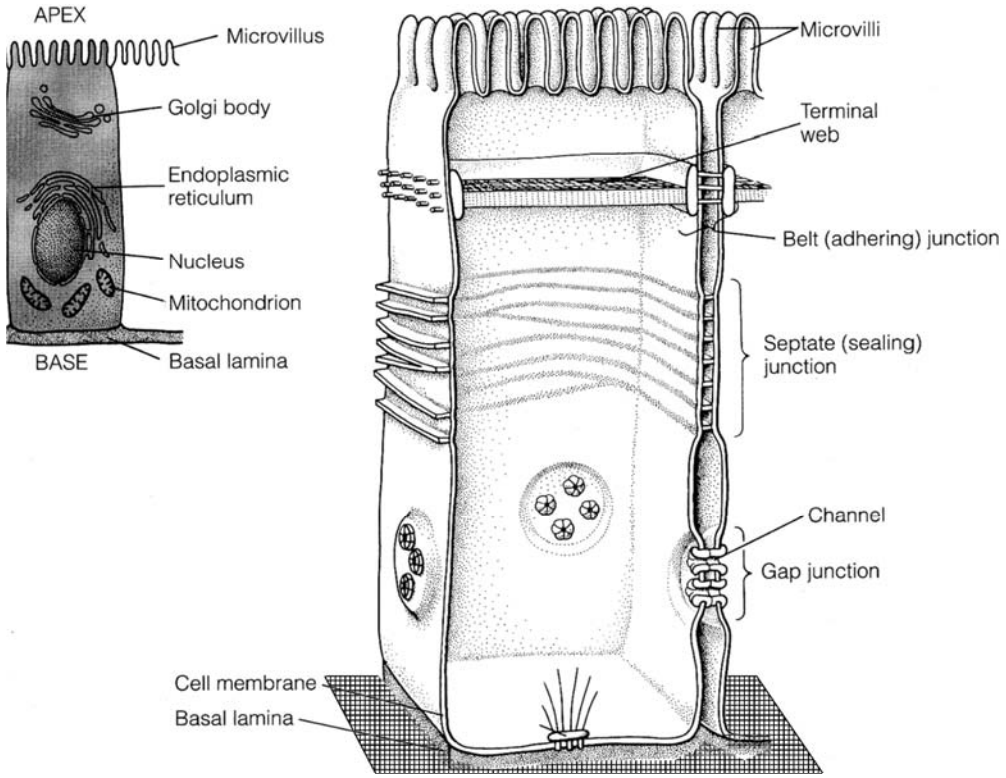
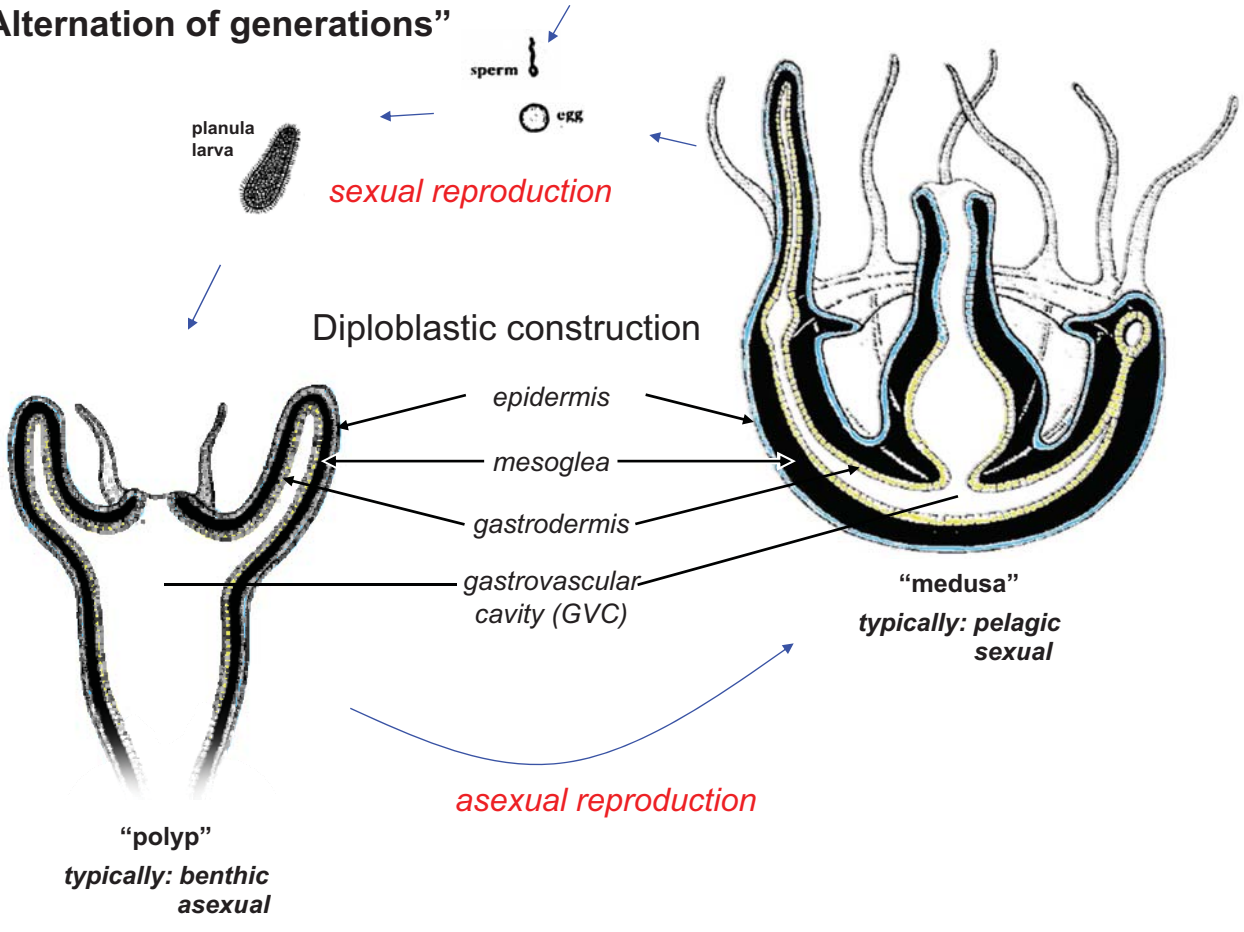
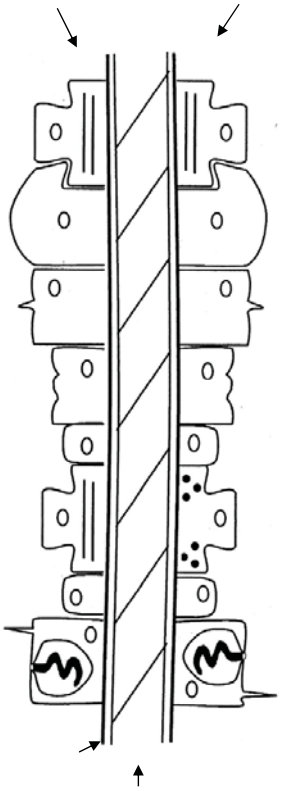
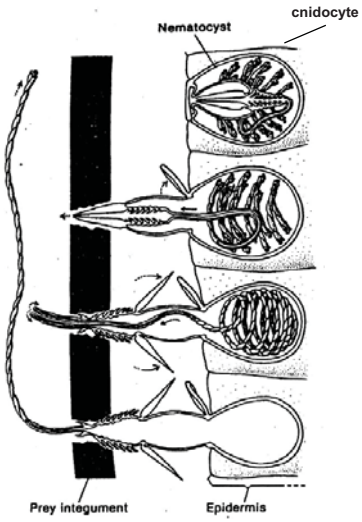
Major event #1: evolution of epithelia



