

karyomastigont mitosis

CHIMERA STAGE

ARCHAEPROTIST STAGE

to plants

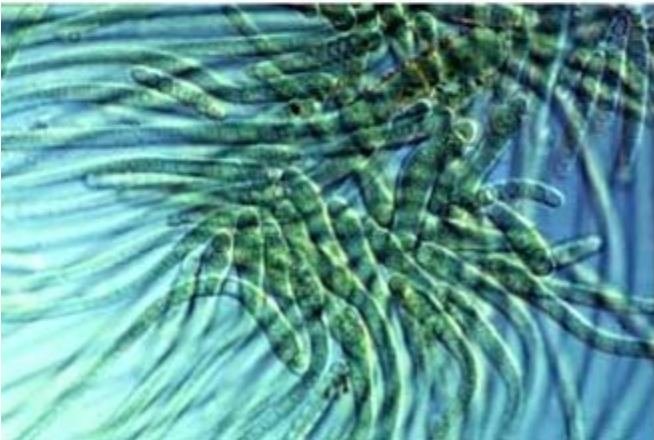
to animals and fungi

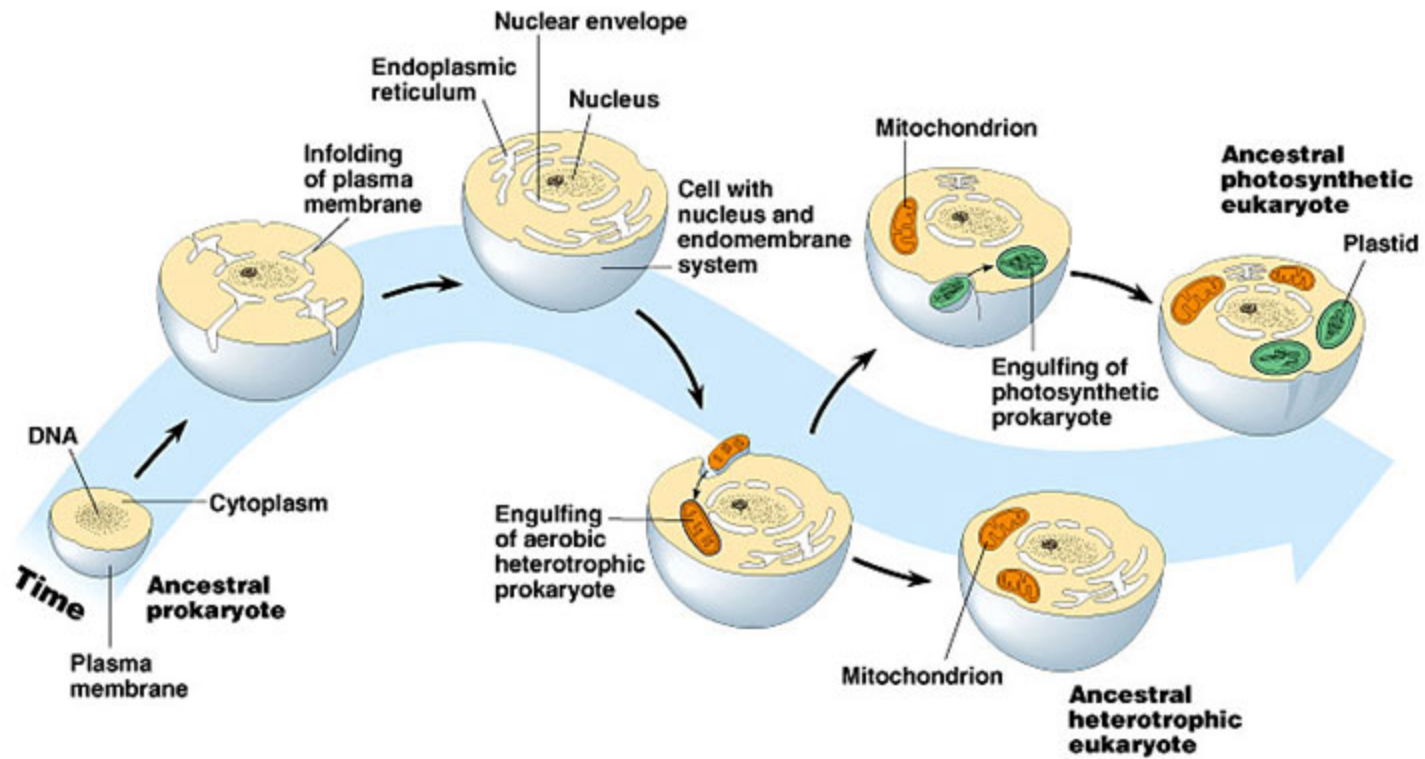
