

The background of the slide is a microscopic image of numerous rod-shaped bacteria, likely Bacillus or E. coli, appearing in various orientations and sizes. The bacteria are rendered in shades of teal and green, matching the overall color scheme of the slide. The text is overlaid on the right side of the image.

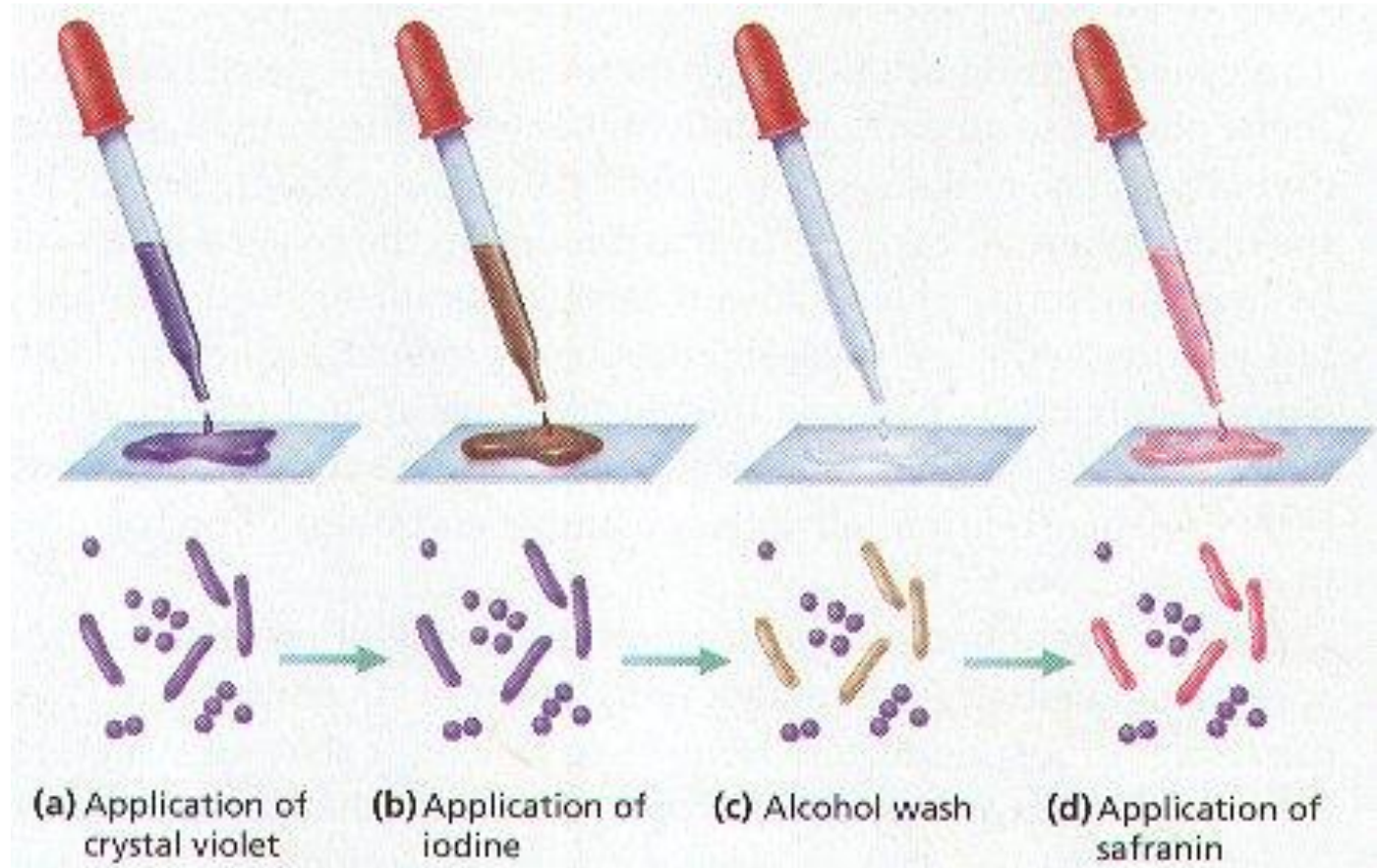
生物多樣性單元 實驗23-細菌

原核生物 (Prokaryotes)

- 根據16S rRNA ,分屬真細菌 (Eubacteria) 和古生菌 (Archaea)
- 單細胞 (Unicellular)
- 沒有核膜，沒有胞器 (no nuclear membrane, no organelle)
- 主要生殖方式為二裂法 (fission)
- 單細胞或形成菌落 (colony)
- 最早出現，種類多，分布廣

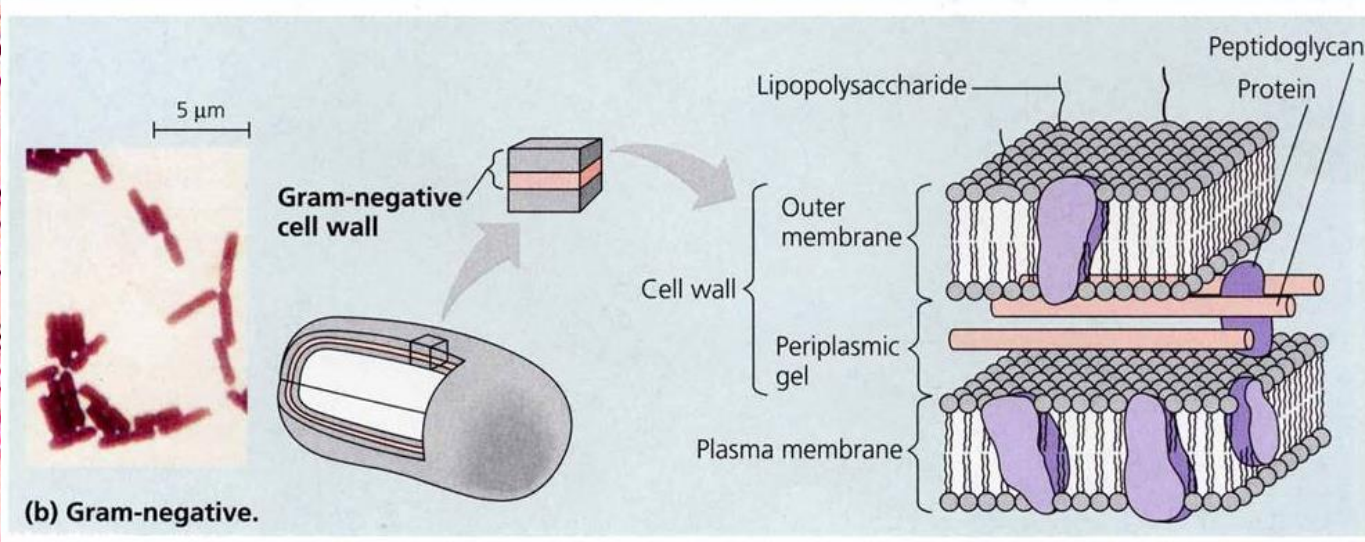
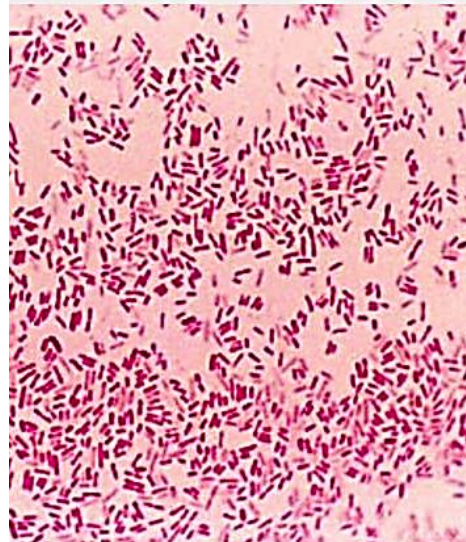
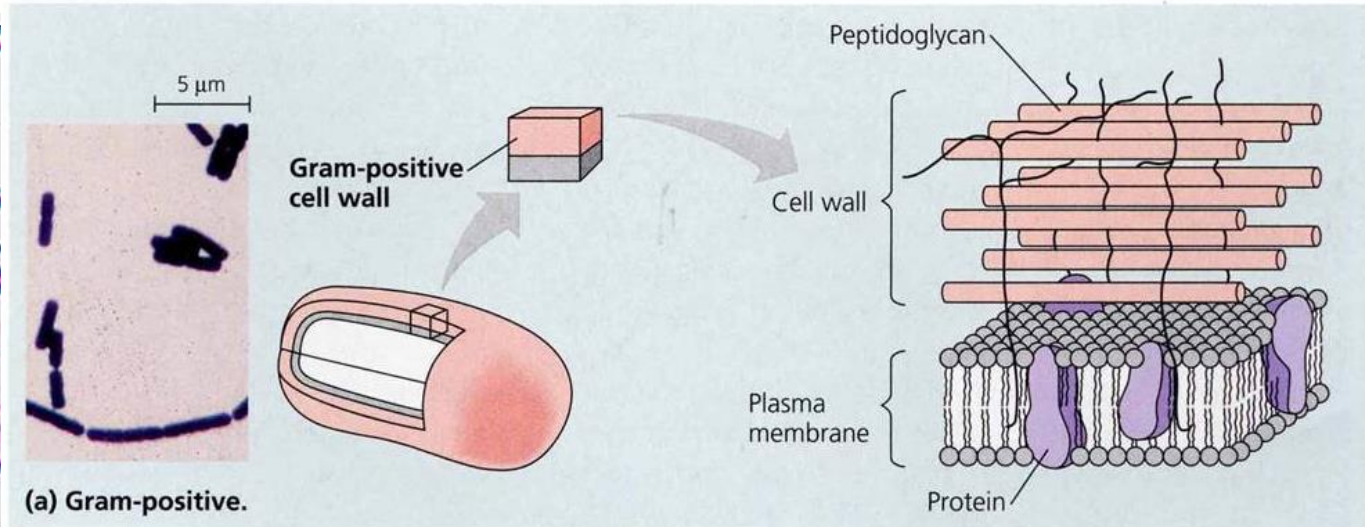
革蘭氏染色 (Gram Stain)

