



جامعة المستقبل AL MUSTAQBAL UNIVERSITY

College of Science, Department of biology
Zoology
Frist stage

By
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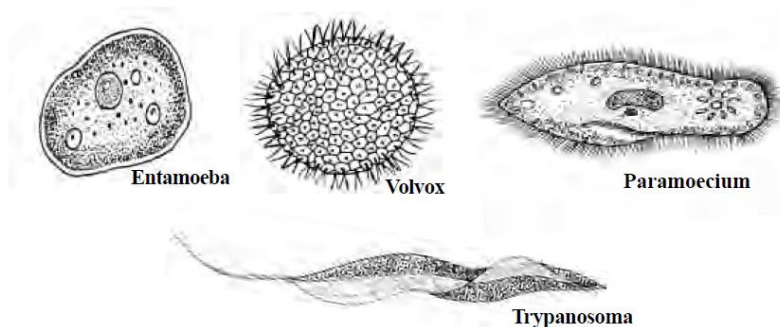
Lecture.2 Theoretical zoology

Major phyla

Phylum: Protozoa

This phylum includes a great diversity of small, microscopic organisms. These are **single celled** eukaryotes. Their locomotion happens using pseudopodia, cilia or flagella.

The nutrition is either autotrophic or heterotrophic. They reproduce either asexually or by sexual methods. Ex: *Amoeba*, *Paramecium*, *Plasmodium*.



Phylum: Porifera.

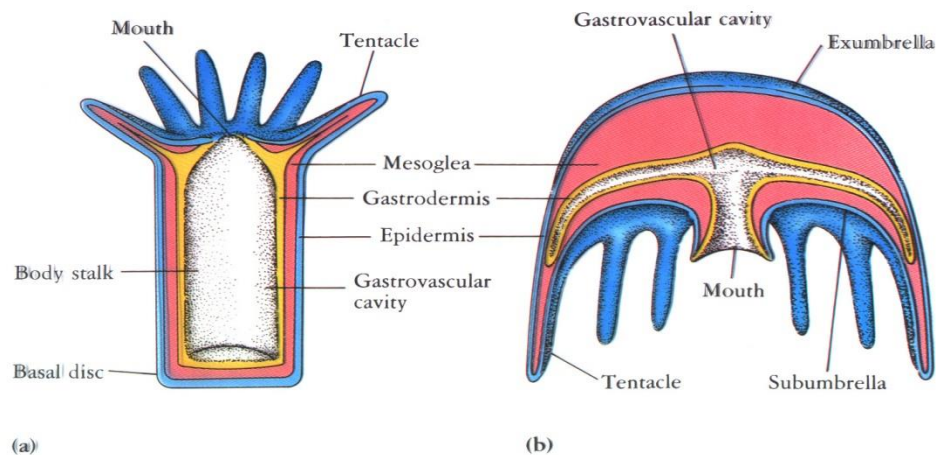
These are multicellular, aquatic organisms. They have a **cellular grade** of construction without the occurrence of tissues. The sponges belonging to this phylum are characterized by the presence of a **canal system** in their body. The body wall contains spicules. They can reproduce both by asexual and sexual methods. Ex: Sponges.



