
Classification of Organisms

The Kingdoms of Living Things

In this classification scheme, **Linnaeus** recognized only two kingdoms of living things: Animalia and Plantae. At the time, microscopic organisms had not been studied in detail. They were placed either in a separate category called Chaos or, in some cases; they were Classified with plants or animals. Then in the 1860s, the German investigator **Ernst Haeckel** proposed a three-kingdom system of classification. Haeckel's three kingdoms were **Animalia** , **Plantae**, and **Protista**. Members of the kingdom Protista included the protozoa, fungi, bacteria, and other microorganisms. Haeckel's system was not widely accepted, however, and microorganisms continued to be classified as plants (for example, bacteria and fungi) or animals (for example, protozoa)

Currently, the system of classification widely accepted by biologists is that devised by **Robert Whittaker in 1968**. Whittaker's classification scheme recognizes five kingdoms: **Monera**, **Protista**, **Fungi**, **Plantae**, and **Animalia**. The five-kingdom classification scheme is in general use today.

The kingdom Monera

The kingdom Monera includes the bacteria and the cyanobacteria. These one- celled organisms are prokaryotic. Prokaryotic organisms have neither nucleus nor organelles in their cytoplasm, possess only a single chromosome, have small ribosomes, and reproduce by simple fission. Many of the organisms (called autotrophic) can synthesize their own foods, and some (called heterotrophic) digest preformed organic matter.

The kingdom Protista

The second kingdom, Protista, includes the protozoa, the one-celled algae, and the slime molds. The cells of these organisms are eukaryotic. They are unicellular, and they may be autotrophic or heterotrophic. Eukaryotic organisms have a nucleus and organelles in their cytoplasm, possess multiple chromosomes, have large ribosomes, and reproduce by mitosis.

The kingdom Fungi

The third kingdom, Fungi, includes the yeasts molds, mildews, mushrooms, and other similar organisms. The cells of this kingdom are eukaryotic and heterotrophic. Some fungal species are unicellular, whereas other species form long chains of cells and are called filamentous fungi. A cell wall containing chitin or cellulose is found in most members. Food is taken in by the absorption of small molecules from the external environment.

The kingdom Plantae

The fourth kingdom is Plantae. Classified here are the mosses, ferns, and seed-producing plants. All plant cells are eukaryotic and autotrophic. The organisms synthesize their own foods by photosynthesis, and their cell walls contain cellulose. All the organisms are multicellular.

The kingdom Animalia

The final kingdom, Animalia, includes animals. Animals without backbones (invertebrates) and with backbones (vertebrates) are included here. The cells are eukaryotic; the organisms are heterotrophic. All animals are multicellular, and none have cell walls. In the kingdom Animalia, biologists classify such organisms as sponges, hydras, worms, insects, starfish, reptiles, amphibians, birds, and mammals. The feeding form is one in which large

molecules from the external environment are consumed, then broken down to usable parts in the animal body .

Classification of organisms (the sixth kingdoms)

When Linnaeus developed his system of classification, there were only two kingdoms, Plants and Animals. But the use of the microscope led to the discovery of new organisms and the identification of differences in cells, A two-kingdom system was no longer useful.

Today the system of classification includes six kingdoms.

The Six Kingdoms:

Plants, Animals, Protists, Fungi, Archaeobacteria, and Eubacteria.

How are organisms placed into their kingdoms?

They are placed into their kingdoms according to:-

- 1- Cell type, complex or simple.
- 2- Their ability to make food.
- 3- The number of cells in their body.
- 4- The types of nuclear materials.

Plants :-

You are probably quite familiar with the members of this kingdom as it contains all the plants that you have come to know - flowering plants, mosses, and ferns.

Plants are all multicellular and consist of complex cells.

In addition plants are autotrophs, organisms that make their own food.

With over 250,000 species, the plant kingdom is the second largest kingdom.

Plant species range from the tiny green mosses to giant trees.

Without plants, life on Earth would not exist! Plants feed almost all the heterotrophs (organisms that eat other organisms) on Earth.

Animals :-

The animal kingdom is the largest kingdom with over 1 million known species.

Sumatran Tiger - Kingdom: Animalia, Phylum, Chordata, Class Mammalia, Order Carnivora, Family Felidae, Genus Panthera , Species tigris .

All animals consist of many complex cells. They are also heterotrophs.

Members of the animal kingdom are found in the most diverse environments in the world.

Archaeobacteria :-

In 1983, scientists took samples from a spot deep in the Pacific Ocean where hot gases and molten rock boiled into the ocean from the Earth's interior. To their surprise they discovered unicellular (one cell) organisms in the samples. These organisms are today classified in the kingdom, Archaeobacteria.

Archaeobacteria are found in extreme environments such as hot boiling water and thermal vents under conditions with no oxygen or highly acid environments.