1. **結晶紫(crystal violet) - 30s**
primary stain，將所有細胞染成藍紫色。
2. **Gram' s iodine - 1 min**
為媒染劑 (mordant)，增加細胞與染劑之作用，使細胞染色增強。
3. **95% ethanol - 10~30s**
去染劑 (decoloring agent)，可溶解lipid，使G(-)的染色脫色。
4. **Safranin O - 30s**
為對比染色劑(counterstain)，使脫色的G(-)染成紅色。



細菌的分類 : 革蘭氏染色 (Gram Stain)

- 格蘭氏陽性菌 G+
 - 藍紫色 (結晶紫)
 - 細胞壁肽聚醣厚
- 格蘭氏陰性菌 G-
 - 紅色 (蘇丹紅)
 - 細胞壁肽聚糖薄
 - 具外膜，致病菌



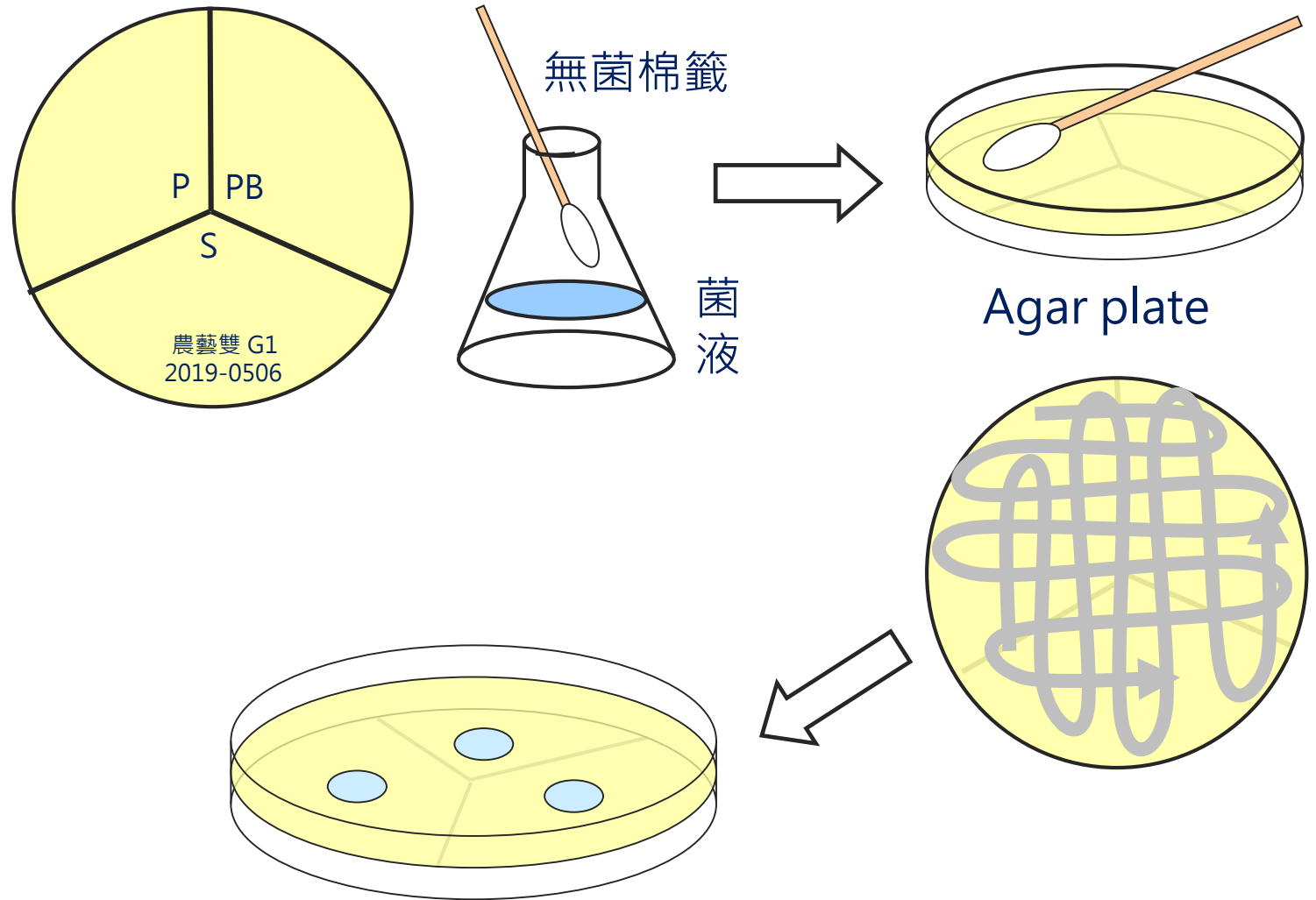
抗生素敏感性測驗

Antibiotic susceptibility test

- 菌種 (Bacteria)
 - 大腸桿菌 (*Escherichia coli*)
 - 枯草桿菌 (*Bacillus subtilis*)
- 抗生素紙錠 (Antibiotic discs)
 - Penicillin (P) 抑制細菌細胞壁中肽聚糖鏈接 → G+
 - Polymyxin B(PB) 改變脂多糖層通透性，破壞細菌細胞 → G-
 - Streptomycin (S) 作用於核糖體抑制蛋白質合成 → Both G+ and G-

