

Phylum 1 Porifera or Sponges

- Porifera, commonly known as sponges, is a phylum of simple aquatic animals
- Cellular level of organisation
- non motile animals
- Holes on the body which led to formation of canal system for circulation of water and food
- Hard outside layer called as skeletons
- Examples sycon, spongilla

- **Basic Structure:**

- Sponges are multicellular organisms with a simple body plan.
- They lack true tissues and organs but have specialized cells for various functions.

- **Body Design:**

- The body of a sponge is porous, allowing water to flow through it.

- **Feeding and Digestion:**

- Sponges are filter feeders. They extract food particles, such as bacteria and organic debris, from the water that passes through them.
- Specialized cells called choanocytes create water currents and capture food particles with their flagella.

- **Reproduction:**

- Sponges can reproduce both sexually and asexually.
- Asexual reproduction often involves the formation of buds or the regeneration of fragments into new individuals.
- Sexual reproduction may involve the production of eggs and sperm, with fertilization occurring either internally or externally.

- **Habitats:**

- Sponges are primarily aquatic and are found in a variety of habitats, including freshwater and marine environments.

Phylum 2 Coelentrata

- Tissue level of organisation
- No coelom
- Radial symmetry, diploblastic
- Hollow gut
- Can move from one place to another
- Examples
- Hydra, jelly fish, corals

- The term "Coelenterata" is an older classification that has been largely replaced by the phylum Cnidaria. Cnidarians are a diverse group of aquatic animals that include jellyfish, corals, sea anemones, and hydras.
- **Cnidocytes:**
- Specialized cells called cnidocytes contain nematocysts, which are stinging structures used for defense and capturing prey.

- **Habitats:**
- Cnidarians are primarily marine, although some species can be found in freshwater.
- Coral reefs, which are formed by colonial cnidarians, are important marine ecosystems.

- Most cnidarians are carnivorous and use their tentacles armed with cnidocytes to capture and immobilize prey.
- **Bioluminescence:**
- Some jellyfish species are bioluminescent, producing light for various ecological purposes, including attracting prey and deterring predators.

Phylum 3 : Platyhelminthes

- Also called flat worms
- No coelom present
- Bilateral symmetry, triploblastic
- Free living or parasite
- Digestive cavity has one opening for both ingestion and egestion
- Examples planaria(free living), liver fluke(parasite)

- Platyhelminthes, commonly known as flatworms, is a phylum of relatively simple, bilaterally symmetrical animals
- **Bilateral Symmetry:**
 - Flatworms exhibit bilateral symmetry, meaning their bodies have a right and left side that are mirror images of each other.
- **Flattened Body Shape:**
 - As the name suggests, flatworms have a flattened, ribbon-like body shape that allows for efficient diffusion of gases and nutrients across their tissues.
- **Tissue Organization:**
 - Platyhelminthes are triploblastic, possessing three germ layers: ectoderm, mesoderm, and endoderm.

- **Regeneration:**
- Flatworms have remarkable regenerative abilities. They can regenerate complete organisms from fragments of their bodies.
- **Habitats:**
- Flatworms can be found in various habitats, including freshwater, marine environments, and damp terrestrial environments.

- **Acoelomates:**
- They are acoelomates, meaning they lack a true body cavity (coelom). The space between the body wall and the digestive tract is filled with mesodermal tissue.
- **Reproduction:**
- Flatworms can reproduce both sexually and asexually.
- Asexual reproduction may involve regeneration, where a fragment of the flatworm can develop into a new individual.
- Sexual reproduction often involves cross-fertilization, and some species are hermaphroditic.

Phylum 4- Mollusca

- Coelom present
- Triploblastic, bilateral symmetry
- Soft bodies sometimes covered with shell
- Generally not segmented
- No appendages present
- Muscular foot for movement
- Shell is present
- Kidney like organ for excretion
- Examples- chiton, octopus, pilla

- Mollusca is a diverse and large phylum of invertebrate animals that includes familiar organisms like snails, clams, and octopuses.
- **Soft-Bodied Animals:**
 - Molluscs are soft-bodied animals, often protected by a hard external shell, though some species have reduced or internal shells.
 - Molluscs exhibit bilateral symmetry, with a distinct head and a ventral foot for locomotion.
- **Three Main Body Parts:**
 - Molluscan body plans typically consist of three main parts: the head, the muscular foot, and the visceral mass containing internal organs.

- **Shell Formation:**
- Many mollusks, such as snails and clams, secrete a calcium carbonate shell that provides protection and support.
- **Reproduction:**
 - Molluscs exhibit various reproductive strategies, including internal and external fertilization. Some are hermaphroditic.
- **Habitats:**
 - Molluscs inhabit a wide range of environments, including freshwater, marine, and terrestrial habitats.

