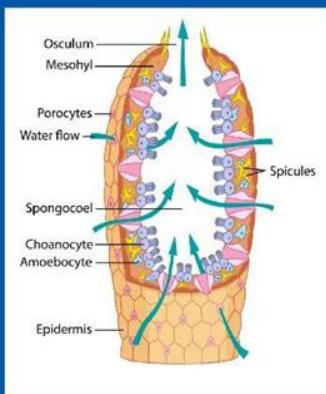


BASIS OF CLASSIFICATIONS & PHYLUM PORIFERA



ANIMAL KINGDOM - L1

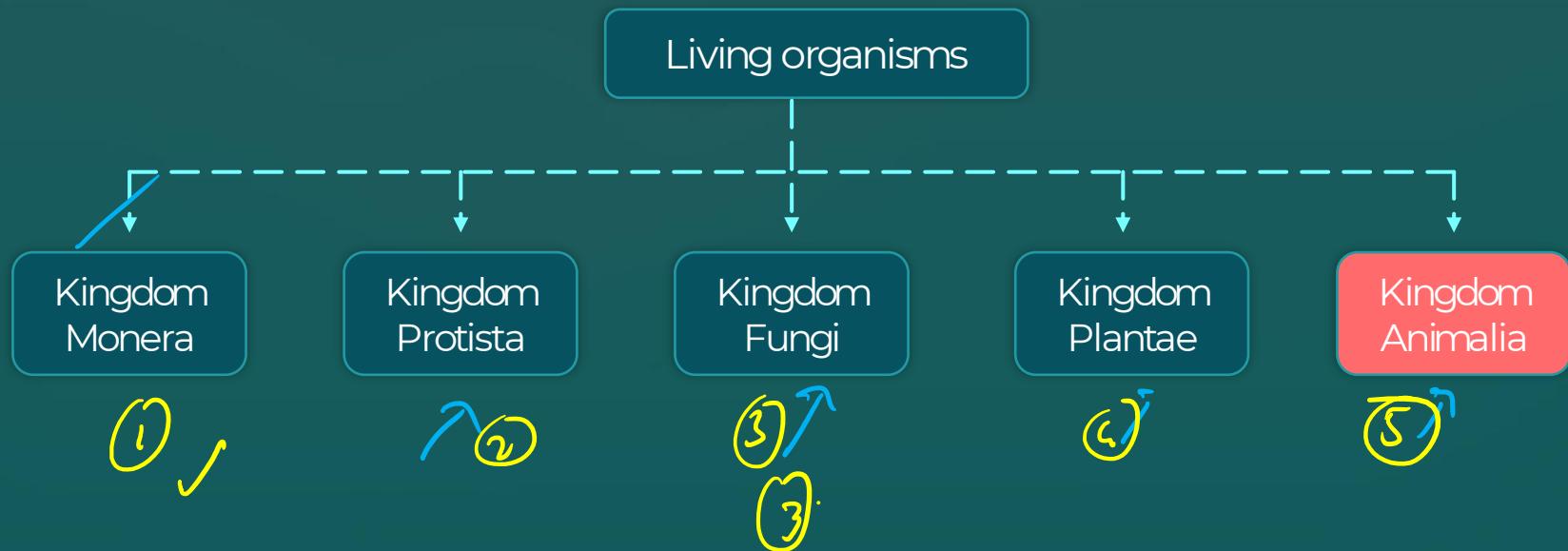


MISSION MBBS 11th | ZOOLOGY

PUSHPENDU SIR



Recall ! Five Kingdom Classification



Kingdom Animalia





Kingdom Animalia



An animal has the following features

- **Eukaryotic:** Cell with well-defined nucleus and membrane-bound organelle.
- ✓ **Lacks a cell wall**
- ✓ **Multicellular:** Made up of more than one cell
- ✓ **Heterotrophic:** Holozoic or parasitic

Key word



Kingdom Animalia

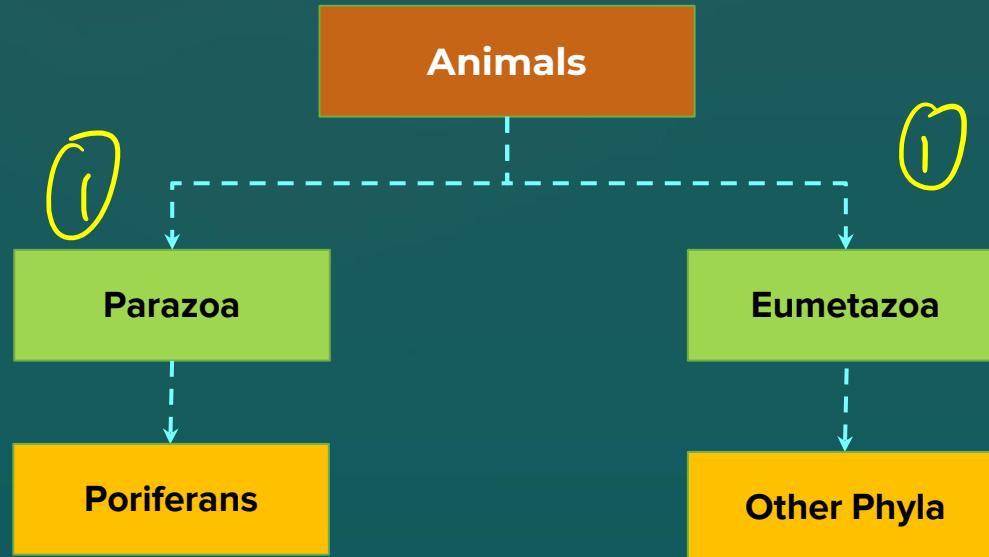


- **Metazoa :**

- Body may or may not be differentiated into tissues or organs
- Digestive cavity lined with specialised cells present



