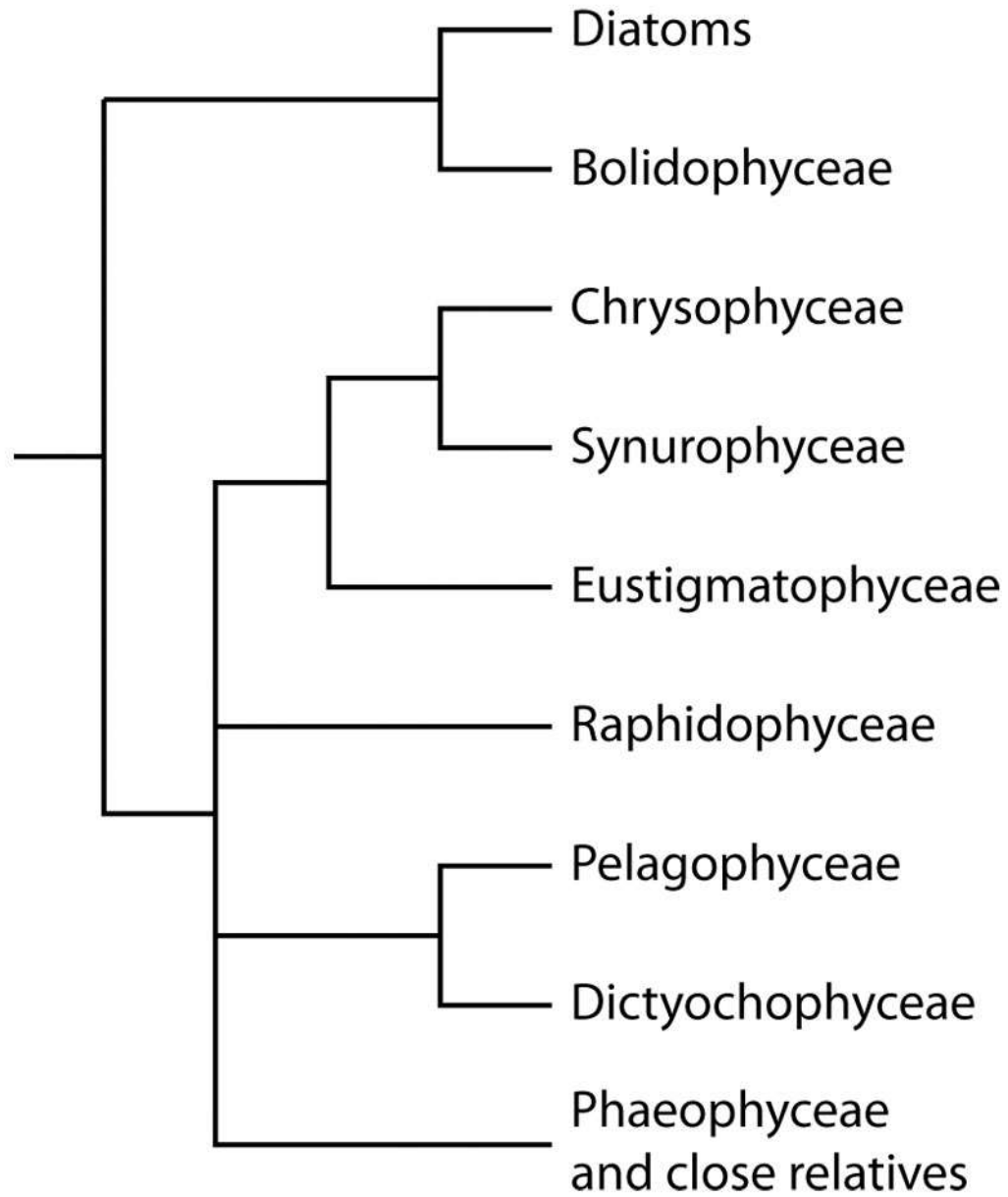


## **Stramenopiles II (Ch.13):**

### **Raphidophyceans, Chrysophyceans, Synurophyceans and Eustigmatophyceans**



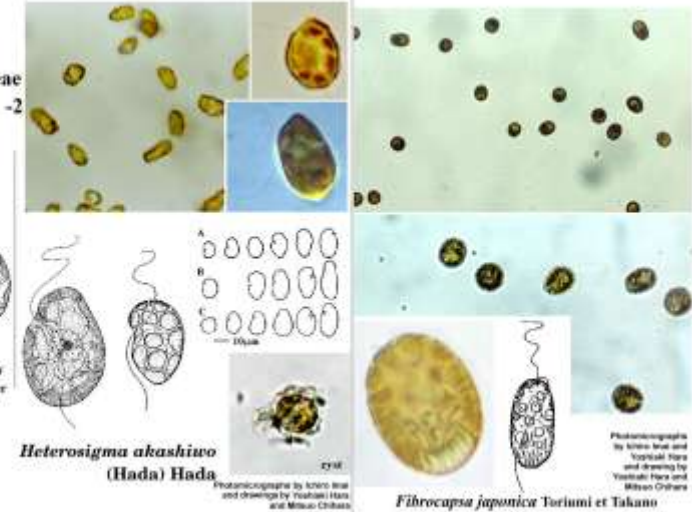
**These groups are mainly freshwater forms and they are related to each other by cellular features and DNA sequences**



# Raphidophyceae

## Plate 15

### Raphidophyceae



*Olinthodiscus luteus* Carter

*Heterosigma akashiwo* (Hada) Hada

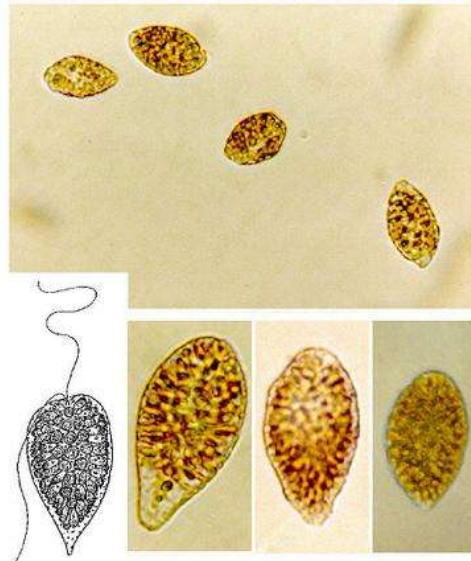