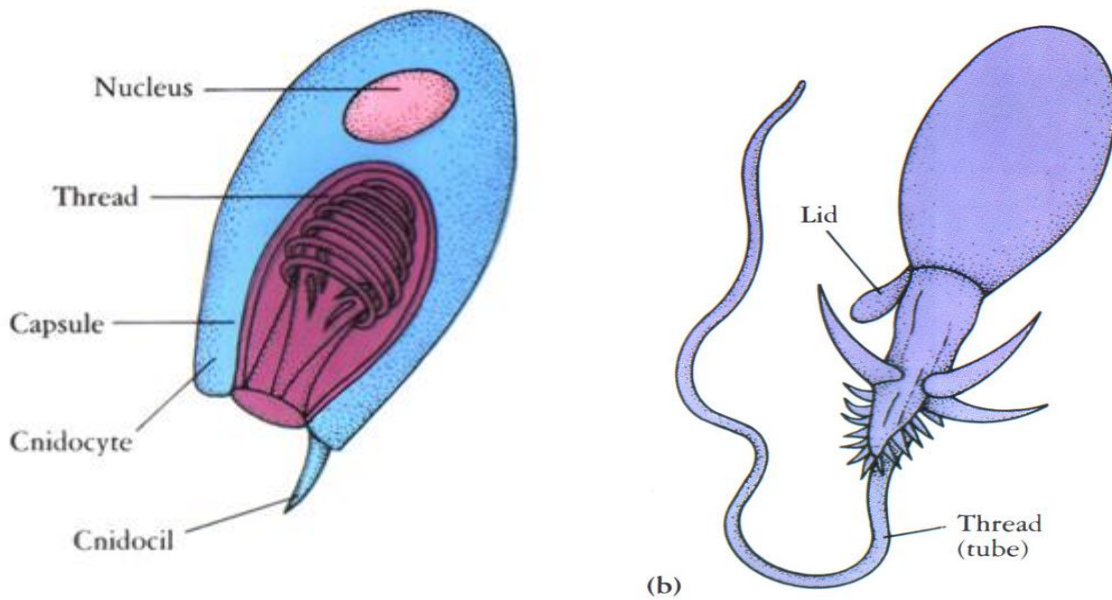
Phylum: Coelenterata or Cnidaria

All coelenterates are aquatic animals. They are mostly marine. The body is radially symmetrical. The body wall is of two layers of cells. The outer layer is called the **ectoderm**. The inner layer, **endoderm** is separated from the ectoderm by a non-cellular **mesogloea**. The mesogloea is a jelly-like substance. Due to the presence of two layers in the body wall, these are said to be **diploblastic animals**.

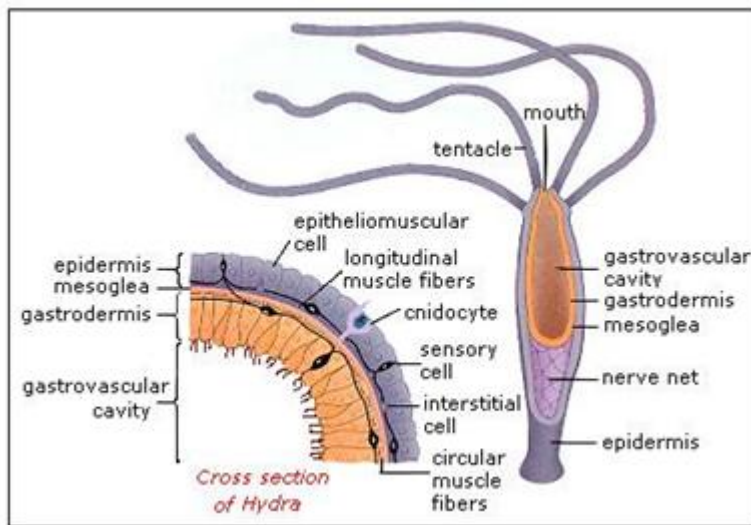
Many coelenterates exhibit **polymorphism**. In this phylum, organisms exist in two different body forms namely, a **polyp(a)** , and a **medusa (b)**.



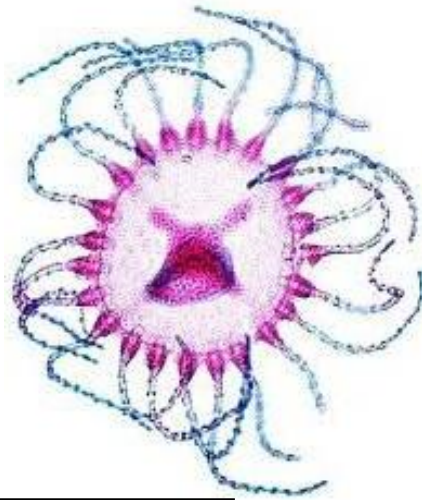
The ectoderm contains stinging cells called **nematocysts**. These cells when triggered can explosively penetrate prey and inject poison.



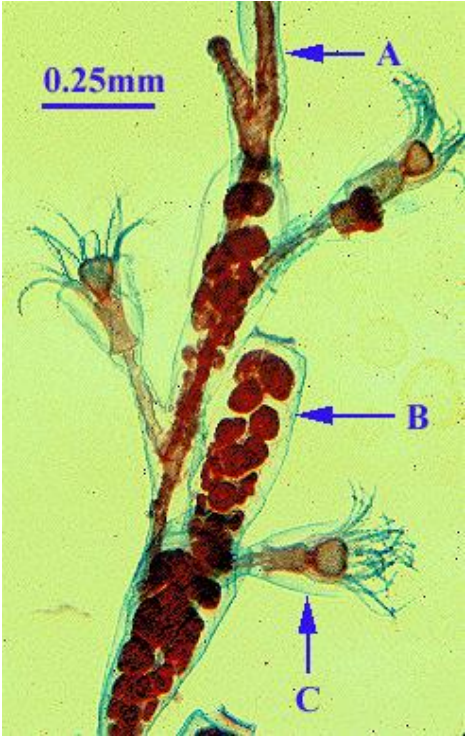
The layers in the body wall contain several cells such as muscle cells, epithelial tissues, gland-cells and sensory cells.