Kingdom Animalia



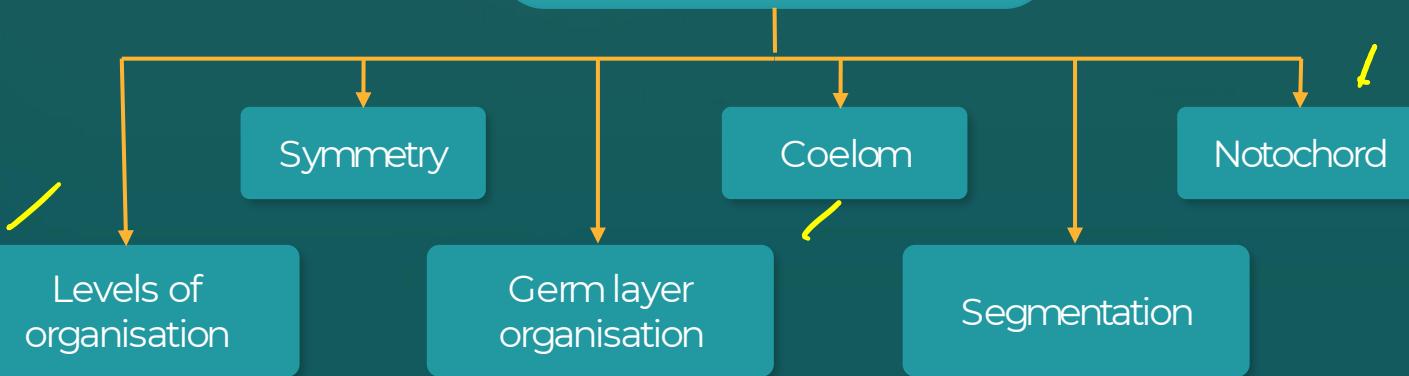


Classification of Animals

Classification of animals

- Classification of animals is important as the diversity of animals is huge
- It also helps in assigning a systematic position to a newly discovered species

Basis of Classification



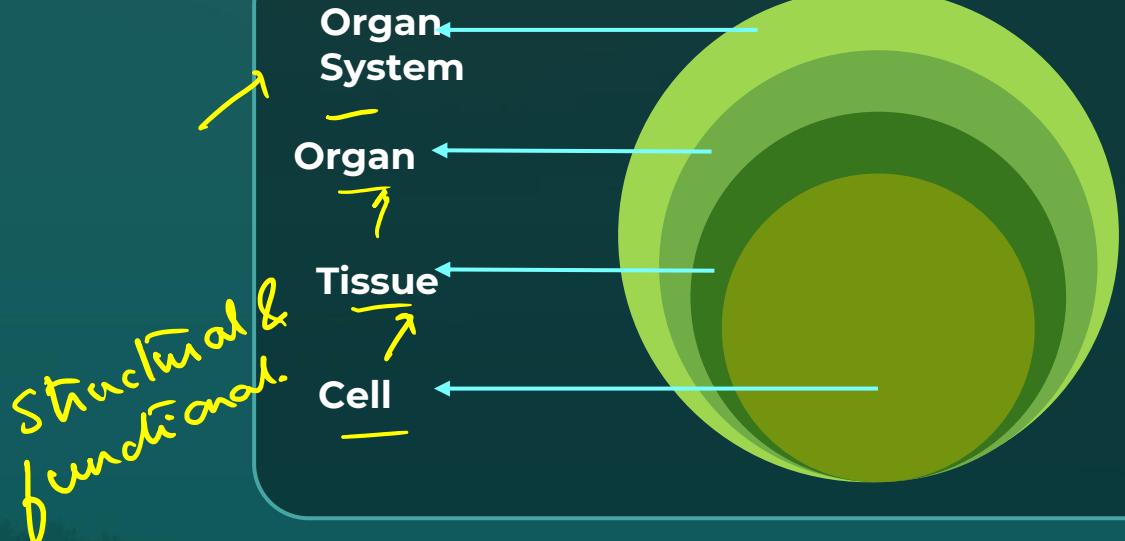


Levels of Organisation



B

Different multicellular animals have different levels of organisation



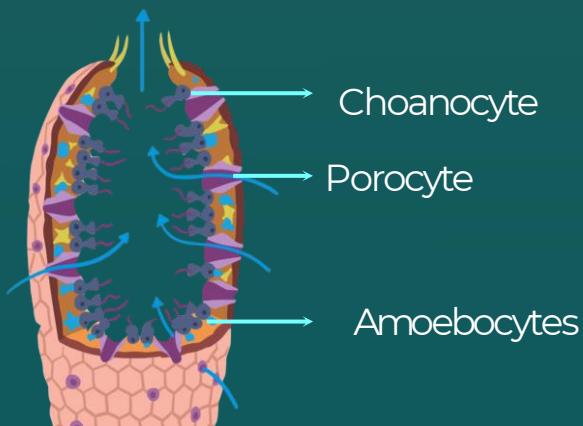


Levels of Organisation



Cellular level of organization:

- Cells are arranged as loose cell aggregates but they do not form any tissue
- Some division of labor occur among the cells
- Example : Poriferans (sponges)





Levels of Organisation

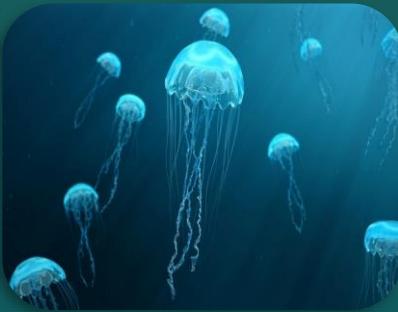


Tissue level of organization:

- Cells having same functions and structure are arranged to form tissues
- Example : **Coelenterates and Ctenophores**



Coelenterata



Ctenophora



Levels of Organisation

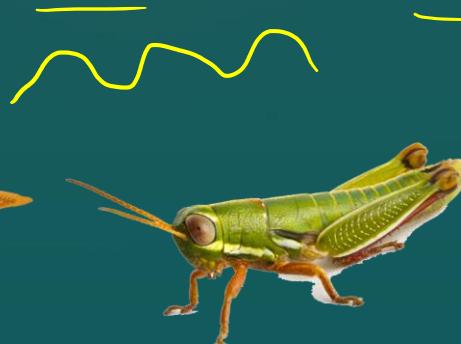


Organ level of organization:

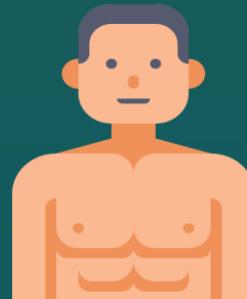
- Tissues are grouped together to form organs and each organ is specialized for a particular function
- Example: **Platyhelminthes (Flatworms), Aschelminthes, Chordates**