抗生素敏感性測驗方法

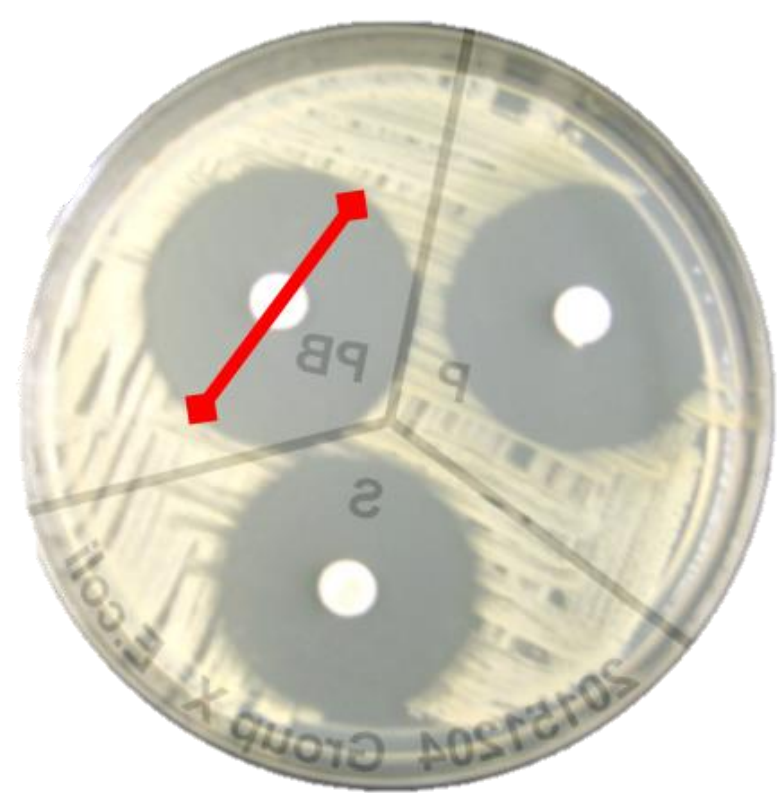
- 洗手消毒
- 在培養皿背面標示
 - 班級，組別，日期
- 將無菌棉籤沾取菌液
- 以Z字形畫法將細菌塗滿於洋菜膠上
- 放置抗生素紙錠
- 37°C 生長箱培養24 hrs



抗生素敏感性測驗

觀察結果，拍照與紀錄

- 培養24小時後，於隔天中午來普植準備室看結果

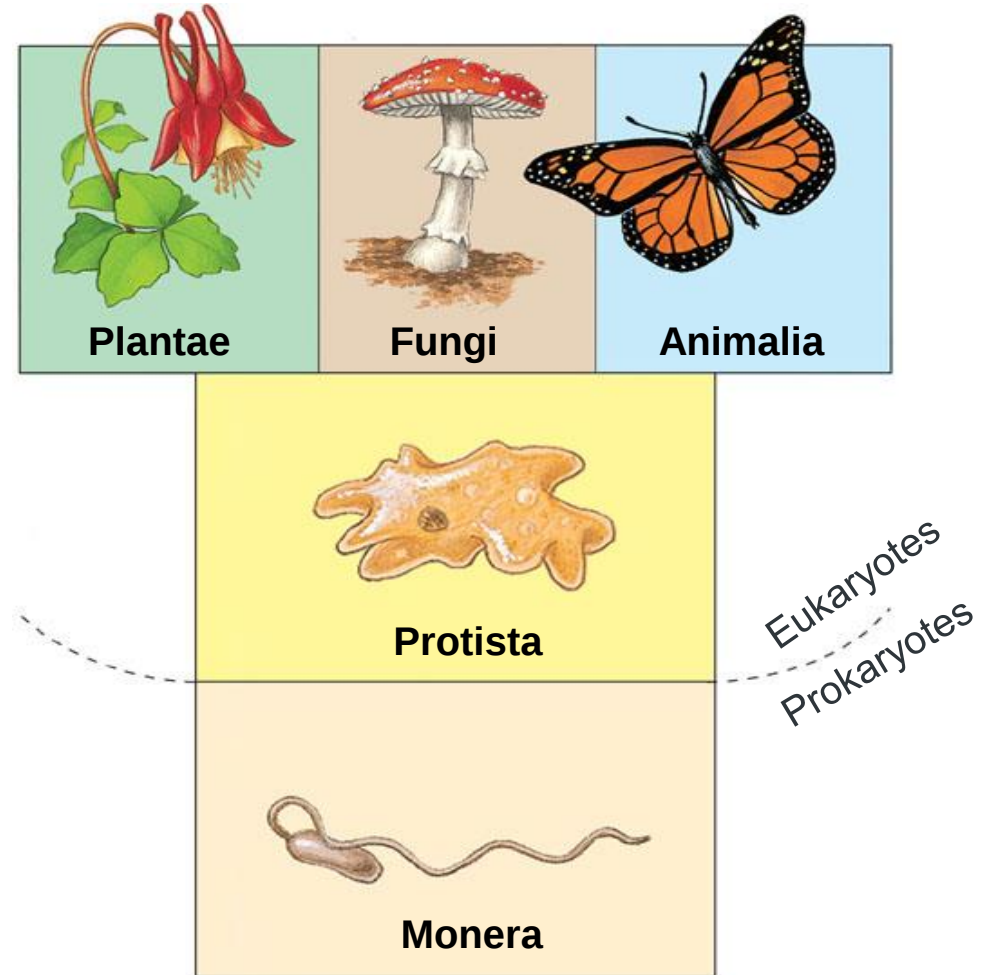


	抑菌圈直徑	
	Bacteria A	Bacteria B
Penicillin		
Polymyxin B		
Streptomycin		
Species		

生物多樣性單元
實驗24、25 藻類

藻類

- 具有光合作用的能力
- 地球上主要的初級生產者
- 原屬於植物界
- 目前分類歸屬於
 - 原核生物界 (Monera)
 - 原生生物界 (Protista)



Robert Whittaker 1969

藻類的生殖

有性生殖 (環境惡劣)

- 同形配子 (isogamy)
- 不同形配子 (anisogamy)
- 精卵結合 (oogamy)

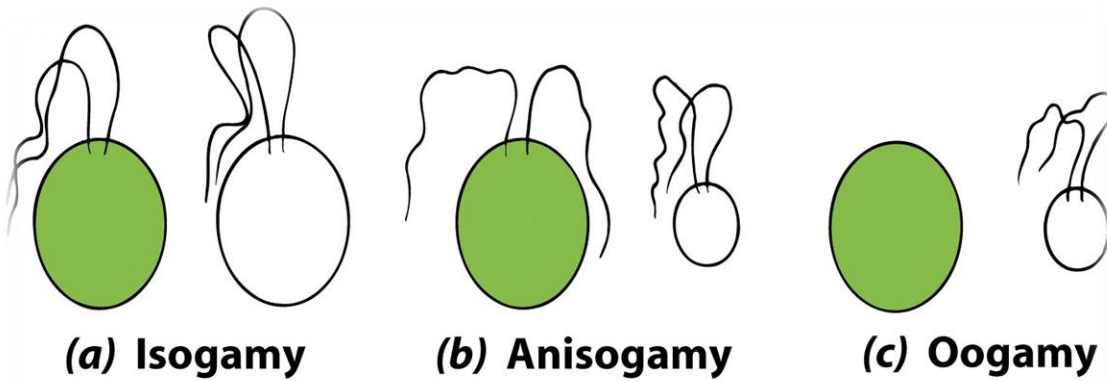
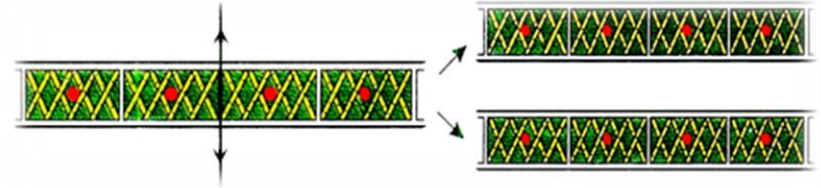


