



Chapter VI

Other Phytoplankton

Department of Oceanography
Xiamen University



Contents

Marine Phytoplankton

Eucaryota 真核生物

Bacillariophyta (硅藻门)

Pyrrophyta (甲藻门)

Chlorophyta (绿藻门)

Chrysophyta (金藻门)

Xanthophyta (黄藻门)

Cryptophyta (隐藻门)

Euglenophyta (眼藻门)

Monera 原核生物

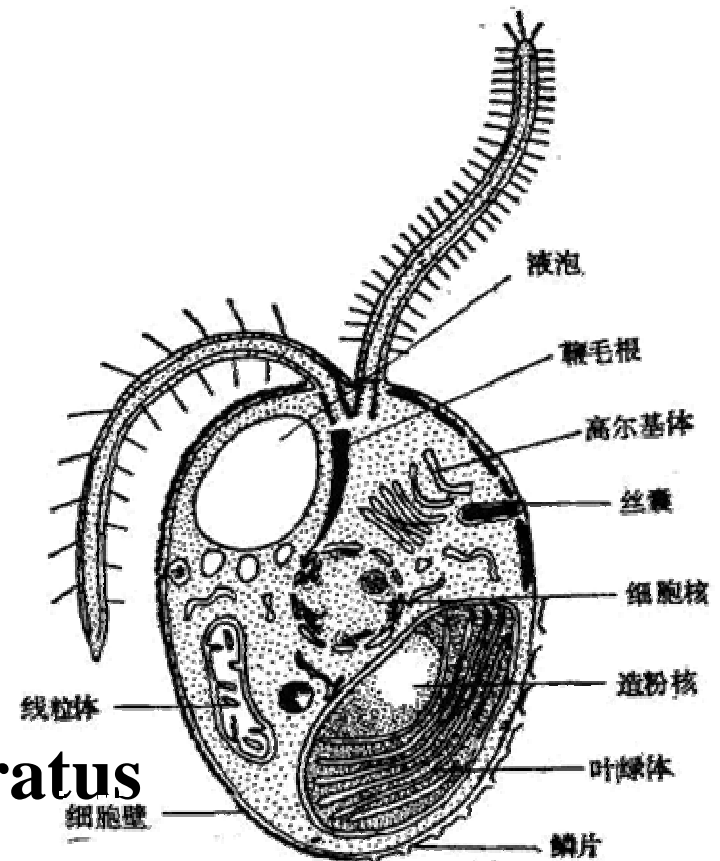
Bacteria (细菌)

Cyanophyta (蓝藻门)

6.1 Chlorophyta(绿藻门)

6.1.1 General Features

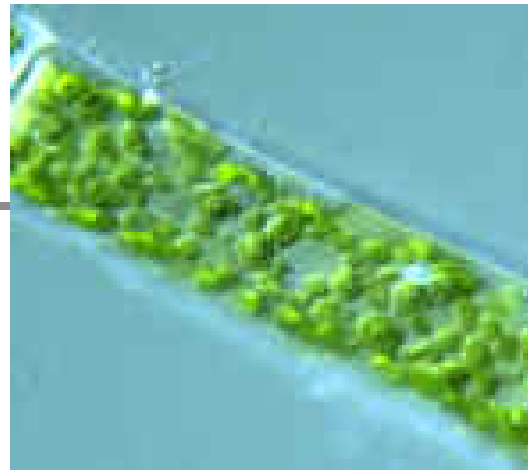
- **Phycobiont Types**
 - unicellular or globular colonies
- **Cell Wall**
 - cellulose microfibril petin
- **Nucleus**
 - one or numerous
- **Flagellum and Flagellar Apparatus**



Chloroplast (叶粒体)



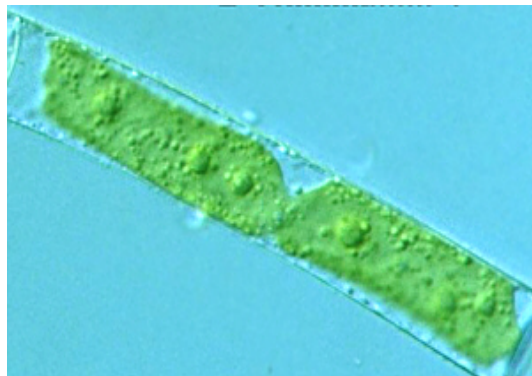
Chalmydomonas
杯形



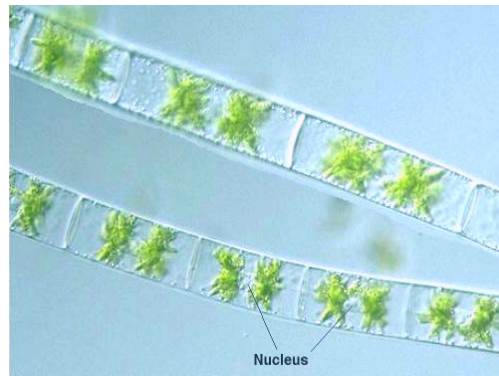
Cladophora
椭圆形



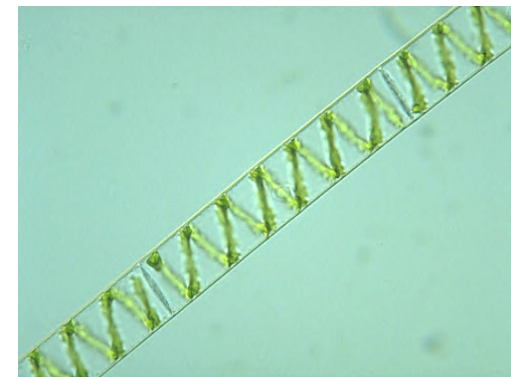
Ulothrix
带状



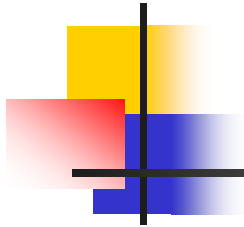
Mougeotia
片状



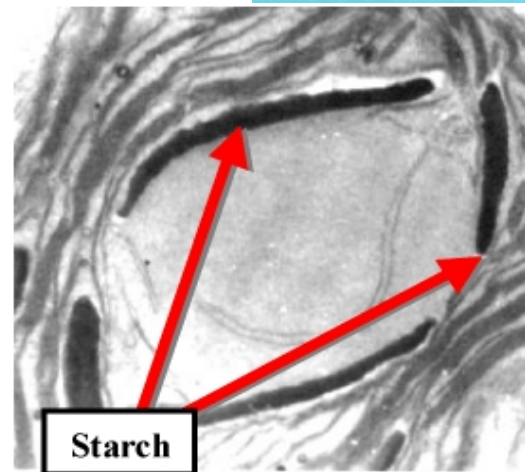
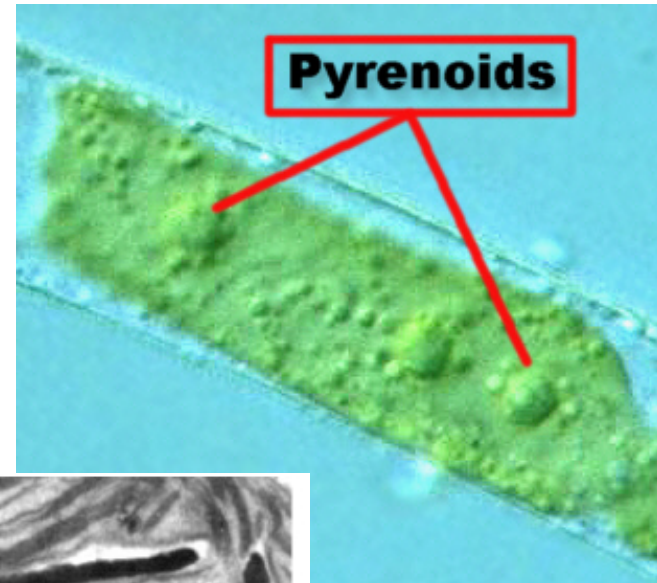
Zygnema
星形