apt. 1982

Saint Mary's University

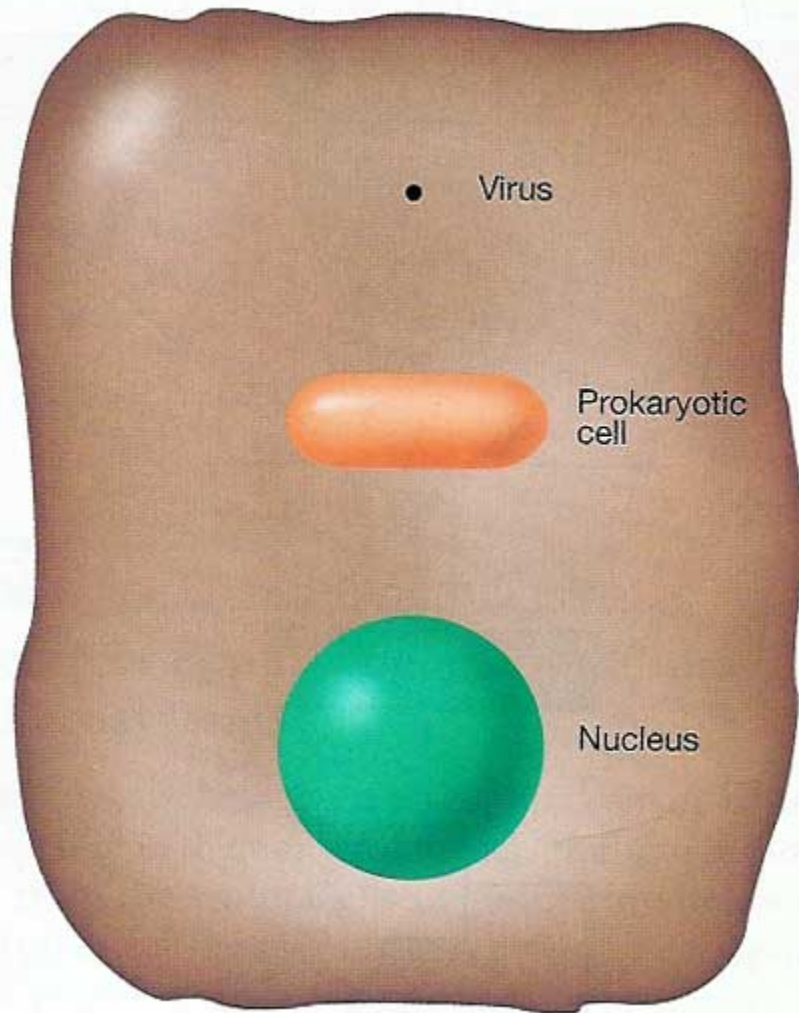


1999 National Medal of Science Laureates

