

UNIT 4



THE ANIMAL KINGDOM (I): NON-ARTHROPOD INVERTEBRATES

Animal kingdom includes **heterotrophic multicellular** organisms with tissues and organs that are composed of **eukaryotic** animal cells. Animals have got well developed sensibility and move freely.

This kingdom is usually divided into vertebrates and invertebrates:

- **Invertebrates** don't have an internal bony skeleton. Some invertebrates have an external skeleton (exoskeleton) like arthropods; other ones haven't got any skeleton at all.
- **Vertebrates** have got an **internal skeleton** (endoskeleton) composed of bones like vertebrae that form the spinal column or backbone.

In this unit we are going to learn about the main non-arthropod invertebrates groups.

▶▶ PORIFERANS. SPONGES

Sponges are aquatic animals. They are permanently attached to rocks. The body of a sponge is shaped like a sac or be irregular (like natural sponges people use in their bathrooms) and it is covered with small **pores**. Sponges eat organic particles they filter from the water, for this reason they are called **filter feeders**.

They don't have any organs or systems. Sponges have an ensemble of small **spicules** inside their body to maintain their shape.

▶▶ CNIDARIANS

These include aquatic animals with **radial symmetry**, such as **jellyfish, sea anemones, hydras** and **corals**. All of them are **carnivores** and catch their prey using their **poisonous tentacles**. There are two types of cnidarians, classified according to their body shape:

Polyps: they have a **sac-like** body hold on the substrate, with the mouth upwards, surrounded by tentacles.

Medusae: they are **umbrella shaped** with the mouth and tentacles downwards. They move with the sea currents by contracting their body.

▶▶ ANNELIDS

Earthworms, leeches and many marine worms are annelids. Annelid's bodies are long, **cylindrical** and segmented into **rings**.

Earthworms are terrestrial and feed on organic particles, but leeches are aquatic animals and feed on blood (they are parasites).

▶▶ PLATYHELMINTHES

They are **flat** worms and usually live in water like **planarians**, but many of them are parasite segmented worms, like the **tapeworm**, that can live inside human intestine.

▶▶ NEMATODES

Nematodes are **cylindrical** and **smooth** worms. Many of them are parasites of plants and animals, like **intestinal roundworms**.

▶▶ MOLLUSCS

Molluscs have a soft body composed of an external layer (**mantle**) that surrounds the internal organs. They have a **muscular foot** they use to move around. Molluscs use to have an internal or external **shell**.

Most molluscs are aquatic and have gills. But some species, such as land snails and slugs, live on land and have lungs.

There are three main *classes* of molluscs:

- **Gastropods**, which have a one piece-spiral shell, like **snails**. Nearly all of them are herbivores.
- **Bivalves** have a shell with two valves and also have a foot, such as **clams, mussels** and **oysters**. Bivalves are filter feeders.
- **Cephalopods**, which have arms or tentacles with suction cups surrounding its mouth. They are carnivores and have got an internal shell or pen. **Squids, cuttlefishes** and **octopuses** are cephalopods.

▶▶ ECHINODERMS

These marine animals include **sea urchins, sea cucumbers** and **starfish**. Many echinoderms have a set of calcareous plates (with spines or not) that are covered by skin (**dermoskeleton**).

Echinoderms move about using a unique system called the **water vascular system** or **system of ambulacra**. It consists on series of internal channels where seawater circulates through. These channels end outside in the **tube feet**. Echinoderms can use this vascular system also for feeding.