Photomicrographs by Ichiro Inai and drawings by Yoshiaki Hara and Mitsuo Chihara.

*Fibrocapsa japonica* Tsurumi et Takano

Photomicrographs by Ichiro Inai and drawings by Yoshiaki Hara and Mitsuo Chihara.

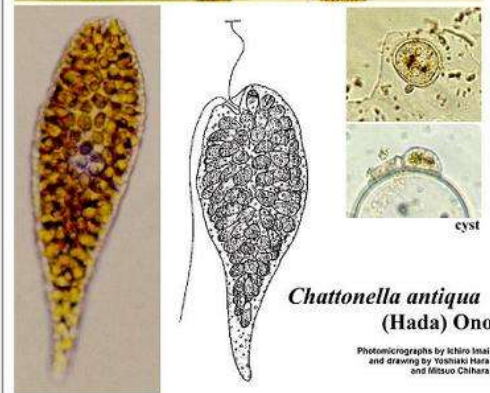
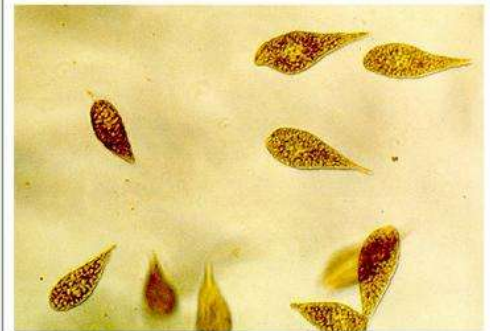
## Plate 14

### Raphidophyceae-1



*Chattonella marina* (Subrahmanyam) Hara et Chihara

Photomicrographs by Ichiro Inai and Sadaaki Yoshimatsu, and drawings by Yoshiaki Hara and Mitsuo Chihara.