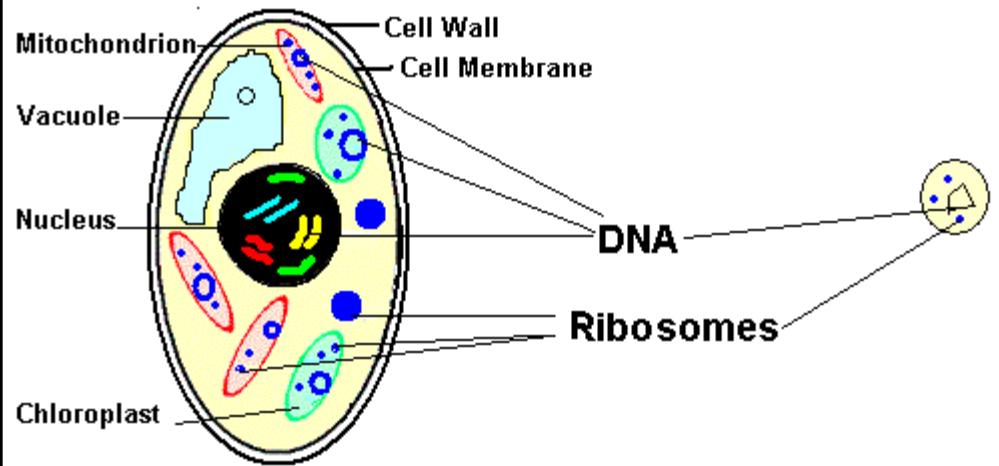




Typical eukaryotic cell



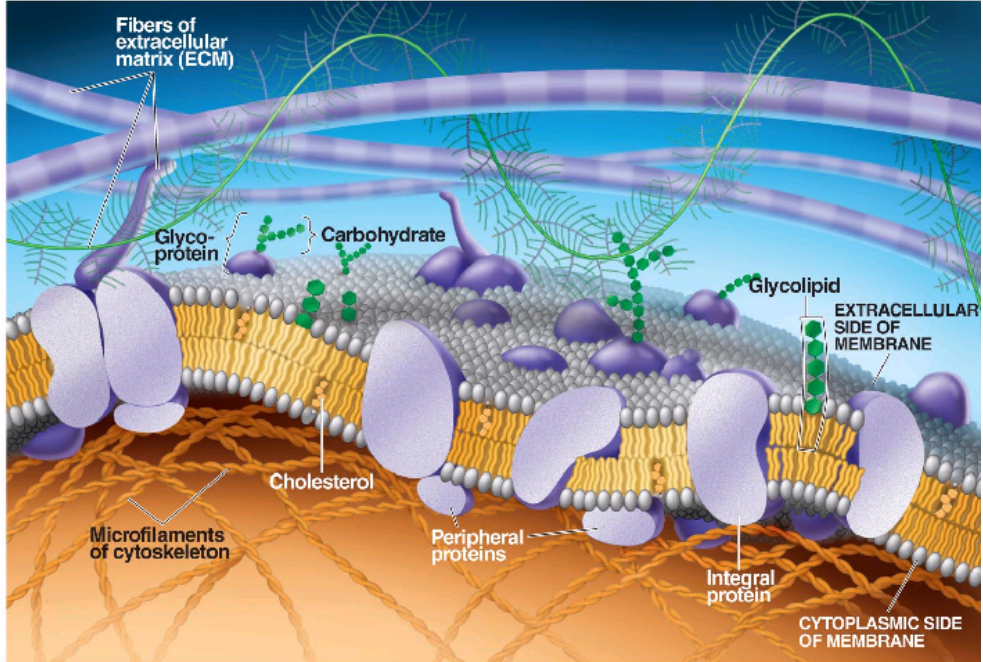
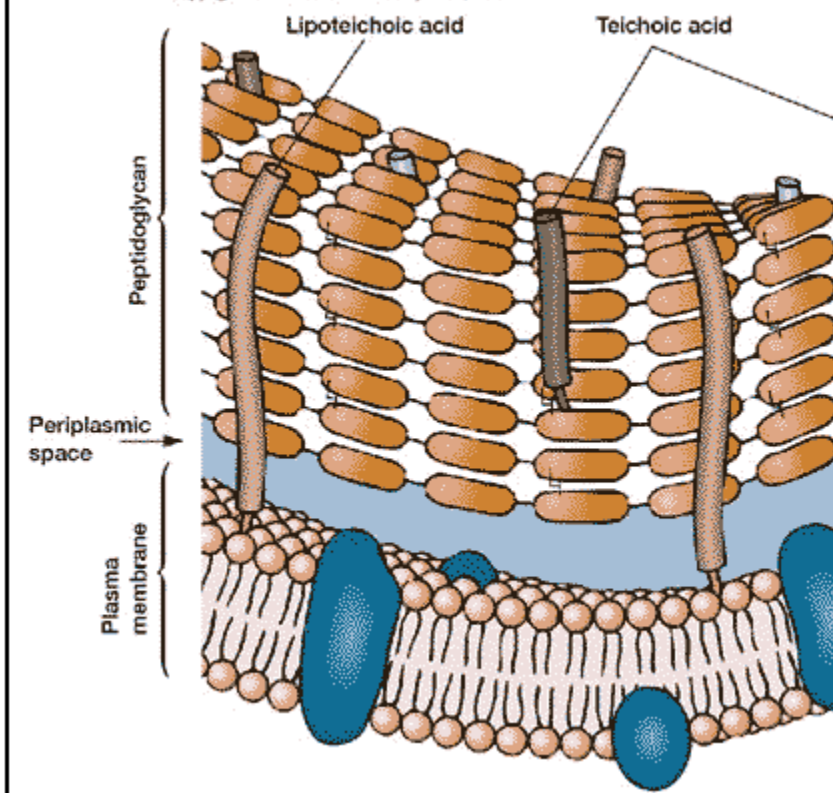
1000 nm (1 μm)



