Lab 4

Phylum Cnidaria (Coelenterata)

Classification

1-Class: Hydrozoa

a/Order: Hydraida

e.g. *Hydra* sp.

b/Order: Calyptoblastea

e.g. *Obelia* sp.

2-Class: Scyphozoa

Order: Semaeostomeae

e.g. *Aurellia* 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.

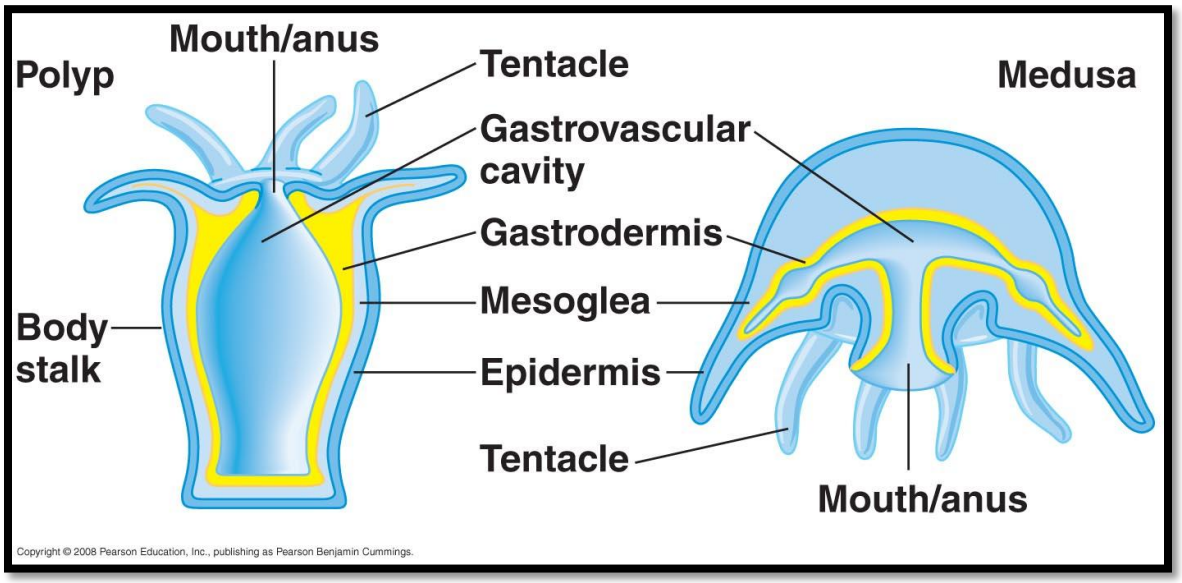
- Many coelenterates exhibit polymorphism (they exist in two defferent body forms) a polyp and medusa.
- Polyp gives rise to medusa by asexual reproduction by budding and medusa produces polyps by sexual reproduction in which the fertillised egg developed into a ciliated free swimming planula larva. 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.



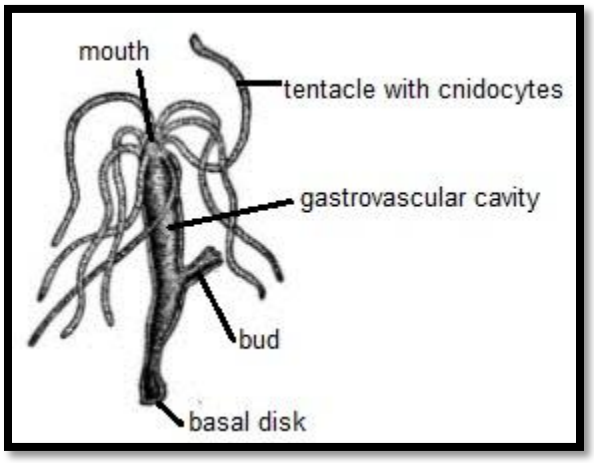
Polyp and medusa

1-Class: Hydrozoa

a/ Order: Hydraida

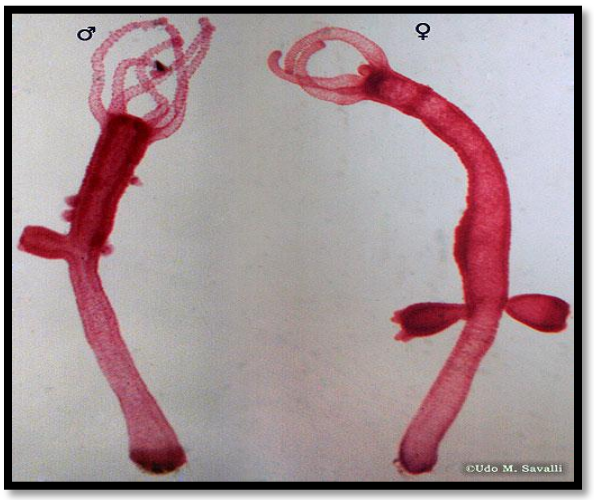
e.g. *Hydra* sp.

