PLANT KINGDOM - L3

BOTANY

PANKHURI MA'AM

ANTHE

AAKASH NATIONAL TALENT HUNT EXAM

Your Gateway To Success

For Class VII to XII

Current Students & Passouts

12TH CLASS | TUESDAY, THURSDAY
11TH CLASS | MONDAY, WEDNESDAY, FRIDAY

3 PM | 4 PM | 5 PM | 6 PM

MISSION MBBS

VIVEK SIR

CHEMISTRY | 3:00 PM

ANUSHRI MA'AM

PHYSICS | 4:00 PM

SACHIN SIR

ZOOLOGY | 5:00 PM

PANKHURI MA'AM

BOTANY | 5:00, 6:00 PM

PUSHPENDU SIR

ZOOLOGY | 6:00 PM

FREE FOR 14 DAYS!

Recall: Classification of Algae

Based on the **colour** and the **pigments**

Rhodophyceae

Red algae
(Chlorophyll d,
Phycoerythrin)

Phaeophyceae

Brown algae
(Chlorophyll c,
Fucoxanthin)

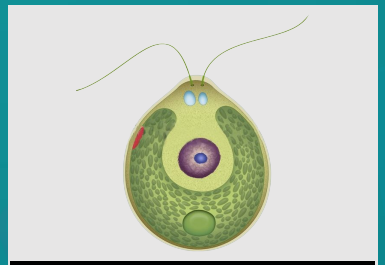
Chlorophyceae

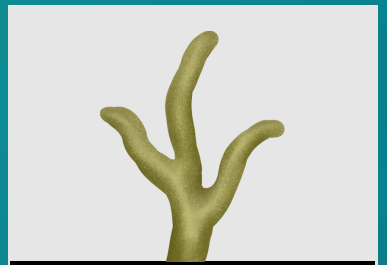
Green algae
(Chlorophyll b)

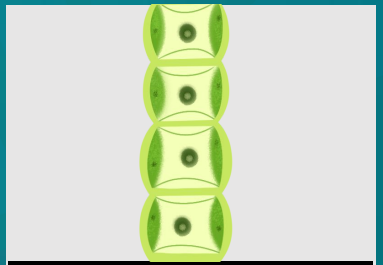
Chlorophyll a is common to all three groups.