Flatworm



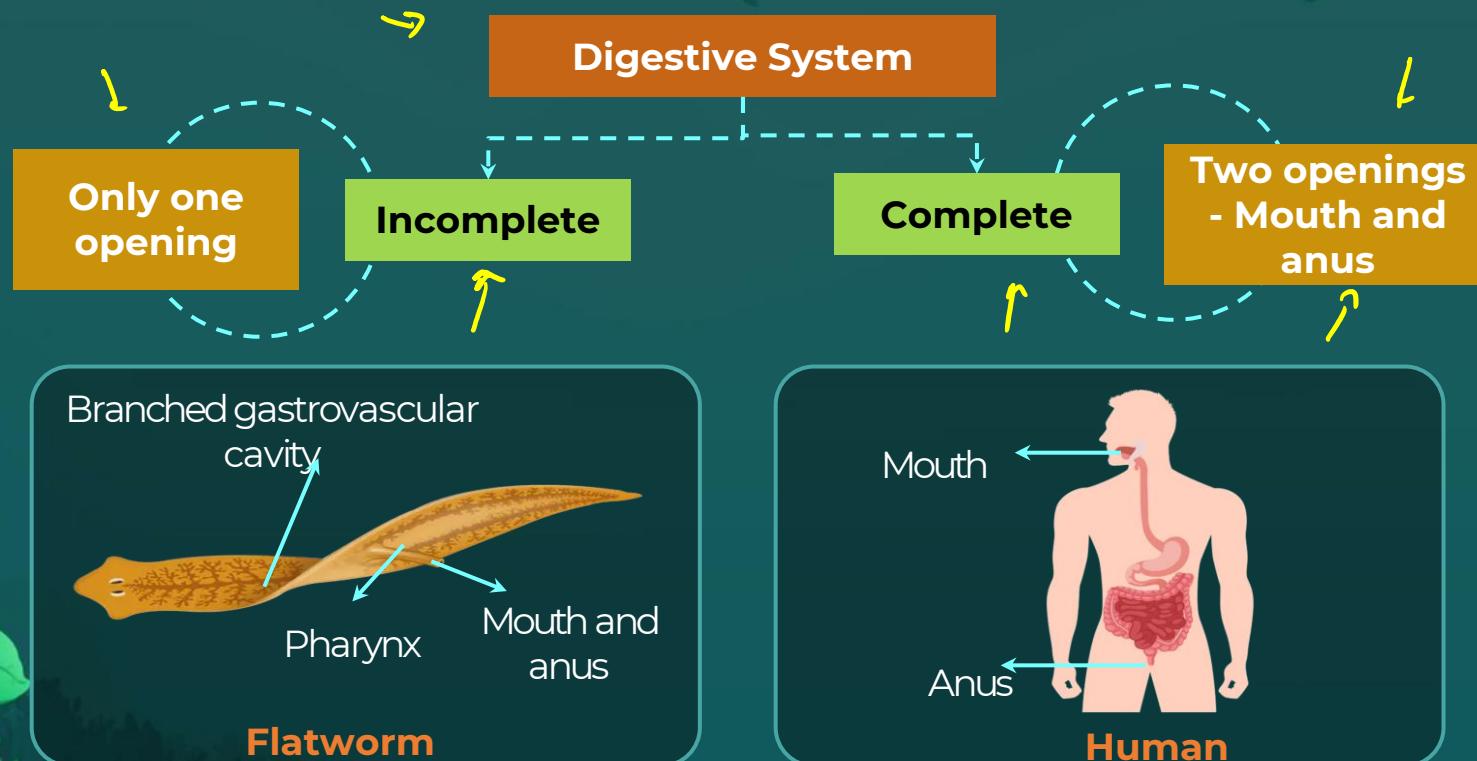
Grasshopper



Human

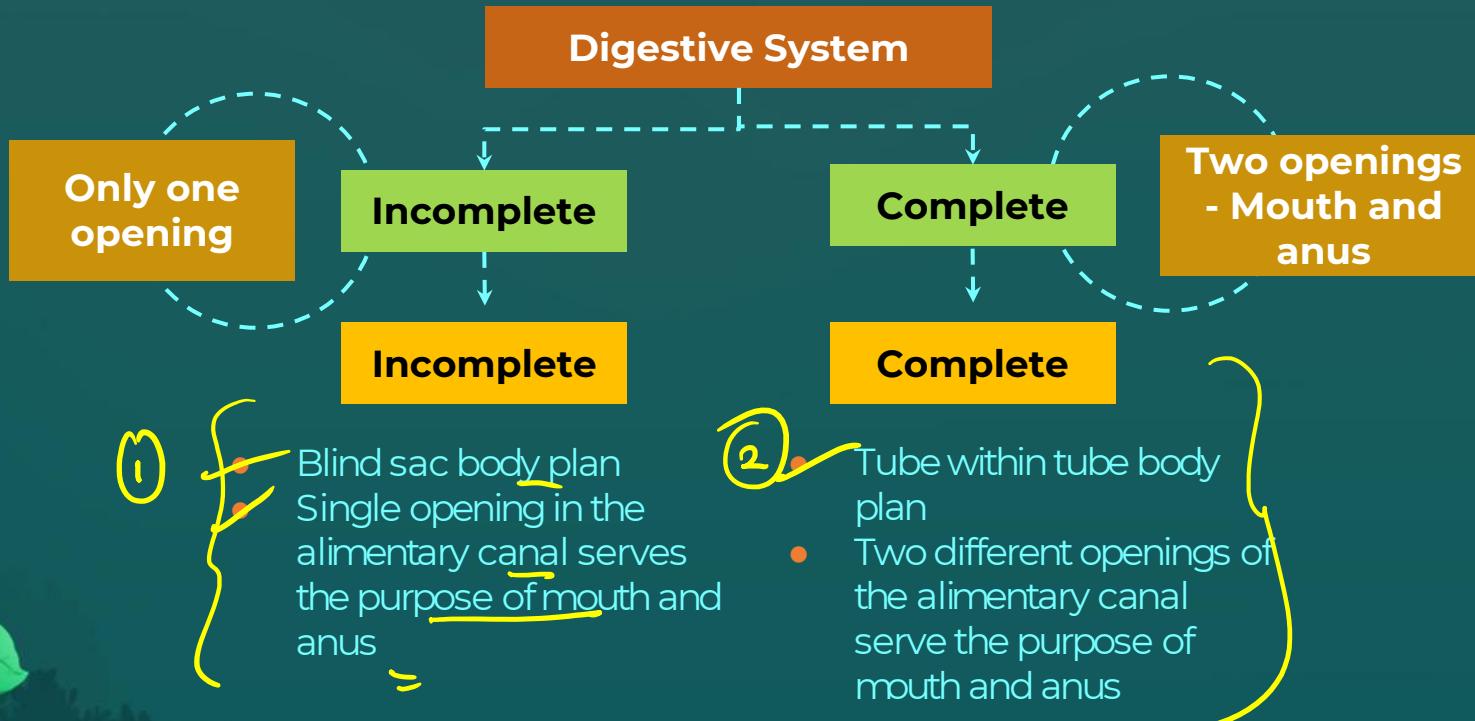


Levels of Organisation





Levels of Organisation



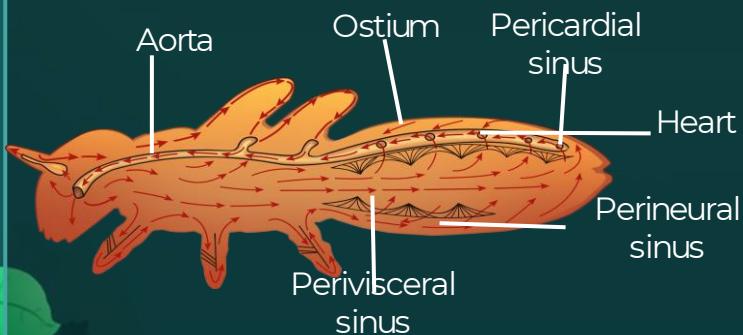


Levels of Organisation

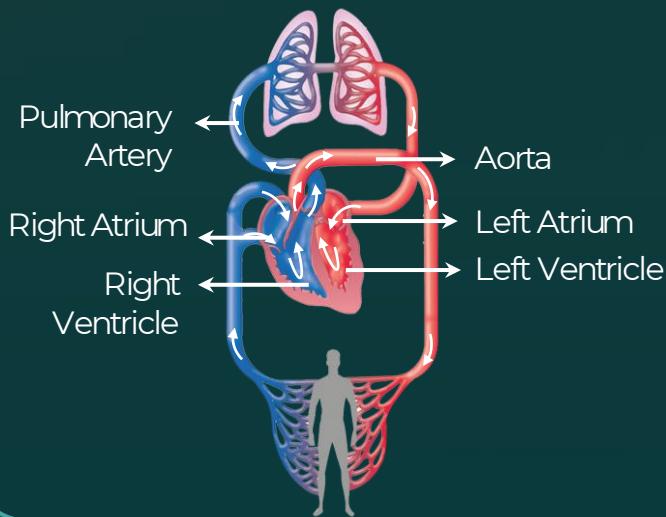


Circulatory System

Open



Closed





Symmetry

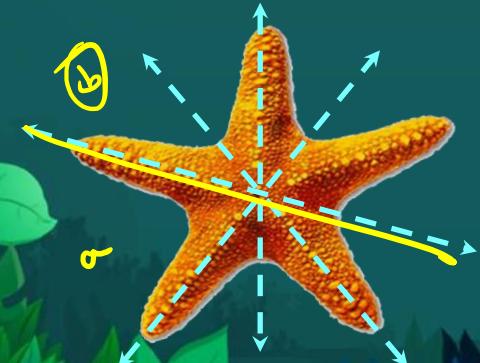
Symmetry refers to a correspondence of body parts, in size, shape and relative position, on opposite sides of a dividing line or distributed around a central point or axis



Symmetry

②

Radial



①

Asymmetrical



③

Bilateral



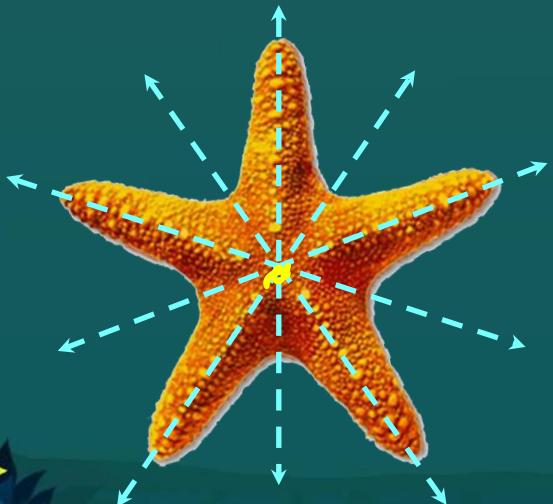


Symmetry



RADIAL SYMMETRY

