

B.Sc I Year Invertebrate Zoology Paper- I
Unit –III
OBELIA

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Fertilization and Development in Obelia

1. Fertilization occurs either in the sea water where the germ cells are set free, or the spermatozoa may be carried by water currents to the female medusae and fertilize the ova in situ. Zygote formed after fertilization, immediately undergoes cleavage.
2. The cleavage is holoblastic and a blastula is formed (Fig. 20.16).
3. By invagination the blastula is converted into an oval, ciliated planula larva.
4. The planula consists of an outer layer of ciliated ectoderm and an inner mass of endoderm cells enclosing a space, the rudiment of coelenteron.
5. The planula swims freely for a brief period and settles down on some submerged substratum by one end.
6. The proximal end gradually narrows down and a disc appears for attachment. The distal end expands and by

developing a manubrium and a circlet of tentacles, it turns to a hydrula or simple polyp.

7. The hydrula sends out lateral buds and, by a repetition of this process, it is converted into a complex obelia colony.

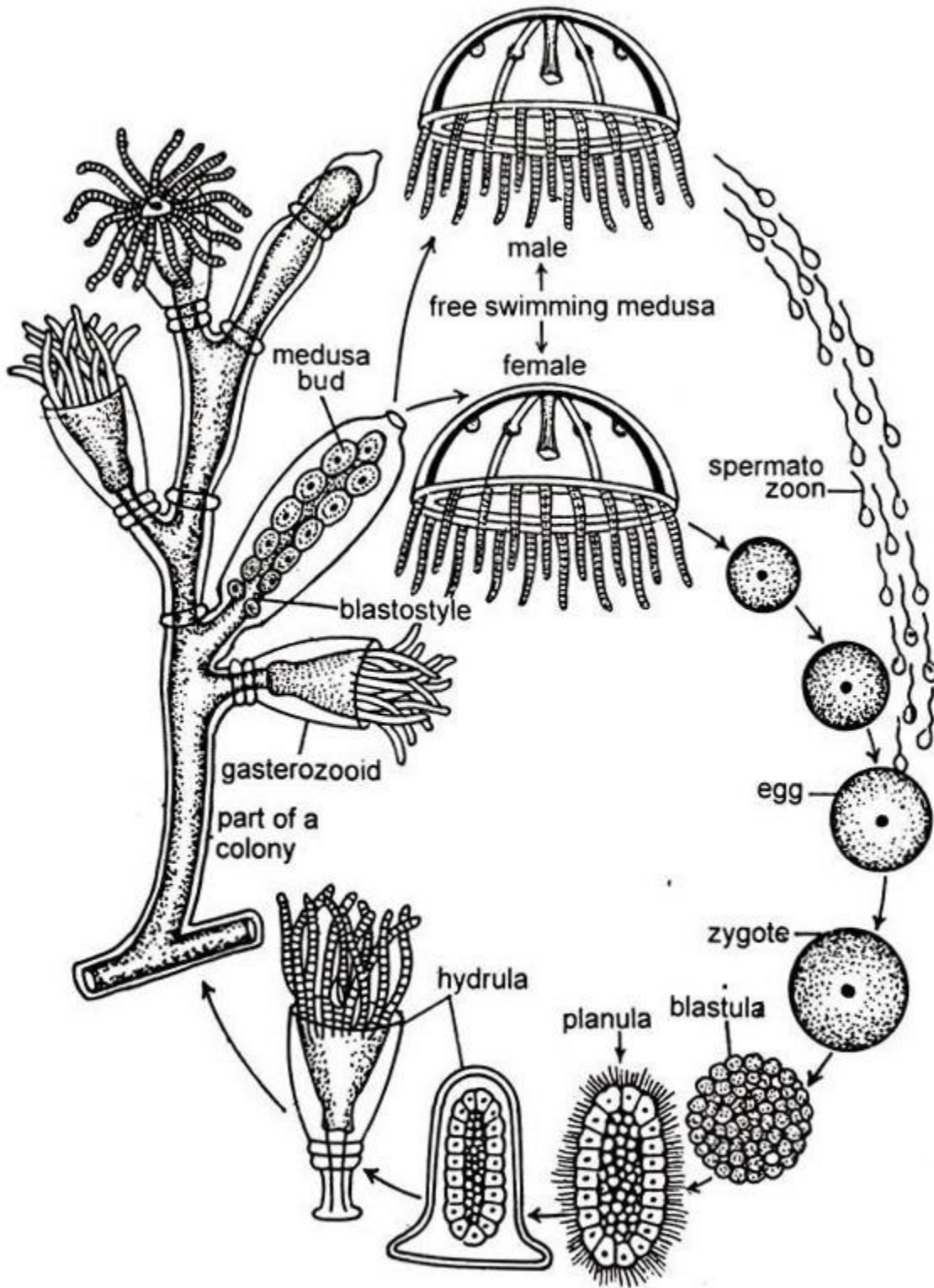


Fig. 20.16. *Obelia* sp. Life cycle

Alternation of Generations of Obelia:

A distinct alternation of generations or metagenesis is present in the life history of Obelia. The Obelia colony is sexless, bears no gonads and develops by asexual process, i.e. by repeated budding of the hydrula.

But the medusae buds, some of the zooids of the colony, develop gonads and, from their fertilized egg, new Obelia colony arises. The asexual generation is dependent on, and is alternated by the sexual generation.

Obelia is a permanently fixed colony but the planula larvae it produces are free swimming. The larva can swim from place to place with the help of cilia and, being aided by water current, it can travel a long distance. Thus, a non-locomotory species becomes locomotory and an overcrowding of individuals within a limited area is avoided and, thereby, the species is successfully continued.

Important Questions

1. Give a detailed account of the structure and life history of *Obelia*.
2. What is meant by 'metagenesis'? Explain it with reference to the life cycle of *Obelia*.
3. Write short notes on (i) Gonangium (ii) Metagenesis (iii) Medusa