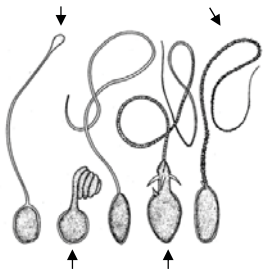
"Alternation of generations"



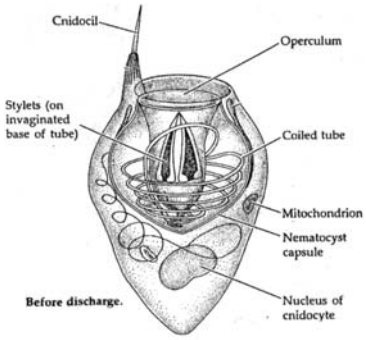


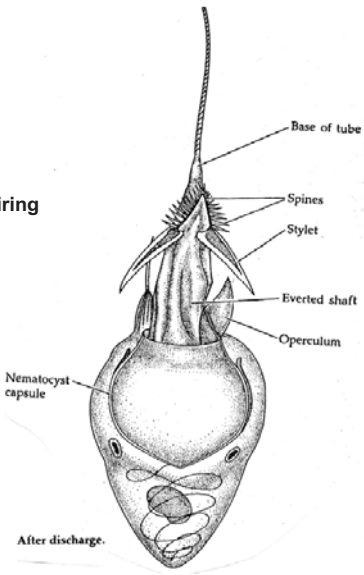


nematocyst types

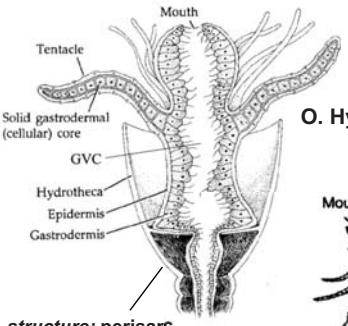


nematocyst firing





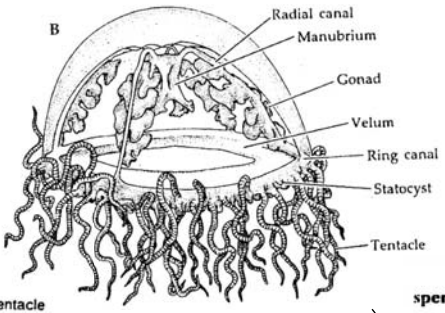
CI. Hydrozoa: anatomy and "typical" life cycle