Eukaryote

Prokaryote

Copyright © The McGraw-Hill Companies, Inc.

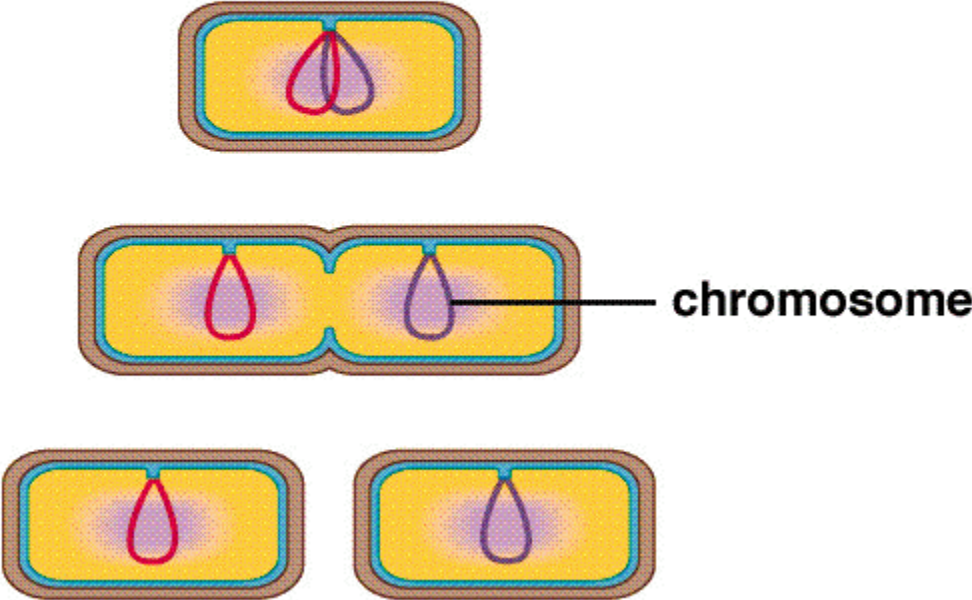


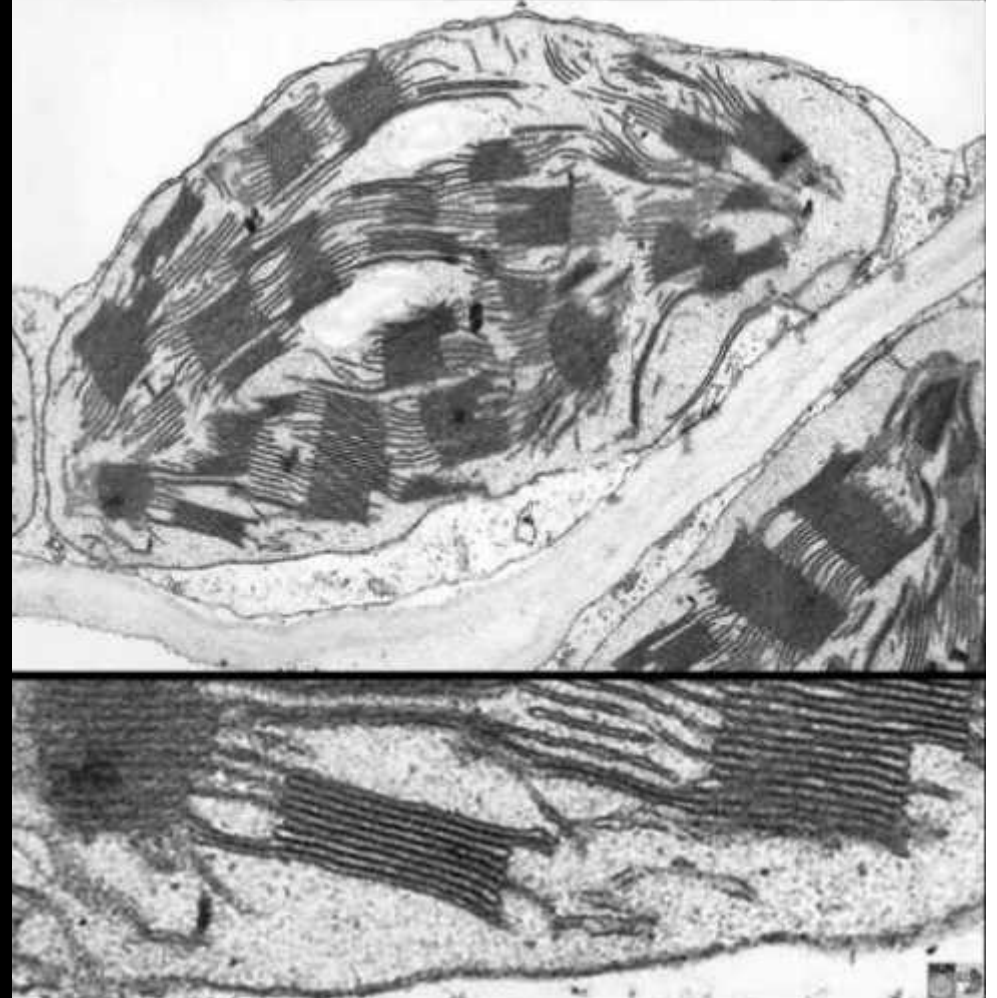
