

5- Phylum Aschelminthes:

Class: Nematode: the nematods are pseudocoelomates, they have hollow, fluid – filled cavity called pseudocoelom between mesoderm and endoderm, they also have a digestive tract with a mouth (surrounded by 3 lips) at anterior end, and an anus at posterior end. This class consists of round worms, which may be free living or parasites E.g. *Ascaris lumbricoides* which infects the intestine of human, the adult female can reach length of up to 30 cm, with straight posterior end, the smaller male has hooked.

6- Phylum Annelida:

Have a true coelom and a body that is divided into many segment. Most annelids have external bristles called setae.

- 1- **Class oligochaeta:** E.g. *Allolobophora* (earth worm) which lives in the moist soil and feeds on organic matter of the soil, its body is divided into more than 100 segments, it has circular and longitudinal muscles. It has prostomium, and the mouth lies in the peristomium (the first segment), the clitellum (a noticeable swelling around the reproductive organs of 8 or 9 segments), earth worms have a closed circulatory system, they exchange gases through their skin and eliminate. Cellular wastes and excess water through excretory tubules called nephridia. Each segment contains setae, nephridia, a pair of excretory pores found in the ventral side of every segment, the worm is hermaphrodite, there two female genital pores in the fourteenth segment, and two male genital pores in the fifteenth segment.

7- Phylum Molluska:

Mollusks have a true coelom, their body is divided into the head – food and the visceral mass, which contain the internal organs. Most mollusks have at least one shell, which is secreted by a layer of epidermis called the mantle. Aquatic mollusks have gills through which they exchange gases with water. The main feeding adaptation of most mollusks is the radula, a tongue – like structure that is Modified in different species for scraping, or harpooning.

- 1- **Class Gastropoda:** E.g. Helix (snail): has open circulatory system move by wave like, muscular contractions of the food.
- 2- **Class Lamellibranchiata:** E.g. Anodonata (the oysters).
- 3- **Class Cephalapoda:** E.g. Octopus.

8- Phylum Arthropoda:

Are segmented animals that have jointed appendages, an exoskeleton, a high degree of cephalization, ventral nerve cord, and an open circulatory system. To grow, an arthropod must shed its exoskeleton periodically in a process called molting.

- 1- **Class Crustacea:** have branched antennae and a pair of chewing mouth parts called mandibles, most crustaceans are aquatic, respire with gills, and a nouplius larval stage during development. Eg. Penaeus (prawn): the body composed of two regions:

Cephalothorax and abdomen. The cephalothorax covered with carapace, its anterior part called rostrum. The abdomen composed of 6 segments with terminal segments called telson. The prawn has 8 pairs of thoracic appendages (3 pairs are maxillipods, 5 pairs are periopods), and

6 pairs of abdominal appendages and 5 pairs of cephalic appendages (2 pairs of antenna, a pair of mandibles and 2 pairs of maxillae).

2- **Class Arachnia:** includes spiders, scorpions, mites, and ticks, their bodies are divided into a cephalothorax and an abdomen, and they usually have 6 pairs of jointed appendages: one pair of chelicerae, one pair of pedipalps, and 4 pairs of pereopods. The scorpions have pincer – like pedipalps and a venomous stinger at the end of their abdomen.

3- **Class Insecta:** the insects body is divided into 3 regions: the head has. Mandibles and one pair of un branched antennae: the thorax has 3 pairs of jointed legs, and in many species, one or two pairs of wings; the abdomen has 9 to 11 segments but neither wings nor legs in a dolts.

Insects lived in most every terrestrial and fresh water environment, factors responsible for their success include their ability to fly, exoskeleton, jointed appendages, small size, and short life span.

Insects have open circulatory system, gas exchange occurs by spiracles (an external opening of a trachea), insect sensory structures include simple and compound eyes, and antennae. Most insects go through metamorphosis. Eg: Order: Orthoptera: eg.: Grasshoppers, cockroaches.

Order: Odonata: eg.: dragonflies.

9- **Phylum Echinodermata:**

1- **Class Asteroidea:** E.g.: Astropecto (sea star): are radially symmetrical with 5 – part body plan, most forms have a water vascular system with tube feet for locomotion. Sea stars are lack

circulatory, excretory, and respiratory system and they have no head or brain, they use skin gills for gas exchange and waste excretion, most have separate sexes.

10- Phylum chordate:

Bilaterally symmetrical; deuterostomes coelom present; have a notochord, adorsal nerve cord, pharyngeal slites, and a tail some stage of life; aquatic and terrestrial include 3 subphyla:

1- Subphylum: Urochrdata: E.g. Selpa

Small animals, the body with saclike covering or tonic, these animals are hermaphrodites, cross – fertilization.

2- Subphylum: Cephalochordata: E.g. Amphioxus (lancelet):

It's a blade shape eyeless small animal live partially buried in the sand, and they can swim from place to place, ingests particles suspended in the water using ciliated structures around its mouth, these animals have separated sexes, external fertilization, and ciliated larval stage.

3- Subphylum: Vertebrata:

The notochord replaced by a spinal column composed of vertebrae that protect the dorsal nerve cord; recognizable head containing a brain. Vertebrates include:

- 1- Class chondrichthyes:** fishes with jaws and paired fins, gills present, Cartilaginous skeleton eg. Sharks.
- 2- Class Osteichthyes:** fresh water and marine fishes with gills attached to gill arch; jaws and paired fins, bony skeleton, eg. Bony fishes.

- 3- **Class Amphibia:** fresh water or terrestrial, gills present at some stages, skin is often slimy and lacking scales, have 4 legs, egg typically laid in water and fertilized externally; eg. The frog *Ranaridibanda*.
- 4- **Class Reptilia:** ectothermic terrestrial or semiaquatic vertebrates; breathe with lungs at all stages; the body covered by scales, eg. Crocodile, lizards, snakes, and turtles (which have a shell composed of a bony plates, the vertebrae and ribs are fused to the interior surface of the shell).
- 5- **Class Mammalia:** Hair on at least parts of the body ,young nourished with milk secreted by mammary glands, endothermic, breathe with lungs E.g.

1- Order: Rodentia: eg. Mice, rats

2- Order: Lagomorpha: eg. rabbits

3- Order: Chiropteraeg. bats

4- Order: Primates

Family: Hominidae

Homo sapiens.

The End