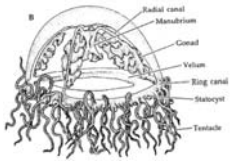


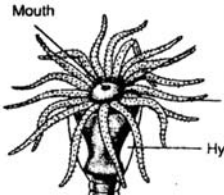
O. Hydroida

structure: **perisarc**

material: **chitin**



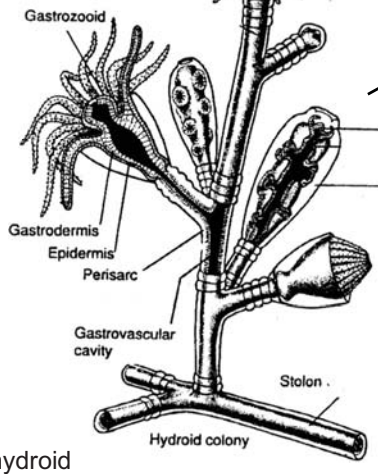


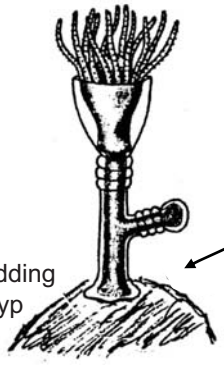


sperm

egg

Planula





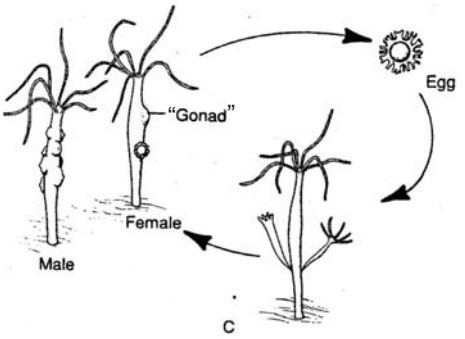
Budding polyp

Obelia,
"thecate" hydroid

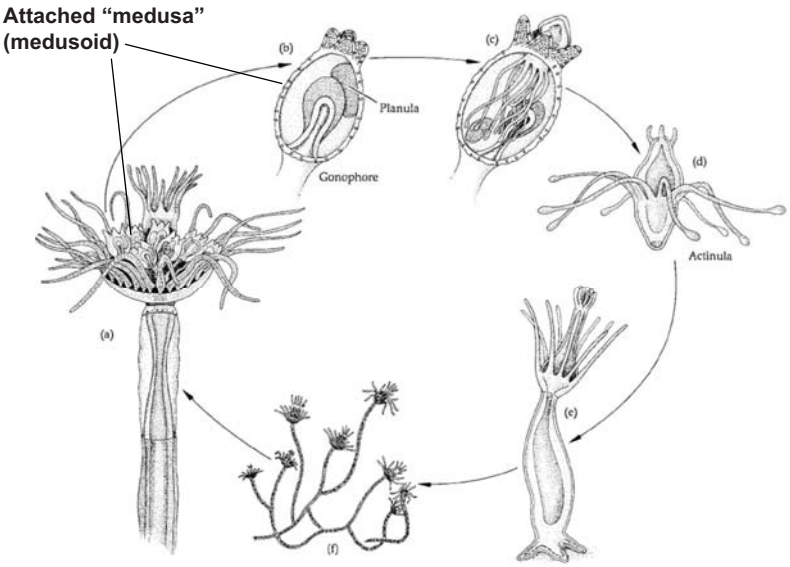
Cl. Hydrozoa: some life cycle alternatives

Are medusa and polyp…
- **present or absent?**
- **sexual or asexual?**
- **pelagic or benthic?**

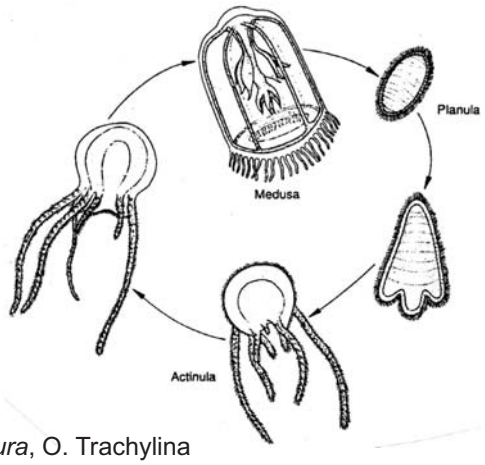
Is the species…
- **if polyp, solitary or colonial?**
- **if colonial, polymorphic or monomorphic?**



Hydra (freshwater)