*Chattonella antiqua* (Hada) Ono

Photomicrographs by Ichiro Inai and drawings by Yoshiaki Hara and Mitsuo Chihara.

# RAPHYDOPHYCEANS or Chloromonads

Unicellular flagellates

2 anterior flagella

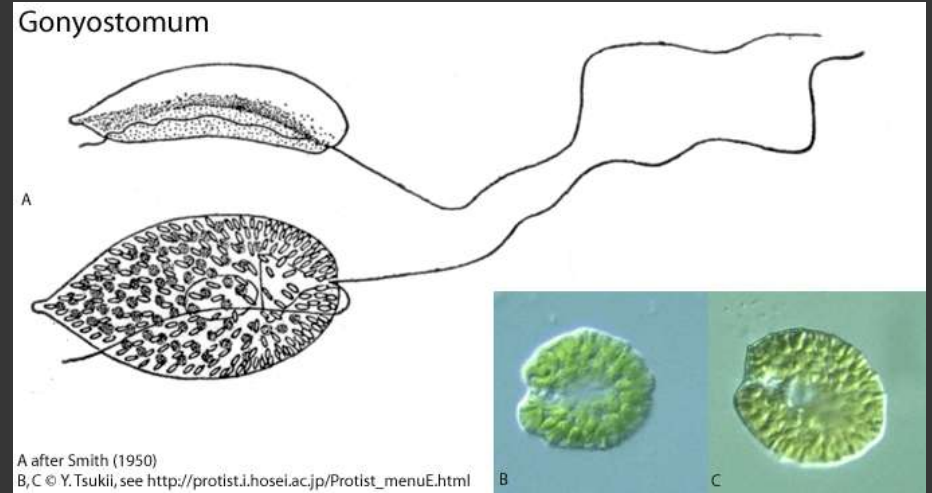
Naked cells

Many discoid chloroplasts

Chlorophyll is dominant

*Vacuolaria* & *Gonyostomum* common

*Heterosigma* and other marine raphydophyceans form toxic blooms



*Heterosigma*



# EUSTIGMATOPHYCEANS

Coccoid forms

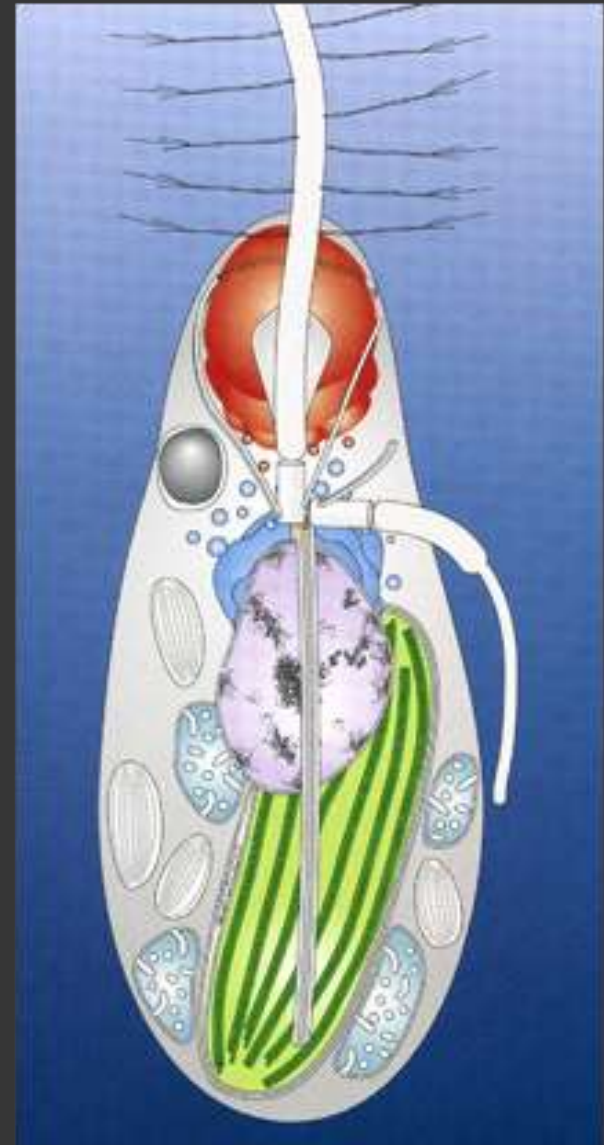
Rare in aquatic or soil habitats

Chlorophyll *a* and violaxanthine

Elongated and unflagellated zoospore

One chloroplast

Apical eyespot!

