

Lab 4

Phylum Cnidaria (Coelenterata)

Classification

1-Class: Hydrozoa

a/Order: Hydrida

e.g. *Hydra* sp.

b/Order: Calyptoblastea

e.g. *Obelia* sp.

2-Class: Scyphozoa

Order: Semaestomeae

e.g. *Aurelia* sp.

Characteristic

- Mostly marine except for *hydra* which is a fresh water form .
- Lives either solitary (single) or colonial (in groups).
- Hollow gut (Coelentrata).
- Radially symmetrical.
- Body wall consist of two germ layers (diploblastic) ,Outer layer of cells(Epidermis) and (gastrodermis) which lines the gut cavity , In between these tissue layers is a noncellular jelly-like material called mesoglea.
- Single opening that serves as both mouth and anus which is usually surrounded by tentacles.
- Possess special stinging cells called cnidoblasts (cnidocytes) which help in food culture.
- Respiration and excretion occur by simple diffusion .
- Nervous system is primitive and consists of a diffused net of nerve cells.
- Soft body may be naked or supported by calcareous exoskeleton.

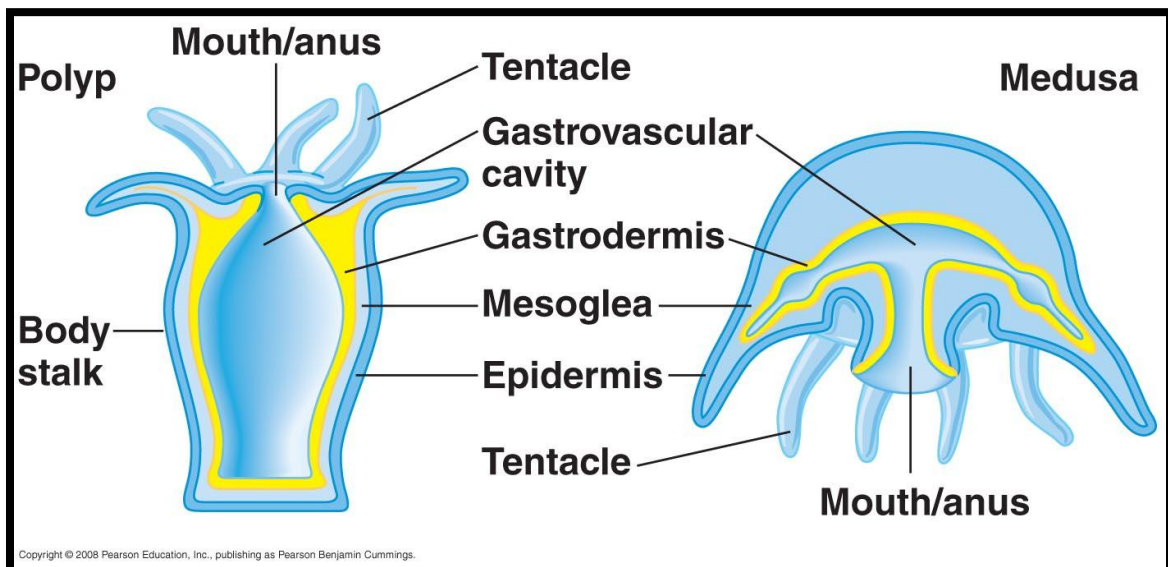
- Many coelenterates exhibit polymorphism (they exist in two different body forms) a polyp and medusa.
- Polyp gives rise to medusa by asexual reproduction by budding and medusa produces polyps by sexual reproduction in which the fertilised egg developed into a ciliated free swimming planula larva. Most species hermaphrodite (male & female) in the same individual.

Polyp form

- Tubular body, with the mouth directed upward.
- Around the mouth are a whorl of feeding tentacles.
- Only have a small amount of mesoglea.
- Sessile.
- asexual stage.