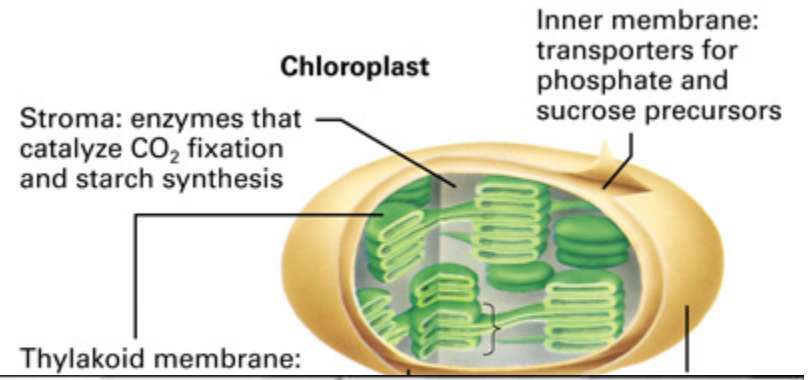
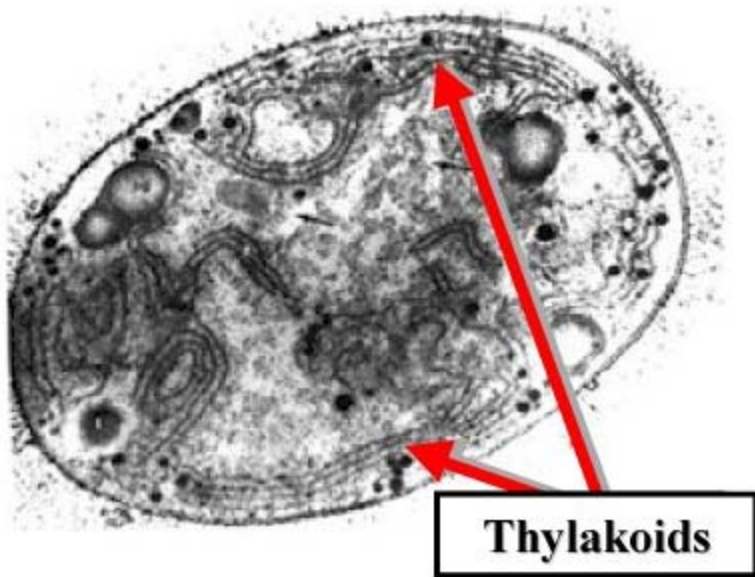
Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings.