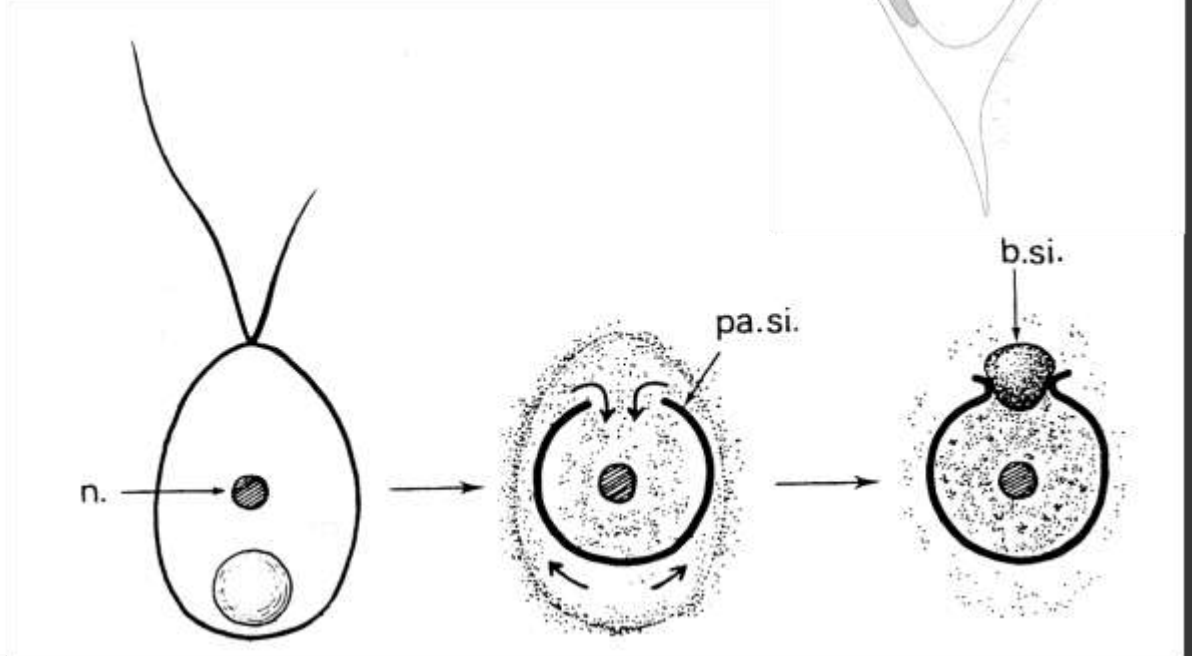
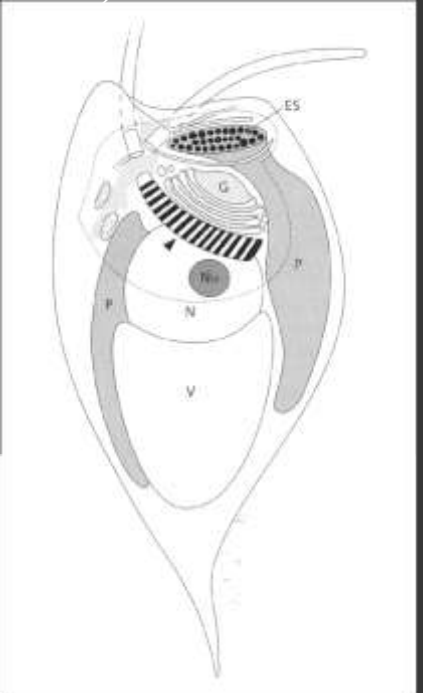