Finding Archaeobacteria: The hot springs of Yellowstone National Park, USA, were among the first places Archaeobacteria were discovered. The biologists pictured above are immersing microscope slides in the boiling pool onto which some archaeobacteria might be captured for study.

Eubacteria :-

Like archaeobacteria, eubacteria are complex and single celled. Most bacteria are in the EUBACTERIA kingdom . they are the kinds found everywhere and are the ones people are most, familiar with.

Eubacteria are classified in their own kingdom because their chemical makeup is different.

Most eubacteria are helpful. Some produce vitamins and foods like yogurt. However, these eubacteria, Streptococci pictured above, can give you strep throat!

Fungi :-

Mushrooms, mold and mildew are all examples of organisms in the kingdom fungi.

Most fungi are multicellular and consists of many complex cells.

Fungi are organisms that biologists once confused with plants, however, unlike plants, fungi cannot make their own food. Most obtain their food from parts of plants that ere decaying in the soil .

Protists :-

Slime molds and algae are protists.

Sometimes they are called the odds and ends kingdom because its members are so different from one another. Protists include all microscopic organisms that are not bacteria, not animals, not plants and not fungi.

Most protists are unicellular. You may be wondering why those protists are not classified in the Archaeobacteria or Eubacteria kingdoms.

It is because, unlike bacteria, protists are complex cells.

These delicate looking diatoms are classified in the protist kingdom.

Classification of organisms and their categories

The Swedish naturalist Carolus Linnaeus proposed away of systematically classifying all living things . his method gives a unique name to each kind of plant and animal and organizes them in away that stresses similarities of physical features based on : 1. Cellularity 2. The types of nuclear materials 3. And based on their comparative anatomy.

***The Name has two parts, genus and species in Latin language.**

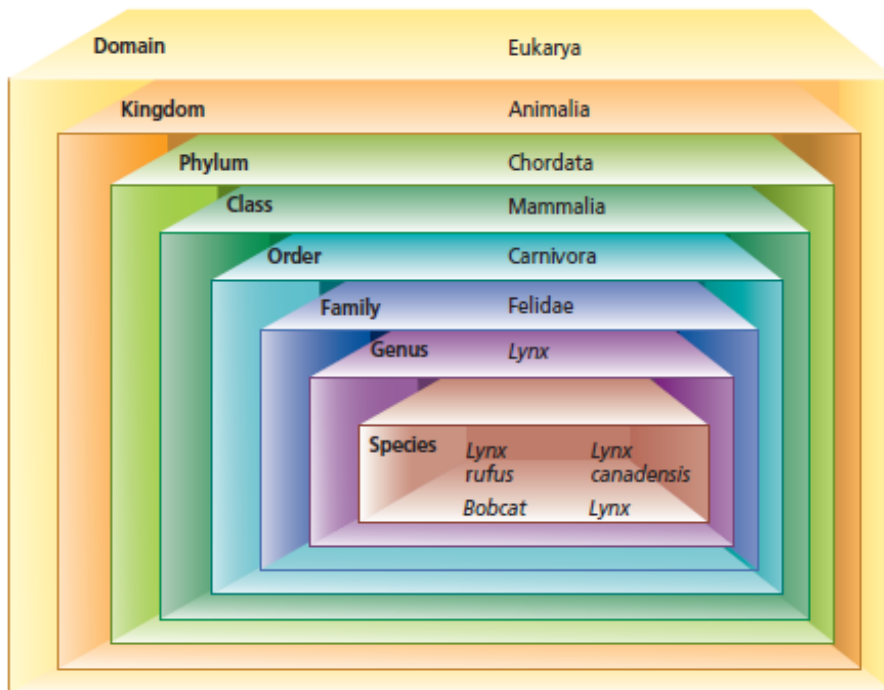
The categories of classification of organisms are , kingdom , phylum , class, order, family, genus and species .

Q1-What are the categories of classification off organisms ?

