Introduction:

Zoology or animal Biology: Biology is divided into two branches, zoology: science of animal biology, Botany: science of plant biology.

Zoology includes the following branches:

Morphology: includes the study of external shape of animals.

Histology: includes study the structure of animal tissues .

Cytology: includes study of the structure of the cells and function.

Physiology: includes study of the functions of the different organs of the body.

Embryology: includes study of formation and growth of animals.

Genetics: means the genetic transmission between successive generation.

Ecology: includes study of the relationships between animals and the environment.

Taxonomy: include knowledge the different types of animals and nomenclature.

There are certain basic characteristics shared by all living thing:

1-Order: All organisms are composed of one or more cells whose structure highly ordered: atoms make up molecules, which construct cellular organelles, which are contained within cells. This hierarchical organization is continued at higher levels in must multicellular organisms cells function together as tissue, which combine to make organs, which are parts of organs, which comprise the organism. At the highest levels, organisms assemble to make populations, which are parts of ecosystems, which combine to form biomes which together make up the biosphere of the our planet.

2-Sensisitivity: All organism respond to stimuli for example your pupil dilate when you walk in to dark room.

3- Growth, development, and reproduction, all organisms are capable of growing and reproduction, and they all possess hereditary molecules that are passed to their offspring, ensuring that offspring are of the same species as their parents. Although crystals also "grow"their growth does not involve hereditary molecules.

4- Regulation: All organisms have regulatory mechanisms that coordinate the functions of the various parts of the organisms. These functions, which include supplying cells with nutrients, transporting substances through the organism, controlling the concentration of water and salts in the organism, and many others, are usually maintained at fairly stable levels as result of regulation.

Classification of Animals

Kingdom: animalia

Multicellular organisms with well developed tissues; usually motile; Heterotrophic by ingestion, generally in digestive cavity; Kingdom animalia is divided into two subkingdom:

Parazoa: animals that for the most part lack a definite symmetry and possess neither tissues nor organs.

Eumetazoa: animals that have a definite shape and symmetry. and is most cases tissues which are organized into organs and organ systems.

The subkingdom parazoa consist primarly of the sponges phylum porifera. The other animals, composing about 35 phyla, belong to the subkingdom Eumetazoa. According to the presence or absence of vertebral column, animals divided into: Invertebrate (animals without backbone), include:

Phylum: Porifera e. g. sponges

Sponges are unique in the animals kingdom is possessing choanocytes, Special flagellated cells whose beating drives water throught the body cavity.

Phylum: Cnidaria e. g Jellyfishes, sea anemons, corals: individual cnidaria species may be either medusa floating, bell shaped animals with the mouth directed downward or polyps anchored animals with the mouth directed upward. In many cnidarians, these two forms alternate during the life cycle of the organism.

Phylum: Platyheliminthes e. g. planarians, fllukes flatworms are the most primitive bilaterally symmetrical animals and the simplest animals in which organs occur flatworms lack circulatory system and most of them have a gut with only one opening. They excrete wastes directly from the gut and also by means of a network of fine tubules with ciliated (flame cells) of the side branches. Their nervous system is simple.

Phylum: Nematoda: e. g. roundworms

Roundworms have a coelom that is incompletely lined by mesoderm. A coelorm provides a space for internal organs and can serve as a hydrostatic skeleton. Roundworms can be free living or parasitic. Free living forms live in the soil, or water, parasitic ones cause some common infections such as pinworm and hookworm infections of humans and heartworm infections in dogs.

Phylum: Mollusca- eg. Snails, slugs, clams, octopuses. All mollusks have a visceral mass, mantle, and foot. Many also have a shell and/ or radula. A reduced coelom and an open circulatory system are also present. Land snails are gastropods which are adapted to terrestrial environment. All snails have a

coiled shell, a large flat muscular foot, and a head region. In addition the mantle in a garden snail becomes a lung.

Phylum: Annelida: e. g. earth worms, leeches. Segmented worms are with body rings, coelom divided by septa. Setae on each segment, ganglia and lateral nerve in each segment, nephridia in most segmentes, branched blood vessels in each segment.

Phylum: Arthropoda e. g. spiders, scorpions, insects many arthropods. The individual segment are fused into functional assemblies. All arthropods have a distinct head, sometimes fused into a single unit with the thorax.

All arthropods have a rigid, chitinous exoskeleton that provides places for muscle attachment, protects, the animal from predators and injury, and most important, impedes water loss.

Phylum: Echinodermata e. g. sea stars, sea urchins, sea cucumbers. Echinoderms are radially symmetrical animals with a five part body plan. The have characteristic calcium rich plates called ossicles and unique water vascular system that includes hollow tube feet.

Phylum: Chordate, chordates are characterized by the presence of a dorsal hollow nerve cord, a notochord, and pharyngeal gill slits during some point of their development with three subphyla:

Subphylum: urochordata e. g. Tunicates.

Subphylum: Cephalochordate e. g. lancelets.

Subphylum: Vertebrata.

Vertebrates are distinguished, in particular, by living endoskeleton, closed circulatory system. Paired appendages, efficient respiration and excretion, high degree of cephalization.

Vertebrates include the following classes:

Class: Chondricthyes e. g. sharks, rays.

Class: Osteichthyes e. g. salmon, eel.

Class: Amphibia e. g. frogs, toads, salamanders.

Class: Reptilia e. g. snakes, lizard, turtles.

Class: Aves e. g. sparrows, pigeons.

Class: Mammalia e. g. cats, rats, humans.