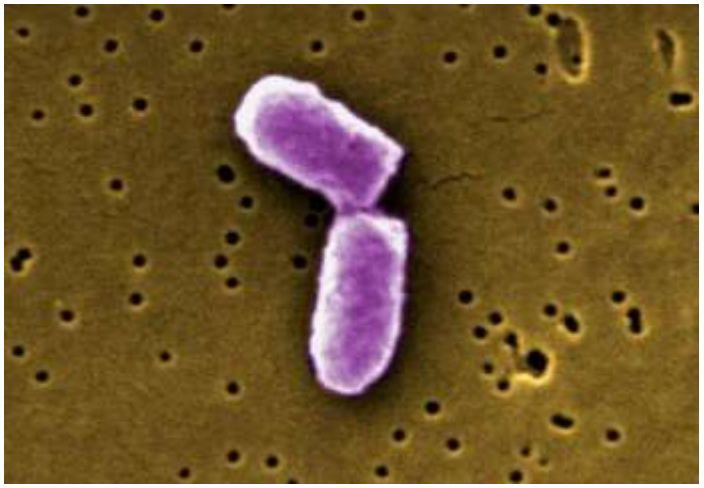
Sphagnum compactum

Matteuccia struthiopteris

Pinus contorta

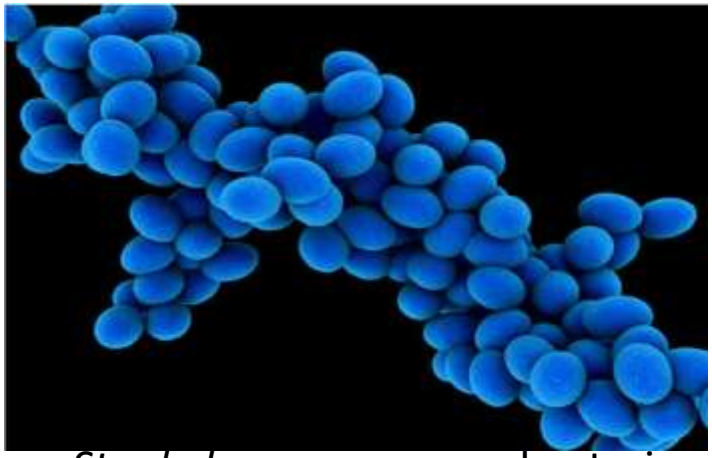
LO- List the main features used to place organisms in kingdom: animal, plant prokaryote, protoctist, fungus. B

Kingdom Prokaryote.



Escherichia coli bacteria

Meningococcus bacteria



Staphylococcus aureus bacteria

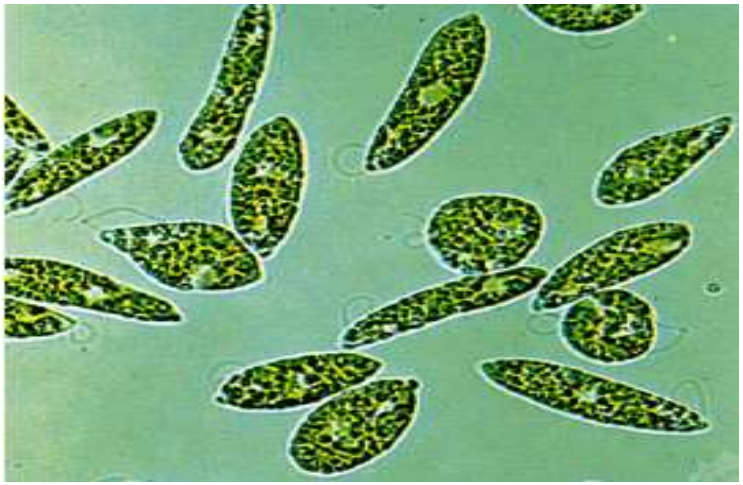
Bacillus anthracis bacteria

LO- List the main features used to place organisms in kingdom: animal, plant, prokaryote, protoctist, fungus. B

Kingdom Protoctist.