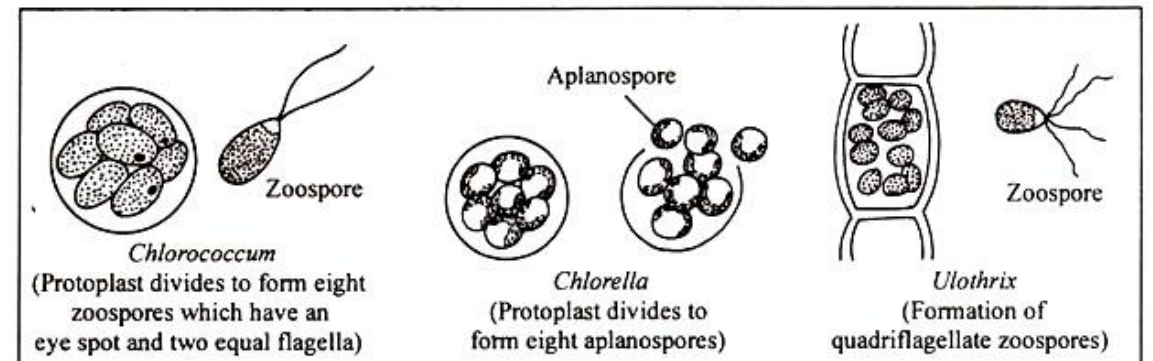
Figure 15-15
Biology of Plants, Seventh Edition
© 2005 W. H. Freeman and Company

無性生殖

- 斷裂 (fragmentation)



- 動孢子 (zoospore)
- 不可動孢子 (aplanospore)



永久玻片與新鮮水樣

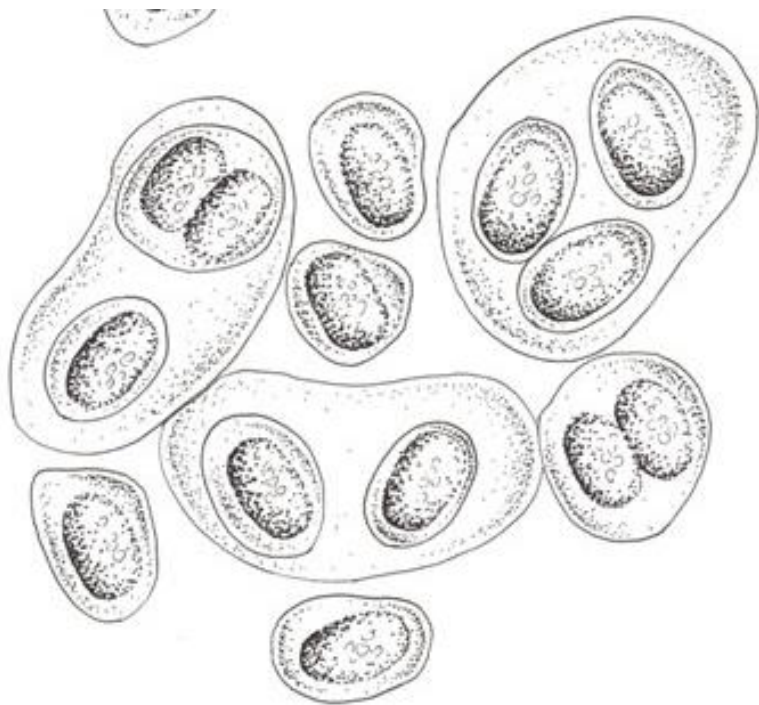
1. Cyanophyta	藍綠藻門	<i>Gloeocapsa</i> sp. (藍鼓藻) <i>Chroococcus</i> sp. (色球藻) <i>Anabaena</i> sp. (念珠藻) <i>Oscillatoria</i> sp. (顫藻)
3. Chlorophyta	綠藻門	<i>Chlamydomonas</i> sp. (單胞藻) <i>Spirogyra</i> sp. (水綿) <i>Pediastrum</i> sp. (星盤藻) <i>Closterium</i> sp. (新月藻) <i>Cosmarium</i> sp. (鼓藻)
4. Charophyta	輪藻門	<i>Chara</i> sp. (輪藻)
5. Euglenophyta	裸藻門	<i>Euglena</i> sp. (眼蟲) <i>Phacus</i> sp. (扁眼蟲)
6. Phaeophyta	褐藻門	<i>Laminaria</i> sp. (昆布)
8. Dinophyta	渦鞭毛藻門	<i>Ceratium</i> sp. (角甲藻) <i>Peridinium</i> sp. (多甲藻)
9. Rhodophyta	紅藻門	<i>Gelidium</i> sp. (石花菜)
10. Cryptophyta	隱藻門	<i>Cryptomonas</i> sp. (隱藻)
12. Bacillariophyta	矽藻門	Diatom (矽藻)

Cyanophyta 藍綠藻門

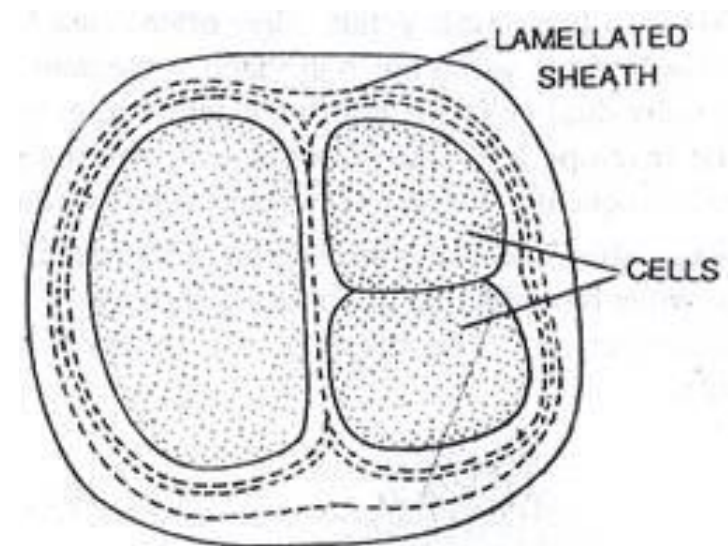
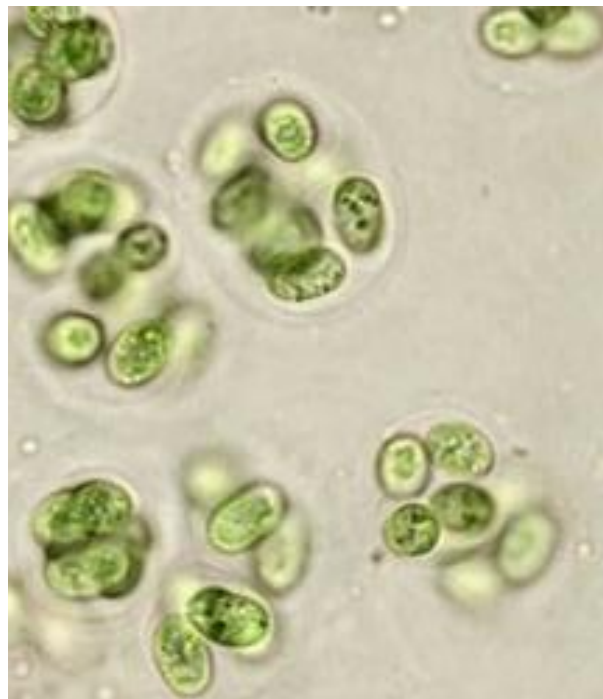
- 原核生物
- 葉綠素 a Chlorophyll a
- 藻膽色素 Phycobilins
- 藻青(藍)素 Phycocyanin
- 藻紅素 Phycoerythrin
- 儲存物質：glycogen
- *Gloeocapsa* sp. (藍鼓藻)
- *Chroococcus* sp. (色球藻)
- *Anabaena* sp. (念珠藻)
- *Oscillatoria* sp. (顫藻)

Cyanophyta 藍綠藻門

- 土壤表層
- 顏色? 膠質層形態?