Phylum 5: Annelida

- Second largest phylum
- Coelom present
- Bilateral, triploblastic
- Segmented, (segments specialised for different functions)
- Water or land
- Extensive organ differentiation
- Examples- earthworm, leech

- Phylum Annelida comprises segmented worms, a diverse group that includes earthworms, leeches, and marine bristle worms
- **Segmentation:**
 - Annelids exhibit true metamerism, with their bodies divided into distinct segments. Each segment often contains similar sets of organs and structures.
- **Hydrostatic Skeleton:**
 - Annelids have a hydrostatic skeleton, which consists of fluid-filled coelomic cavities that provide support and facilitate movement.
- **Bilateral Symmetry:**
 - Annelids show bilateral symmetry, meaning their bodies have a right and left side that are mirror images of each other.
- **Coelom:**
 - Annelids have a well-developed coelom, a fluid-filled body cavity that surrounds the internal organs.

- **Setae:**
 - Bristle-like structures called setae are often present on the body segments, aiding in locomotion and providing traction.
- **Habitats:**
 - Annelids are found in various habitats, including terrestrial, freshwater, and marine environments.
- **Earthworms:**
 - Earthworms, belonging to the class Oligochaeta, are important for soil health as they burrow through the soil, improving aeration and nutrient cycling.
- **Leeches:**
 - Leeches, belonging to the class Hirudinea, are often parasitic and are known for their ability to secrete anticoagulants during feeding.

Phylum6- Arthropoda

- Largest phylum(consist of 80% of species)
- Generally known as insects
- Coelom present
- Bilateral, triploblastic
- Segmented sometimes fused
- Tough exoskeleton of chitin
- Joining appendages like feet, antenna
- Examples- prawn, scorpio, cockroach, butterfly, spider etc.

- **Exoskeleton:**
 - Arthropods have an external skeleton made of chitin, providing support, protection, and a framework for muscle attachment.
- **Segmentation:**
 - The body is segmented into distinct regions, typically a head, thorax, and abdomen. Segmentation is also evident in appendages.
- **Jointed Appendages:**
 - Arthropods possess jointed appendages, allowing for a wide range of movements. Each body segment typically has a pair of appendages.
- **Bilateral Symmetry:**
 - Arthropods exhibit bilateral symmetry, with a body divided into two mirror-image halves.

Phylum 7: Echinodermata

- Spiny skin, marine
- No notochord
- Coelom present, bilateral symmetry, triploblastic
- Endoskeleton of calcium carbonate
- Water vascular system for locomotion
- Bilateral symmetry before birth and radial symmetry after birth
- Examples- antedon, sea cucumber, star fish etc.

Phylum 8: protochordata

- Marine animals
- BS, triploblastic and have a coelom
- Gills present at same phase of life
- Notochord is present which is a long rod like support structure that runs along the back of the animal separating the nervous tissue from the gut.
- Notochord provides a place for muscles to attract or ease the movement
- Example- balangiossus, Herdmania

- Protochordates, also known as hemichordates and chordate relatives, represent a group of animals that share some characteristics with chordates but lack certain definitive features found in true chordates.
- **Chordate Characteristics:** Protochordates exhibit some features characteristic of chordates, including a notochord, dorsal nerve cord, and pharyngeal slits. However, these features may not persist throughout the entire life cycle in all members of the group.

- **Notochord:** The notochord is a flexible, rod-like structure that provides support to the body. In protochordates, the notochord may be present only during certain stages of development or may persist throughout the entire life cycle, depending on the subphylum.
- **Dorsal Nerve Cord:** Protochordates have a dorsal nerve cord, which is a hollow tube located on the dorsal side of the body. This nerve cord is part of the nervous system and is homologous to the spinal cord in vertebrates.
- **Pharyngeal Slits:** The presence of pharyngeal slits is a characteristic feature of protochordates. These slits are openings in the pharynx that may have various functions, including filter feeding and respiration.

Phylum 9- nematoda

- Bilaterally symmetrical and triploblastic
- Body is cylindrical rather than flattened
- Tissues but no real organs
- Sort of body cavity or a pseudocoelom is present
- Familiar as parastic worms causing diseases
- Worms causing elephantiasis the worms in the intestine
- Examples- Ascaris, Wucheria

Phylum 10 Vertebrate

- Notochord converted to vertebral column
- 2,3,4 chambered heart
- Organs like kidney for excretion
- Pair appendages
- Examples human (4 chambered), frog(3 chambered) fishes(2 chambered)
- Vertebrates are divided into five classes-
- Pisces, Amphibian, reptilian, Aves, mammalia

- Vertebrates

Pisces water living two chambered heart e

.g. Shark. Fishes come under this category

Amphibians land and water living two chambered heart

e.g. Frog

Reptiles three chambered heart except crocodile four chambered heart

Aves four chambered heart

Mammals

All viviparous animals come under mammals except for oviparous which lays eggs

Dolphin, whale, Porpoise

- The taxonomic hierarchy family comes between
- Ans -
- The five kingdom classification was given by
- Ans
- Two chambered heart occurs in
- Ans
- Who introduced the system of scientific nomenclature of organisms
- Ans
- Organisms without nucleus and cell organelles belong to-
- Ans
- Amphibians do not have the following-
- Ans
- Pteridophytes do not have-
- Ans

- Elephantiasis is caused by-
- Ans
- Which one is a true fish?
- Ans
- Which is the highest level of classification
- Ans
- First vascular plants on land were
- Ans
- The amphibians of plants kingdom are-
- Ans