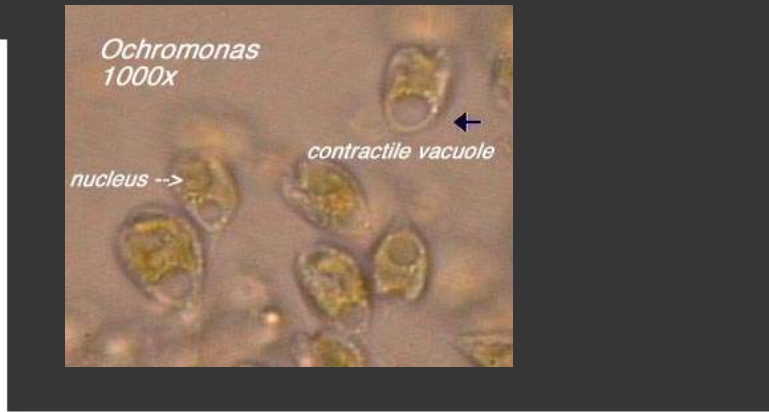
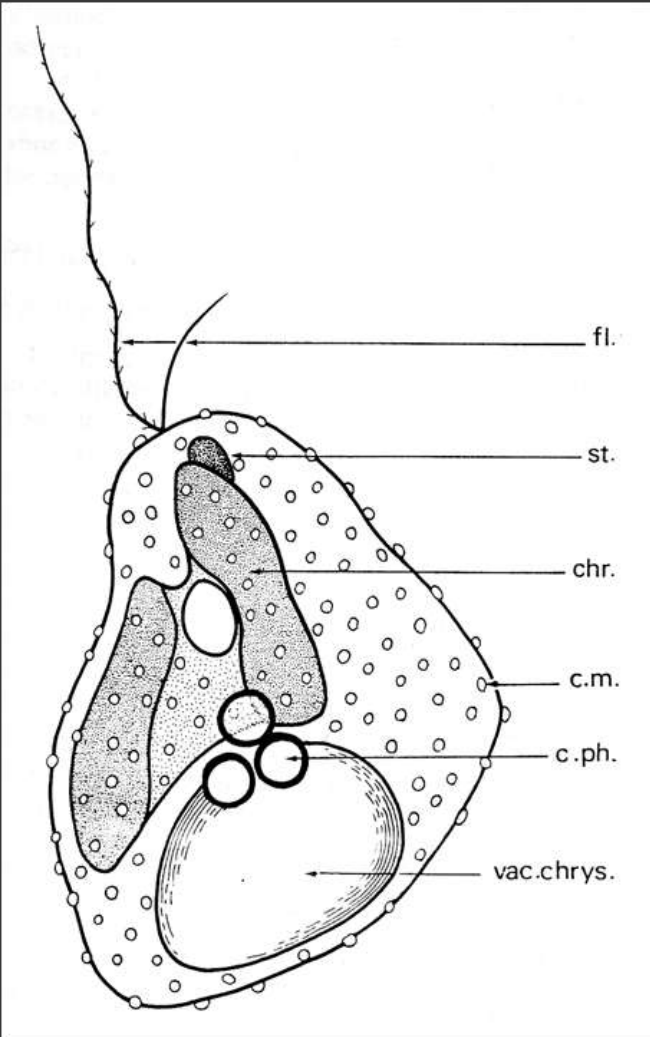