- Example : **Coelenterates, Ctenophores, adult Echinoderms**
- There is one main axis around which the various body parts are arranged
- Body can be divided into two identical halves in any plane passing through the centre





Symmetry



BILATERAL SYMMETRY

- When only one plane passing through the central axis divides the animal into equal halves.
- Example: Platyhelminthes to Chordates (except adult echinoderms)





Symmetry



ASYMMETRICAL

- Sponges exhibit irregular shape
- Body cannot be divided into two equal halves in any plane



Sponges

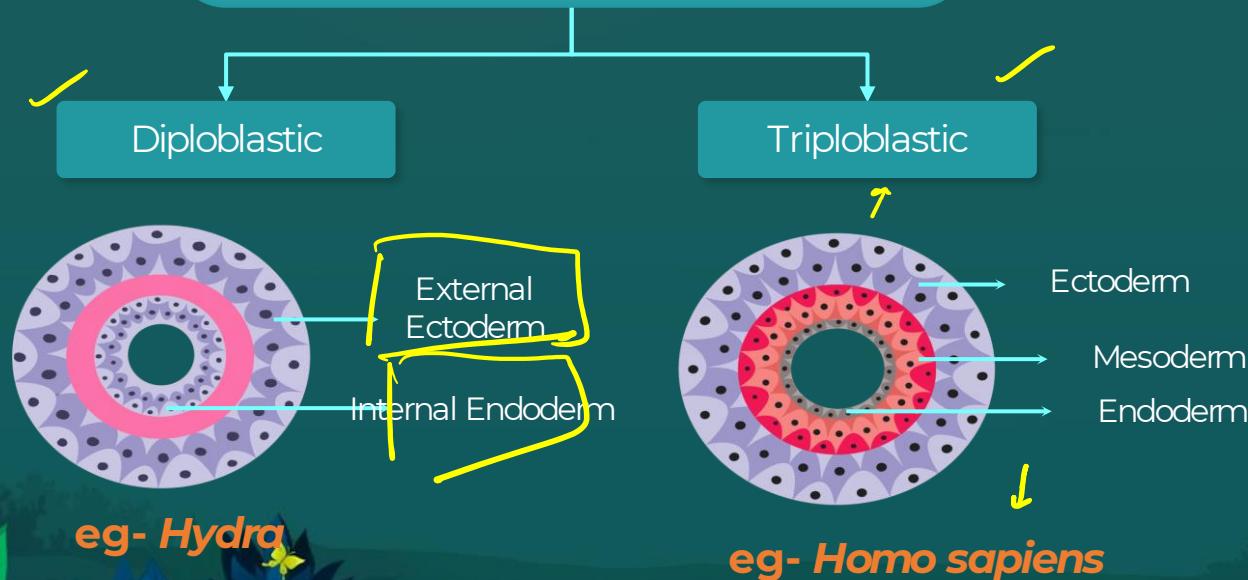


Germ Layer Organisation



- Germ layer is a layer of cells in an embryo
- It contributes to the formation of all organs and tissues