Gloeocapsa sp. (藍鼓藻)



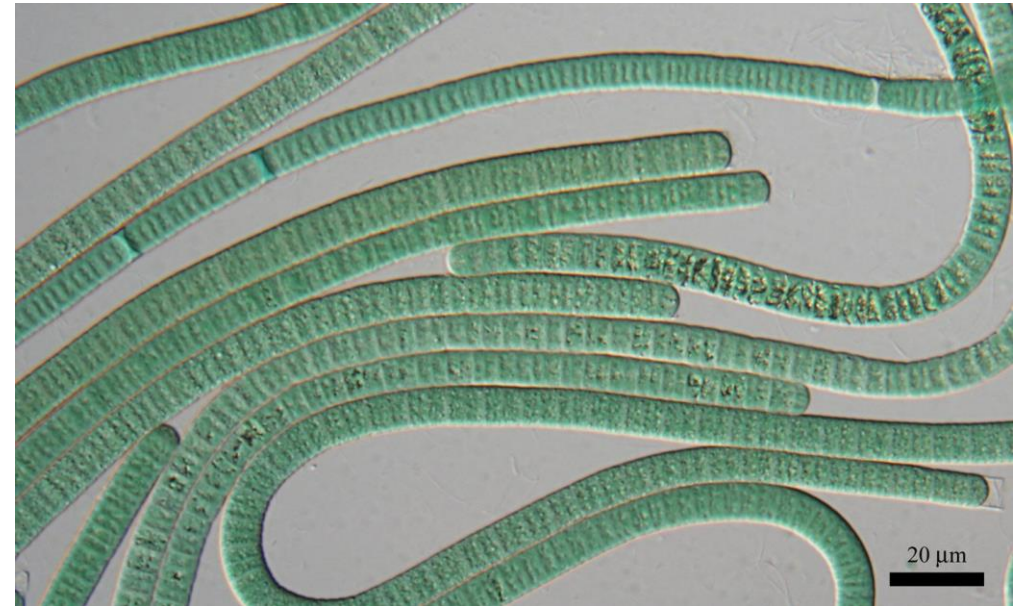
Chroococcus sp. (色球藻)

Cyanophyta 藍綠藻門

- *Anabaena* sp. (念珠藻)
 - 滿江紅 (*Azolla* sp.) 葉中
 - **Heterocyst** (異形細胞)
 - **Akinete** (厚壁孢子)



- *Oscillatoria* sp. (顫藻)
 - 土壤表層
 - 黏液鞘
 - 顫動



Chlorophyta 綠藻門

- 植物體多呈綠色
- 葉綠素a、b
- 儲存物質：澱粉
- 細胞壁：纖維素
- *Spirogyra* sp. (水綿)
- Desmids (鼓藻類)
 - *Closterium* sp. (新月藻)
 - *Cosmarium* sp. (鼓藻)
- 新鮮水樣
 - 醉月湖
 - 生態池
 - 共同教室

Chlorophyta 綠藻門

- 是單細胞還是群體？
- 形狀？顏色？
- 葉綠體與蛋白核
- 鞭毛或棘刺？



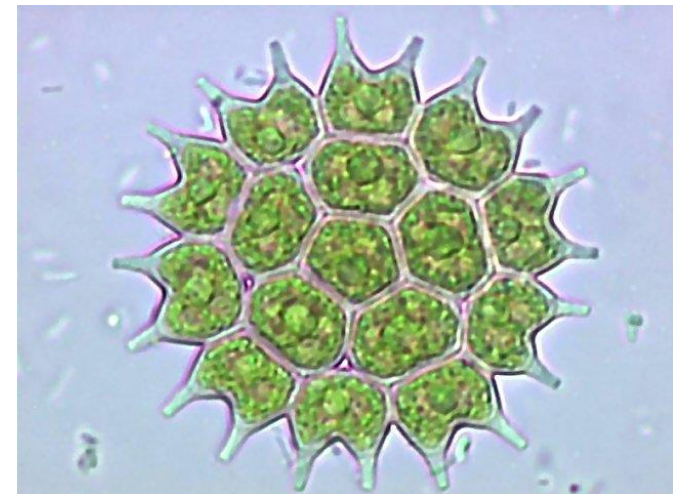
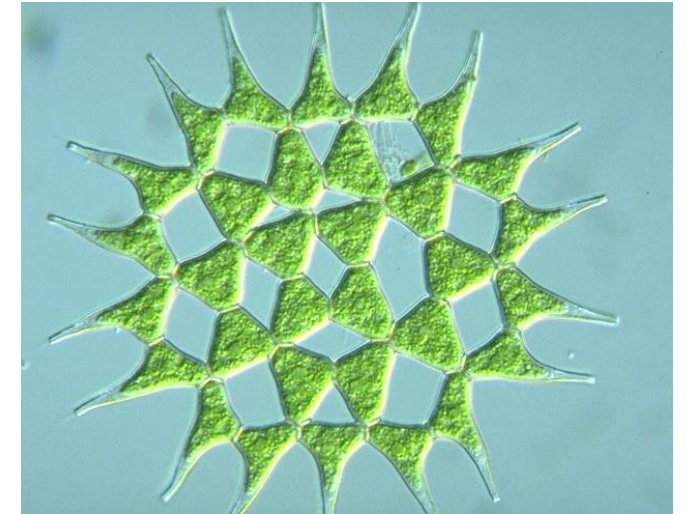
Chlamydomonas sp. 單胞藻



Micractinium sp. 星芒藻



Coelastrum sp. 空星藻

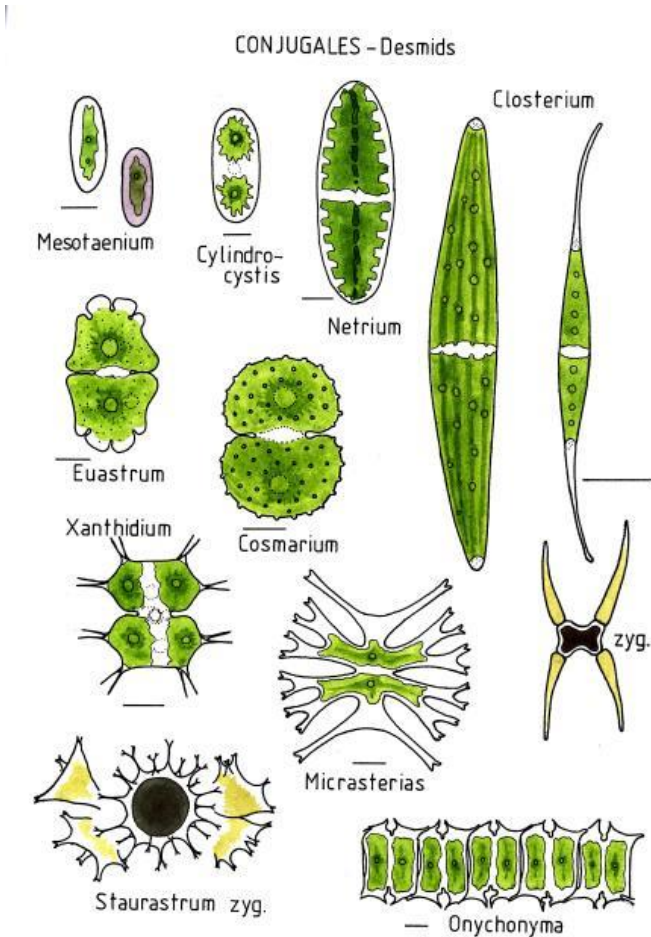


盤星藻 *Pediatrum* sp.