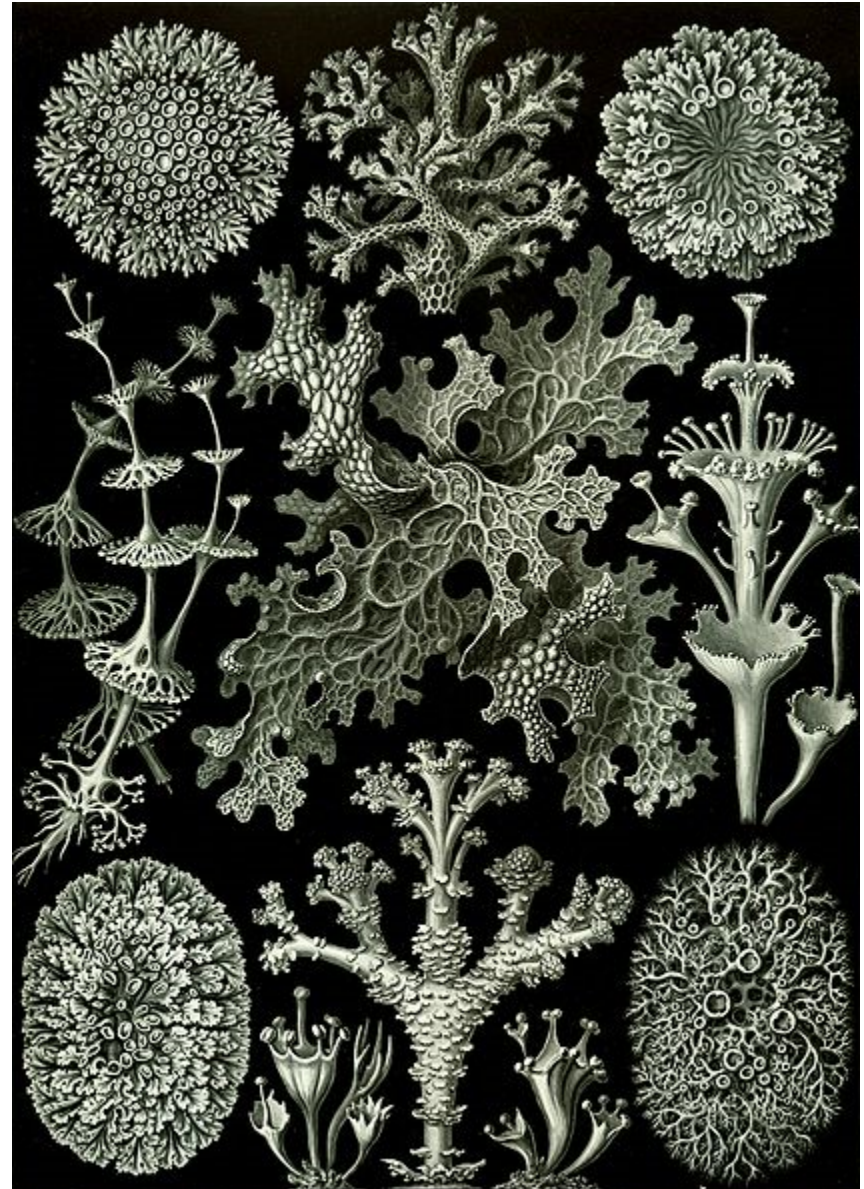
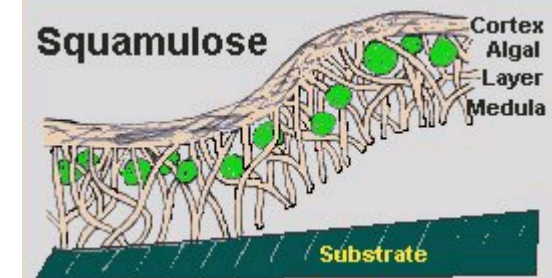
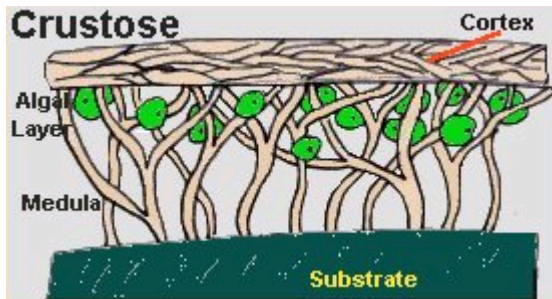
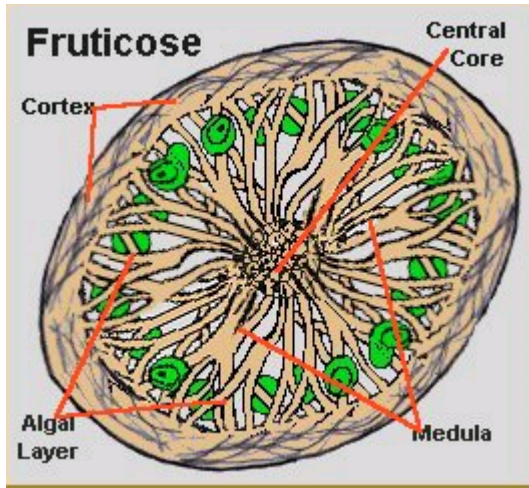
11. The Bacterial and Plant Plastid Code (transl_table=11)