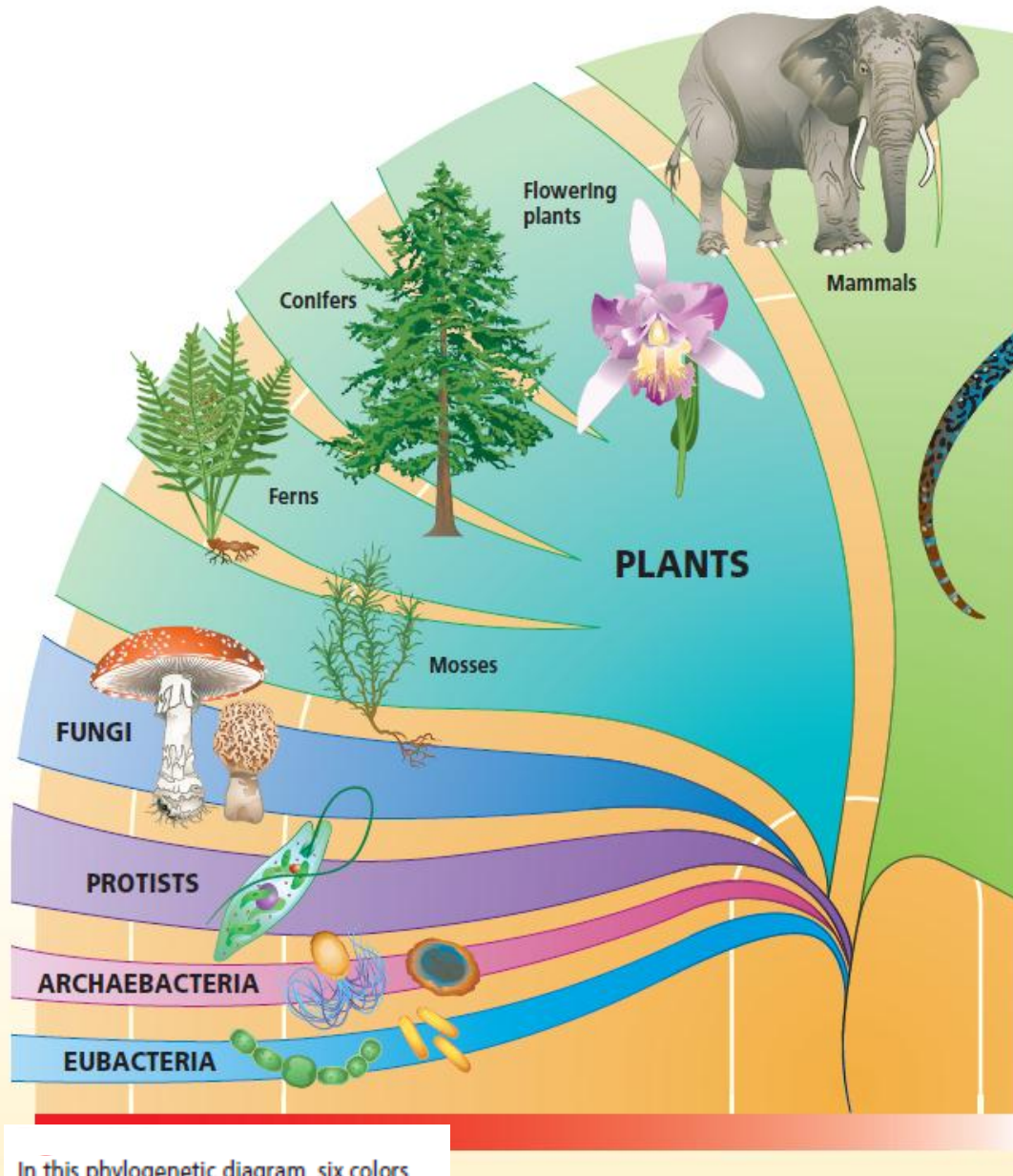
Q2-Arranged in order from the fewer to greater numbers of organisms?

Q3-What is the scientific name ?

Q4-What are the binomial ? or what is the nomenclature?



Although the lynx and bobcat are different species, they belong to the same genus, family, order, class, phylum, and kingdom. Observe and Infer **What class do the bobcat and lynx belong to? What kingdom do both belong to?**



In this phylogenetic diagram, six colors represent the six kingdoms of living things. The phylogeny of organisms is represented by a fanlike structure perched on the geologic time scale. The fan's base represents the origin of life during the Precambrian. The fan's rays represent the probable evolution of species from the common origin. The major groups of modern organisms occupy the fan's outer edge, which represents present time. **Critical Thinking**
Identify characteristics of each of the six kingdoms.

Classification of humans according Linnaeus system:

Categories	For human	Description
Domain	Eukarya	Multicellular , moves
Kingdom	Animalia	ingests food
Phylum	Chordate	Dorsal supporting rod and nerve cord
Class	Mammalia	Hair, mammary glands
Order	Primates	Adapted to climb trees
Family	Hominidac	Adapted to walk erect
Genus	Homo	Large brain , tool use
Species	H- sapiens	

How are placed the organisms into their kingdom ?

They are placed into their kingdoms according to these characteristics :

- 1- Based on plants or animals .
- 2- Based on type of cells (cellularity).
Simple or complex, eukaryotic or prokaryotic
- 3- Based on the types of nuclear material
- 4- Based on their ability to make food autotrophs (photosynthesis) or heterotrophs (herbivores ; carnivores ; omnivores ; and detritivores)
- 5- Based on the number of cells in their body .
- 6- Concept body of six kingdoms .

The End