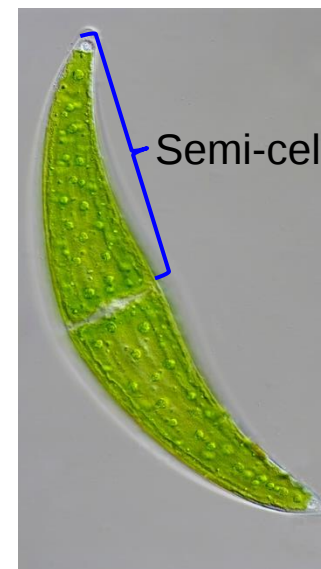
Chlorophyta 綠藻門



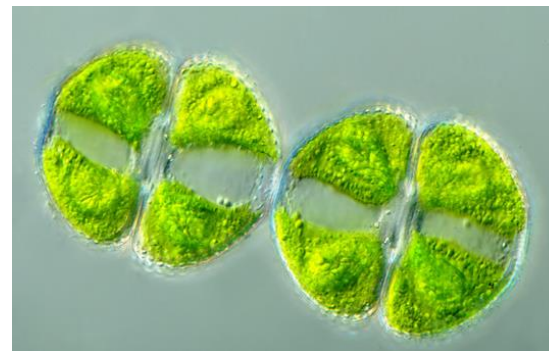
柵藻 *Scenedesmus* sp.



Desmids



新月藻 *Closterium* sp.

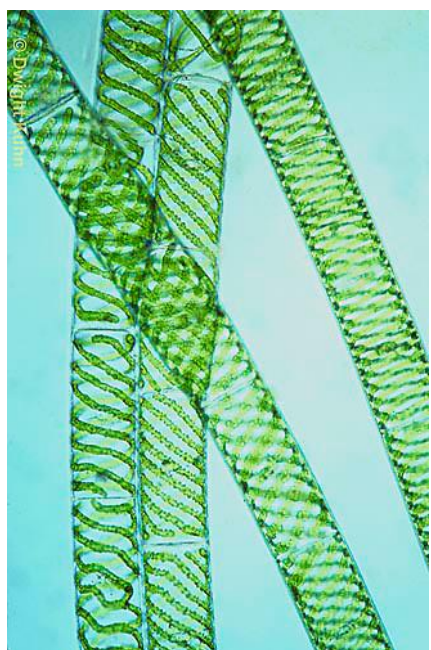


鼓藻 *Cosmarium* sp.

Chlorophyta 綠藻門

- *Spirogyra* sp. 水綿 (玻片)
 - 葉綠體螺旋狀，澱粉核 (Pyrenoid)
 - 細胞核

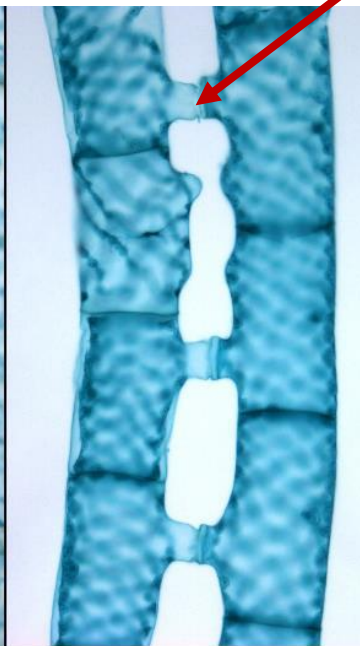
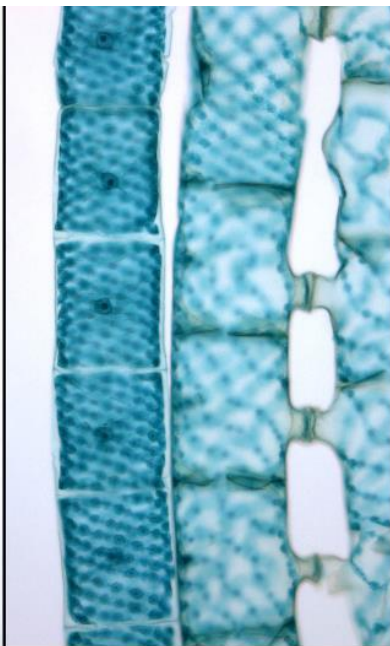
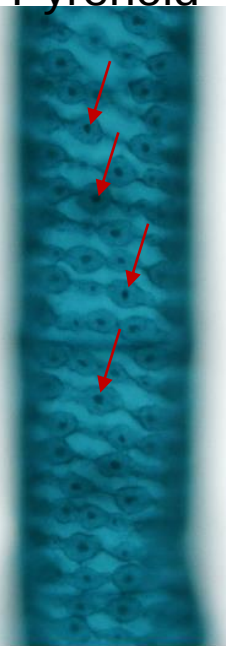
- 無性生殖—斷裂生殖
- 有性生殖—接合生殖 (Conjugation)