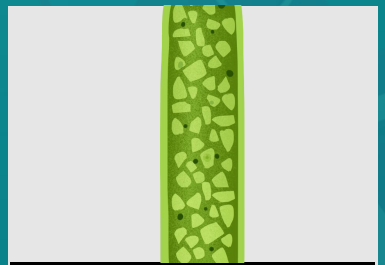
Chlorophyceae: Green Algae

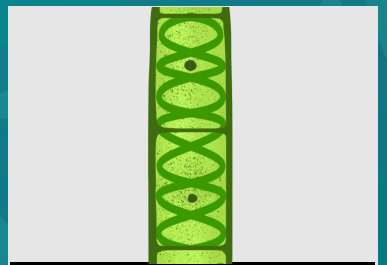
Chloroplast diversity

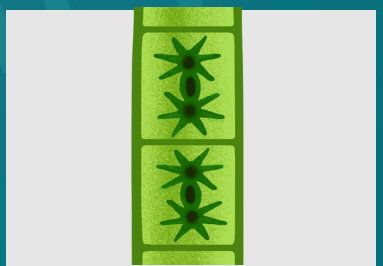

Cup shaped


Discoid


Girdle shape


Reticulate


Spiral


Stellate

Chlorophyceae: Green Algae

Pigments that make the algae green

- Chlorophyll ‘a’
- Chlorophyll ‘b’
- Beta Carotene
- Xanthophyll

Chlorophyceae: Green Algae

Reproduction

Asexual

- Binary fission
- Fragmentation
- Spore formation

Sexual

- Isogamy
- Anisogamy
- Oogamy

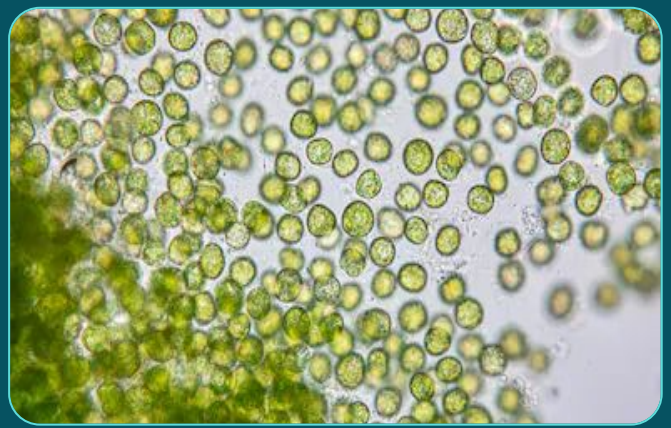
Chlorophyceae: Green Algae

Alternation of generations

- **Haplontic** life cycle
- No exceptions

Algae in space missions!

Chlorella



Phaeophyceae: Brown Algae

Phaeophyceae: Brown Algae

- **Habitat:** Predominantly marine
- Show great variation in size and form
  - Simple branched, filamentous forms (Eg: *Ectocarpus*)
  - Profusely branched forms: Represented by kelps

Phaeophyceae: Brown Algae

- Pigments present

Chlorophyll ‘a’

Chlorophyll ‘c’

Fucoxanthin
A type of xanthophyll pigment responsible for the brown colour

Carotenoids

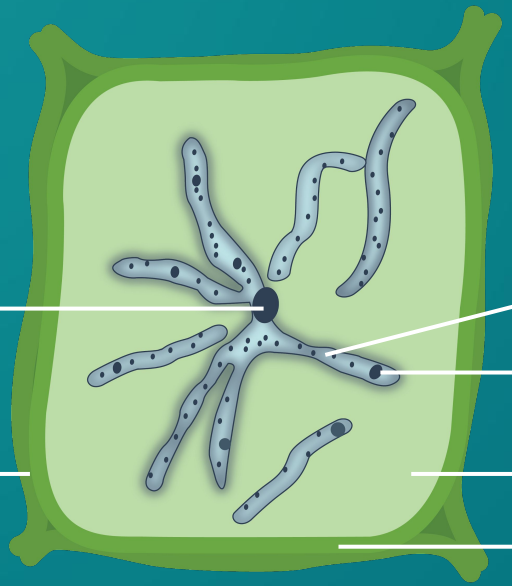
Phaeophyceae: Brown Algae

Food storage

- In form of **complex carbohydrates**
  - Mannitol
  - Laminarin

Phaeophyceae: Brown Algae

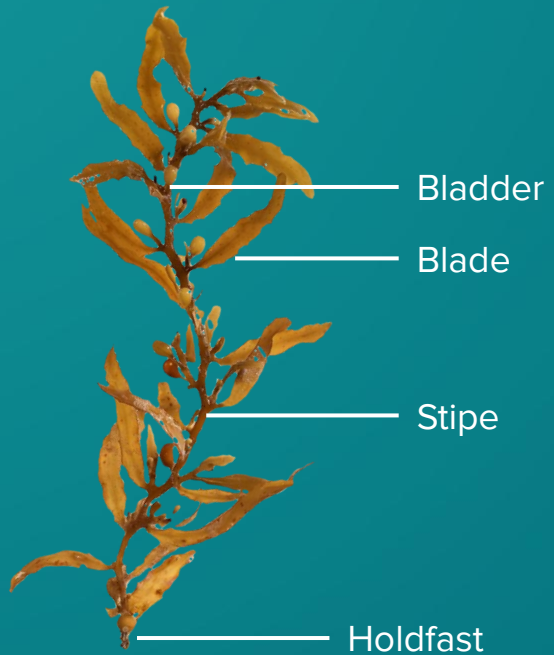
- **Cell wall: Algin-fucoidan** outer coat
- Protoplast contains, in addition to plastids, a centrally located vacuole and nucleus



Pectin
Cellulose
Algin
Fucoidan

Phaeophyceae: Brown Algae

Structure of brown algae



Phaeophyceae: Brown Algae

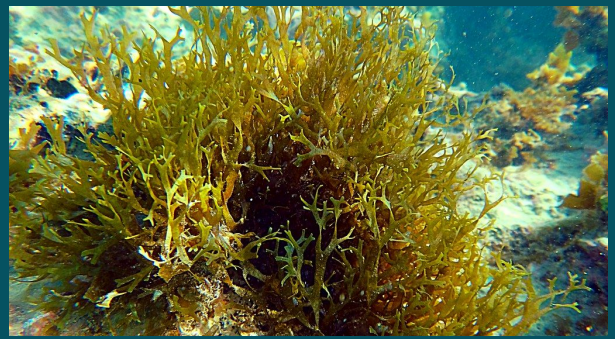
Ectocarpus

- Produces hydrocolloids
  - **Algin**
  - **Fucoidan**
- Used in manufacture of:
  - Beer
  - Toothpaste
  - Paint
  - Soaps
  - Medicine