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 develope on the lower part of the stalk.
Male *Hydra* testis in the upper part of the stalk.



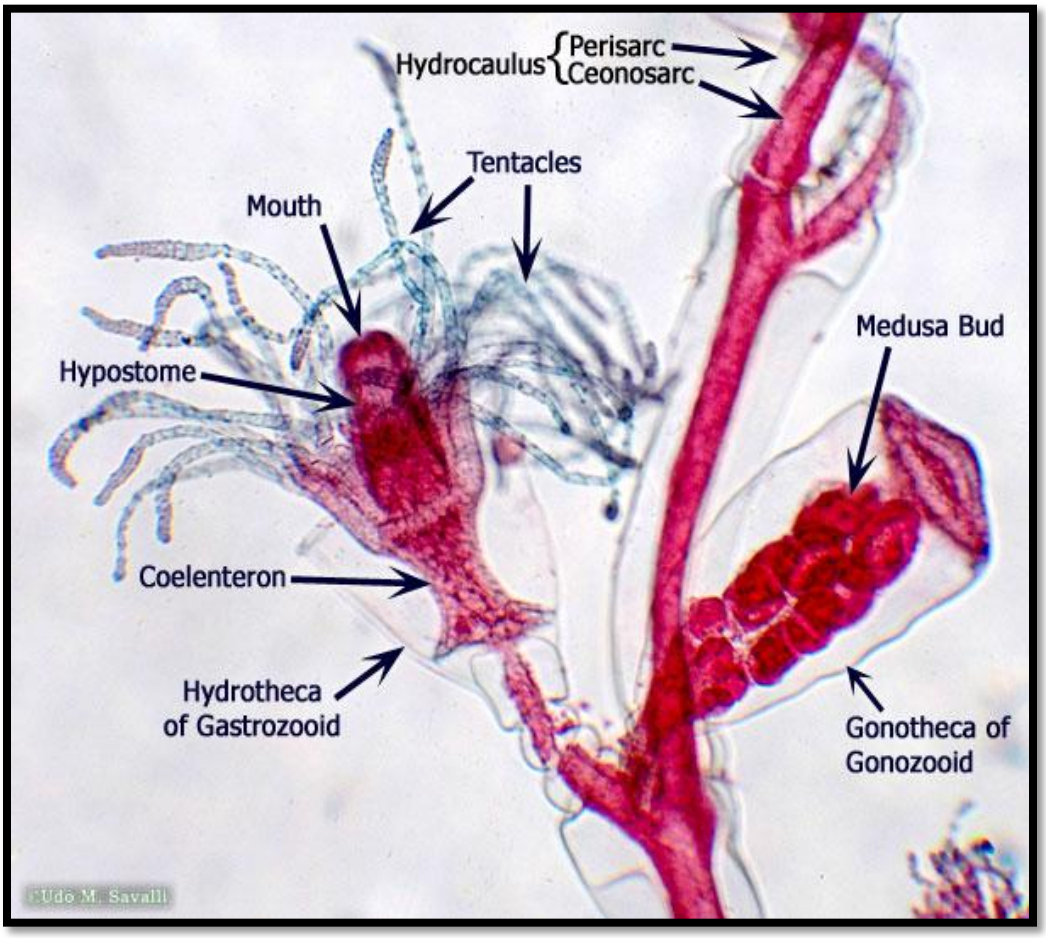
***Hydra* (male and female)**

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 (gastrozooid) and reproductive polyp (gonozooid). The polyp reproduce asexually while the free swimming medusa reproduce sexually.



