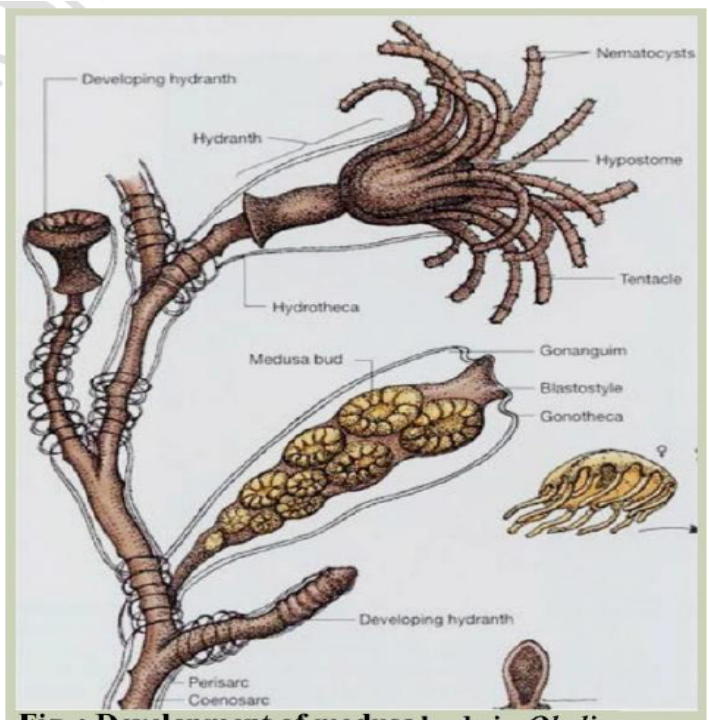
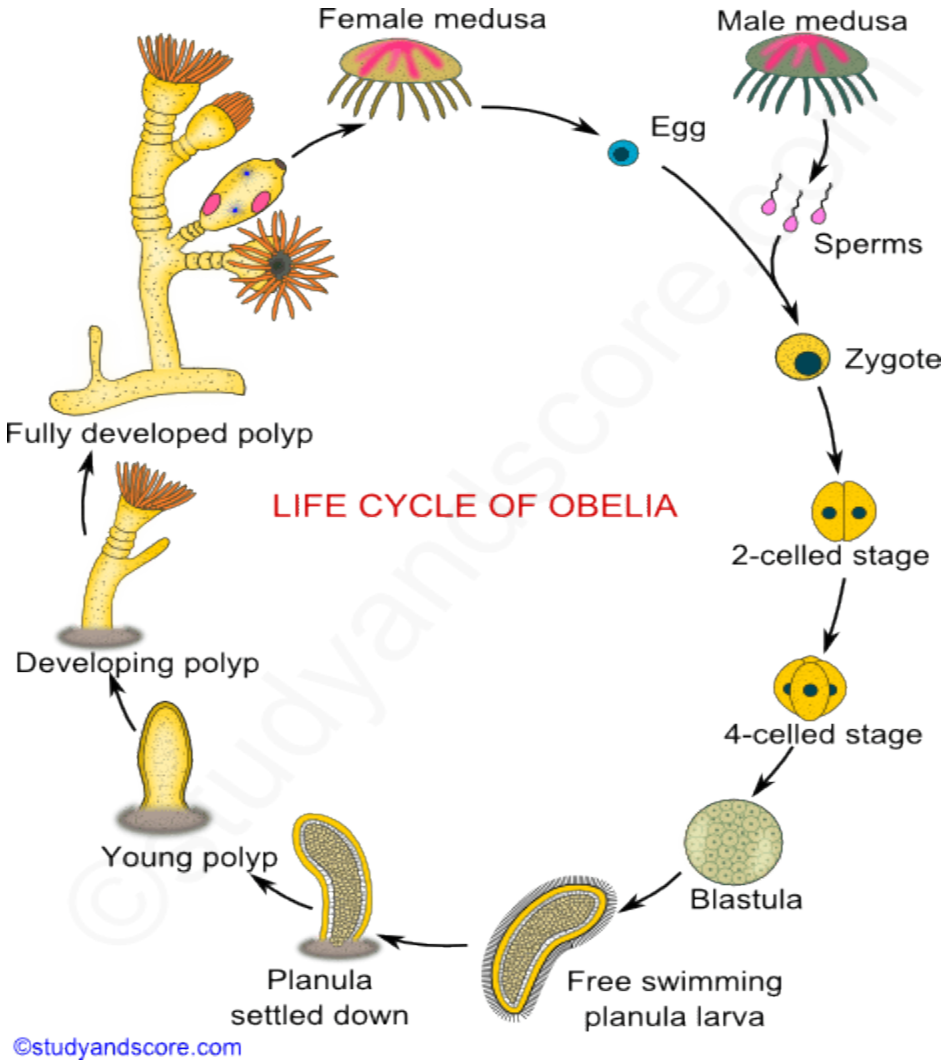
REPRODUCTION IN OBELIA