Phaeophyceae: Brown Algae

Dictyota

- Produces **diterpene compounds:** Used in pharmaceutical industries



Phaeophyceae: Brown Algae

Laminaria

- Rich source of **iodine**

Phaeophyceae: Brown Algae

Sargassum

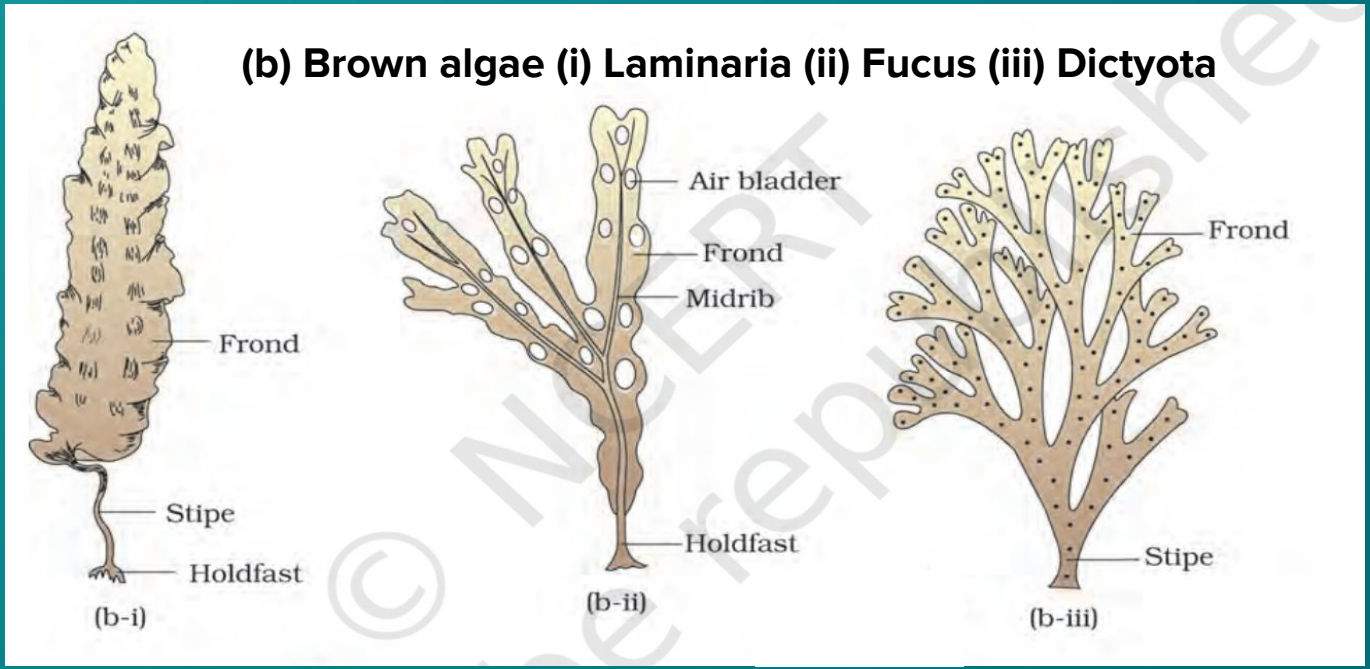
- Important **habitat** for fish
- Used as a **natural fertilizer**

Phaeophyceae: Brown Algae

Fucus

- Source of **alginate** and **iodine**

Phaeophyceae: Brown Algae



Phaeophyceae: Brown Algae

Vegetative reproduction

- By fragmentation

Asexual reproduction

- By biflagellate zoospores that are pear-shaped and have two unequal laterally attached flagella

