

1. INTRODUCTION TO ANIMAL KINGDOM

Definition of Zoology,

Outline classification

- ❖ □ Protozoa,
- ❖ □ Parazoa,
- ❖ □ Metazoa and
- ❖ □ Major Phyla.

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ZOOLOGY

Systematics is the branch of biology that deals with the diversity of organisms in relation to their classification. Many biologists and textbooks do not clearly distinguish systematics from **taxonomy**. The term **systematics** originates from the Greek word **systema**. It means 'placing together'. Thus according to Simpson (1961), "Systematics is the scientific study of the kinds and diversity of organisms and of any and all relationships among them".

Hence, systematics is an umbrella term which can include many processes that describe species. There are at least three important disciplines which are united under this broad term.

The description of species
(identification)

The naming of names **(taxonomy)**
and

The description of the relationships
among and between Taxa
(Phylogenetics).

Classification: The arranging of groups of organisms into sets or divisions on the basis of their evolutionary relationships.

Taxonomy: The theory and practice of describing, naming and classifying organisms.

Cladistics: A method of inferring evolutionary ancestry by methodically comparing possible evolutionary relationships between organisms and selecting as most likely the relationships which require, for instance, the fewest number of evolutionary transformations between character states.

Phylogeny: The evolutionary development and history of a species or higher taxonomic grouping of organisms.

Taxa and species;

While grouping or arranging the organisms, we must need to understand three scientific concepts, namely **taxonomy**, **systematic** and **classification**. These disciplines though appear similar have slight deviations in their meaning.

The term taxonomy is a Greek word. Its components are ***taxis*** and ***nomos***. While *taxis* means arrangement, *nomos* means law. Thus taxonomy is defined as the **theory and practice of classifying organisms** (E. Mayr 1966).

Taxon.

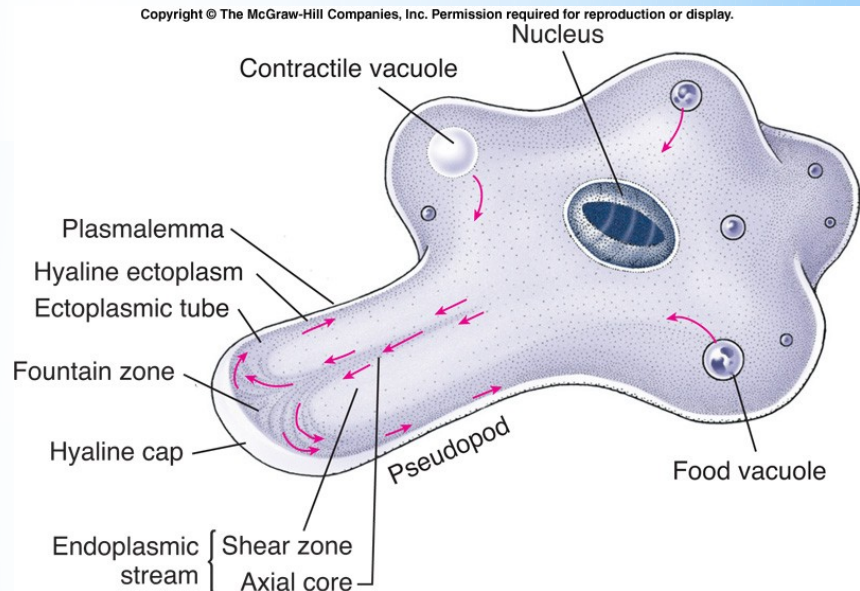
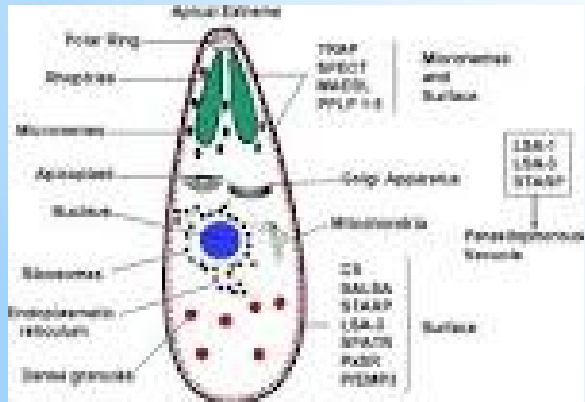
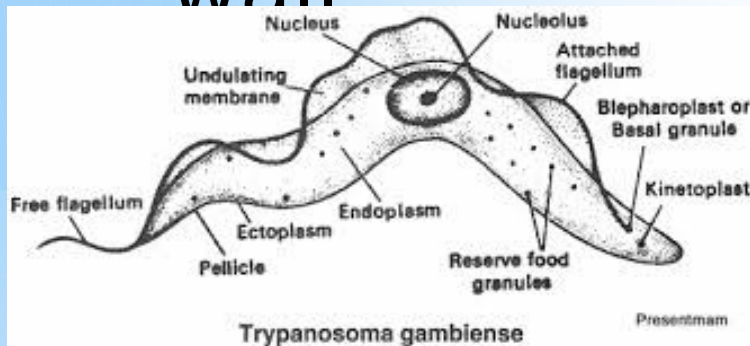
Based on specific characteristics, animals are grouped in various categories. These categories are otherwise called taxa (singular: taxon). **“A taxon is a taxonomic group of any rank that is sufficiently distinct to be worthy of being assigned to a definite category”**. Sometime we confused in meaning between the terms systematics, taxonomy and classification is.

The several taxa in animal taxonomy are the **Phylum, Class, Order, Family, Genus** and **Species**. This arrangement from Phylum to Species is designated as the **hierarchic system of classification**. In this system each taxon is based on specific characters of a group of organisms. Even though such an arrangement appears to be manmade, each taxon is a natural assemblage.

Outline classification

- ❖ Protozoa,
- ❖ Parazoa,
- ❖ Metazoa and
- ❖ Major Phyla.

Protozoa are eukaryotic, unicellular microorganisms, which lack cell wall



Characteristics of Protozoa:

The major distinguishing characteristics of protozoa are given below:

1. They do not have cell wall; some however, possess a flexible layer, a pellicle, or a rigid shell of inorganic materials outside the cell membrane.
2. They have the ability during their entire life cycle or part of it to move by locomotor organelles or by a gliding mechanism.
3. They have heterotrophic mode of nutrition, whereby the free-living forms ingest particulates, such as bacteria, yeast and algae, while the parasitic forms derive nutrients from the body fluids of their hosts.
4. They reproduce primarily by asexual means, although in some groups sexual modes also occur.

*Movement in Protozoa

- *Protozoa move mainly using cilia or flagella and by using pseudopodia
- *Cilia also used for feeding in many small metazoans.
- *The collection of tubules is referred to as the **axoneme** and it is covered with a membrane continuous with the rest of the organism's cell membrane.
- *Axoneme anchors where it inserts into the main body of the cell with a basal body.

*Cilia and flagella

- *No real morphological distinction between the two structures, but cilia are usually shorter and more abundant and flagella fewer and longer.
- *Each flagellum or cilium is composed of 9 pairs of longitudinal microtubules arranged in a circle around a central pair.

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