Germ Layer Organisation



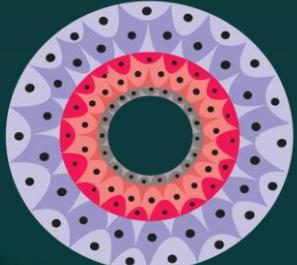


Coelom



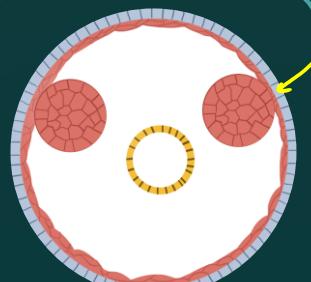
- Coelom is a fluid filled cavity between the alimentary canal and body wall
- It is lined by the mesoderm on all sides
- Present only in triploblastic animals

Acoelomate



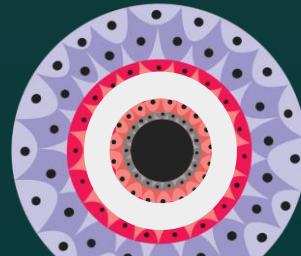
Platyhelminthes

Pseudocoelomate



Aschelminthes

Eucoelomate

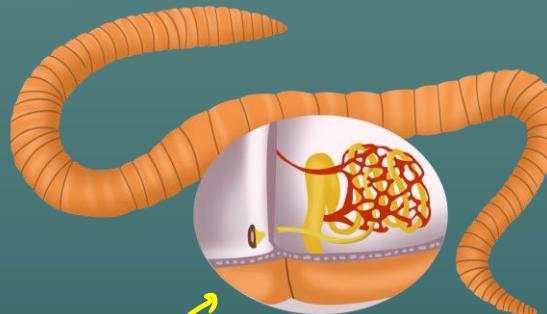
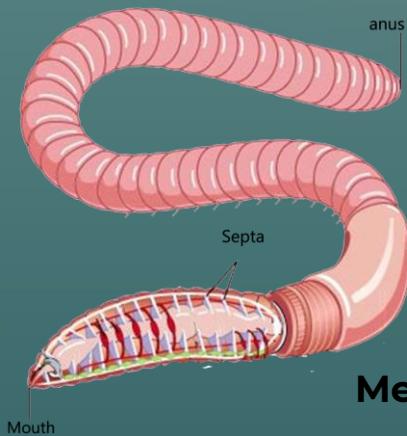


Annelida to chordata



Segmentation

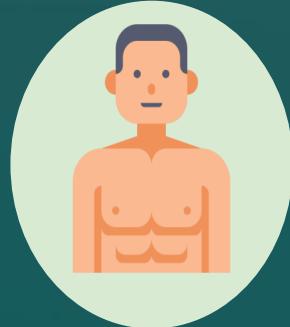
- Segmentation is defined as division of body into parts or segments.



Metameric segmentation in Earthworm



Notochord



Animals

Chordates

- With notochord
- Notochord is replaced by vertebral column in adults of some chordates which are known as vertebrates.