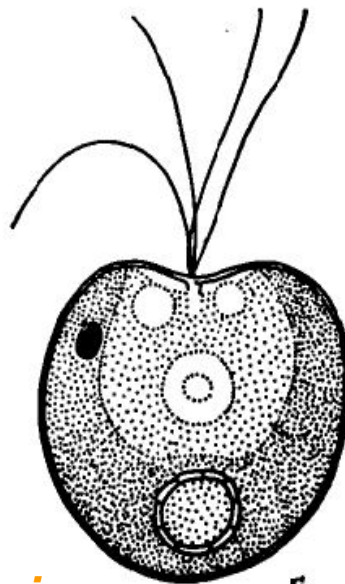
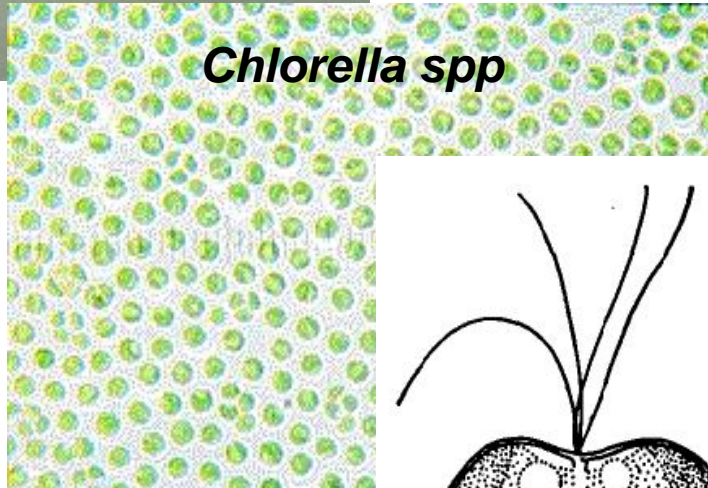
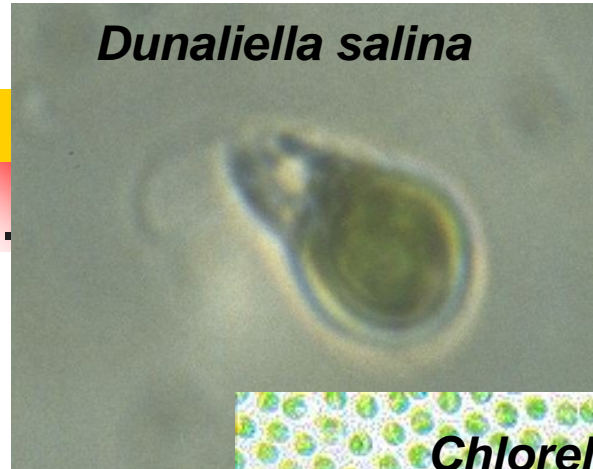
Spirogyra
螺旋形