*Pseudocharaciopsis*



# CHRYSTOPHYCEAE or Golden Algae

Heterokont algae with chlorophylls a, c<sub>1</sub> & c<sub>2</sub> and fucoxanthin  
With silica-walled resting stage or Stomatocyst (statospore)



# MORPHOLOGY AND DIVERSITY

Unicellular flagellates

Monadoid colonies

Rhizopodial

Filamentous forms

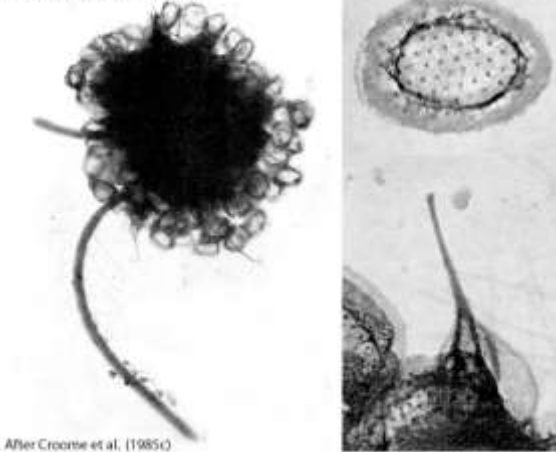


*Chromulina*