Medusa form

- umbrella shaped body, with the mouth is directed downward.
- Small tentacles, directed downward.
- Possess a large amount of mesoglea.
- Motile (free swimming).
- sexual stage.



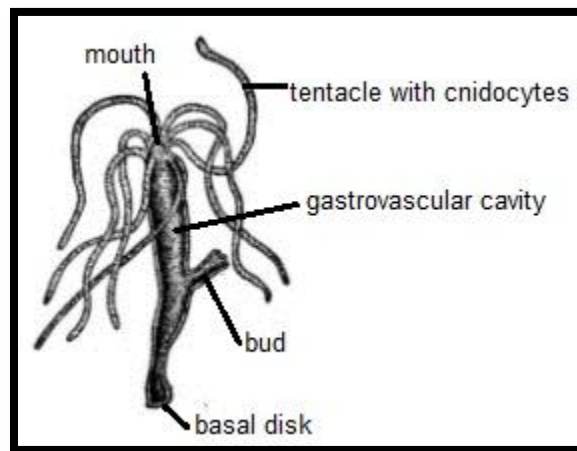
Polyp and medusa

1-Class: Hydrozoa

a/ Order: Hydrida

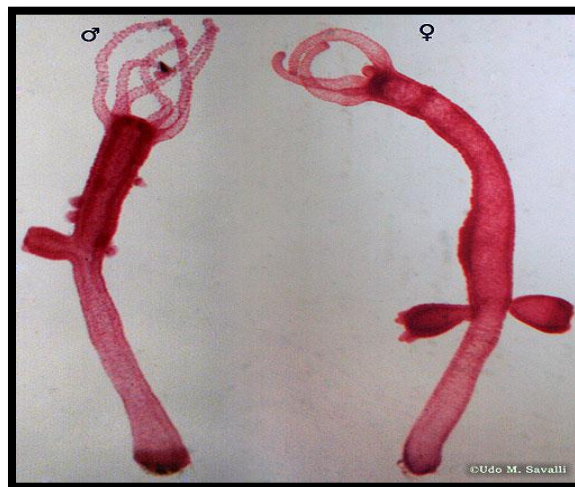
e.g. *Hydra* sp.

The genus *Hydra* is a freshwater species with the polyp stage according to environmental condition . The size ranges from a few millimeters to over 1 cm in length. The aboral end attaches to a substrate by a basal disk. The oral end contains the mouth surrounded by six tentacles. Budding is a form of asexual reproduction in the species.



Hydra sp.

Female *Hydra* ovary develop on the lower part of the stalk.
Male *Hydra* testis in the upper part of the stalk.