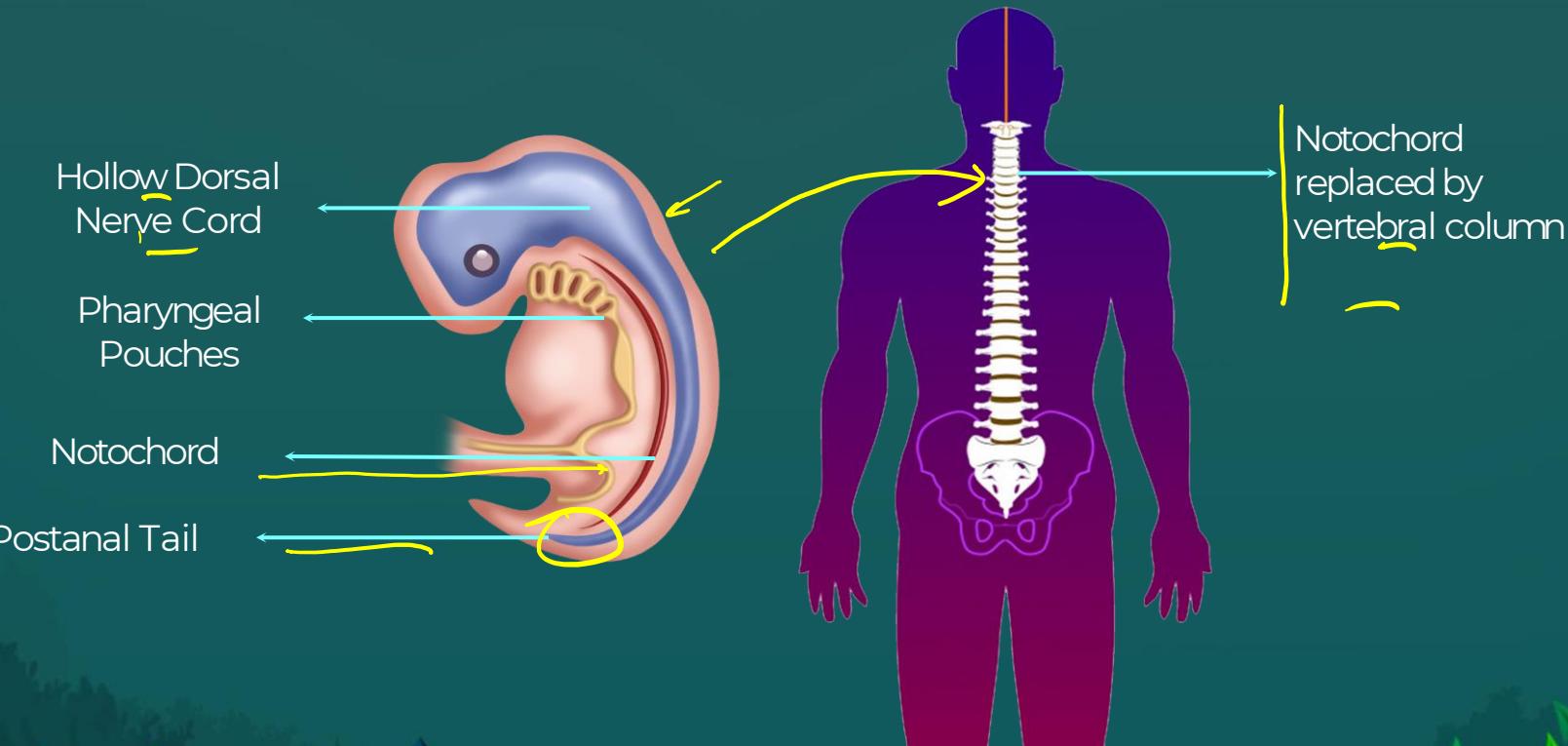
Non chordates



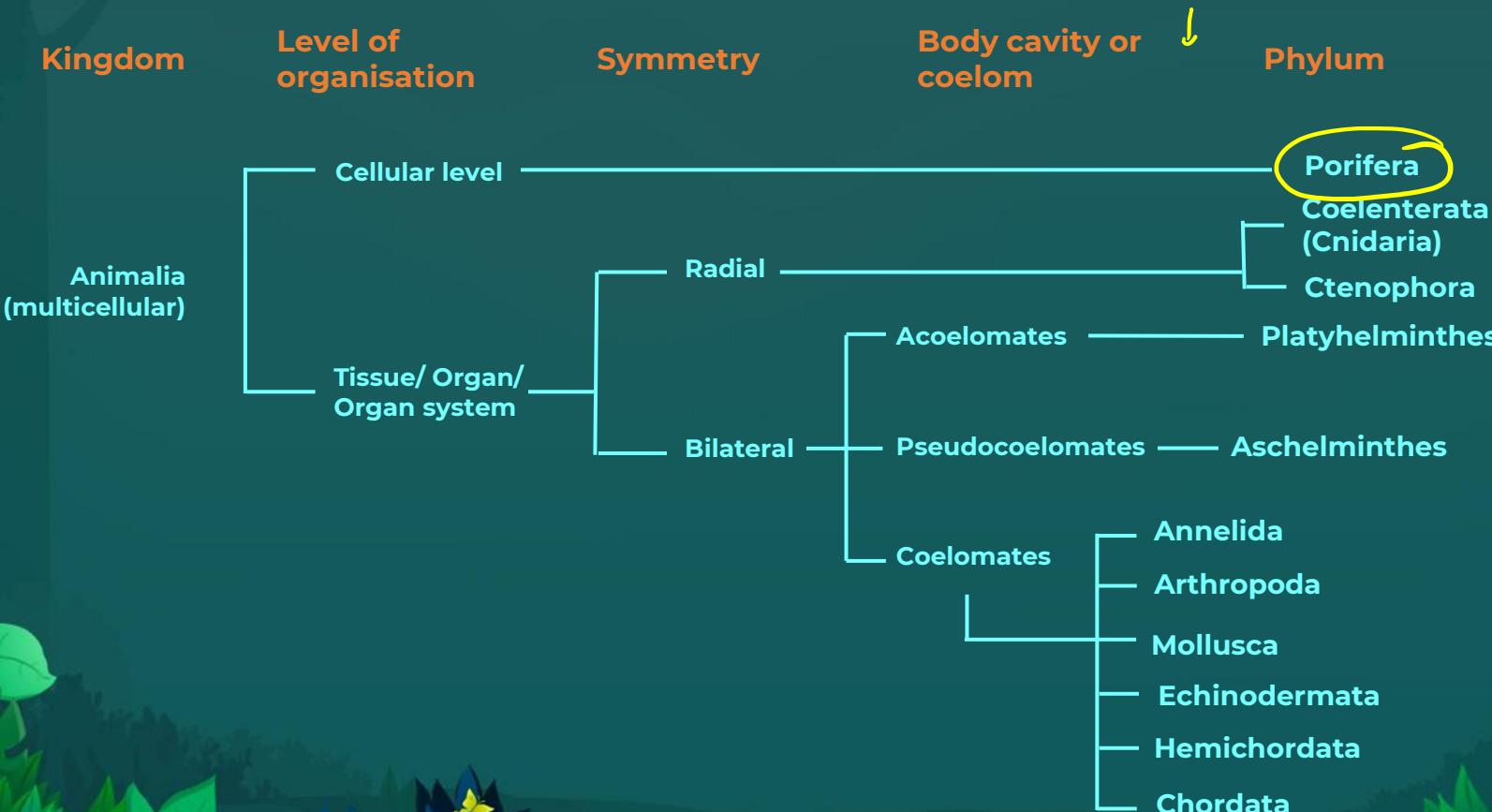
- Without notochord
- Hemichordates contain a notochord like structure, stomochord



Notochord



Classification of Animals



Phylum Porifera



Phylum Porifera

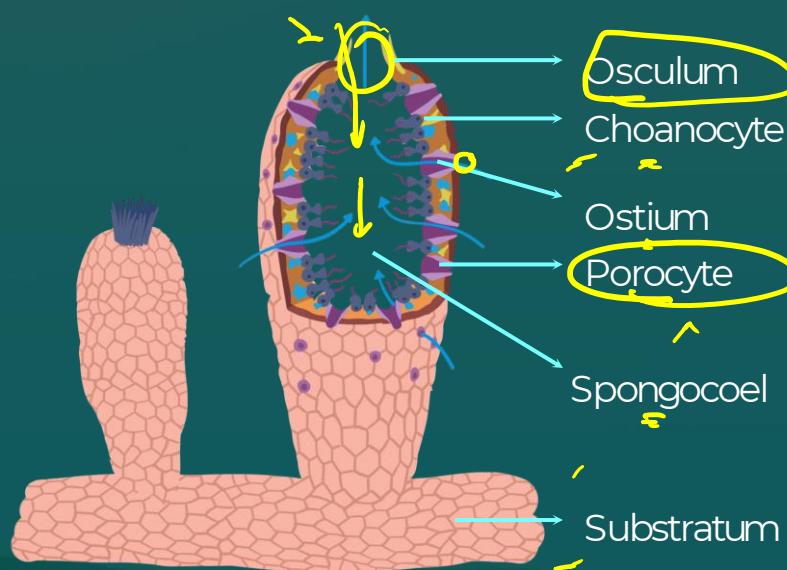
NCERT

Phylum Porifera	
<u>Habitat</u>	Aquatic habitat (mostly marine)
<u>Level of organization</u>	Cellular
<u>Body symmetry</u>	Asymmetrical
<u>Germ layer</u>	No germ layer
<u>Coelom</u>	Acoelomate
<u>Segmentation</u>	Unsegmented