*Entamoeba histolytica (*Amoeba)

Paramecium caudatum



Euglena gracilis

Plasmodium falciparum

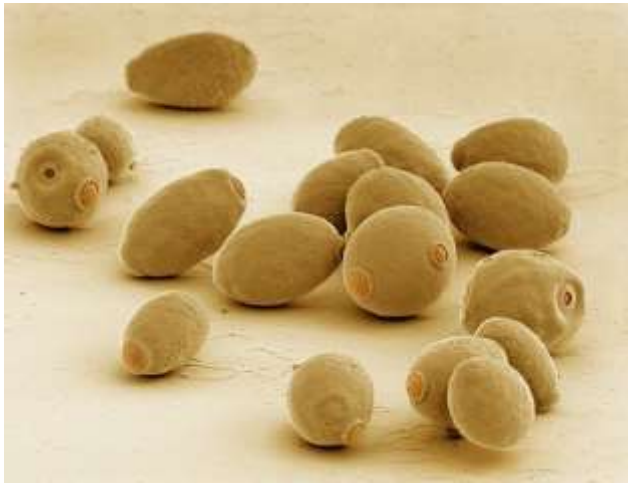
LO- List the main features used to place organisms in kingdom: animal, plant, prokaryote, protoctist, fungus. B

Kingdom Fungus.

Amanita muscaria

Rhizopus microsporus

Penicillium solitum

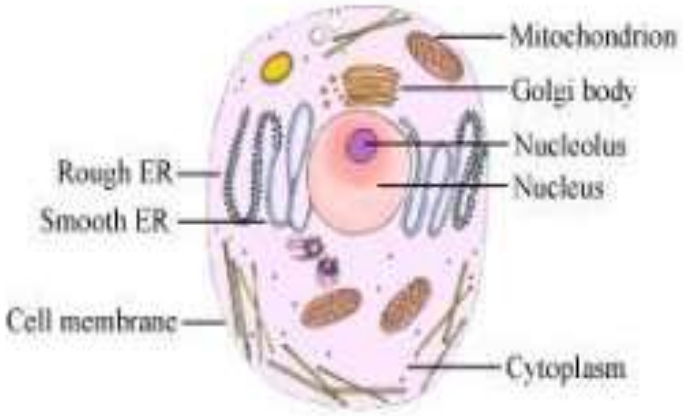


Saccharomyces cerevisiae.

LO- List the main features used to place organisms in kingdom: animals, plants. C

Features of Kingdom Animals e.g. Humans, Fish, Birds, Cats, Insects.

Task: Use the labeled diagram below and the other images of organisms in kingdom animals to list the main features of the group. Use the structures in the cell do decide on how they obtain their food, whether they have a nucleus or not, whether all members are unicellular or multi-cellular or both. List any other features they have.