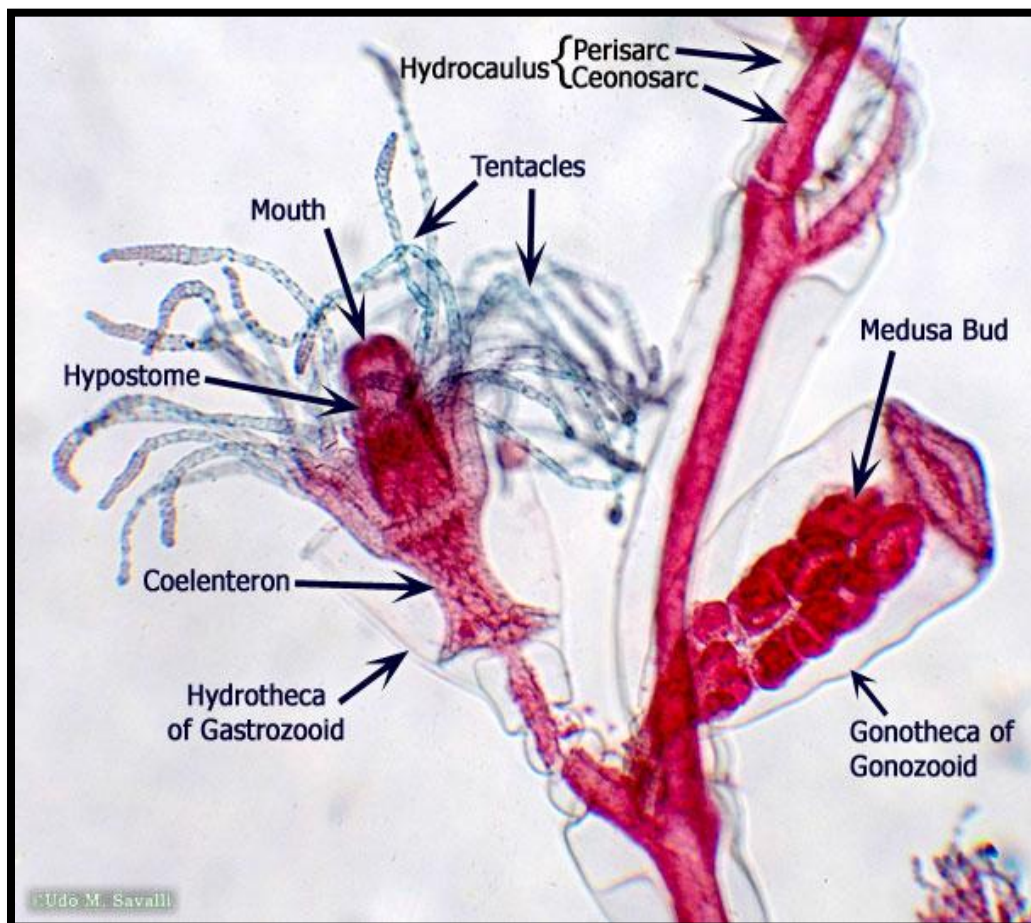
Hydra (male and female)

1-Class: Hydrozoa

b/Order: Calyptoblastea

e.g. *Obelia* sp.