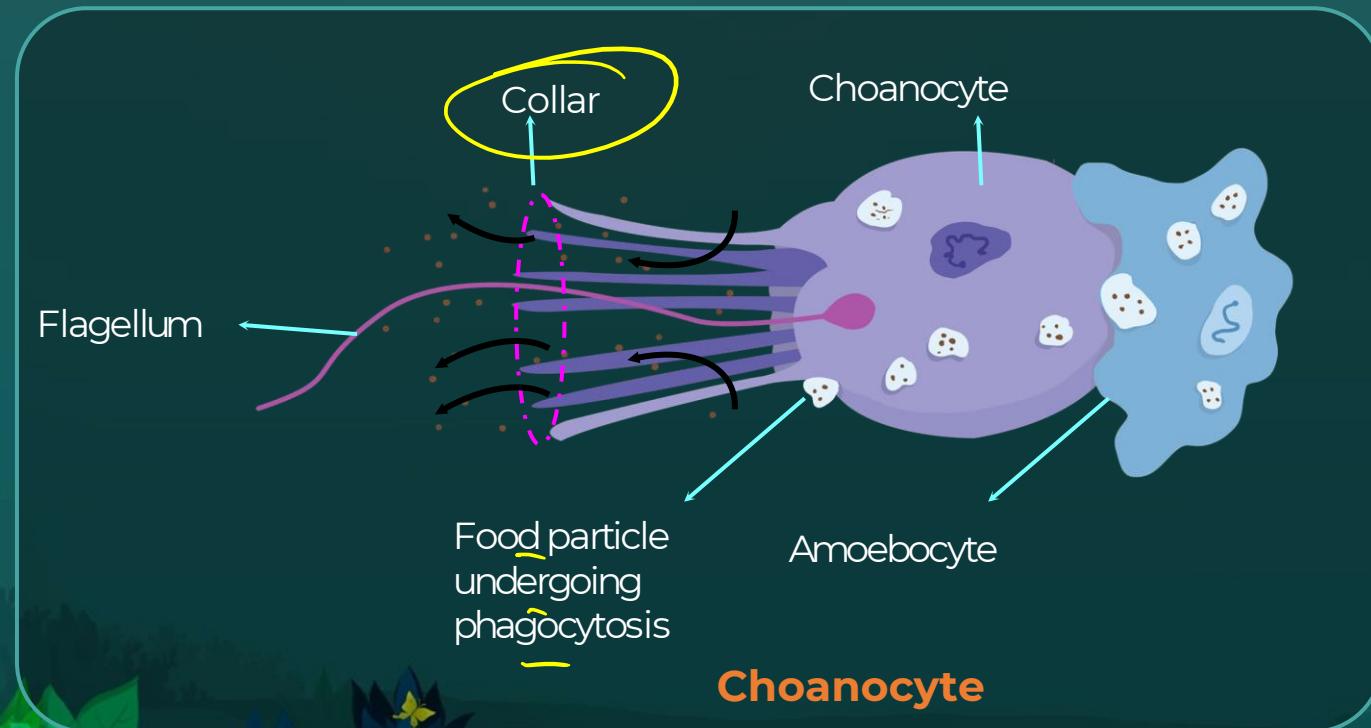
Phylum Porifera

- Porifera includes more than 5,000 species
- The term 'Porifera' means 'pore bearing' organisms and commonly known as **sponges**.
- All sponges are sessile and attached to substratum.
- Two types of pores are present on sponges body i.e.:
 - Ostia (sing. ostium)
 - Osculum