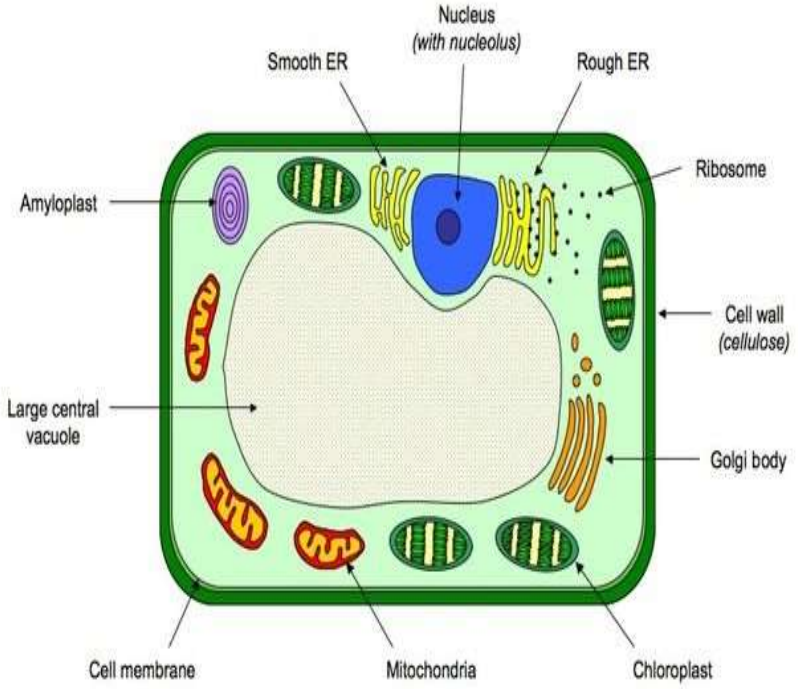
Animal cell

- They are all multi-cellular
- Their cells contain nucleus
- **Their cells do not have cell wall.**
- **They do not have chloroplasts**
- **They store glycogen.**
- Their cells have mitochondrion
- They have endoplasmic reticulum (ER).
- **The cells have membrane-bound organelles**
- **The are all heterotrophic**

LO- List the main features used to place organisms in kingdom: animals, plants. C

Features of Kingdom Plant e.g. moss, fern, pines, banana, maize, mango

Task: Use the labeled diagram below and the other images of organisms in kingdom plants to list the main features of the group. Use the structures in the cell do decide on how they obtain their food, whether they have a nucleus or not, whether all members are unicellular or multi-cellular or both. List any other features they have.



Plant cell

- They are all multi-cellular
- All have **cell wall made of cellulose**
- Have a nucleus
- Have chloroplasts so carry out photosynthesis
- The cells have got large permanent vacuoles
- **Store starch**
- All have mitochondria.
- All have endoplasmic reticulum(ER)
- They do not move from place to place.

LO-List the main features used to place organisms in kingdom: animal, plants, prokaryote, protoctist, fungus. B

Features of Prokaryote e.g. Bacteria

Task: Use the labeled diagram below and the other images of prokaryotes to list the main features of the group. Use the structures in the cell do decide on how they obtain their food, whether they have a nucleus or not, whether all members are unicellular or multi-cellular or both. List any other features they have.

