BASUDEV GODABARI DEGREE COLLEGE,KESAIBAHAL,

DEPARTMENT OF ZOOLOGY

SELF STUDY MODULE

MODULE DETAILS –

.CLASS-1ST SEMESTER

.SUBJECTNAME- ZOOLOGY

.PAPER NAME-NON- CHORDATES 1- PROTISTA TO PSEUDOCOELOMATES

UNIT-2-- STRUCTURE-

CTENOPHORA

.GENERAL CHARACTER & EVOLUTIONARY SIGNIFICANCE OF CTENOPHORA

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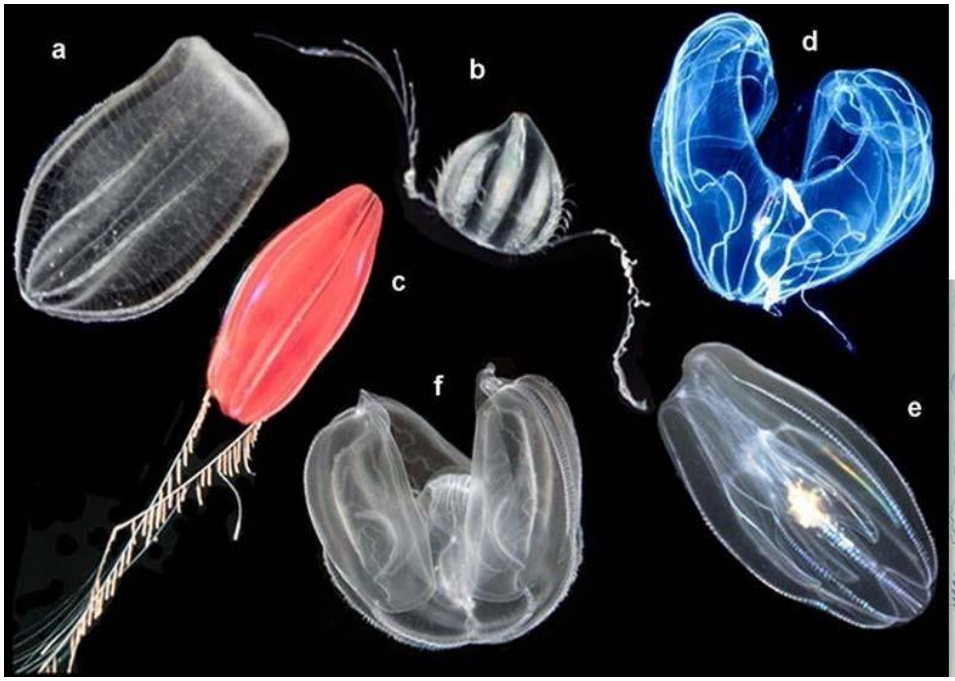

Phylum Ctenophora

DEFINITION- Ctenophores are free-swimming, transparent, jelly-like, soft-bodied, marine animals having biradial symmetry, comb-like ciliary plates for locomotion, the lasso cells but nematocytes are wanting. They are also known as sea walnuts or comb jellies.

GENERAL CHARACTERS-

- They are free-swimming, marine, solitary, pelagic animals. No polymorphism and no attached stages were found.
- The body is transparent, gelatinous, pear-shaped, cylindrical, or flat or ribbon-shaped.

- They have a biradially symmetrical body along an oral-aboral axis.
- They have an external surface with comb-like 8 ciliary plates for locomotion. Hence name as comb jellies.
- They have a pair of long, solid, retractile tentacles.
- Their body organization is cell- tissue grade.
- Their body is acoelomate and triploblastic, with the outer epidermis, inner gastrodermis, middle jelly-like mesoglea with scattered cells, and muscle fibers.
- Their digestive-system contains the mouth, stomodaeum, complex gastrovascular canals, and 2 aboral anal pores.
- They lack nematocysts.

- They have special adhesive and sensory cell i.e. colloblasts or lasso cells present in tentacles which helps in food captures.
- They lack skeletal, circulatory, respiratory, and excretory organs.
- Their nervous system is diffused types and the aboral end bears a sensory organ, called statocyst.
- They are monoecious (hermaphrodite); gonads are endodermal situated on walls of digestive canals.
- Their development direct with characteristic cydippid larva.
- They lack asexual reproduction and alternation of generation.
- Regeneration and paedogenesis are common in them.

Evolutionary significance:

- **Cnidaria:**
- The Ctenophora bear many characters of the cnidarians, but it differs considerably from the other members of the phylum Cnidaria.
- 1.Cnidarian features:
- Presence of basic radial symmetry.
- Lack of coelom.
- Diploblastic body wall. The mesodermal tissue is not distinct during embryogenesis.
- Presence of gelatinous mesoglea.
- Presence of ramified coelenteron.
- Presence of diffused sub-epidermal nerve network.
- Presence of statocyst as sense organ.
- Absence of organ systems.

- Arrangement of the parts of the body along an oral-aboral axis.
- Presence of tentacles.
- Gastro-dermal origin of gonads,
- Presence of lasso cells in ctenophores similar to the nematoblasts of Cnidaria.
- The body structure of ctenophores is superficially similar to medusae of cnidarians.
- **Platyhelminthes:**
- The idea that Ctenophora gave rise to certain bilateria (Polyclad) has been supported by many zoologists. Platyctenea has been considered to be a connecting link between Ctenophora and the bilateria.
- Flat compressed body having a movement by creeping-like on the sole of the foot.
- General ciliation of the body.

- The dorsal polar nerve of Turbellaria can be compared with the statocyst of Ctenophora.
- Origin of the so-called mesoderm is more or less similar.
- Primary locomotor organs in the larva (Muller's larva) consist of eight ciliated ridges of ectoderm which can be compared with the ctenophoran meridional comb-plates.
- Dermal musculature well developed.
- Branched gastro-vascular cavity.
- Ctenophora exhibits both radial as well as bilateral symmetries.
- Development of the two groups has a close resemblance.

- **Ctenophora:**
- Many authors tried to establish the sponges as to be closely related to Ctenophora.

- The large central cavity and the osculum of sponges correspond to the coelenteron and mouth of Ctenophora respectively.
- Absence of well-formed mesoderm in both,
- Simpler organization in both.
- But closer examination reveals that these two groups are quite widely apart.
- **Hydrozoa:**
- Presence of two tentacles, situated at opposite per radii, each is provided with a deep pouch at its base, resembling closely the tentacular sheath of Hormiphora.
- Presence of eight radial canals formed by the bifurcation of four inter-radial pouches of the stomach.
- The subumbrellar cavity of the Ctenidia can be homologised with the stomodaeum of Hormiphora.

THANK YOU.