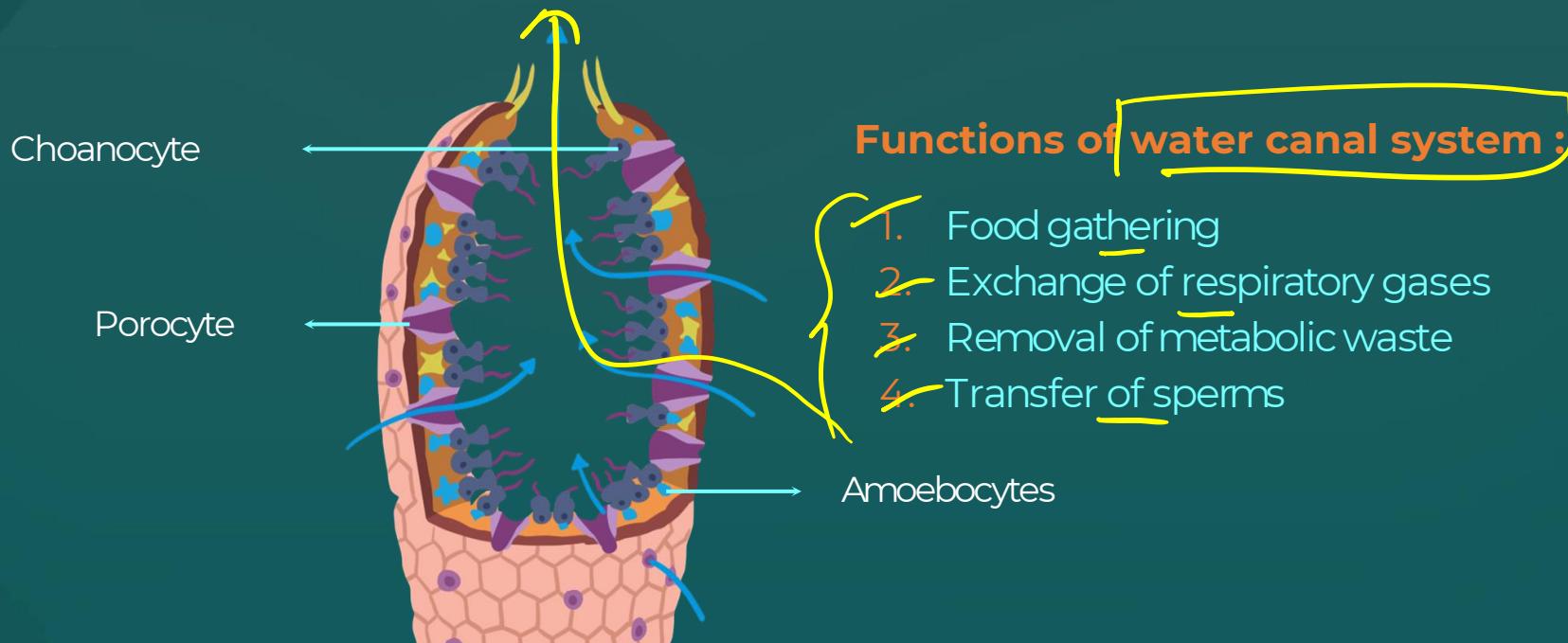


Phylum Porifera

- Digestion is intracellular and occurs in the food vacuole of **choanocytes**



Phylum Porifera



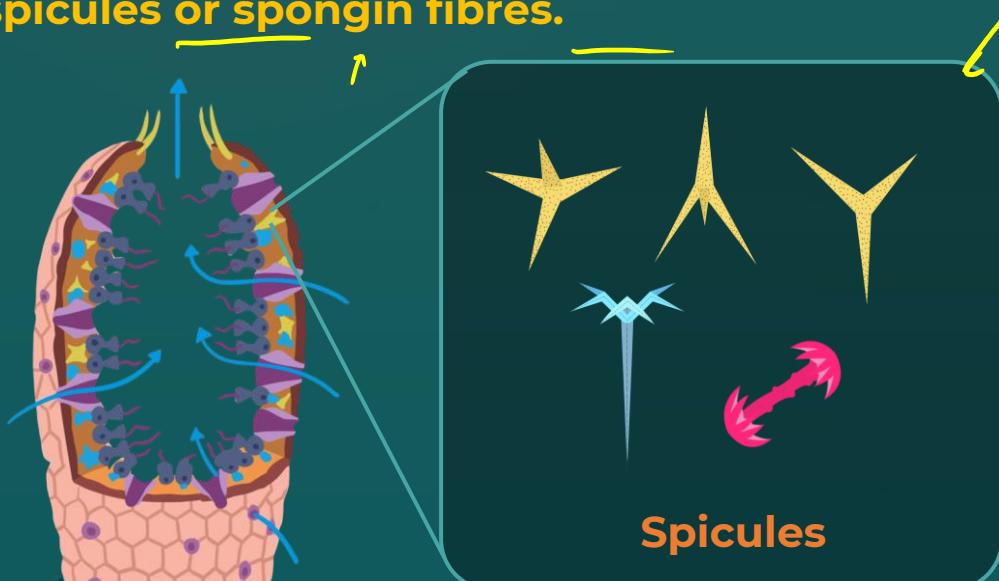
Functions of water canal system :

1. Food gathering
2. Exchange of respiratory gases
3. Removal of metabolic waste
4. Transfer of sperms

Water Circulation in Sponges

Phylum Porifera

- They have **great power of regeneration**.
- Body is supported by an endoskeleton which is made up of **spicules or spongin fibres**.



Phylum Porifera

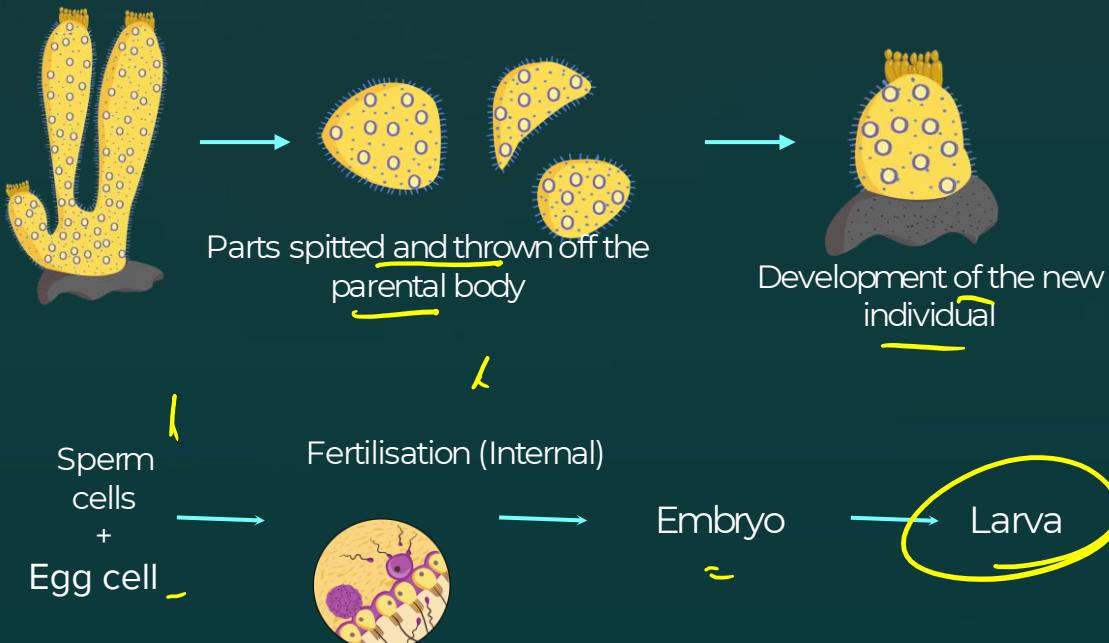
- **Reproduction:**
 - ✓ Asexual through fragmentation
 - ✓ Sexual by gamete formation
- ✗ **Hermaphrodites** showing protandry (male gametes mature first)
- Fertilization: **Cross and internal**
- Development is indirect i.e. larval stage is included
- Larval stage is morphologically different from adult and freely swimming i.e. motile

2 type



Phylum Porifera

Asexual Reproduction



Phylum Porifera

Examples:



Spongilla
(Freshwater sponge)



Euspongia
(Bath sponge)



Sycon
(Scypha)



Euplectella
(Venus flower
basket)



Keep Learning!