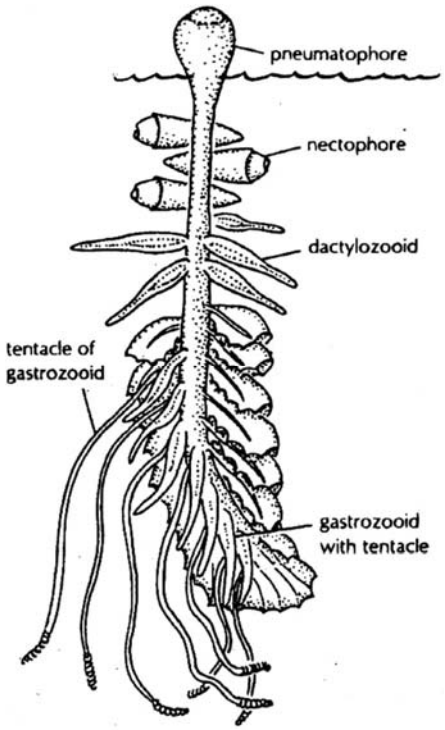


Tubularia,
"athecate" hydroid

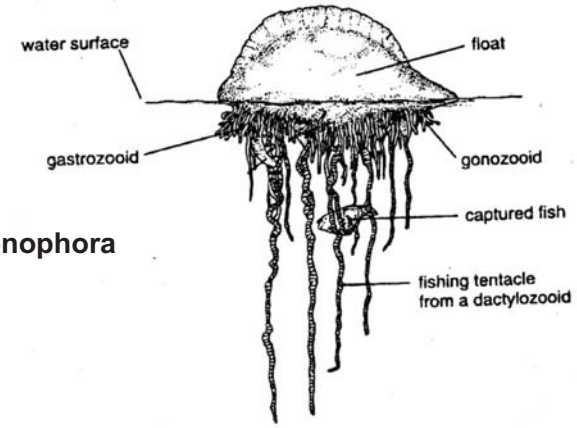


Aglaura, O. Trachylina

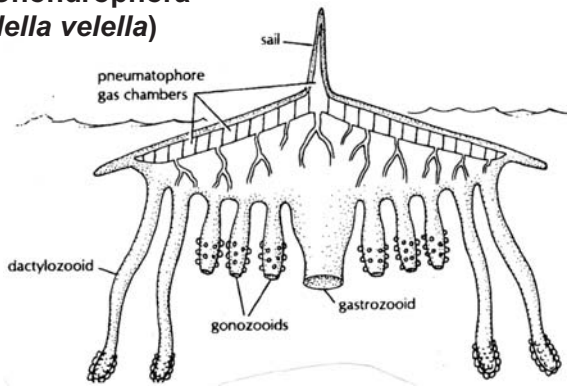
Cl. Hydrozoa: polymorphic pelagic colonies



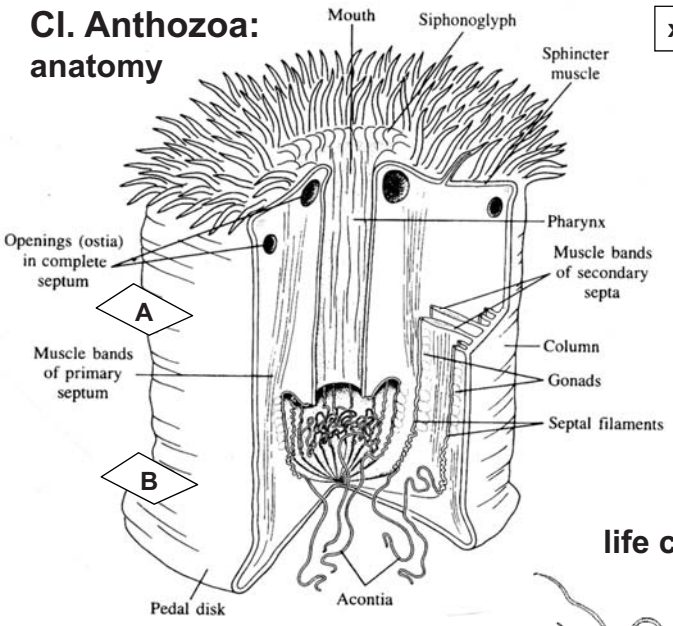
O. Siphonophora



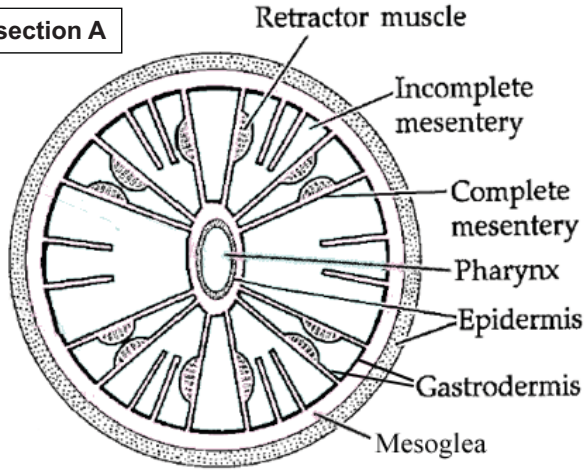
O. Chondrophora
(*Velella velella*)