蛋白核（造粉核）
蛋白质体 淀粉鞘



6.1.2 Classification



绿藻纲

团藻目

衣藻科

杜氏藻属

杜氏盐藻

绿球藻目

卵胞藻科

小球藻属

小球藻

青绿藻纲

塔形藻目

扁藻科

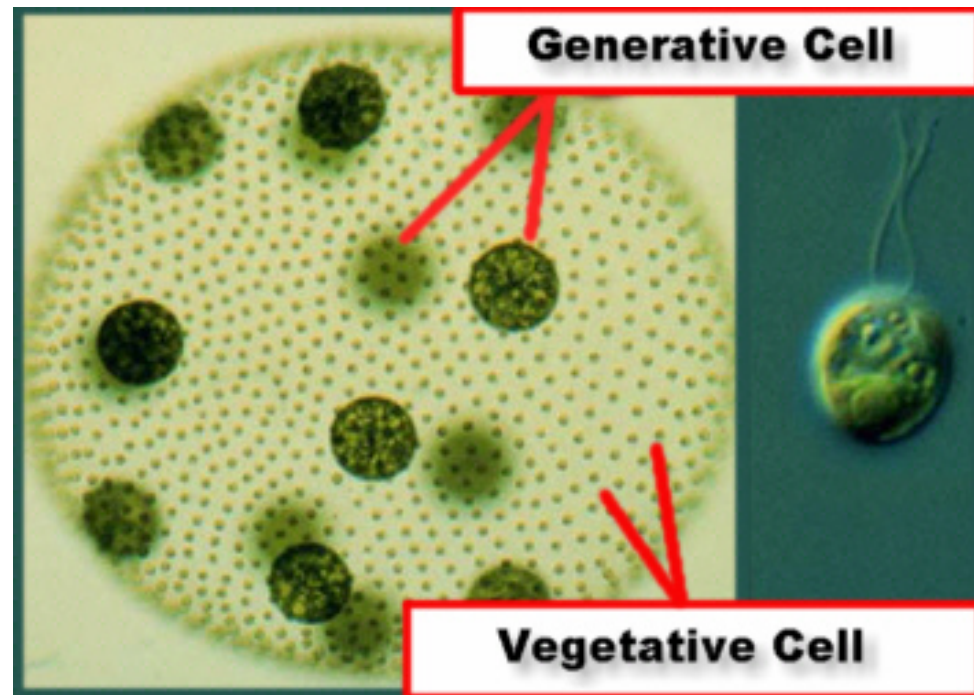
扁藻属

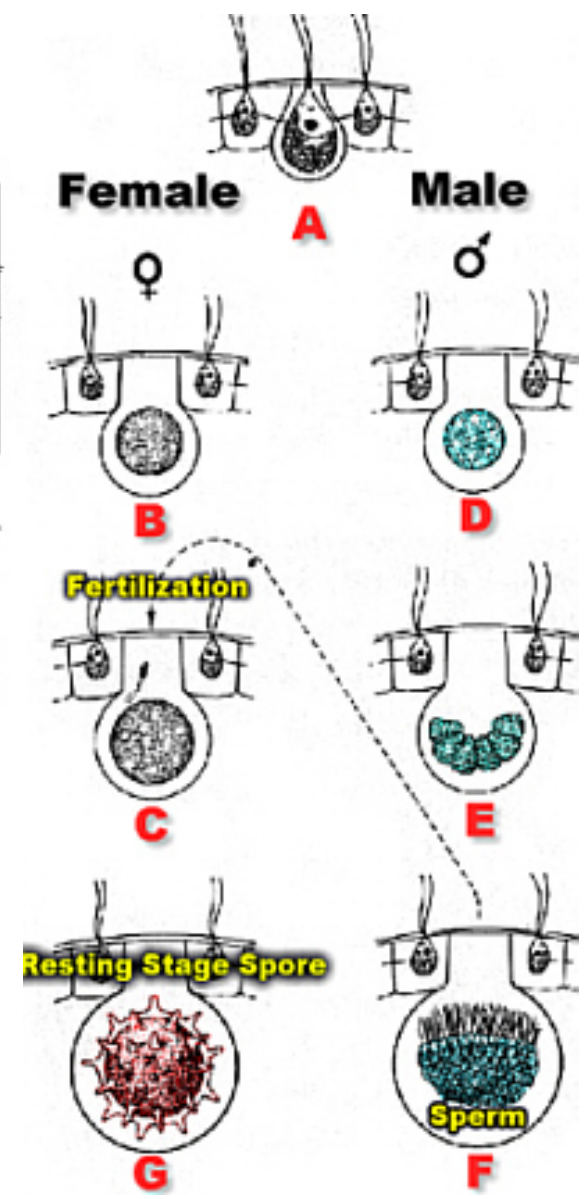
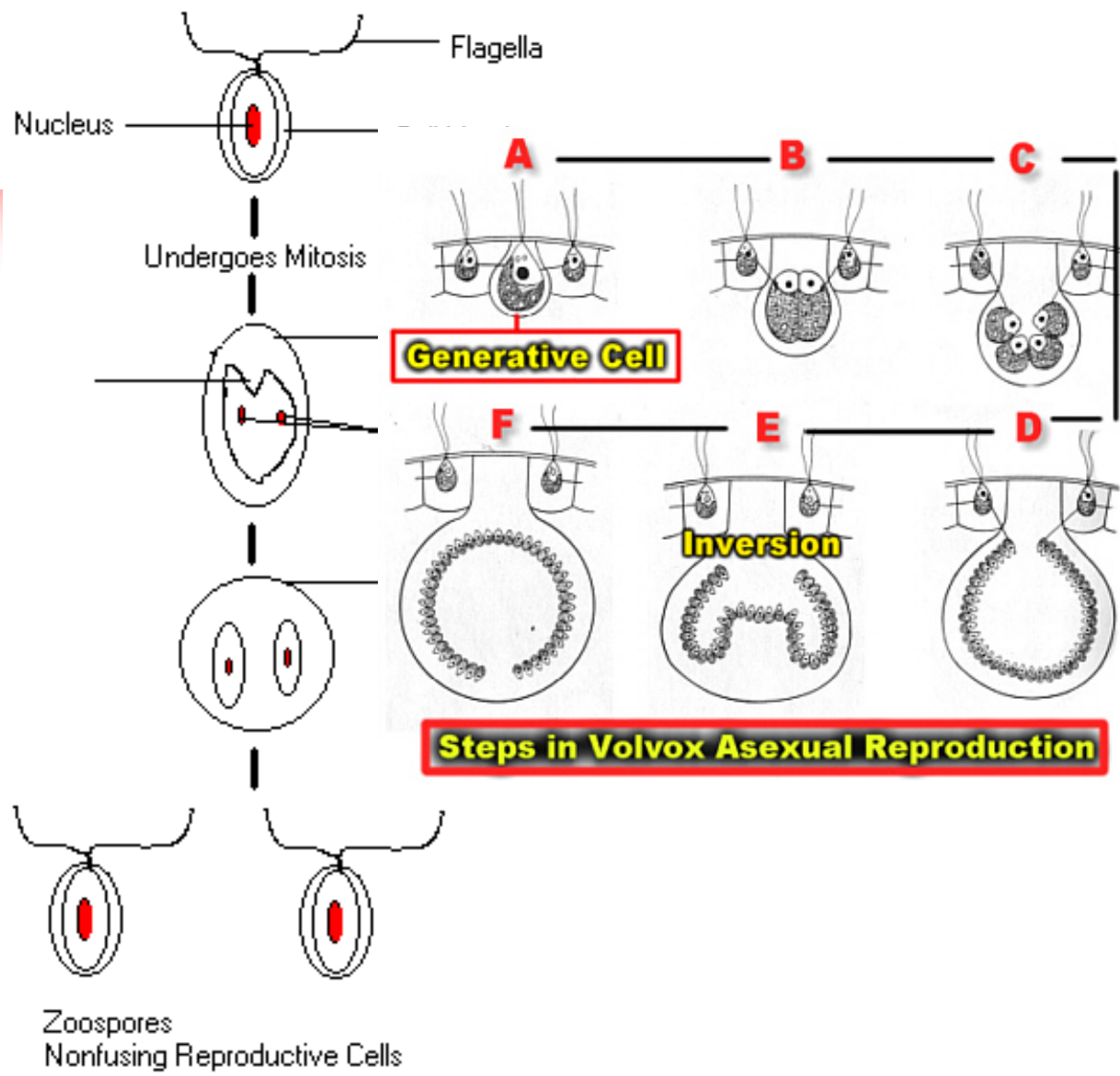
亚心形扁藻

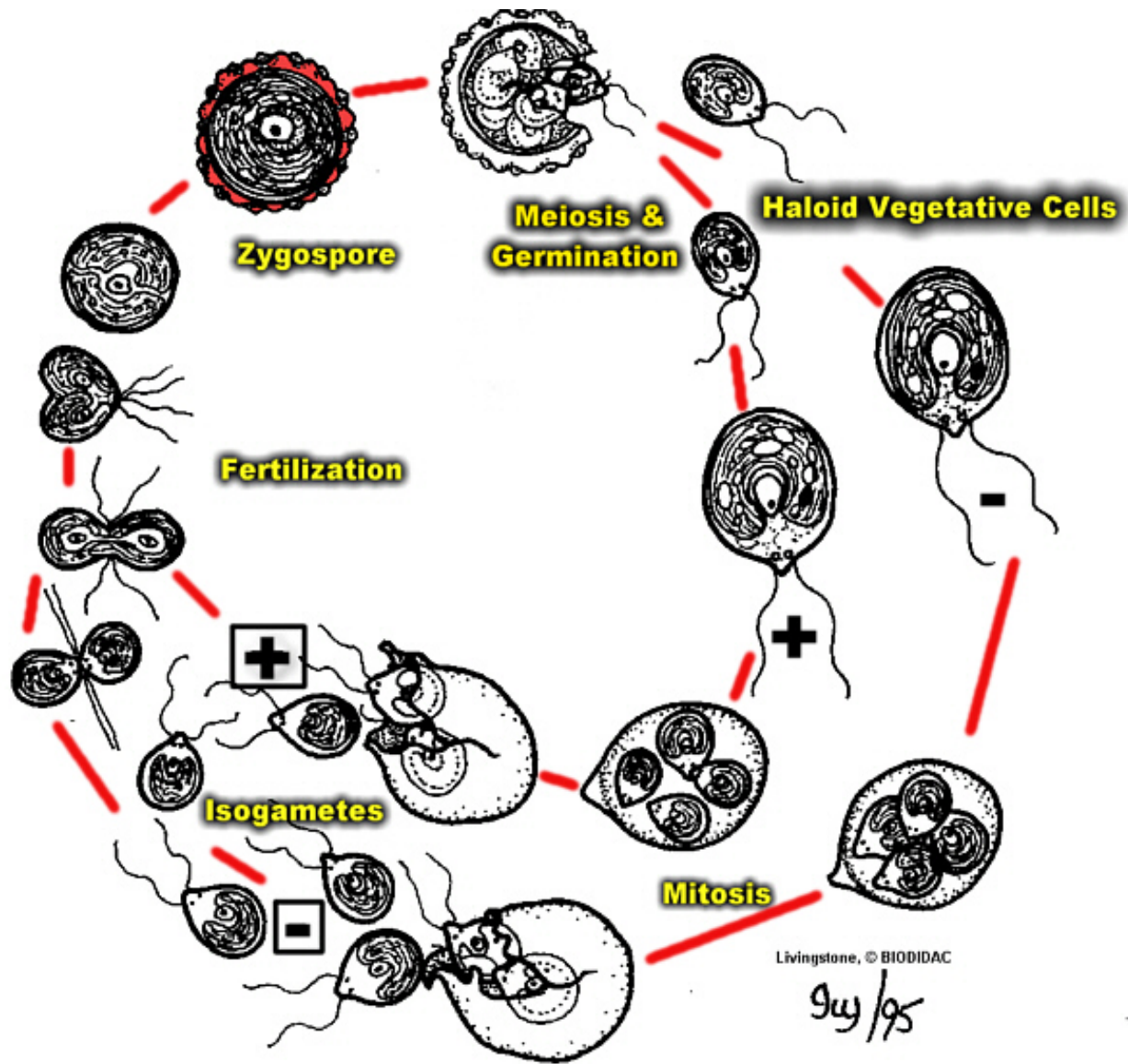
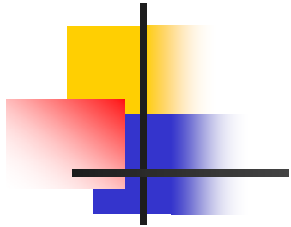
6.1.3 Biology

