Kingdom Protista

Evolution of Protists

- For many years, biologists thought that prokaryotic cells gradually evolved nuclei and therefore became protists.
- The Endosymbiosis Hypothesis suggests that the first protist cell was formed by a symbiosis among several prokaryotes (bacteria). These bacteria lived within each other as endosymbionts and they formed an effective team. Eventually they lost their independence and were unable to live without one another. This gave rise to the organelles that we observe today in eukaryotic cells.

Evidence:

A number of organelles in eukaryotic cells are very similar in structure to prokaryotes. Mitochondria and chloroplasts closely resemble bacteria and blue-green bacteria respectively. Flagella and cilia of many eukaryotic cells are similar to a group of bacteria known as spirochetes. Cyanophora paradoxa was thought to be an algae but its "chloroplasts" can actually be removed; they are blue-green bacteria that can live on their own!

Characteristics of protists

- Protists are grouped together in a kingdom because they __________________________ that would let them fit into any other kingdom.
- Protists are diverse; they differ in size, shape and manner of movement.
- Classification of protists is based on the way they obtain __________________________.

There are 3 groups of protists:

1) Animal-like Protists
   Animal-like protists are called __________________________. They are animal-like because they are __________________________ and they can __________________________.
   Protozoans are classified into 4 groups according to how they __________________________:

   i) Sarcodinians-organisms that move by __________________________ called __________________________.
      Ex) radiolarians, foraminiferans, ameba.

   ii) Zooflagellates - use __________________________ (whiplike structures that aid in movement). An example of a disease that they can cause is __________________________.
      Ex) Trichonympha (lives in the gut of a termite)

   iii) Ciliophorans or ciliates - use __________________________ (short, hairlike projections used for movement) and live mostly in ________________ water.
      Ex) Paramecium
iv) Sporozoans-cannot move themselves. They are ____________ - forming protozoa that are ________________ of animals. They live only in ________________ environments. An example of a disease that they can cause is ________________. Protozoans are important because they are ______________________________. Ex) Plasmodium

2) Plant-like Protists
These protists are called ___________________. They perform __________________; they are __________________. Like plants, algae contain ________________ and produce __________________. They are different from plants because ______________________________. They are important because ______________________________.

Algae have been classified based on differences in their __________. They are divided into 2 groups:

i) Unicellular-include dinoflagellates, __________________, and __________________ and some green algae.

ii) Multicellular-include green algae, red algae, and __________________ algae. Multicellular algae used to be classified as plants because ______________________________. They are no longer classified as plants because ______________________________. Algae are important because ______________________________.

3) Fungus-like Protists
Fungus-like protists are ___________________. A fungus that acts as a decomposer is known as a ____________________

The molds are divided into 3 groups:

i) Plasmodial slime molds - have ________________ cells with multiple ________________ that can form __________________-producing fruiting bodies.

ii) Cellular slime molds - have ________________ ameboid cells that can come together to form __________________ bodies and produce __________________.

iii) Water molds-include different ________________ water and land protists that act as decomposers and sometimes as ____________.
Kingdom Protista

Evolution of Protists

- For many years, biologists thought that prokaryotic cells gradually evolved nuclei and therefore became protists.
- The Endosymbiosis Hypothesis suggests that the first protist cell was formed by a symbiosis among several prokaryotes (bacteria). These bacteria lived within each other as endosymbionts and they formed an effective team. Eventually they lost their independence and were unable to live without one another. This gave rise to the organelles that we observe today in eukaryotic cells.

Evidence:
A number of organelles in eukaryotic cells are very similar in structure to prokaryotes. Mitochondria and chloroplasts closely resemble bacteria and blue-green bacteria respectively. Flagella and cilia of many eukaryotic cells are similar to a group of bacteria known as spirochetes. Cyanophora paradoxa was thought to be an algae but its “chloroplasts” can actually be removed; they are blue-green bacteria that can live on their own!

Characteristics of protists

- Protists are grouped together in a kingdom because they LACK CHARACTERISTICS that would let them fit into any other kingdom.
- Protists are diverse; they differ in size, shape and manner of movement.
- Classification of protists is based on the way they obtain NUTRIENTS

There are 3 groups of protists:

1) Animal-like Protists
   Animal-like protists are called PROTOZOANS. They are animal-like because they are HETEROTROPHS and they can MOVE.

Protozoans are classified into 4 groups according to how they MOVE.

i) Sarcodinians-organisms that move by EXTENDING LOBES OF THEIR CYTOPLASM called PSUEDOPODS. 
   Ex) radiolarians, foraminiferans, ameba.

ii) Zooflagellates - use FLAGELLA (whiplike structures that aid in movement).
   An example of a disease that they can cause is TRYPANOSOMA - AFRICAN SLEEPING SICKNESS.
   Ex) Trichonympha (lives in the gut of a termite)

iii) Ciliophorans or ciliates - use CILIA (short, hairlike projections used for movement) and live mostly in FRESH water.
   Ex) Paramecium

iv) Sporozoans-cannot move themselves. They are SPORE forming protozoa that are PARASITES of animals. They live only in WET environments. An example of a disease that they can cause is MALARIA. Protozoans are
important because they are AN IMPORTANT FOOD SOURCE FOR MANY SMALL ANIMALS.
Ex) Plasmodium

2) Plant-like Protists
These protists are called ALGAE. They perform PHOTOSYNTHESIS, they are AUTOTROPHS. Like plants, algae contain CHLOROPHYL and produce OXYGEN AND SUGAR. They are different from plants because THEY LACK TRUE ROOTS AND LEAVES. They are important because THEY PRODUCE OXYGEN AND FOOD FOR MANY ANIMALS.

Algae have been classified based on differences in their STRUCTURE. They are divided into 2 groups:

i) Unicellular—include dinoflagellates, DIATOMS, and EUGLENIODS and some green algae.

ii) Multicellular—include green algae, red algae, and BROWN algae. Multicellular algae used to be classified as plants because THEY HAVE CHLOROPLASTS AND PERFORM P.S.. They are no longer classified as plants because THEY HAVE DIFFERENT REPRODUCTIVE STRUCTURES. Algae are important because THEY PRODUCE OXYGEN AND FOOD FOR MANY ANIMALS.

3) Fungus-like Protists
Fungus-like protists are HETEROTROPHS. A fungus that acts as a decomposer is known as a MOLD.

The mold like protists are divided into 3 groups:

i) Plasmodial slime molds - have SINGLE cells with multiple NUCLEI that can form SPORE producing fruiting bodies.

ii) Cellular slime molds - have SOLITARY ameboid cells that can come together to form PLASMODIUM bodies and produce SPORES.

iii) Water molds—include different FRESH water and land protists that act as decomposers and so