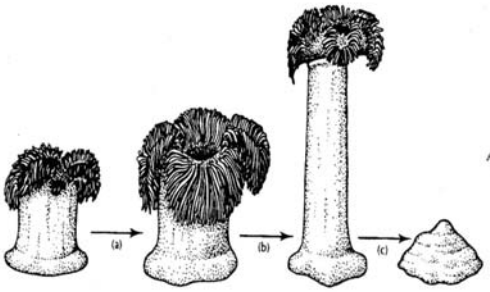
Cl. Anthozoa:
anatomy

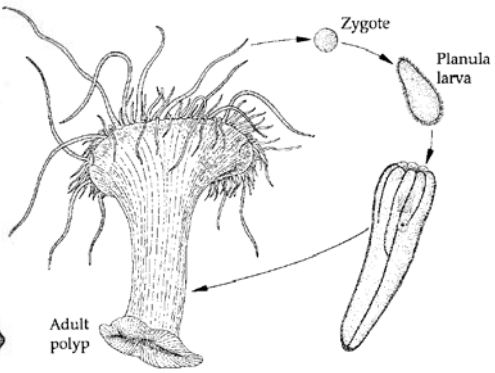


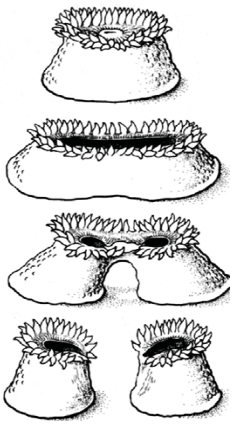
x-section A

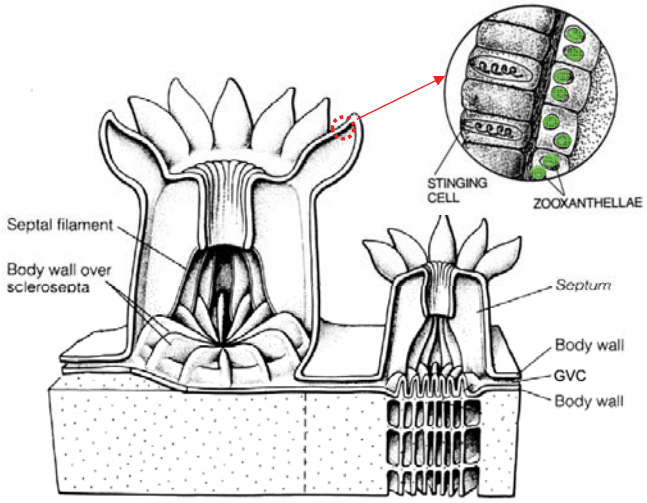


life cycle variation