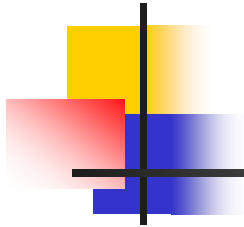
1 Reproduction

- **Vegetable Reproduction**
 - 休止孢子
- **Asexual Reproduction**
 - 游孢子 静孢子
- **Sexual Reproduction**
 - 同配 异配 卵配









2 Habits

3 Economic Significance

Food

Purify seawater





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Marine Phytoplankton

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Euglenophyta (眼藻门)

Monera 原核生物

Bacteria (细菌)

Cyanophyta (蓝藻门)

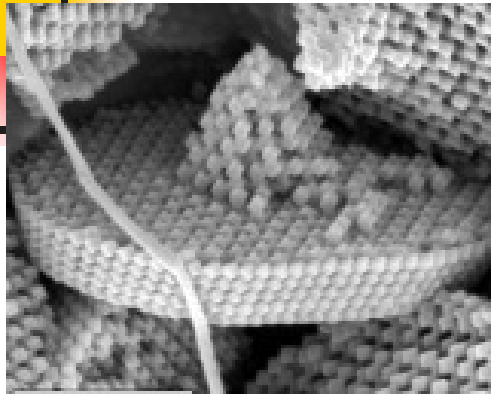


6.2 Chrysophyta (金藻门)

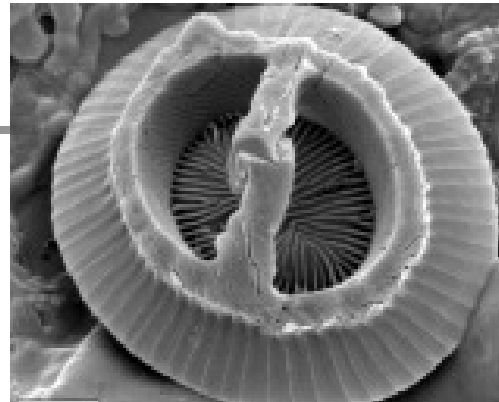
6.2.1 Morphology

- Cell wall
- Chloroplast and Pigments
- Storge
- Pyrenoid
- Nucleus and Vacuole
- Flagella

■ Coccolith (球石粒)



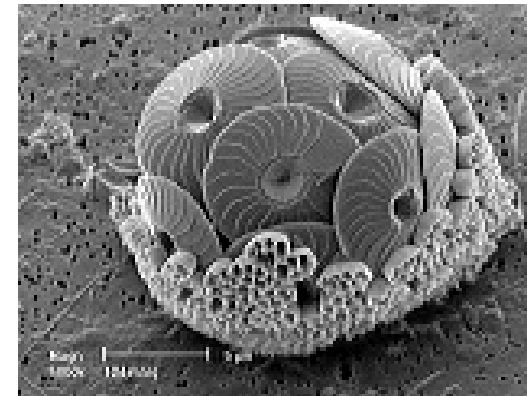
全球石粒
Syracolithus catilliferu



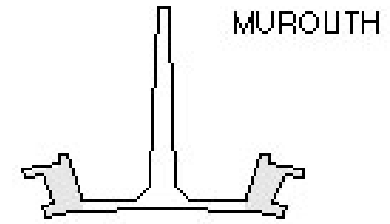
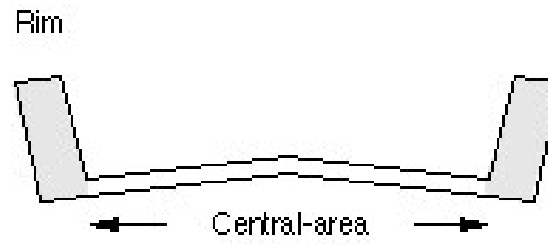
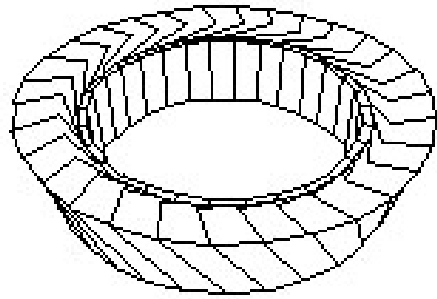
异球石粒
Gephyrocapsa oceanica *Eiffelithus eximius*



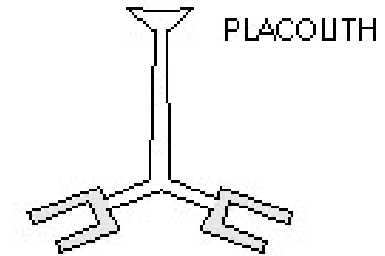
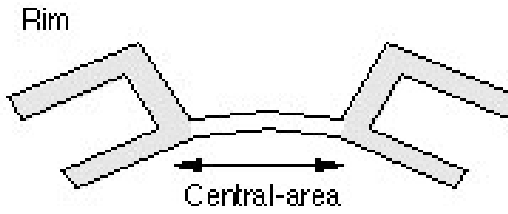
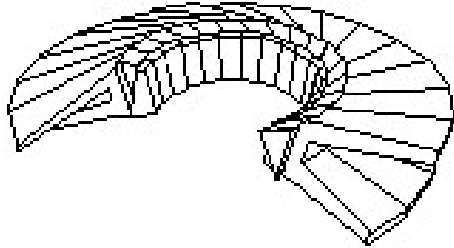
颗石球
Gephyrocapsa oceanica *Emiliana huxleyi*



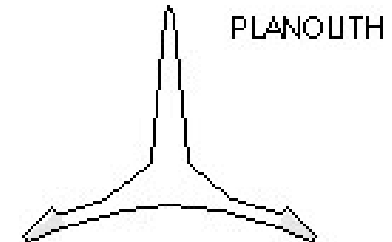
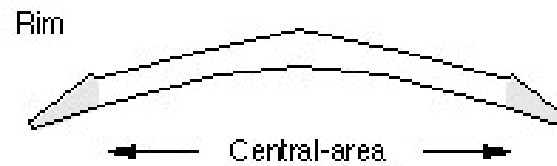
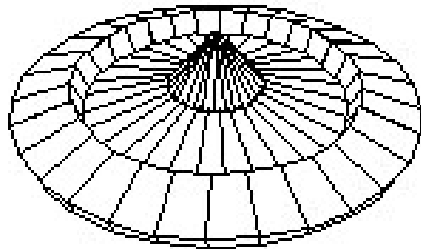
Calcidiscus leptoporus with
Syracolithus quadriperforatus