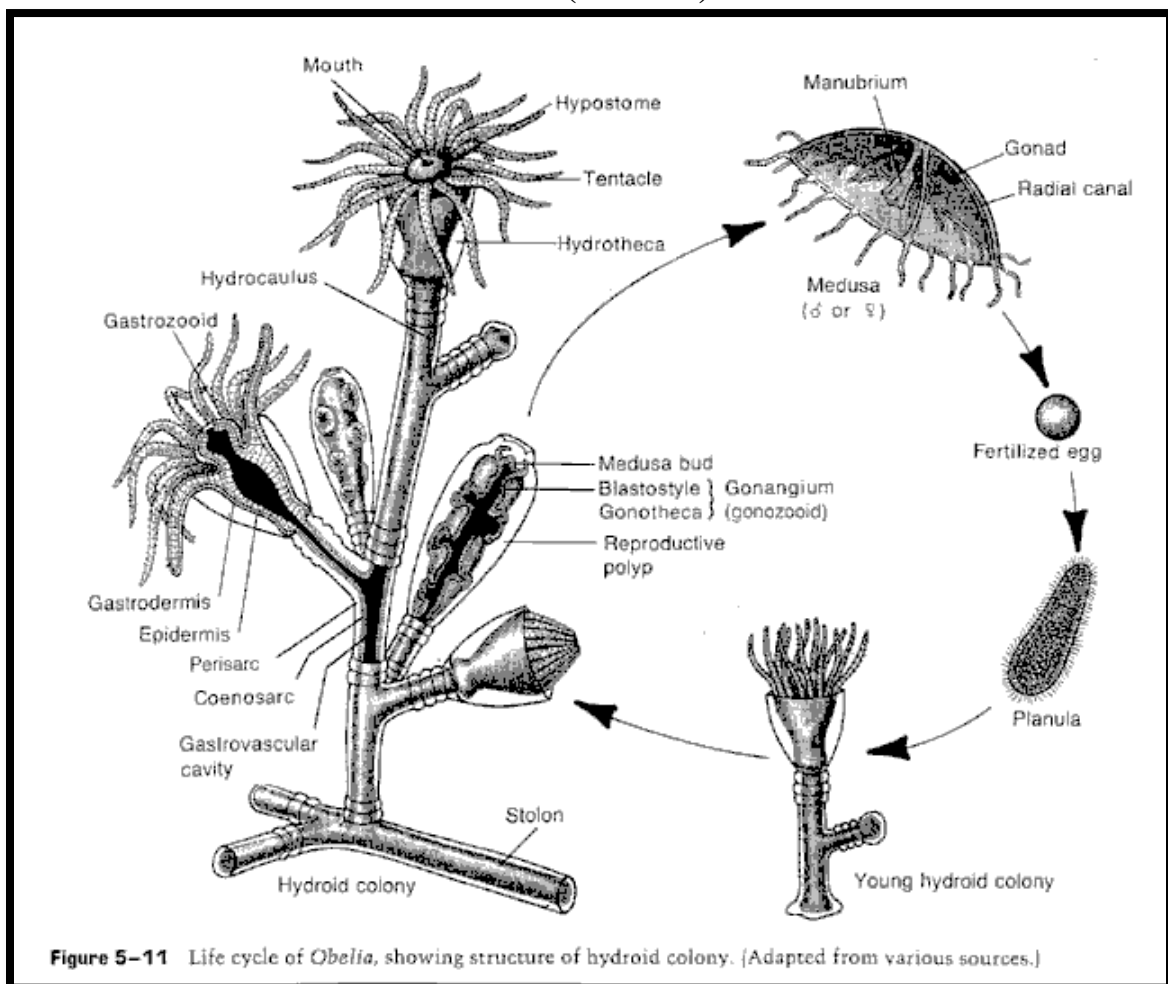
Lives in marine as colonies It has both the polyp and medusa stages in their life cycle. During the polyp stage, the *Obelia* takes on a stalk-like structure which is covered by a protective perisarc. The polyp reproduces asexually, releasing free-swimming, ciliated medusa. Polyp consists of two types, feeding polyp (gastrozoid) and reproductive polyp (gonozooid). The polyp reproduce asexually while the free swimming medusa reproduce sexually.



Obelia (polyp)



Obelia (medusa)



Obelia life cycle

2-Class: Scyphozoa

Order: Semaestomeae

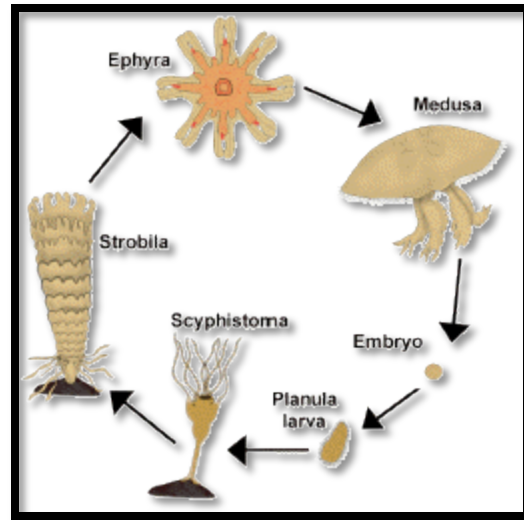
e.g. *Aurelia* sp. (Jelly fish)

Medusa umbrella shaped , tentacles used for capturing and stinging prey, oral arms used to bring food in to the mouth.



Aurelia sp.

Aurelia has a complex life cycle which includes the adult medusa that produces egg and or sperm that are fertilized externally. The fertilized egg develops into a (**planula larva**). The larva is free-swimming and spends some time moving about. Finally it settles and changes into a polyp form called the (**scyphistoma**). The scyphistoma buds to forms a complex structure called the (**strobilus**). Each strobilus buds off young, immature medusae called(**ephyrae**) which mature into the adult jellyfish. This is known as alternation of generation (metagenesis).



Aurelia life cycle