

CHAPTER-9
DIVERSITY AMONG
ANIMALS

Q1. Give the literal meaning of the word animalia.

Ans: The name animalia is derived from Latin word "**anima**" meaning **breath or soul**. All the animals of the world are included in the kingdom animalia.

Q2. Define invertebrates and mention the names of phyla included in it.

Ans: Definition:

The animal species that lack a backbone are commonly known as **invertebrates**. Invertebrates account for 95% of known animal species.

Division of invertebrates:

The invertebrates have been divided into eight major phyla: porifera, cnidaria, platyhelminthes, aschelminthes, mollusca, annelid, arthropod a echinodermata.

Q3. Describe the group Protochordata (Acrania).

Ans: Group Protochordata (Acrania):

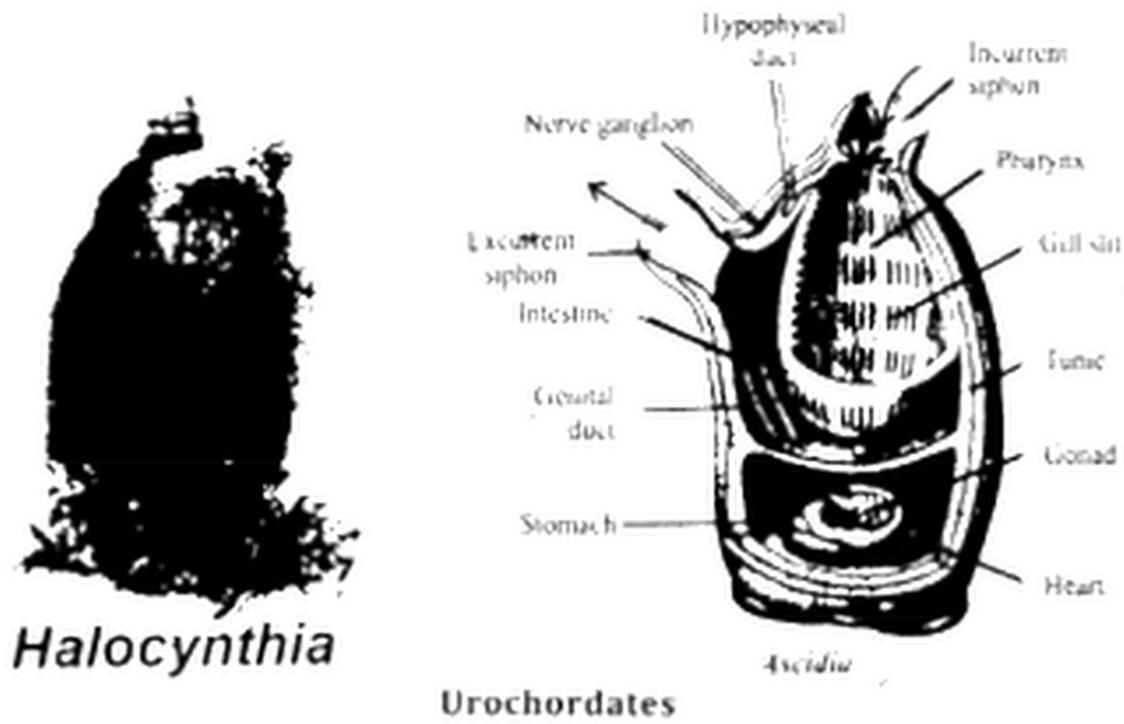
Protochordata has been divided into two sub-phyla:

(i) Subphylum urochorda (ii) Subphylum cephalochordate

i. Subphylum Urochorda:

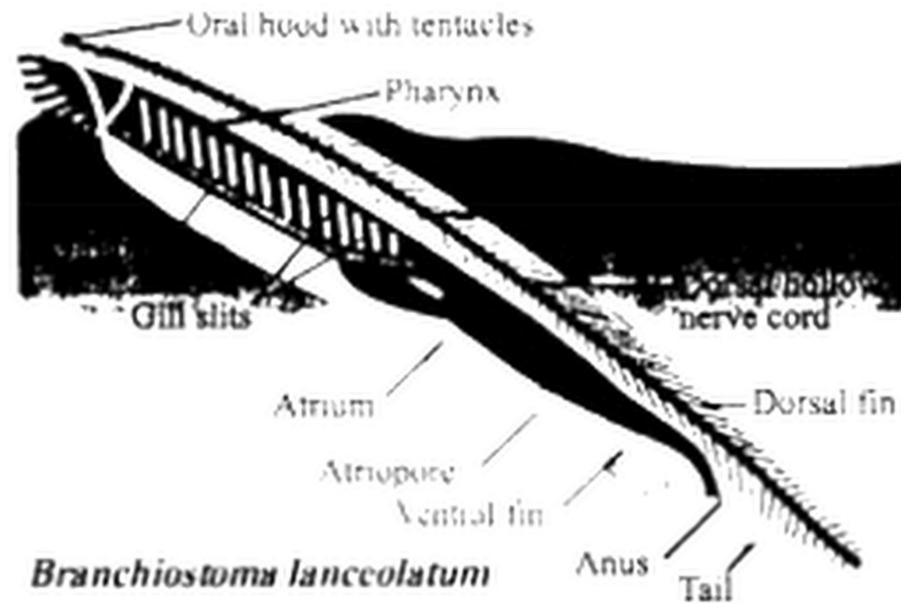
The body is covered by a covering called **tunic** so they are called **tunicates**. On the outside are two projections: the **incurrent siphon** which corresponds to the anterior end of the body and **excurrent siphon** that marks the dorsal side. Larva has a mid-dorsal supporting rod, the **notochord**, in the tail, so the group has been named urochorda. The notochord usually disappears

during metamorphosis, so that adult has no skeleton. The examples of urochordates are *Ascidia*, *Halocynthia*, etc.



ii. **Subphylum Cephalochordata:**

Body is fish like. It has no head but tail is present. Notochord extends the entire length of the body. There is no organ for respiration. The example of cephalochordate is: *Branchiostoma (Amphioxus)* (Lancelet).



Q4. Briefly describe group Craniate.

Ans: Group Craniate:

Craniates has one subphylum i.e. vertebrata.

Subphylum Vertebrata:

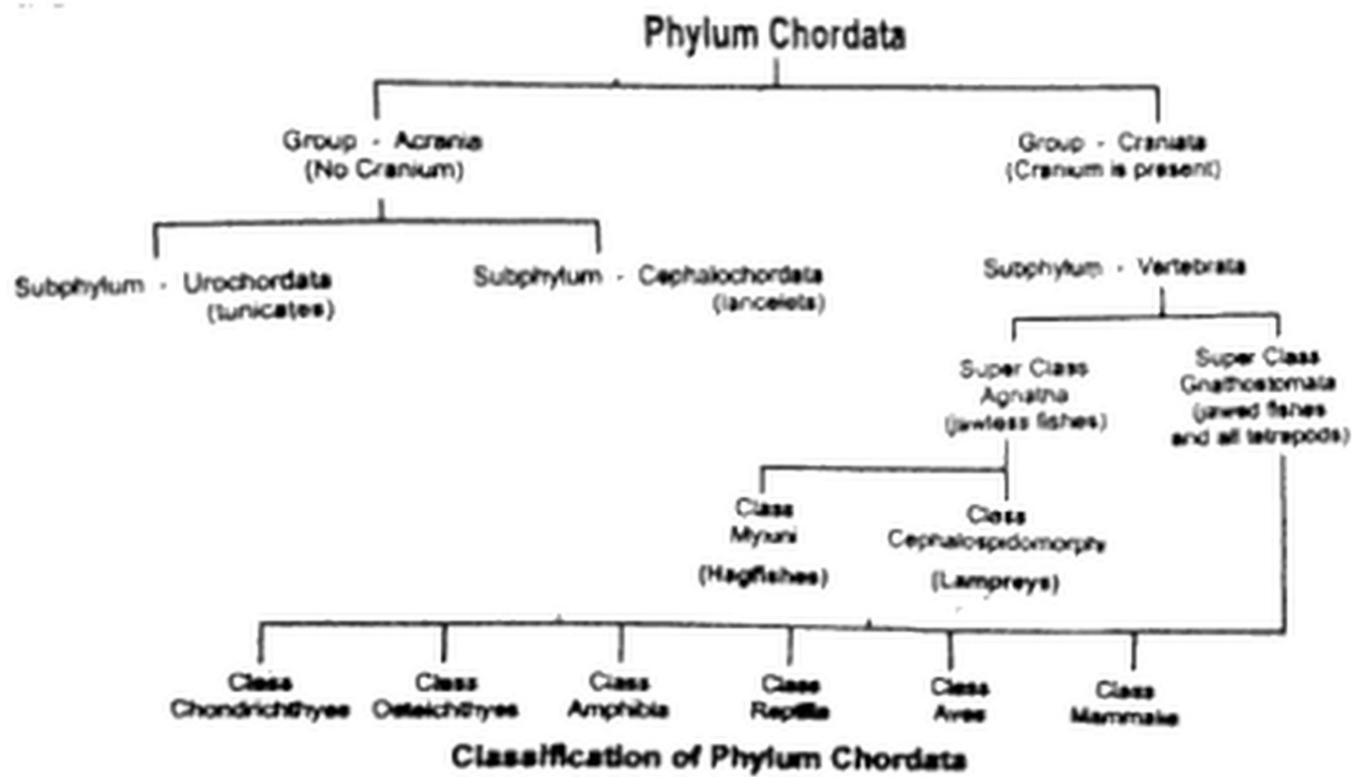
The characteristics that give the member of this group the names "vertebrata" and "Craniata" are spinal column of vertebrae, which forms the chief skeletal axis of the body, and a brain case or cranium. Subphylum vertebrata is divided into two super classes:

(a) Agnatha

(b) Gnathostomata

Q5. Draw the flow chart of classification of phylum chordate.

Ans:



Critical Thinking

What limits the ability of amphibians to occupy the full range of terrestrial habitats and allows other terrestrial vertebrates to live in them successfully?

Ans: In general amphibians are only partly successful in their colonization of land, since their limbs are short and they need to flex their body laterally in order to take reasonable strides.

Amphibian skin is permeable and in a dry atmosphere would quickly dehydrate, they even do not have the mechanisms to drink water. A moist skin is also required to supplement respiration, since the lungs are comparatively simple and not totally adequate for its needs. These limitations restrict amphibians to moist environments. For reproduction amphibians are also almost entirely dependent on water since, like fish their eggs have no water proof covering and their larvae (tadpoles) are quite fish-like. These larvae initially have no legs swim using a long tail and breath using external feathery gills. That is why they are not successful terrestrial vertebrates.

Q7. Describe the evolutionary adaptation in class mammalian.

Ans: Evolutionary Adaptation in class mammalian:

A regulated body temperature. These makes them independent of environmental change keeping active throughout the year. Complete separation of venous and arterial blood in the heart. More efficient mechanism of respiration due to the presence of a diaphragm. An active life and a high rate of metabolism. A separate respiratory passage that avoids interference in breathing during feeding. Better development senses of smell, sight and hearing. A more highly develop nervous system. Large cerebrum and cerebellum provide for better coordination in all activities and for learning and retentive memory. Patterns of behaviour. Such as care a nursing of the young once present.

Teacher's Point

Teacher would guide the students to:

- ◆ Trace the position in the phylogeny of major groups of animals.
- ◆ Draw the evolutionary tree of sponges, butterfly and monkey.

Did you know?

Bioinformatics is an interdisciplinary field that develops methods and software tools for understanding biological data. As an interdisciplinary field of science bioinformatics combines computer science statistics, mathematics and engineering to analyze and interpret biological data. Bioinformatics has been used for in silicon analyses of biological queries using mathematical and statistical techniques.

Did you know?

Coelenterate animals may show a number of zooids. They are of different forms. They take up different functions. This is called **polymorphism**. Polymorphism denotes division of labour among the zooids of the individual. A polymorphic colony contains many individuals called zooids. They are mainly two types. (1) medusa (2) polyps. Polyps are sedentary. It shows mouth and tentacles at the free end. The medusa is free swarming. Hydra is a monomorphic form. It is represented by polyp form. It performs all functions. Obelia like animals. Show to forms polyp nutritive zooid and medusa reproductive zooid. This is called dimorphic organism. In a colony of Obelia three types of zooids are present (1) hydranth, (a polyp stage) (2) blastostyle (asexually reproducing zooid) (3) medusa are present.

Science Titbits

Origin of Arthropods: It is believed that arthropods and annelids have a common origin, as both have appendages, a segmented body and cuticle,

Science Titbit

What are the secrets of insect success?

The body plan is modified and specialized in so many ways that insects have been able to adapt to a number of life styles. They have ability to fly Protective mechanisms include body is covered by mimicry protective coloration and aggressive behavior. The larvae and pupae do not have to compete with adults for food or habitats

Science Titbits

Echinoderms show close resemblance with chordates. Both (1) have mesodermal skeleton (2) are deuterostomes (3) have similar early development. That is why echinoderms have been placed closest to phylum chordate.

Teacher's Point

Teachers would guide the student to explain the role of invertebrates in the field of research and daily life

Science Titbits

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

Teacher's point

Teachers would guide the students to:

- ◆ Trace the position in the phylogeny of major groups of animals.
- ◆ Demonstrate an understanding of the connection of extinction of species with of human activities.

ACTIVITY

Classifying the given invertebrates into phyla and given chordates into classes by using classification key