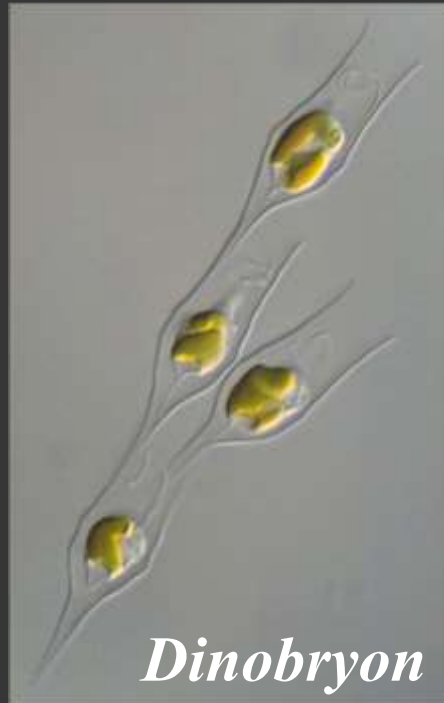


*Uroglena*

Paraphysomonas



*Paraphysomonas*



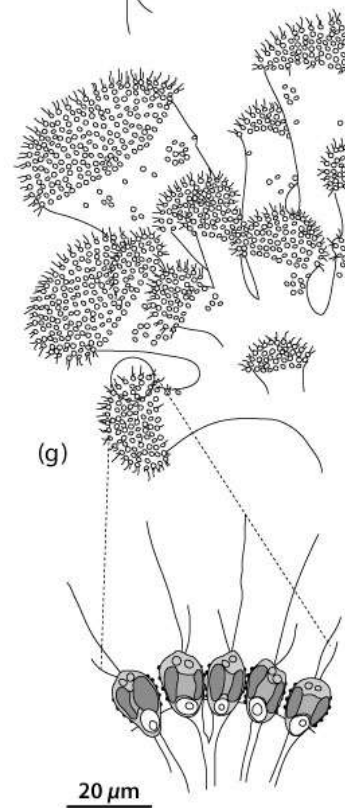
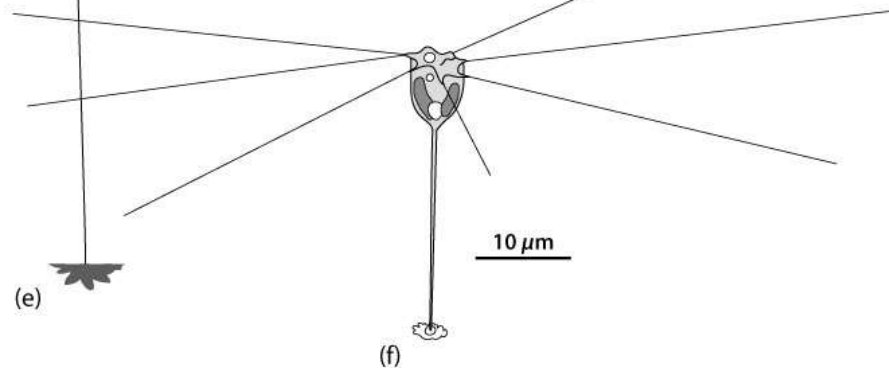
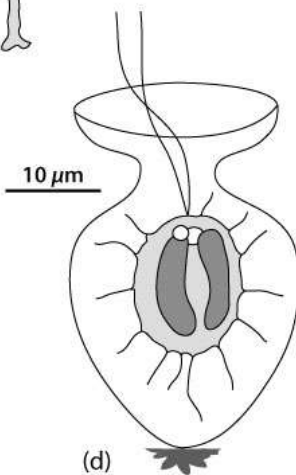
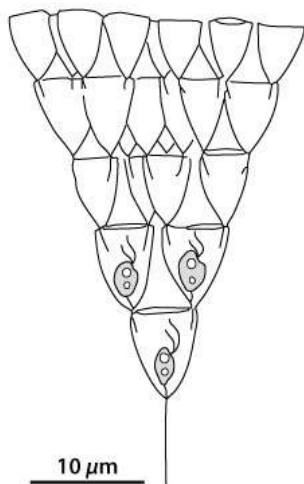
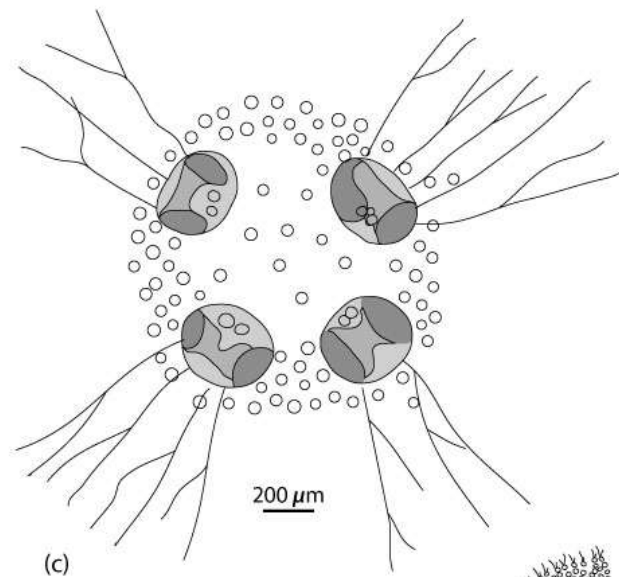
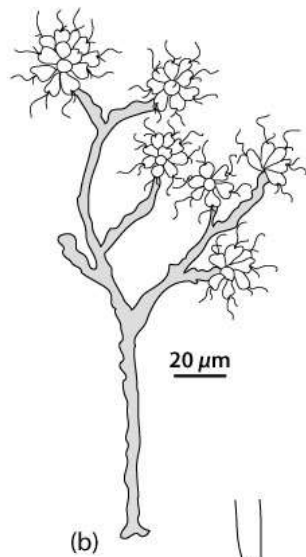
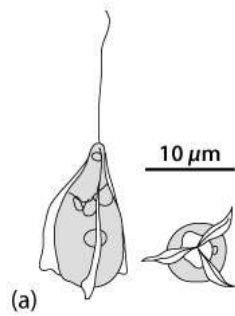
*Dinobryon*