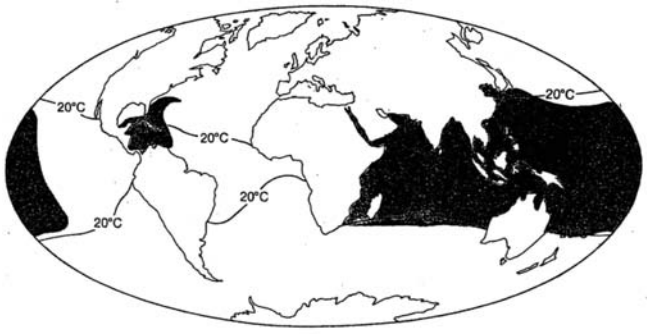
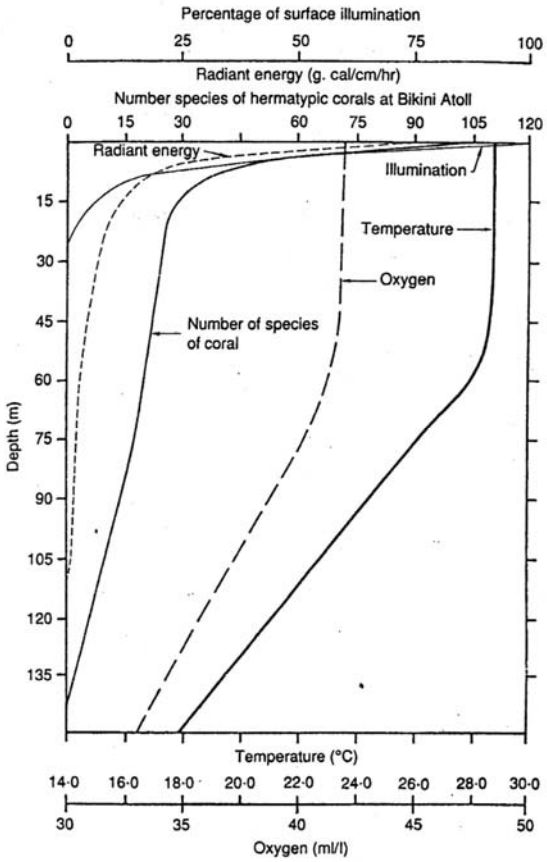
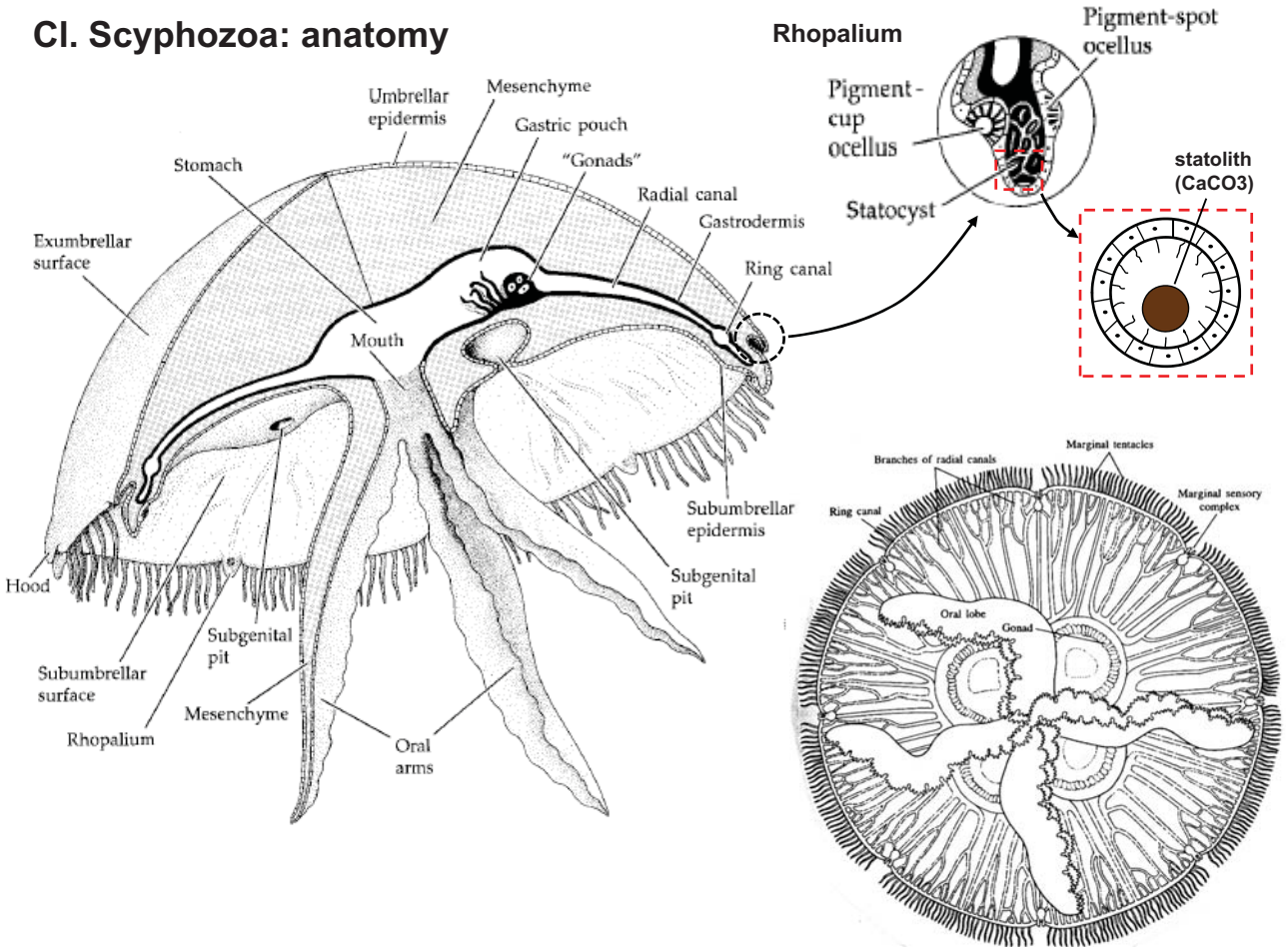


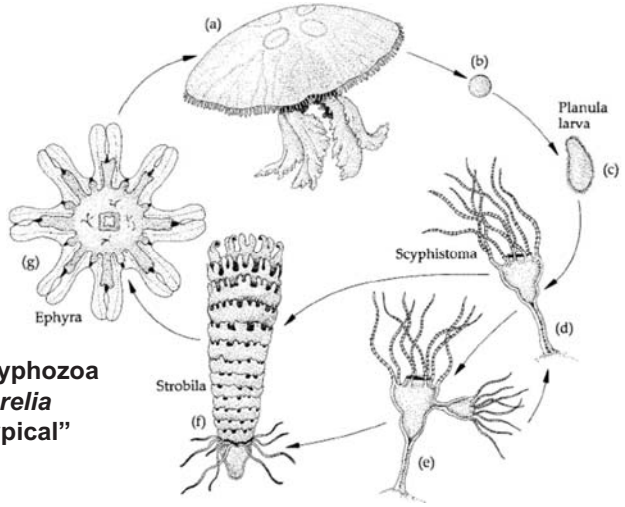
FIGURE 4–59 Distribution of coral reefs today (heavy shading).