MURCOUTH



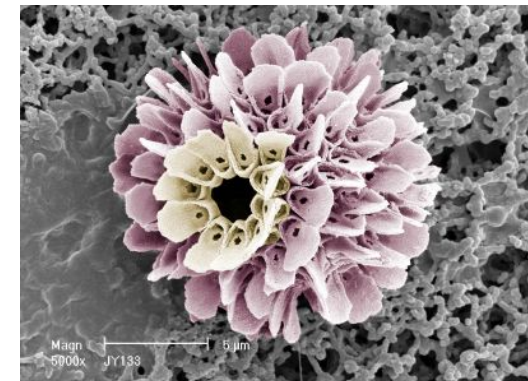
PLACOUTH



PLANCOUTH

HETEROCOCCOLITH SHAPES IN PROFILE

***Periphylophora mirabilis*
(holococcolith)**



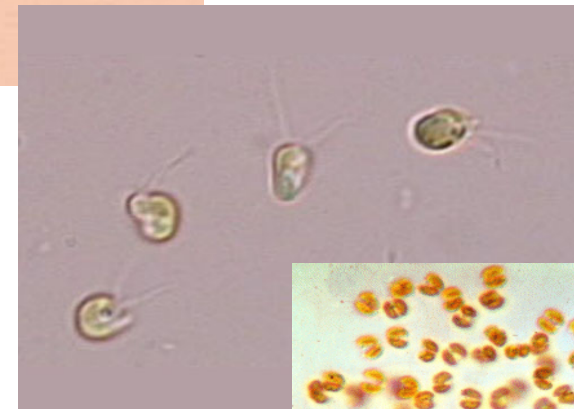
6.2.2 Classification

1 定鞭金藻纲
钙板金藻目
钙板金藻科
钙板金藻属



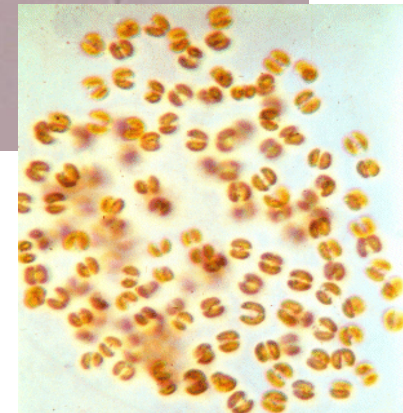
*Gephyrocapsa
oceanica*

等鞭藻目
等鞭金藻科
等鞭金藻属
球等鞭金藻

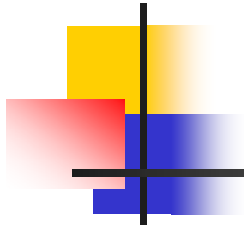


*Isochrysis
galbana*

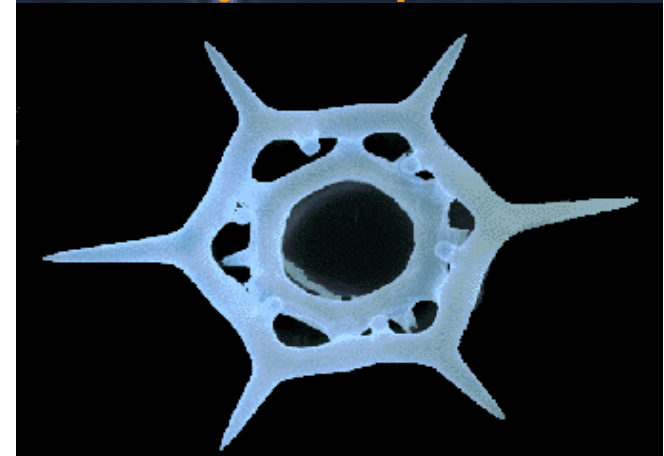
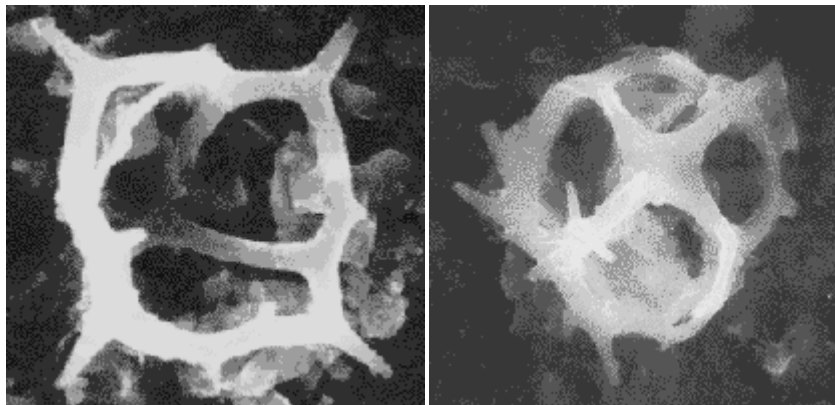
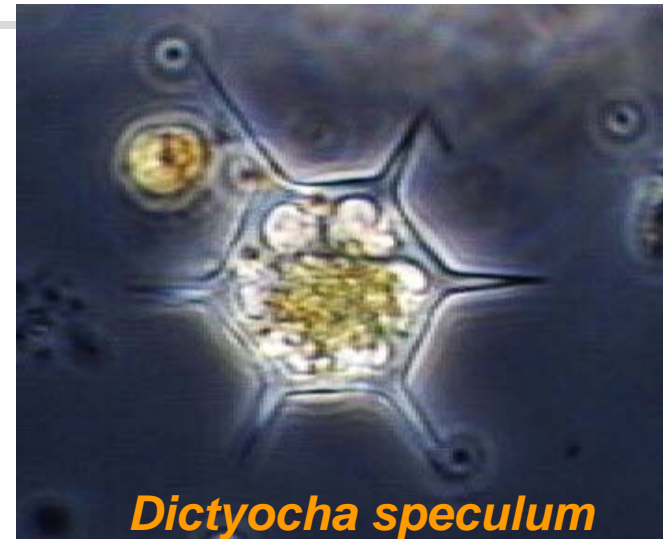
金囊藻目
金囊藻科
褐胞藻属
褐胞藻



*Phaeocystis
pouchetii*



2 金藻纲
 硅鞭藻目
 网骨藻科
 网骨藻属
 六角网骨藻



6.2.3 Biology and Economic Significance

- **Distribution**

- **Reproduction**

 - Asexual Reproduction**

 - 细胞分裂 游孢子 静孢子

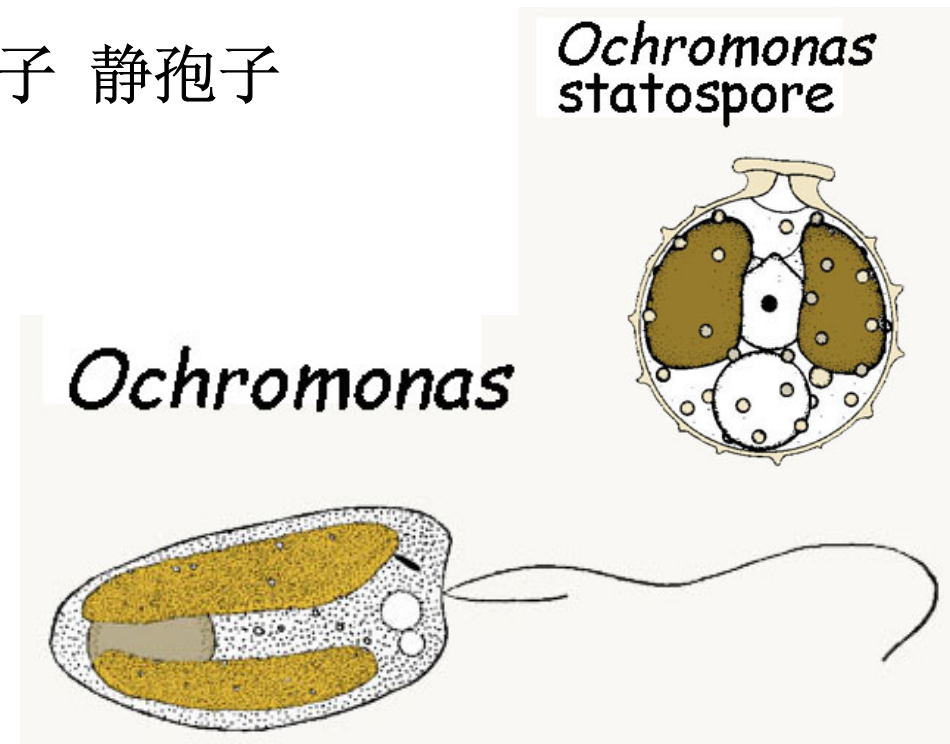
 - Sexual Reproduction**

- **Economic Significance**

 - Primary Production**

 - Diet**

 - Red Tide**





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Xanthophyta (黄藻门)