They reproduce both asexually and sexually. They are divided into three classes, namely **Hydrozoa**, **Scyphozoa** and **Anthozoa**. In **Hydrozoa** class, there are two body forms: the medusa and polyp, as in *Obelia*, and there may be one form in its life cycle, which is the polyp, as in *Hydra*.

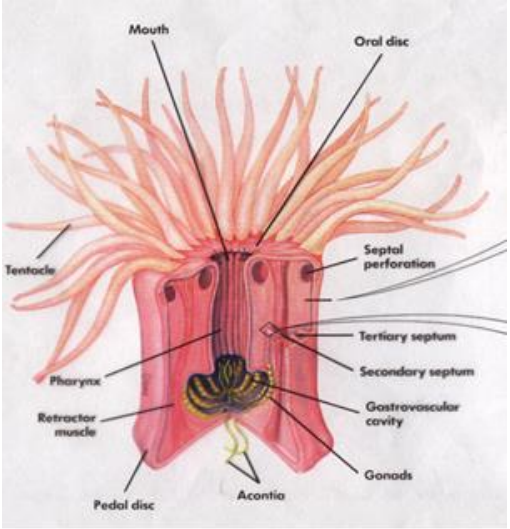


Obelia Medusa



Obelia Polyp

Scyphozoa the medusa form is permanent. This group includes *Aurelia*. They swim in the surface waters. They have a bell shaped medusa stage. The **Anthozoans** mostly remain as polyps. Their body cavity is divided by large radial partitions called **mesenteries**. (eg) **sea-anemone** and **corals**.



Metridium



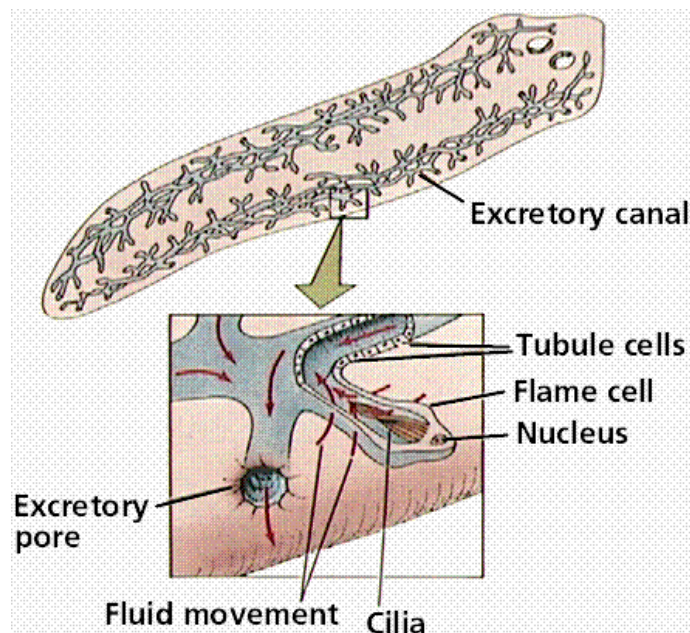
Aurelia

All animals of subsequent phyla show the following general characters.

1. All of them have three layers in the body wall. They are named as outer ectoderm, middle mesoderm, and inner endoderm. Thus they are called as **Triploblastic** animals.
2. The body is bilaterally symmetrical.

Phylum: Platyhelminthes:-

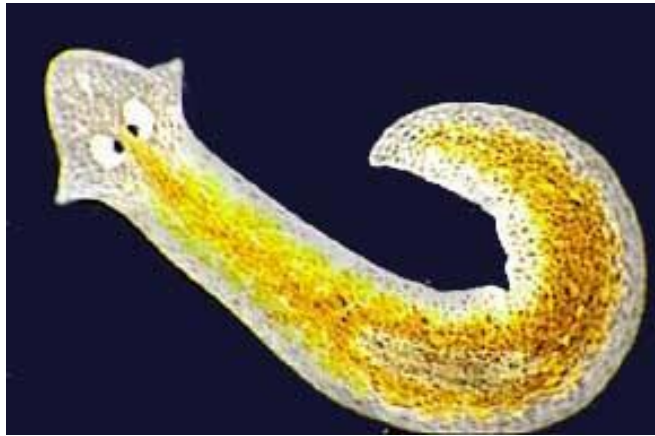
This phylum includes flatworms. These are acoelomates, without a body cavity called **coelom**. The alimentary canal is either absent or very simple. Excretion and osmoregulation occur through **flame cells**.