***Obelia* (polyp)**

***Obelia* (medusa)**

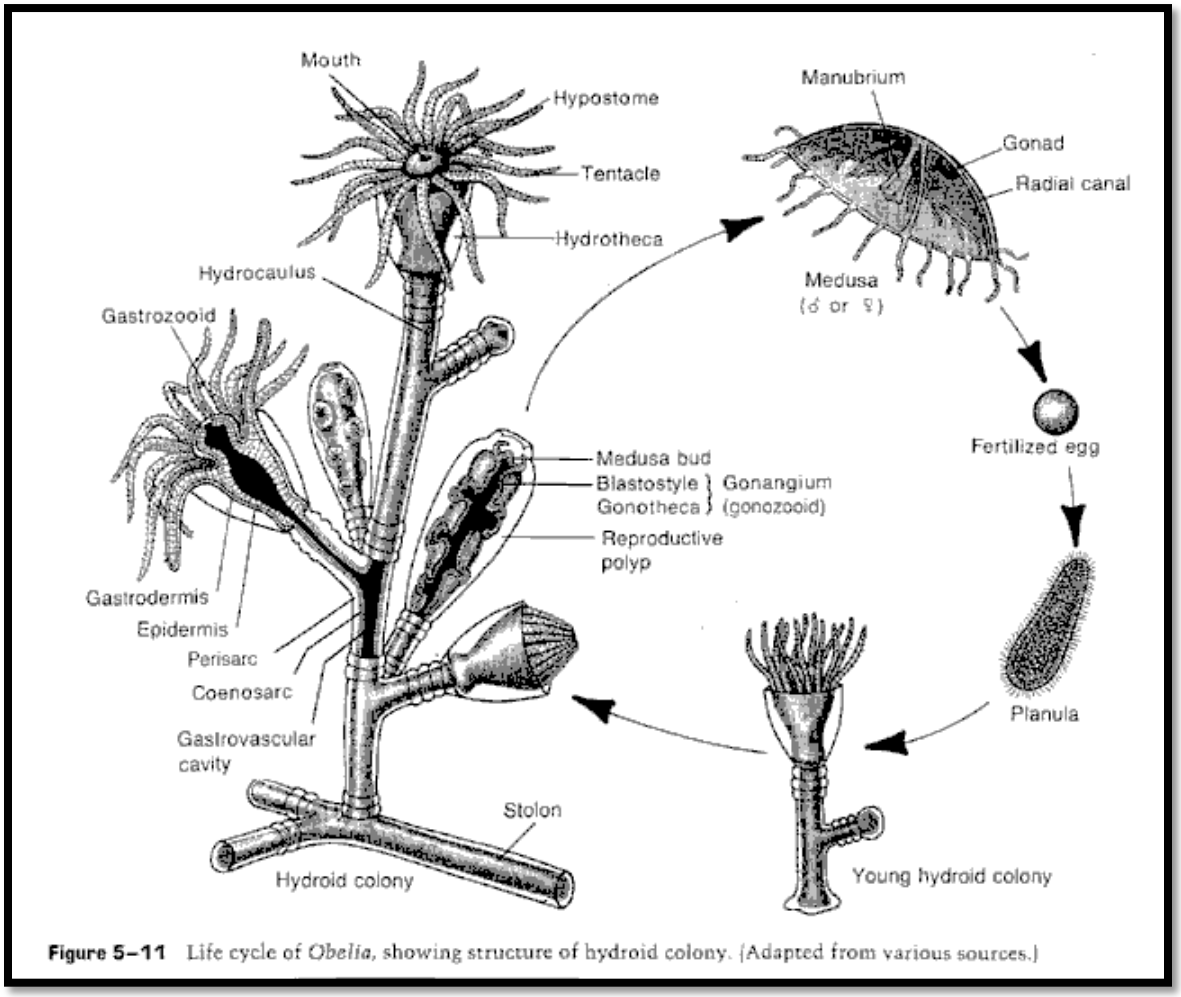


Figure 5–11 Life cycle of *Obelia*, showing structure of hydroid colony. (Adapted from various sources.)

Obelia life cycle

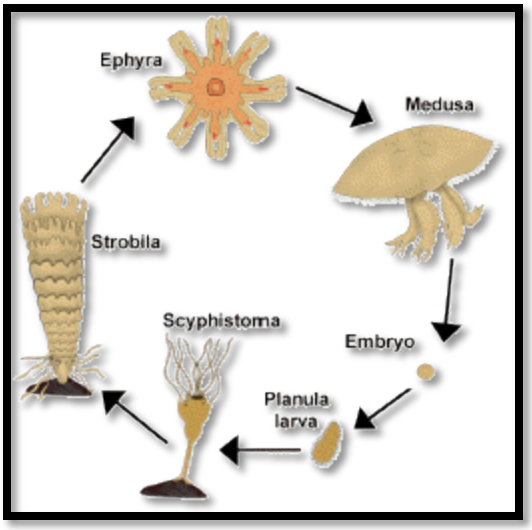
2-Class: Scyphozoa

Order: Semaeostomeae

e.g. *Aurellia* 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**