

# Rhodophyceae

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## ► Features:

- Known as red algae
- Almost restricted to seas, very few freshwater
- Free living attached with rocks, epiphyte, endophyte, or parasite
- Bright red, purple to dark brownish red, brownish green, blue green, black
- Some unicellular to simple filamentous to branched, heterotrichous
- Unicellular to more than a meter
- Presence of gelatinous material, used to prepare agar
- Some East and South-East Asian countries used as food

## ► Pigments:

- Chlorophyll a and Chlorophyll d,  $\alpha$ - and  $\beta$ -carotenes, lutein, taraxanthine, allophycocyanin
- r-phycoerythrine (red) and r-phyococyanin (blue)



*Polysiphonia*

## ▶ **Storage Food:**

- Floridean starch, alcohol, oils

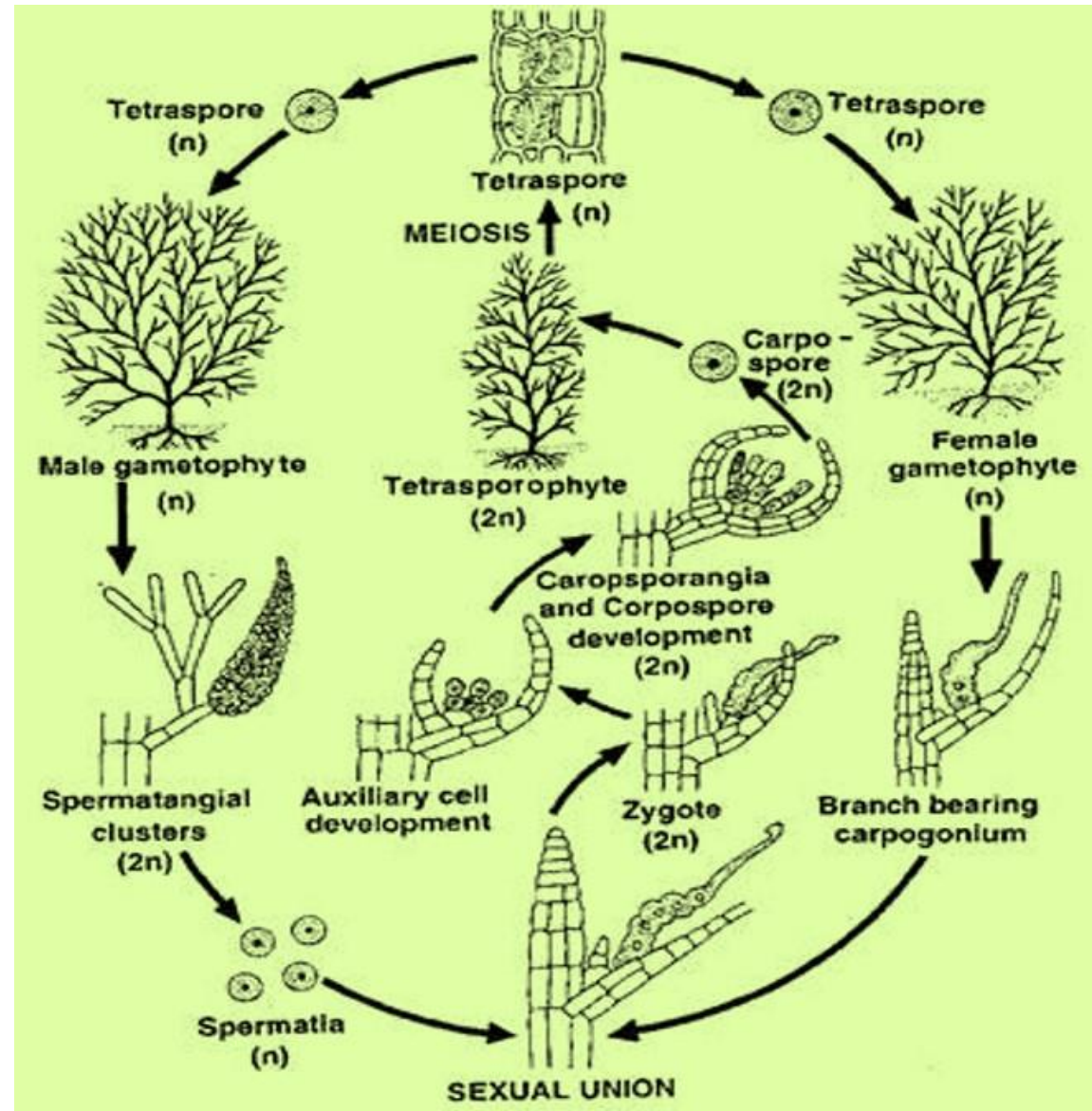
## ► Cell Wall:

- Pore like opening in cell wall through which cytoplasmic connection take place  
– pit connection

## ► **Reproduction:**

- Absence of flagellate reproductive structures
- Sexual reproduction oogamous
- Male reproductive organ – spermatangium bear only one uninucleate male gamete – spermatium
- Female reproductive organ – carpogonium with long neck – trichogyne and bulbous base – carpogonium base
- Elaborate post-fertilization (depend on gametophyte) stage and elaborate diploid phase (independent)

- Sporophytic body may or may not be resemble morphologically with gametophytic body
- Sporophytes bears tetrasporangia and tetraspores
- Reduction division occur during sporogenesis in sporangium of independent sporophyte
- Isomorphic to heteromorphic alternation of generation
- Asexual reproduction very common and most species reproduce by this method
- Monospore, bispore, polyspore, or paraspore are non-motile single celled spores formed inside sporangia
- Vegetative reproduction not very common



Triphasic life cycle of *Polysiphonia*

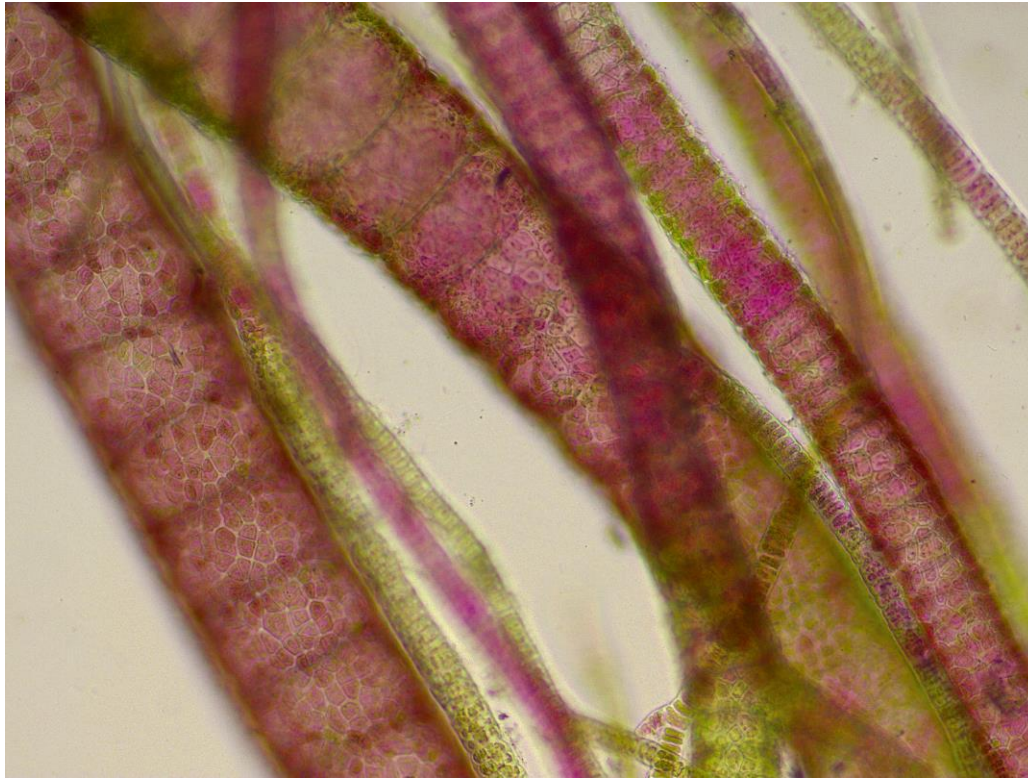


## ► Evolution:

- Rhodophyceae only resemble with Cyanophyceae
- Lack of flagellate structure in both groups
- Floridean starch resembles with cyanophycean starch
- Some consider it derived from member of Chlorophyceae, but difficult to justify
- Two alternatives theory – (1) it originated from simple Cyanophyceae, (2) it derived from eucaryotic algae which themselves originated from Cyanophyceae. Fundamental difference of Procaryotic and Eucaryotic did not support these theory

## ► Example:

- *Polysiphonia*, *Compsopogon*, etc.



*Compsopogon*