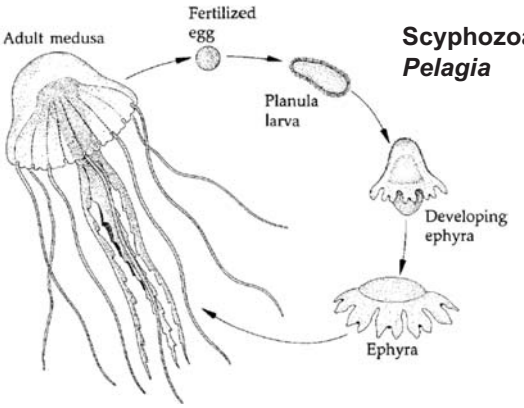
Cl. Scyphozoa: anatomy



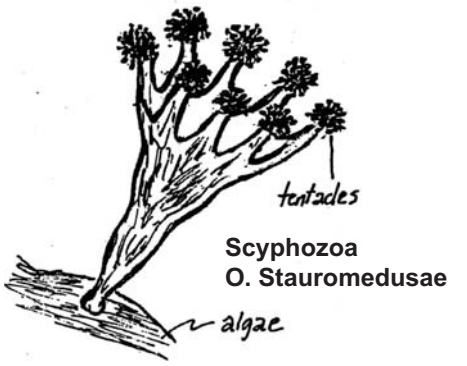
Scyphozoan/Cubozoan life cycle variation



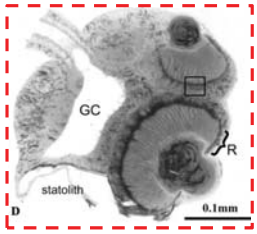
Scyphozoa
Aurelia
"typical"