Cryptophyta (隐藻门)

Euglenophyta (眼藻门)

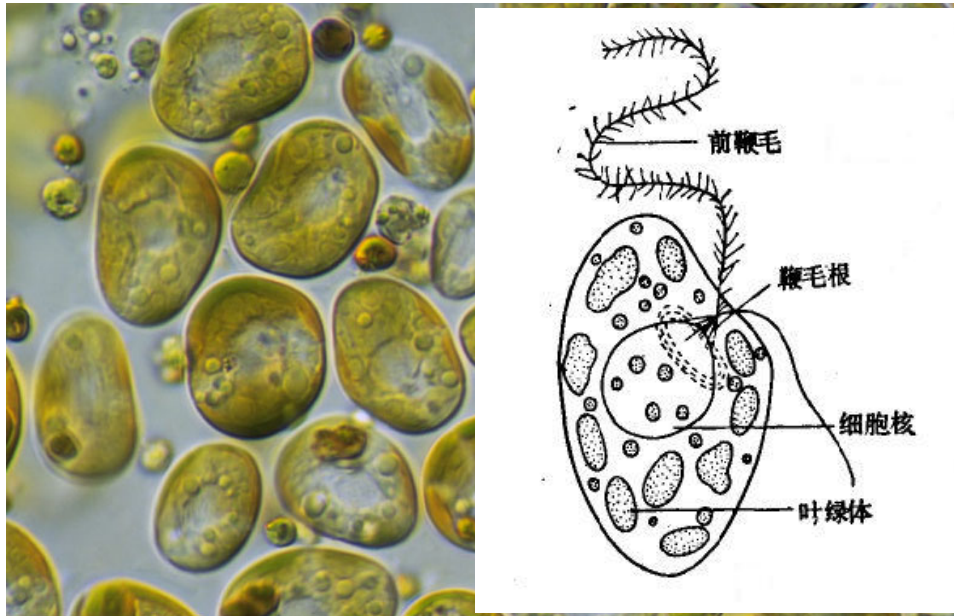
Monera 原核生物

Bacteria (细菌)

Cyanophyta (蓝藻门)

6.3 Xanthophyta (黄藻门)

6.3.1 Characteristic Features



- Cell Wall
- Chloroplast
- Storge
- Nucleus
- Flagella

6.3.2 Classification

黄藻纲

异鞭藻目

滑盘藻属

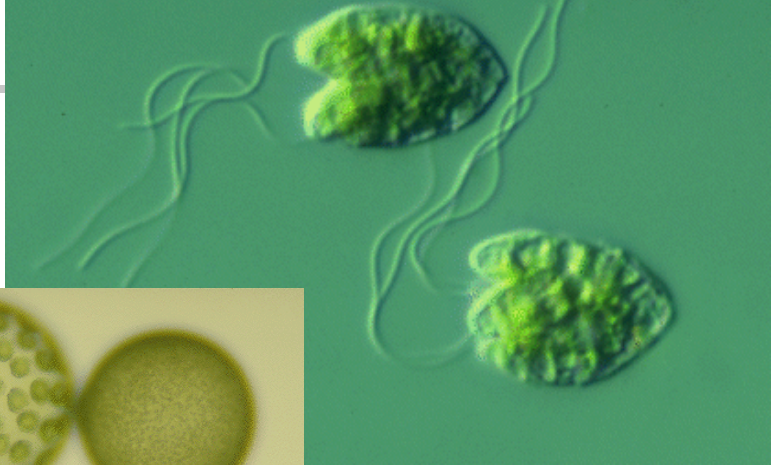
柄球藻目

海球藻属

异囊藻目

浮囊藻属

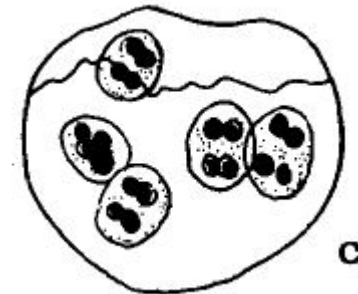
Halosphaera minor
Ostenfeld



6.3.3 Reproduction

Asexual Reproduction

细胞分裂 游孢子 静孢子 囊胞





Contents

Marine Phytoplankton

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Xanthophyta (黄藻门)

Cryptophyta (隐藻门)

Euglenophyta (眼藻门)

Monera 原核生物

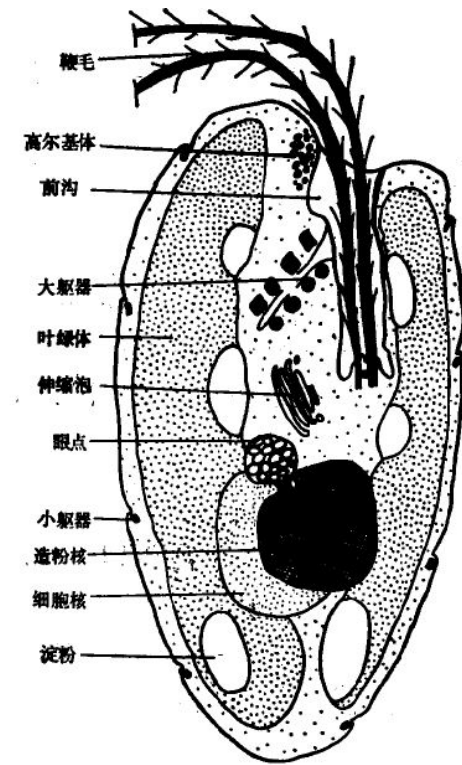
Bacteria (细菌)

Cyanophyta (蓝藻门)

6.4 Cryptophyta (隐藻门)

6.4.1 Morphology

- 1 周质体
- 2 鞭毛
- 3 叶绿体及色素
- 4 躯器



6.4.2 Biology

Reproduction

Distribution



Contents

Marine Phytoplankton

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Cryptophyta (隐藻门)

Euglenophyta (眼藻门)

Monera 原核生物

Bacteria (细菌)

Cyanophyta (蓝藻门)