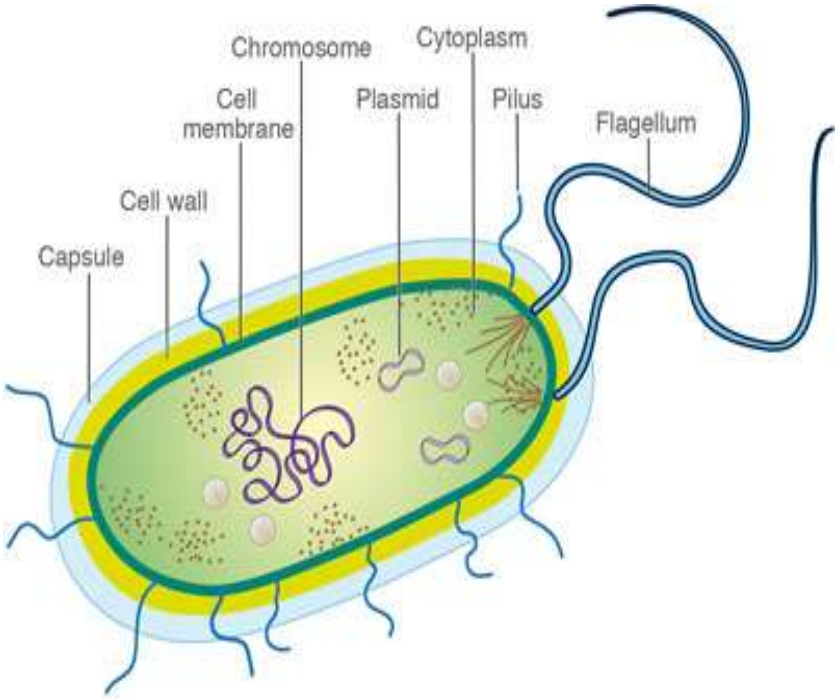


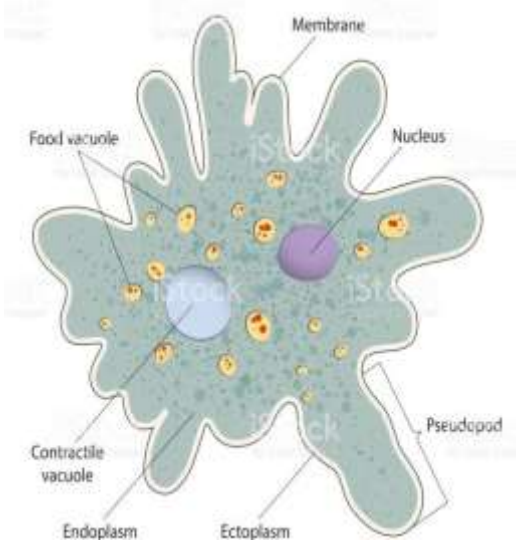
Diagram of a Bacterium

- **All have a cell wall made of peptidoglycans**
- **All do not have a nucleus**
- **All do not have chloroplast, mitochondrion**
- **All do not have membrane-bound organelles.**
- **All unicellular.**
- **All have a cytoplasm, cell membrane, ribosome**
- **All have circular DNA**
- Some may have plasmids
- Some may have flagellum /flagella(plural)
- Some may have a capsule
- Some are photosynthetic while others are parasitic or saprophytic

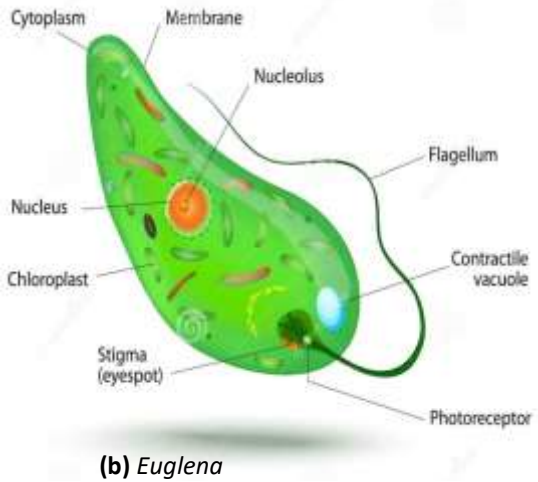
LO- List the main features used to place organisms in kingdom: animal, plant, prokaryote, protoctist, fungus. B

Features of Protoctist e.g. Amoeba, *Euglena, Plasmodium, Paramecium*

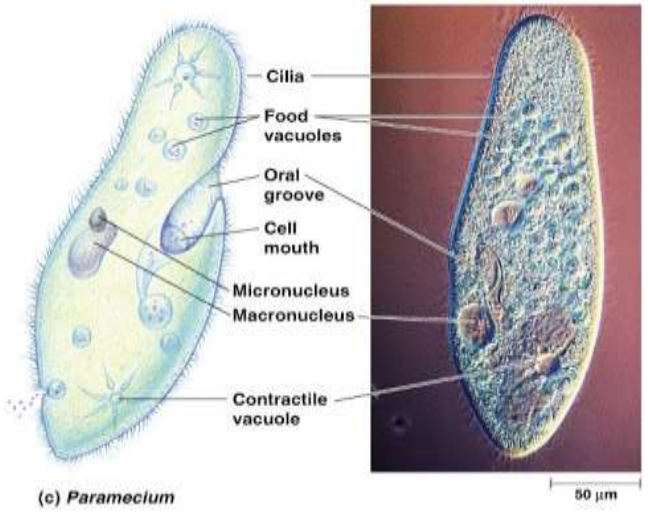
Task: Use the labeled diagrams below and the other images of protoctists to list the main features of the group. Use the structures in the cell to decide on how each one obtain its' food, whether they have a nucleus or not, whether all members are unicellular or multi-cellular or both. List any other features they have.