The life cycle of Obelia includes both polyp and medusa stages.
Polyp is an asexual form and reproduces by asexual means while medusa is a sexual zooid and reproduces sexually.

a) Asexual Reproduction – Polyps

- The polyps reproduce asexually by the process of budding.
- The hydrocaulus gives rise to a number of gastrozooids and as the colony matures, blastostyles bud from the axils of proximal gastrozooids and hydrocaulus.
- Each blastostyle produces a large number of medusa buds in spring and summer.
- These medusa buds graduallyΦ develop and mature.
- When fully formed, they detach from the blastostyles and escape into the water through the gonopore.





B) Sexual Reproduction - Medusa

- The sexual reproduction in Obelia takes place in the medusa stage; the male and female medusa being separate.
- The medusae produce ova and sperms and release them into the water where fertilization takes place.
- Sperms may also enter the female medusa along with the water current and fertilization may take place inside the body of female medusa.

Development of Fertilized Egg:-

- The fertilized egg undergoes complete and equal cleavage resulting in the formation of solid ball of cells, called morula.
- Morula develops a central cavity, blastocoel surrounded by loosely arranged blastomeres. This hollow blastula is termed as coeloblastula.
- Gradually, the new cells cut off from the blastomeres and start migrating in the blastocoel from one end of the coeloblastula.
- Slowly, entire blastocoel is filled with the cells and hollow blastula converts into solid gastrula, called stereogastrula by delamination.

- The outer surface of the embryo becomes ciliated forming a ciliated larva, planula larva.
- It is double layered ovoid larva, consisting of outer ciliated ectoderm and inner solid mass of endodermal cells.
- It actively swims in the water and helps in the dispersal of species.
- After a short period of time, the larva settles down and attaches itself to the substratum by one of its ends.
- The attached end forms a basal disc while a mouth surrounded by tentacles is formed at the distal end.
- This sessile stage is termed as hydrula stage as it resembles a hydra.
- Gradually, hydrula undergoes asexual reproduction repeatedly and converts into an adult Obelia colony.

METAGENESIS

- The life cycle of Obelia represents a remarkable example of alternation of generation where the asexual and sessile phase of Obelia (polyp) reproduces asexually by budding and gives rise to sexual and free-swimming medusa.
- The sexual and free swimming medusa reproduces sexually and forms new polyps.
- Thus, a diploid asexual hydroid phase alternates with another diploid sexual medusoid phase. This phenomenon of alternation between two diploid phases is termed as metagenesis.

POLYMORPHISM

Thus, the life cycle of Obelia includes three distinct types of zooids;

a) Nutritive polyps – hydranths
b) Asexual reproductive polyps – blastostyles
c) Sexual reproductive polyps – medusa

- This phenomenon, where Obelia is represented by structurally and functionally different individuals, is called polymorphism.
- Initially the colony of Obelia is represented by only two forms, gastrozooids and blastozooids and is called dimorphic.
- Later, when gonophores develop on the blastozooids is formed by the process of budding, the colony is considered trimorphic represented by three kinds of zooids.