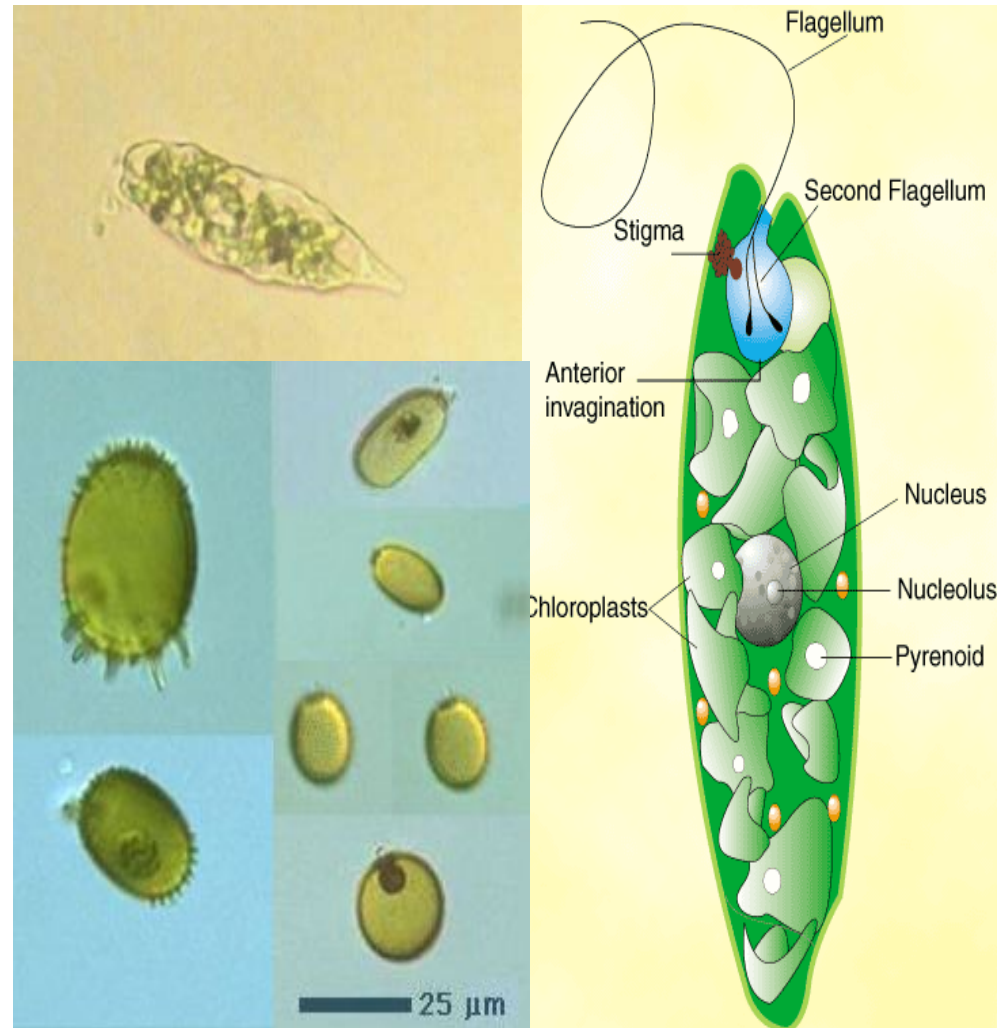
6.5 Euglenophyta (眼藻门)

6.5.1 Morphology

- 1 周质膜
- 2 鞭毛
- 3 叶绿体
- 4 储藏物
- 5 眼点

6.5.2 Biology

Reproduction
Distribution





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Chrysophyta (金藻门)

Xanthophyta (黄藻门)

Cryptophyta (隐藻门)

Euglenophyta (眼藻门)

Monera 原核生物

Bacteria (细菌)

Cyanophyta (蓝藻门)

Monera

6.6 Bacteria (细菌)

一 一般形态特征

微型 具鞭毛 形态多样 生长缓慢 分解蛋白质能力强

二 分类、鉴定

革兰氏阴性、阳性

自由生活、共生、寄生

自养性 异养性

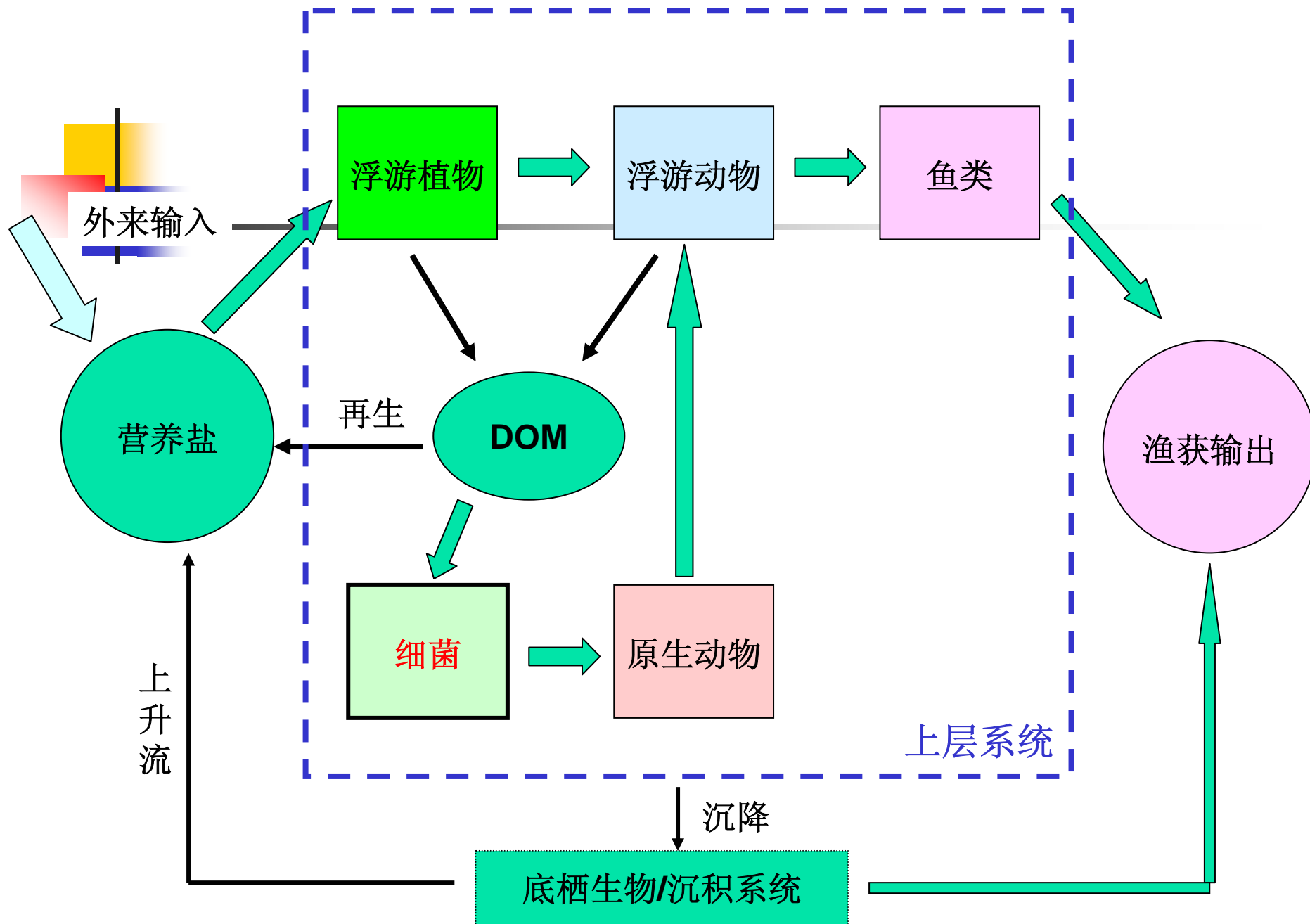
三 生物学与经济意义

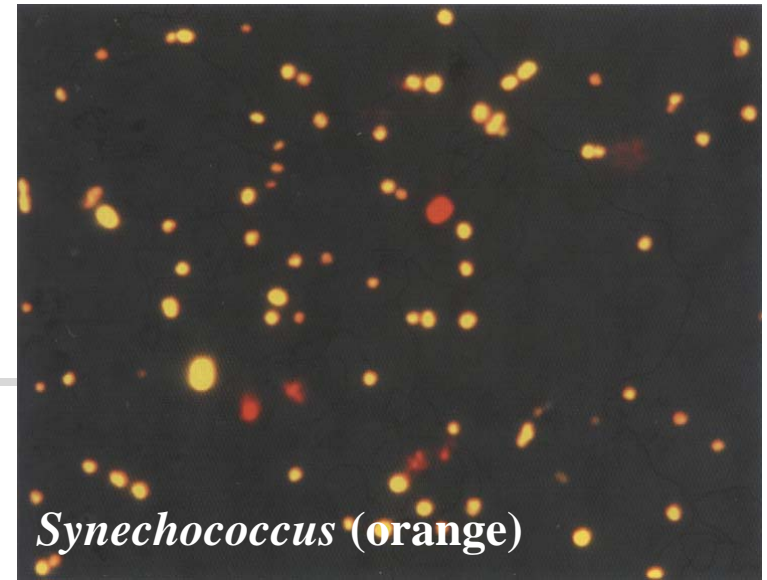
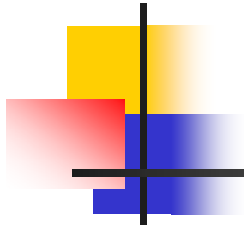
1 生物地球化学循环