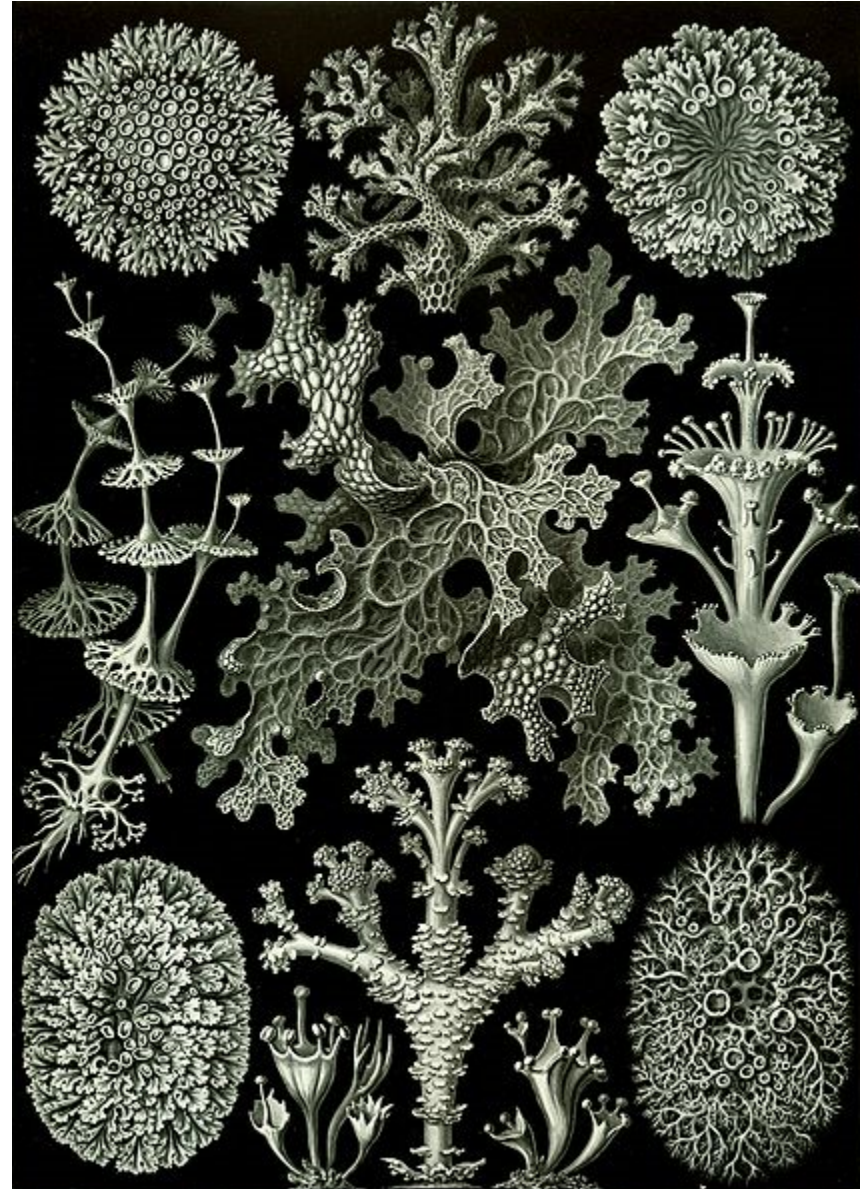
| | | | |
|-------------|-----------|-----------|-----------|
| TTT F Phe | TCT S Ser | TAT Y Tyr | TGT C Cys |
| TTC F Phe | TCC S Ser | TAC Y Tyr | TGC C Cys |
| TTA L Leu | TCA S Ser | TAA * Ter | TGA * Ter |
| TTG L Leu i | TCG S Ser | TAG * Ter | TGG W Trp |
| CTT L Leu | CCT P Pro | CAT H His | CGT R Arg |
| CTC L Leu | CCC P Pro | CAC H His | CGC R Arg |
| CTA L Leu | CCA P Pro | CAA Q Gln | CGA R Arg |
| CTG L Leu i | CCG P Pro | CAG Q Gln | CGG R Arg |
| ATT I Ile i | ACT T Thr | AAT N Asn | AGT S Ser |
| ATC I Ile i | ACC T Thr | AAC N Asn | AGC S Ser |
| ATA I Ile i | ACA T Thr | AAA K Lys | AGA R Arg |
| ATG M Met i | ACG T Thr | AAG K Lys | AGG R Arg |
| GTT V Val | GCT A Ala | GAT D Asp | GGT G Gly |
| GTC V Val | GCC A Ala | GAC D Asp | GGC G Gly |
| GTA V Val | GCA A Ala | GAA E Glu | GGA G Gly |
| GTG V Val i | GCG A Ala | GAG E Glu | GGG G Gly |