*Chrysamoeba*



*Hydrurus*





# ECOLOGY

Prefer slightly acid & oligotrophic waters

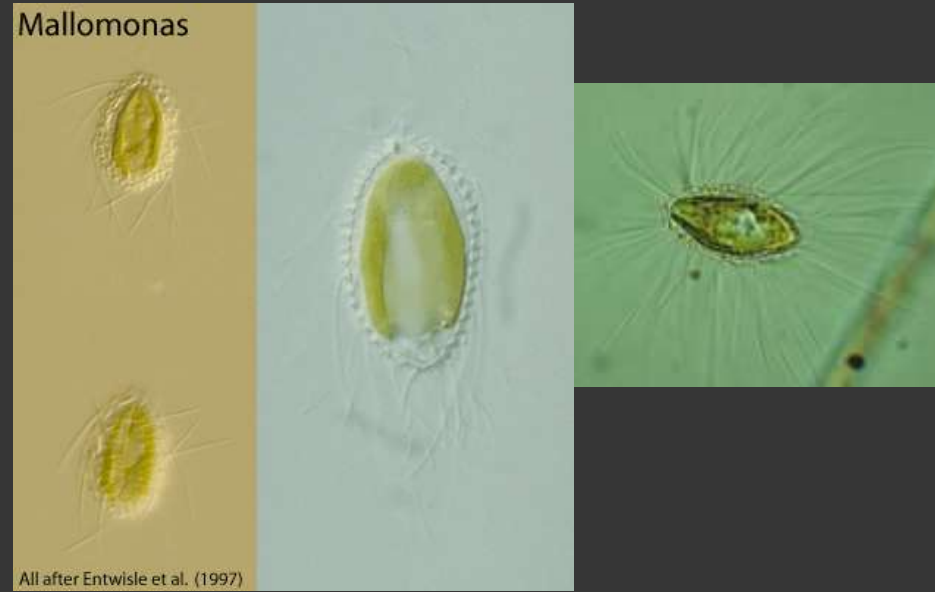
Mixotrophy: photo-, hetero-, auxo-, phagotrophs

Some form blooms: *Uroglena* fatty acids toxic to fish

*Uroglena* and *Dinobryon* give unpleasant taste and odor  
("fishy water")

# SYNUROPHYCEAE

- Very similar to Chrysophyceans but lack chlorophyll  $c_2$
- Primary photoautotrophic forms
- Chrysophyceans and Synurophyceans algae have a great impact in the silica cycle in local lakes
- Synurophyceans are indicators of low levels of pollution
- *Mallomonas* and *Synura* can contribute to the fishy taste and odor



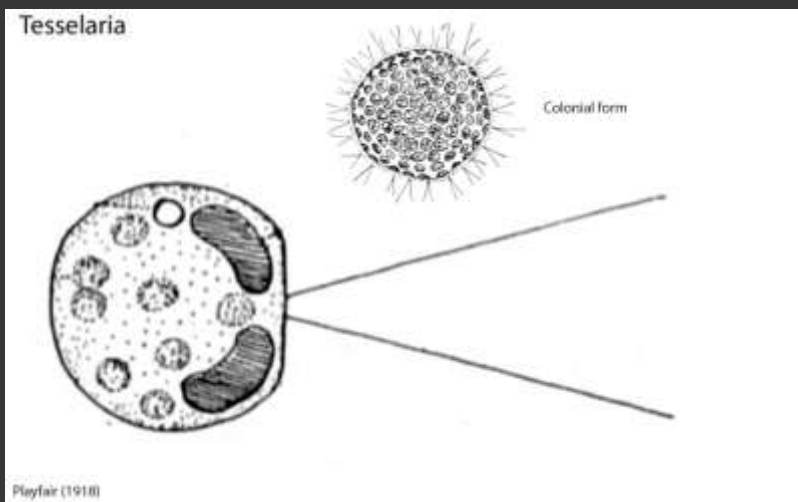
*Mallomonas*



*Synura*



*Synura*



*Tesellaria*