2 发光

3 经济意义







- ***Synechococcus*** 光合自养 蓝细菌 (1979)
- ***Prochlorococcus*** 原绿球藻 产氧光合自养原核生物 二乙基叶绿素 (1988, 1992)
- **Archaea** 海洋古菌 (1990)
- **AAPB** aerobic anoxygenic phototrophic bacteria 好氧不产氧光合异养细菌 (1979, 2001–2002) 专性好氧、营光合作用而生长不依赖于光，细菌叶绿素含量低于厌氧光合细菌，类胡萝卜素多样



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Cryptophyta (隐藻门)

Euglenophyta (眼藻门)

Monera 原核生物

Bacteria (细菌)

Cyanophyta (蓝藻门)

6.7 Cyanophyta (蓝藻门)

6.7.1 Morphology

- Cell Wall

- Protoplasm

类囊体 中央体 气泡

- Locomotion

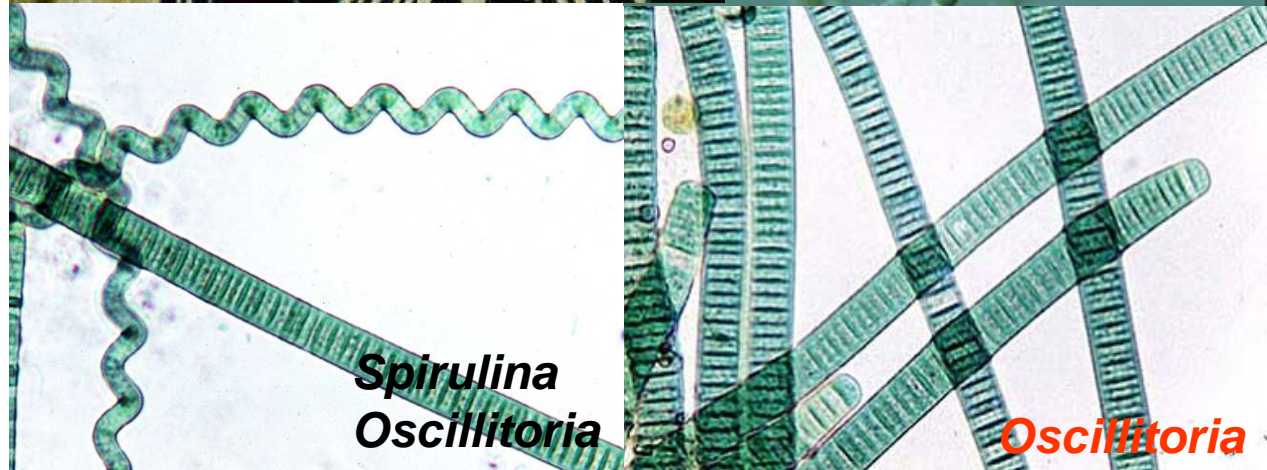


6.7.2 Classification

蓝藻纲
颤藻目
颤藻科
束毛藻属
束毛藻



念珠藻科
念珠藻属



6.7.3 Biology

Distribution

Reproduction

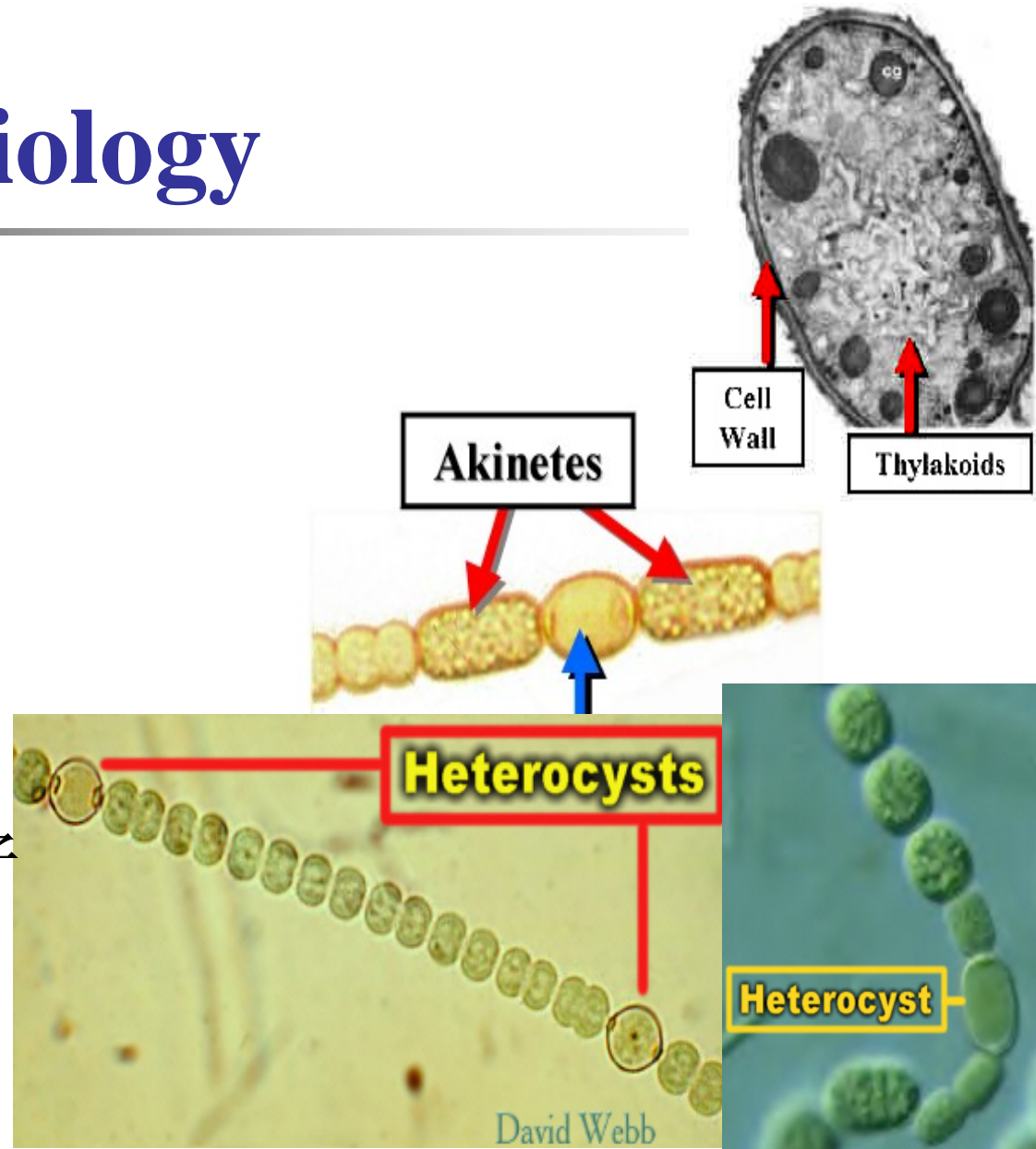
营养生殖

厚壁孢子

内生孢子 外生孢子

异形胞

Symbiosis



6.7.4 Economic Significance

Nitrogen- fixing

Red Tide

Food