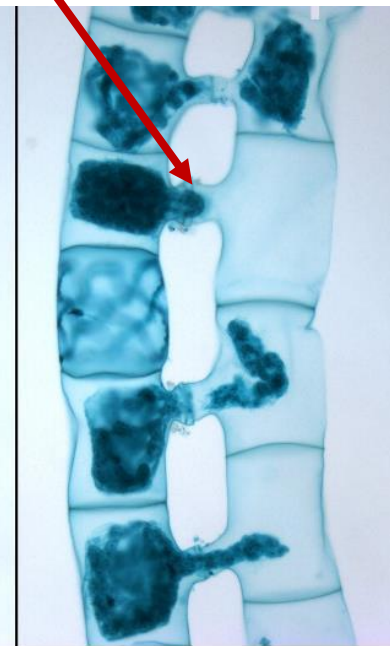
Nucleus



Pyrenoid



Conjugation tube

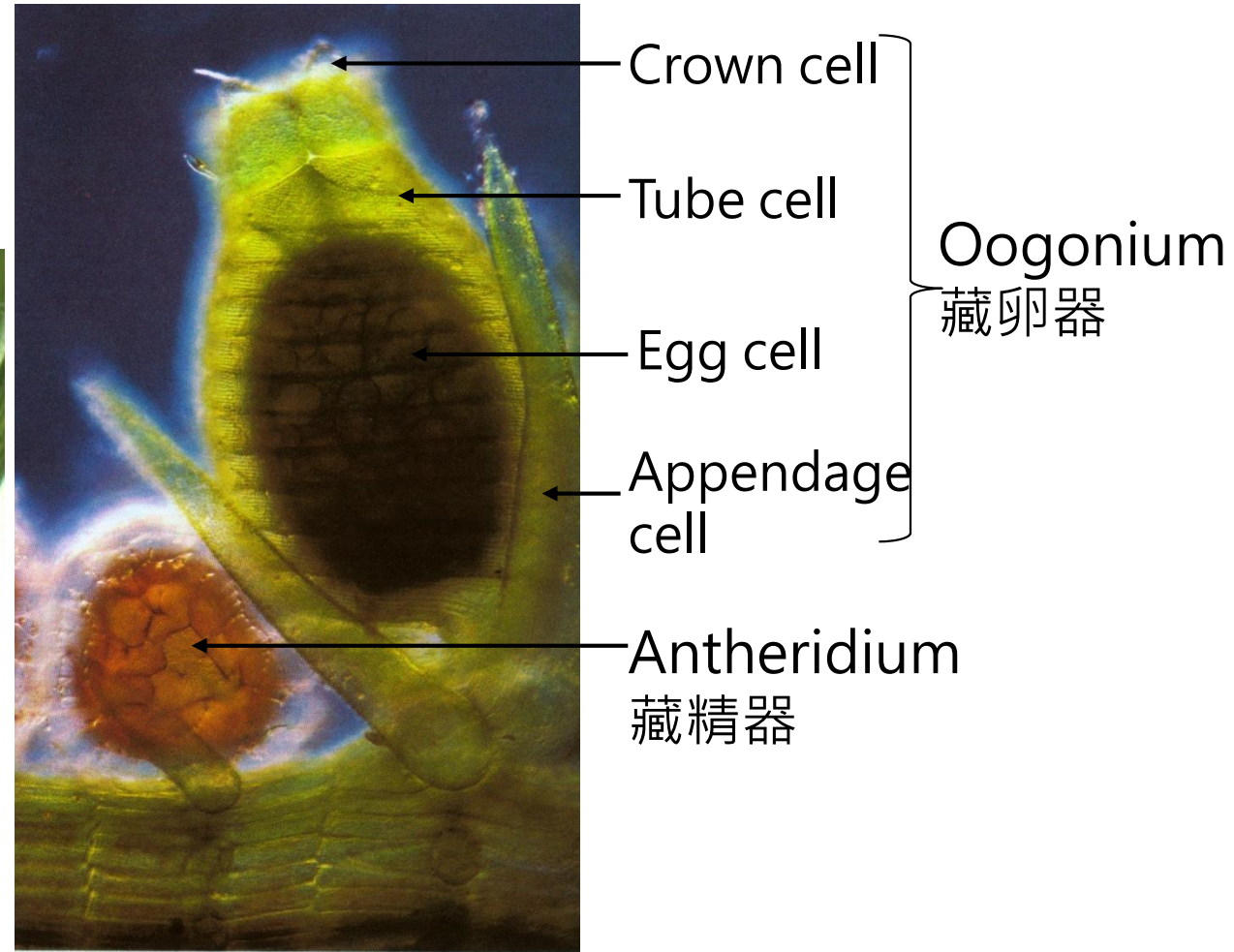


zygospore (zygote)