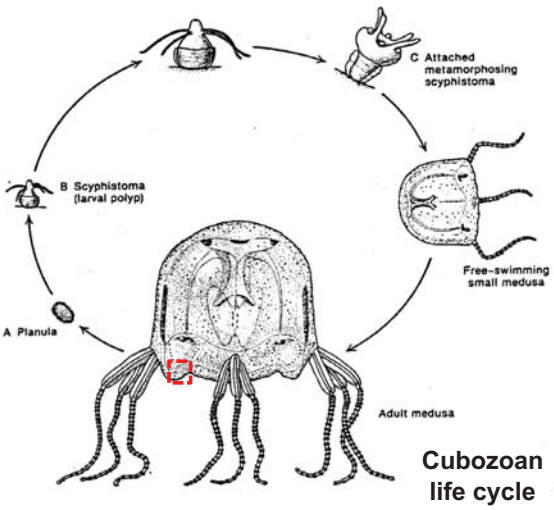


Scyphozoa
Pelagia



Scyphozoa
O. Stauromedusae

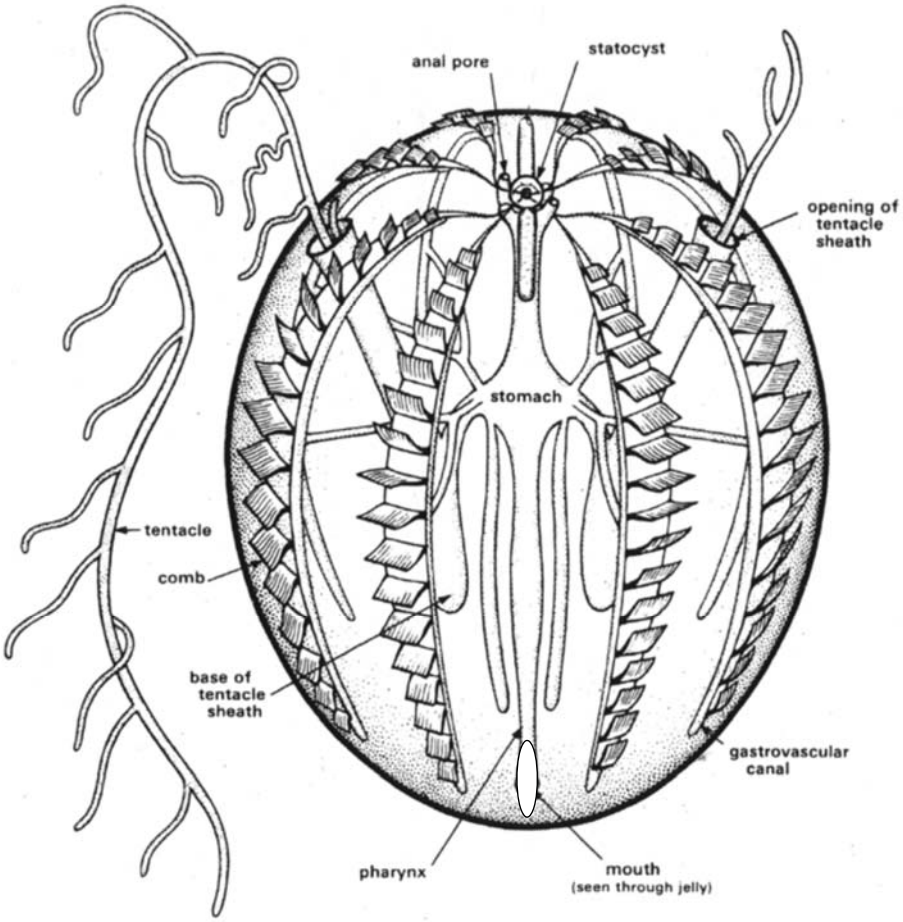


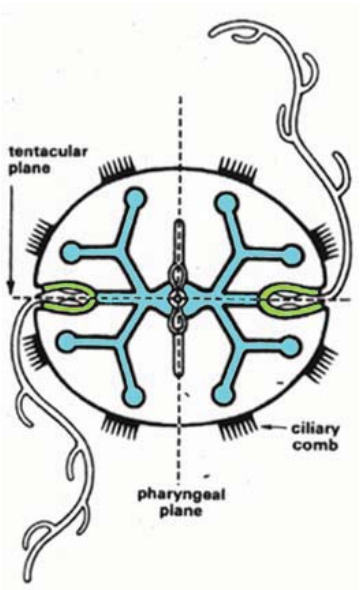


Cubozoan
life cycle

Ph. Ctenophora

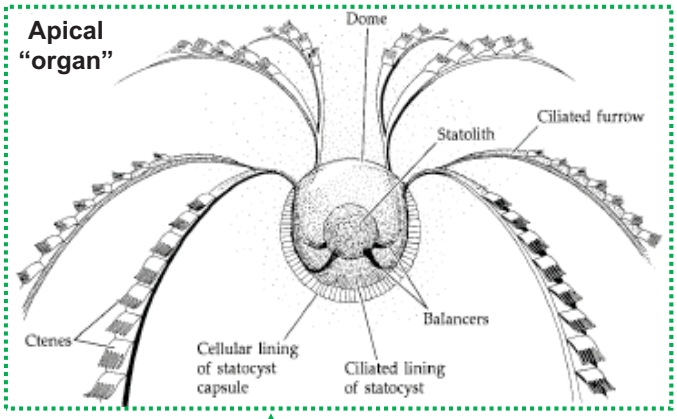
generalized body plan

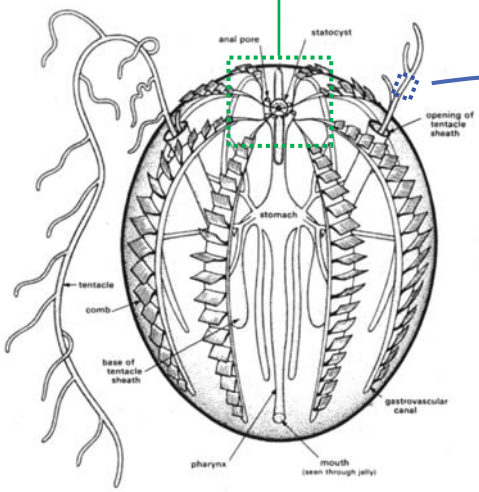


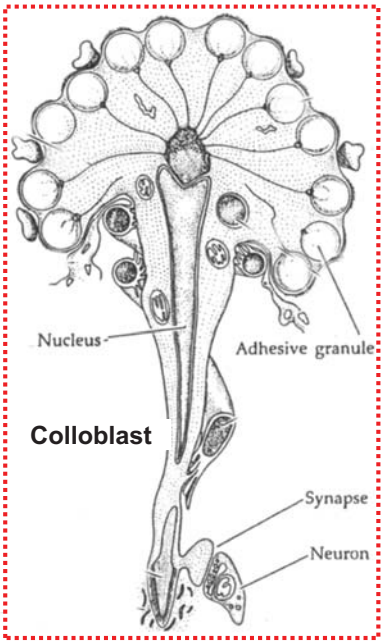


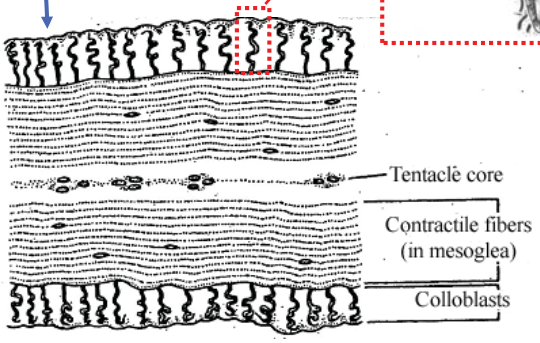
Biradial symmetry shown in a diagrammatic cross-section of *Pleurobrachia*. The dotted vertical line is the *pharyngeal plane*, in which pharynx and mouth are elongated. The dotted horizontal line is the *tentacular plane*. Pharyngeal halves are not equivalent to tentacular halves.

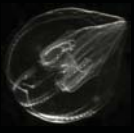
Apical "organ"









Jelly plankton:
***homology* or *homoplasy* of habitat, transparency and feeding mode?**

Life cycle	Alternating generations	Typical
Swimming mechanism	“Muscular” contractions	Ciliary (8 ctene rows)
Symmetry	Radial	Biradial
“Muscle”	Epithelial	True fibers?
Food capture (cell)	Cnidocyte	Colloblast
(structure)	Nematocyst	Colloblast
(control)	Independent effectors	Nervous control
Larval development	Planula (indirect)	Cydippid (direct)
Cleavage	Indeterminate	Determinate