(a) Amoeba



(b) *Euglena*



(c) *Paramecium*

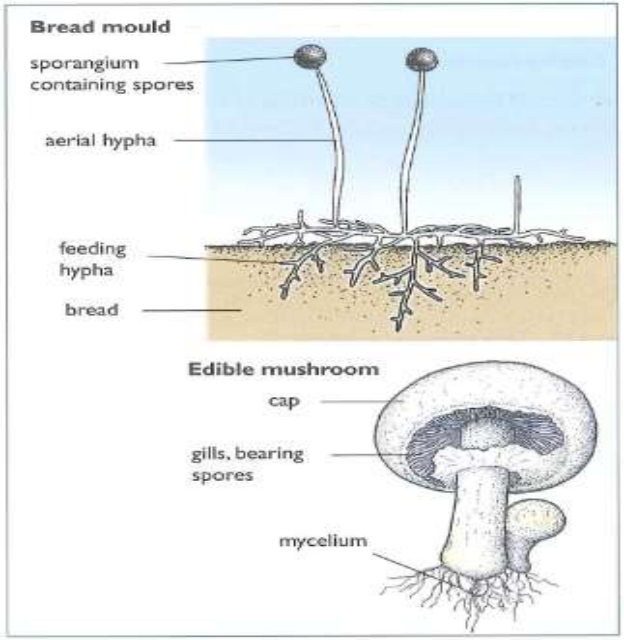
- They are unicellular organisms
- They have a nucleus
- Have mitochondria
- Some have chloroplast for photosynthesis
- Move using flagellum, cilia or pseudopodium

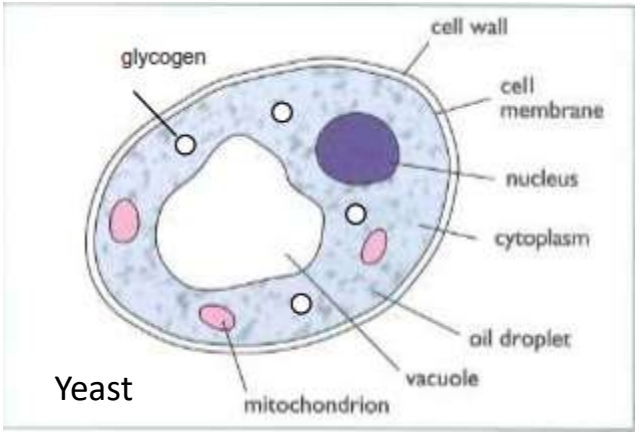
- Some are parasitic or saprophytic
- Contractile vacuole for excretion of excess water.

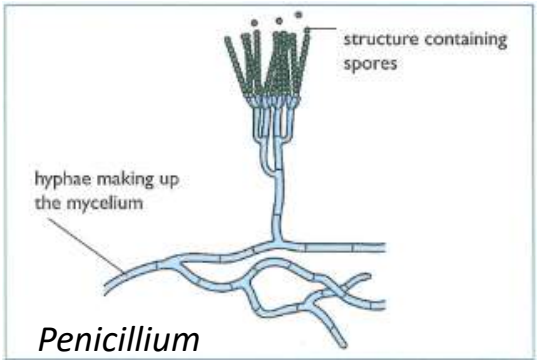
LO-List the main features used to place organisms in kingdom: animal, plant, prokaryote, protoctist, fungus. B

Features of Fungus e.g. Yeast, moulds, mushrooms, *Penicillium*

Task: Use the labeled diagrams below and the other images of fungi to list the main features of the group. Use the structures in the cell do decide on how they obtain their food, whether they have a nucleus or not, whether all members are unicellular or multi-cellular or both. List any other features they have.







- Unicellular e.g yeast or multi-cellular e.g. *Penicillium*, *Rhizopus* (bread mould), *Agaricus*(edible mushroom)
- **All have cell wall made of chitin**
- **All contain spores for reproduction**
- **Do not have chloroplasts**
- Multi-cellular fungi have cells with many nuclei
- **They store glycogen.**
- Either saprophytic or parasitic mode of nutrition.
- Multi-cellular fungi have got a general body called **mycelium** made up of thread-like branches called **hyphae**