Flame cells

These worms are mostly hermaphrodites, having both male and female reproductive organs in a single individual. Most of the members are parasites. It is divided into three classes, namely **Turbellaria**, **Trematoda** and **Cestoda**.

Class Turbellaria: - These are free living aquatic flatworms. The *Planaria* of this class shows characteristic regeneration.



Class Trematoda: - These are flukes living as parasites inside a host (endoparasites). A protective **cuticle** covers the outer surface of the body. Flukes have **suckers** for attachment to the host tissues. The examples are *Fasciola* (liver fluke), *Schistosoma* (blood fluke).

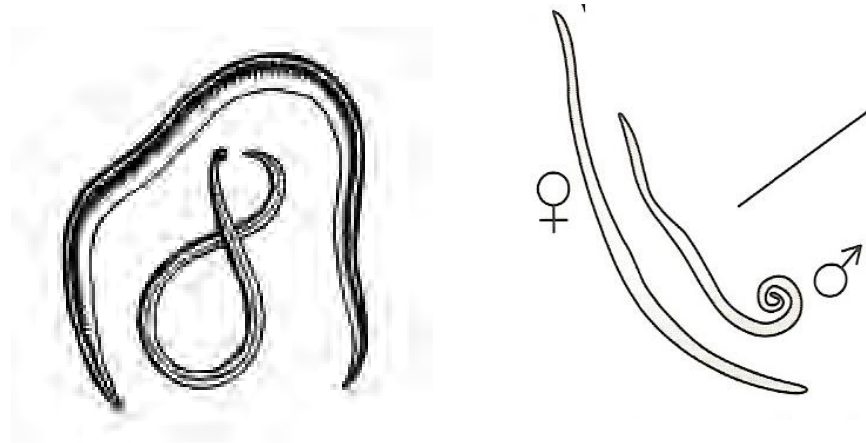


Class Cestoda (tape worms):- These are internal parasites with a complex life cycle. The life cycle involves two hosts. Their body characters are adaptations for parasitic life. Mouth and alimentary canal are absent. Food is absorbed through general body surface. The head is called the **scolex**. It has hooks and suckers for attachment to the host tissue. The body consists of several segments called **Proglottids**. (eg) sheep and cattle **tape worms**.



Phylum: Nematoda:-

These are the popular round worms. The body is narrow and pointed at both the ends. There are no body segments. The body is covered by a thin cuticle. The body cavity is considered as a pseudocoelom. The alimentary canal is a straight tube. They reproduce sexually and the sexes are separate. There are several free living soil nematodes. Others are parasites. (eg) *Ascaris lumbricoides*.



Ascars male and female

In subsequent Phyla the animals show following general characters

1. There is a coelom within the mesoderm. Hence these are called as coelomates.
2. The body consists of a series of compartments. This phenomenon is called as metameric segmentation. They have a circulatory system providing internal transport.

Phylum: Annelida: - These worms have bodies with rings on the outside. Internally the parts are separated by partitions (**septa**). Externally the body is protected by a **cuticle**. Excretion and osmoregulation are achieved by ciliated tubules called **nephridia**. There is a central nervous system. The brain is formed of **ganglia** in the head region. The nerve cord is ventral in position. For the first time head formation or **cephalization** happens. These are bisexual and hermaphroditic. The larva is called the **trochophore**.

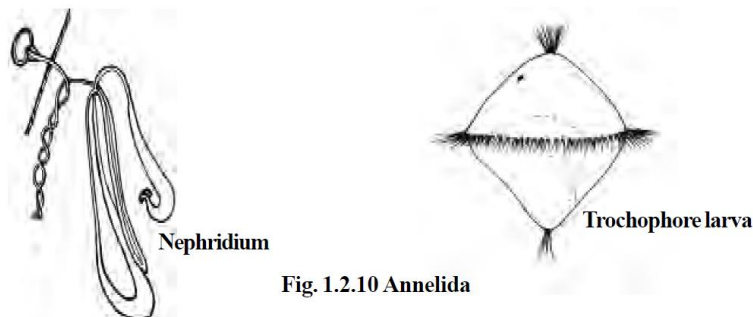


Fig. 1.2.10 Annelida

This phylum includes three Classes, namely **Polychaeta**, **Oligochaeta** and **Hirudinia**. The **polychaetes** are marine worms. They have a distinct head. There are pairs of lateral projections called **parapodia**. The examples are *Nereis*. **Earthworms** are included in the Class *Oligochaeta*. The Class: **Hirudinia** includes **leeches**. These are blood suckers and ectoparasites. They have well developed suckers for attachment at anterior and posterior ends.