Charophyta 輪藻門

- 具有輪生的分枝，且有節與節間的分化
- 陸生植物是演化自輪藻



Euglenophyta 裸藻門

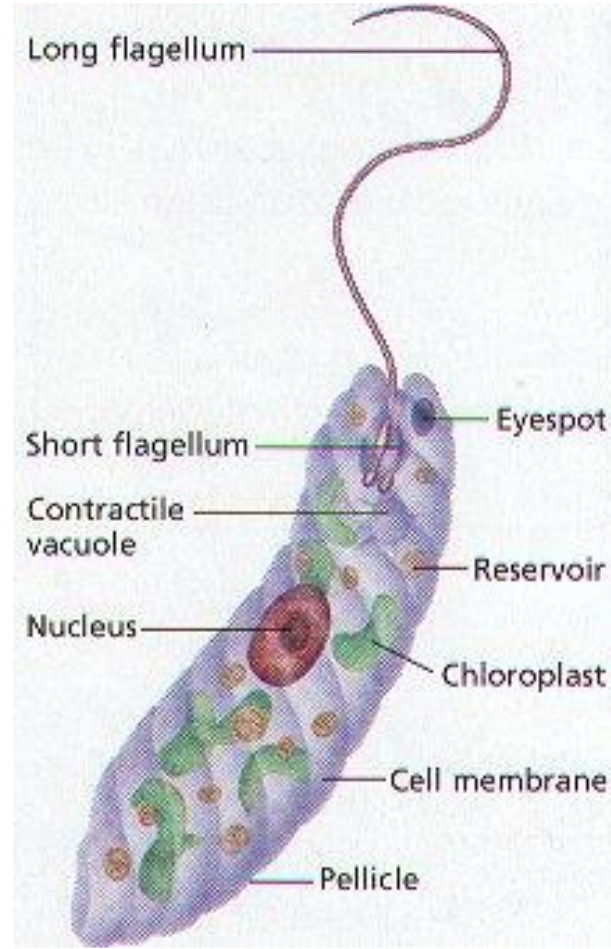
- 新鮮水樣
- 不具細胞壁
- 葉綠體
- 眼點 (stigma)
- 鞭毛



Paramylon
裸藻澱粉



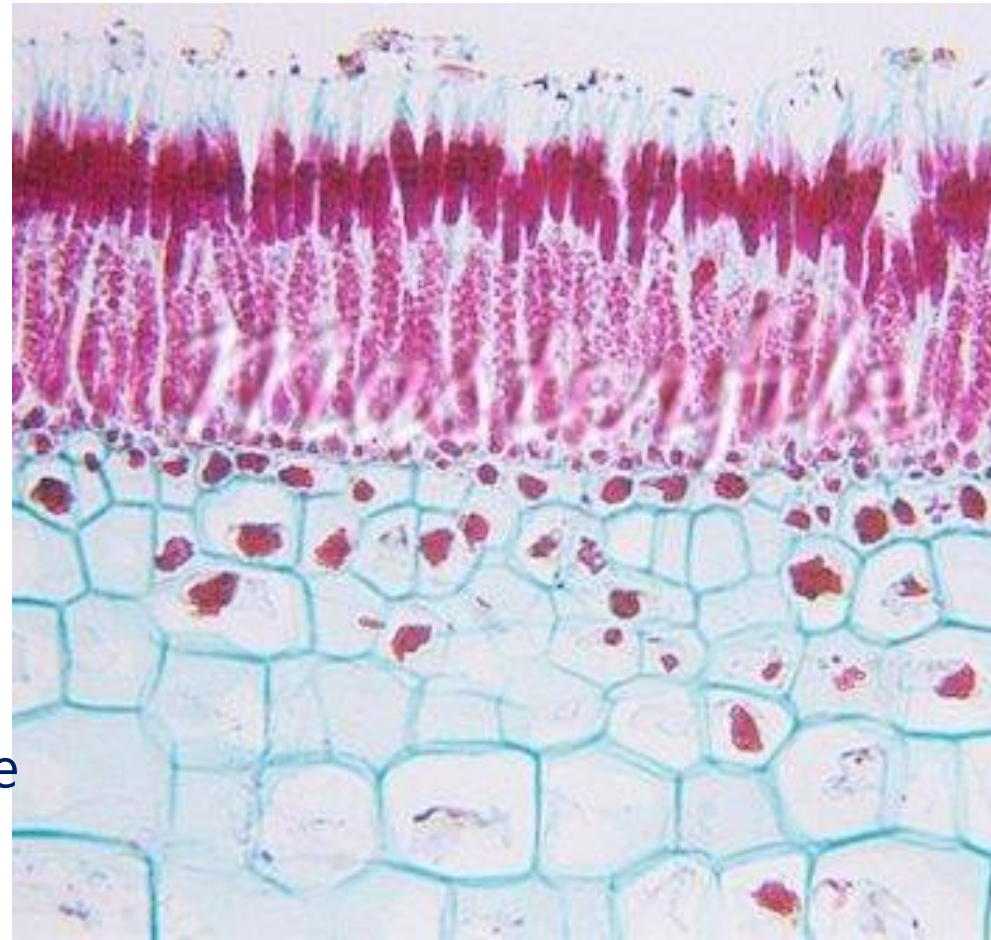
Euglena sp. 眼蟲



Phacus sp. 扁眼蟲

Phaeophyta 褐藻門

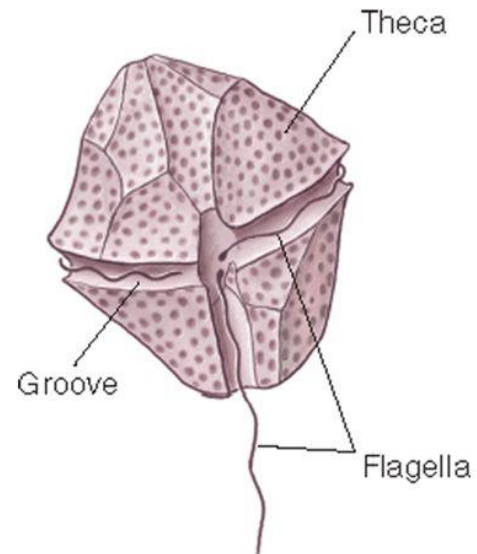
- 乾燥標本；永久玻片
- 多細胞，含褐色素
- 分化成附著器、莖狀柄和葉片
- 具氣囊，與浮力有關
- 多生長於海水



昆布 (*Laminaria* sp.) 葉狀體切片(玻片)

Dinophyta 渦鞭毛藻

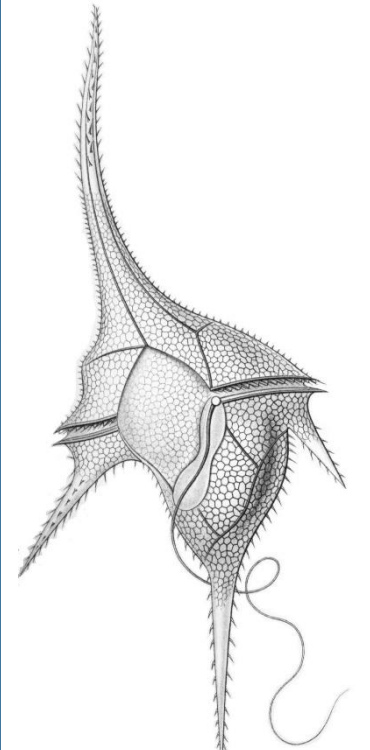
- 多甲藻黃素 peridinin
- 建構立體構造 (改變焦距)
- Groove
- Flagella
- Theca (Cell wall)
 - cellulose
- 有眼點



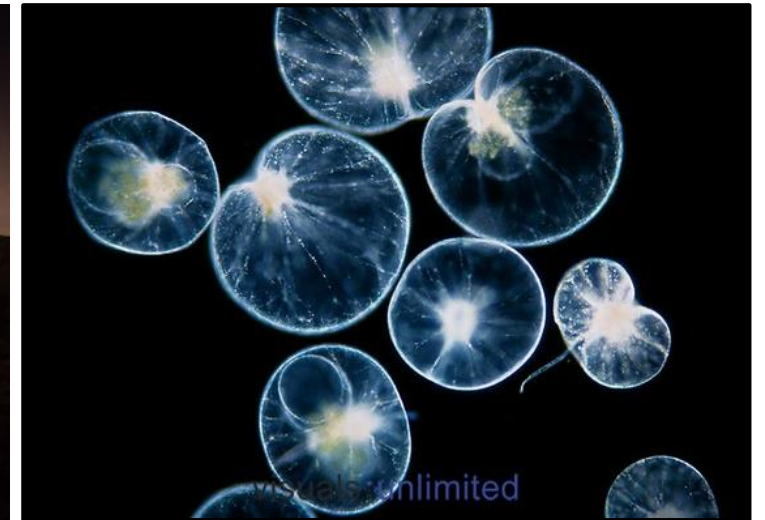
Peridinium sp.
多甲藻



Ceratium sp. 角甲藻

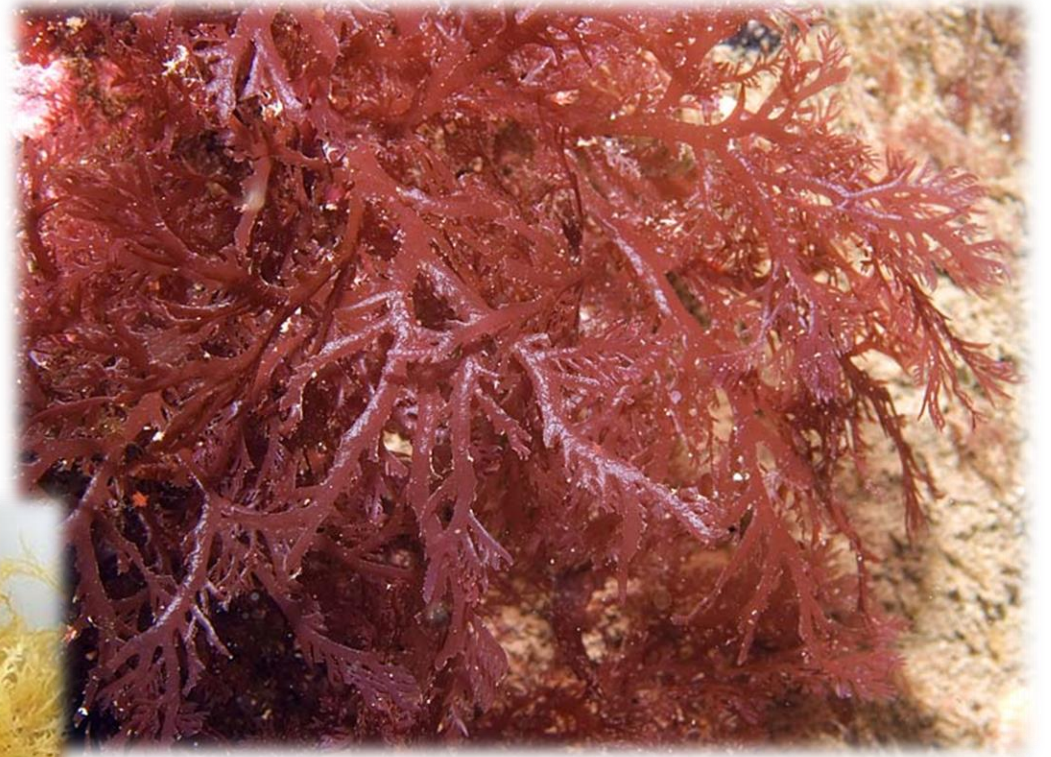


Dinophyta 渦鞭毛藻



Rhodophyta 紅藻

- 幾乎所有的紅藻都生活在海洋中
- 不具任何鞭毛
- 紅藻多營附著生活
- 紅藻的顏色來自稱為藻紅素的色素
- 許多種類的細胞壁含有碳酸鈣



Gelidium sp. 石花菜



<http://a9779953.pixnet.net/album/photo/603999160>



http://twminilisa.blogspot.tw/2011/07/blog-post_1010.html

Bacillariophyta 矽藻

- 種類繁多，分布極廣，全為單細胞。
- 矽藻的細胞壁，含有大量的矽質(SiO_2)，成為堅硬殼體：矽(硅)藻土
- 矽藻細胞由上下兩個半殼套合而成。套在外面較大的稱上蓋(epitheca)，較小的稱為下蓋(hypotheca)
- 花紋：輻射與兩側對稱

