

**ATOMIC ENERGY CENTRAL SCHOOL,
INDORE**

MODULE 4.1



**UNIT 1 :
DIVERSITY
IN THE
LIVING
WORLD**

**CHAPTER 4
ANIMAL
KINGDOM**

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Animal Kingdom Classification System

Classification of Animal Kingdom is based on various fundamental features like -

1. Levels of Organisation,
2. Symmetry,
3. Diploblastic and Triploblastic Organisation,
4. Coelom development,
5. Segmentation of the body and
6. Presence or absence of Notochord.

Levels of Organisation

- **Cellular level of organisation**, the cells are arranged as loose cell aggregates. e.g. Sponges.
- **Tissue level of organisation**, here the cells performing the same function are arranged into tissues, e.g. in coelenterates
- **Organ level of organisation**, is exhibited by members of Platyhelminthes and other higher phyla where tissues are grouped together to form organs, each specialised for a particular function.
- **Organ system level of organisation**, in animals like Annelids, Arthropods, Molluscs, Echinoderms and Chordates, organs have associated to form functional systems, each system concerned with a specific physiological function.

Organ systems in different groups of animals exhibit various patterns of complexities.

Incomplete digestive system: has only a single opening.

A complete digestive system has two openings, mouth and anus.

Symmetry

- Asymmetrical - No symmetry eg. Sponges.
- Radial Symmetry - Any plane passing through central axis divides body in two equal halves.
- Bilateral Symmetry - Body can be divided into two equal halves through one plane only.

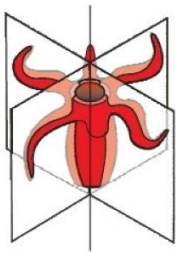


Figure 4.1 (a) Radial symmetry

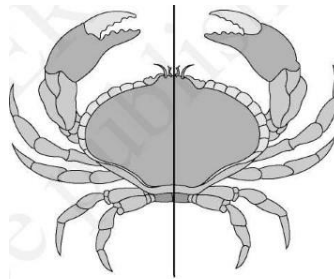


Figure 4.1 (b) Bilateral symmetry

Diploblastic and Triploblastic Organisation

- Two embryonic layers - Ectoderm and Endoderm - Diploblastic.
- Three embryonic layers- Ectoderm, Mesoderm and endoderm- Triploblastic.

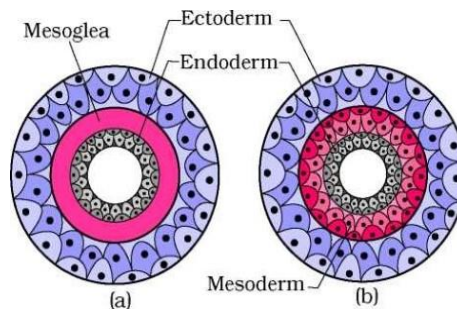


Figure: Showing germinal layers : (a) Diploblastic (b) Triploblastic

Coelom

- Body cavity lined by mesoderm- True Coelom.
- Body cavity not lined by mesoderm Pseudo Coelom.
- No body cavity - Acoelomate.

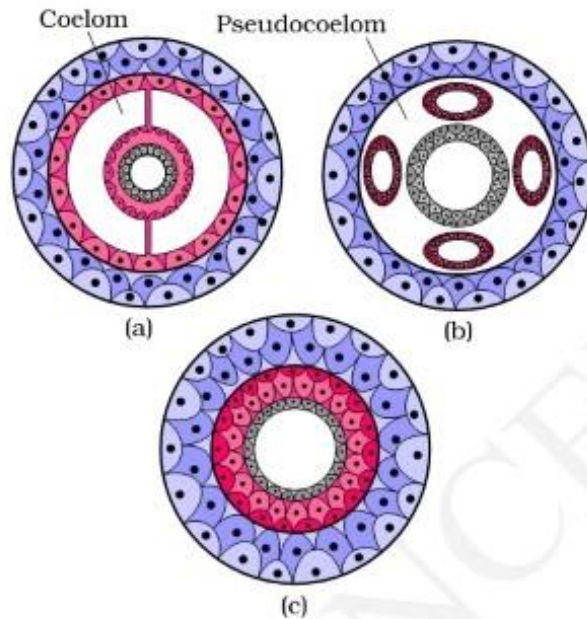


Figure 4.3 Diagrammatic sectional view of :
 (a) Coelomate (b) Pseudocoelomate
 (c) Acoelomate

Segmentation

- **Metameric segmentation**, the body is externally and internally divided into segments with a serial repetition of at least some organs, i.e. in earthworm, the body shows this pattern, and the phenomenon is known as **metamerism**.

Notochord

- Animals with notochord are called **chordates**
- and those animals which do not form this structure are called **non-chordates**.

References

1. NCERT. BIOLOGY TEXTBOOK FOR CLASS XI
2. CONCEPTS OF BIOLOGY (R.L. KOTPAL / BENDRE/TYAGI)

<https://www.ruf.rice.edu/~bioslabs/studies/invertebrates/kingdoms.html>