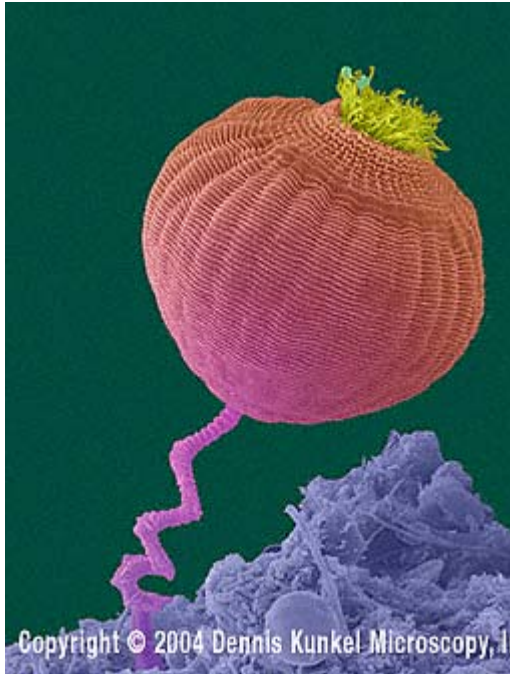
Binary fission











Vorticella

- Freshwater (pond, stream) unicellular, eukaryotic protozoan.
- Sessile when mature, via contractile stalk (an organelle used for defense). Free-swimming (juvenile or when detached).
- Preys upon bacteria, cilia around “mouth” draw water in.



Ultrastructure of Endosymbiotic *Chlorella* in a *Vorticella*

LINDA E. GRAHAM* JAMES M. GRAHAM †

*Department of Botany, University of Wisconsin, Madison, Wisconsin 53706 †Division of Biological Sciences, University of Michigan, Ann Arbor, Michigan 48109

KEYWORDS

Vorticella • Chlorella • symbiosis • ultrastructure

ABSTRACT

SYNOPSIS Observations were made on the ultrastructure of a species of *Vorticella* containing endosymbiotic *Chlorella*. The *Vorticella*, which were collected from nature, bore conspicuous tubercles of irregular size and distribution on the pellicle. Each endosymbiotic algal cell was located in a separate vacuole and possessed a cell wall and cup-shaped chloroplast with a large pyrenoid. The pyrenoid was bisected by thylakoids and surrounded by starch plates. No dividing or degenerating algal cells were observed.



Journal of Eukaryotic Microbiology

Volume 25 Issue 2, Pages 207 - 210

Published Online: 30 Apr 2007

© 2008 The International Society of Protistologists

Vorticella

- Sequesters endosymbiotic *Chlorella* algae.
 - Complete with cell membrane, cell wall, etc.