Phaeophyceae: Brown Algae

Sexual reproduction

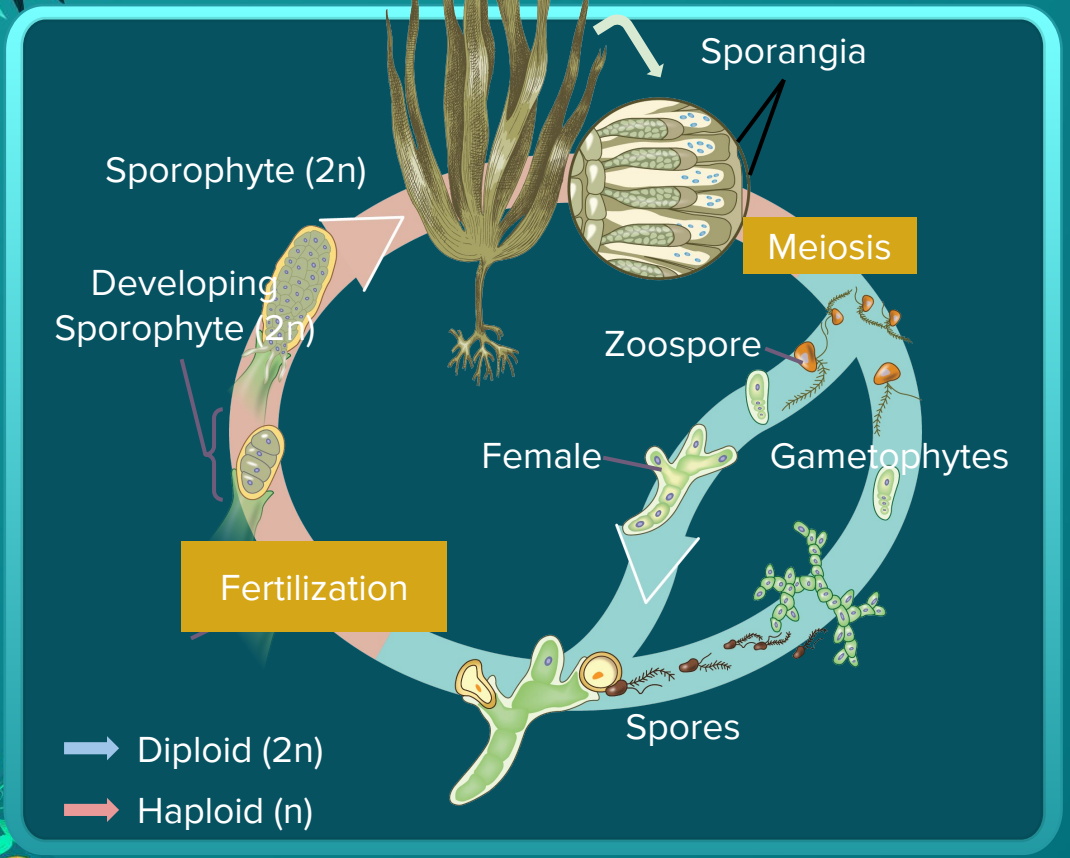
- May be isogamous, anisogamous or oogamous
- Union of gametes may take place in water or within the oogonium
- The gametes are pyriform (pear-shaped) and bear two laterally attached flagella

Phaeophyceae: Brown Algae

Alternation of generations

- **Haplontic** life cycle
- Exceptions are
  - **Fucus: Diplontic** life cycle
  - ***Ectocarpus* and *Kelp*: Haplo-diplontic** life cycle

Phaeophyceae: Brown Algae



Alternation of generations: Haplontic life cycle

Summary

Habitat	Found in marine habitats
Cell wall	Cellulose and algin
Pigments present	Chlorophyll a & c, carotenoids, **xanthophylls (Fucoxanthin)**
Food stored	Complex carbohydrates: Mannitol and laminarin
Members	*Ectocarpus, Laminaria, Fucus, Sargassum, Dictyota*
Reproduction	a) Vegetatively by **fragmentation** b) Asexually by **biflagellate zoospores** c) Sexual reproduction may be **isogamous**, **anisogamous** or **oogamous**

Alternation of generations

- **Haplontic** life cycle

Exceptions are

- ***Fucus*** - **Diplontic** life cycle
- ***Ectocarpus*** and ***Kelp*** - **Haplo-diplontic** life cycle


Keep
Learning!