

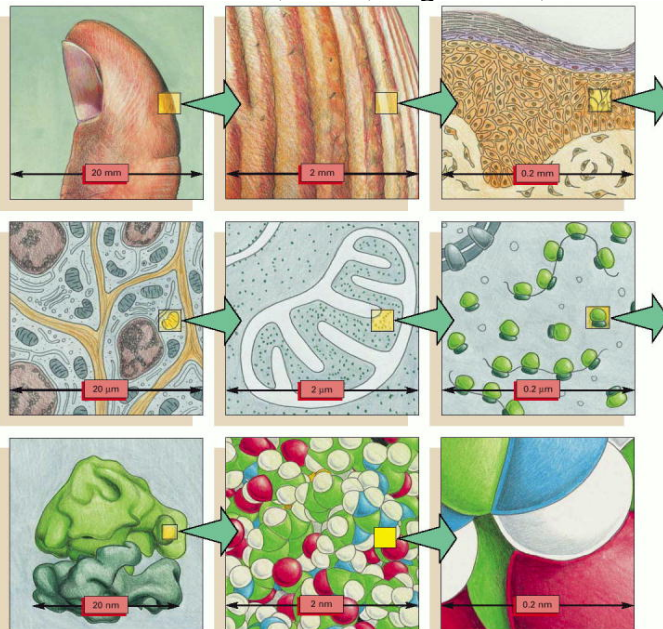
Chapter 6 – The Cell

1. Cell Theory
2. Types of Cells
3. Prokaryotic Cells
4. Eukaryotic Cells
5. Animal Cells
 - Membrane bound organelles
 - Cytoskeleton
6. Plant Cells

10 μm

Cambell and Reece, 7th Ed.

Scale of Tissue, Cells, Organelles, Atoms



Molecular Biology of the Cell, 4th Ed.

Cell Theory

- All living things are composed of cells
- Cells are the basic organizational unit of life
- All cells arise from pre-existing cells

Traits Common to all cells

- Plasma membrane encloses cell
 - Cytoplasm: the compartment within the plasma membrane
- Four major classes of Biomolecules
- DNA as genetic material with same genetic code
- Ribosomes synthesize proteins
- Energy and Nutrients from environment

Prokaryotic Vs Eukaryotic Cells

Prokaryotes

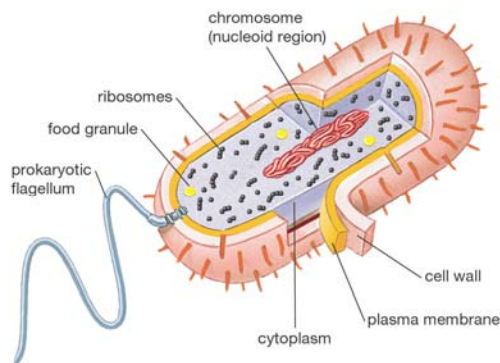
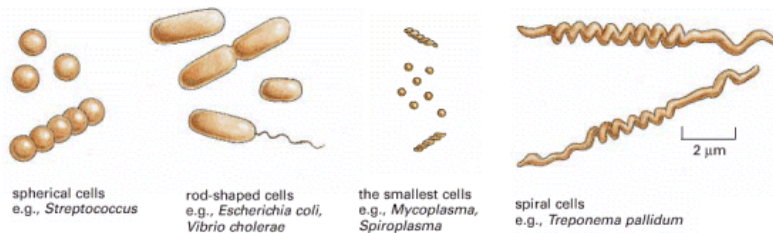
- No Nucleus
- Lacks membrane bound organelles
- Typically 1-10 μ M
- Circular DNA Genome

Eukaryotes

- Membrane Bound Nucleus
- Numerous Membrane Bound Organelles
- Typically 10-100 μ M
- Linear DNA chromosomes

Both possess plasma membranes, ribosomes, all four classes of macromolecules, have DNA as genetic material and use the same genetic code.

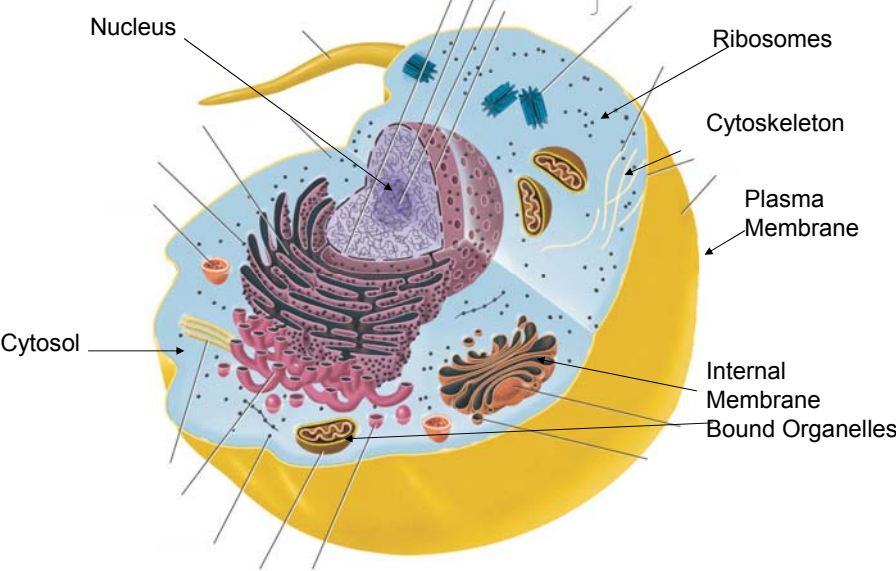
Prokaryotes



1. Small
2. Plasma Membrane
3. Cytoplasm
4. Ribosomes
5. Nucleoid Region
6. Many have
 1. Cell Wall
 2. Flagella

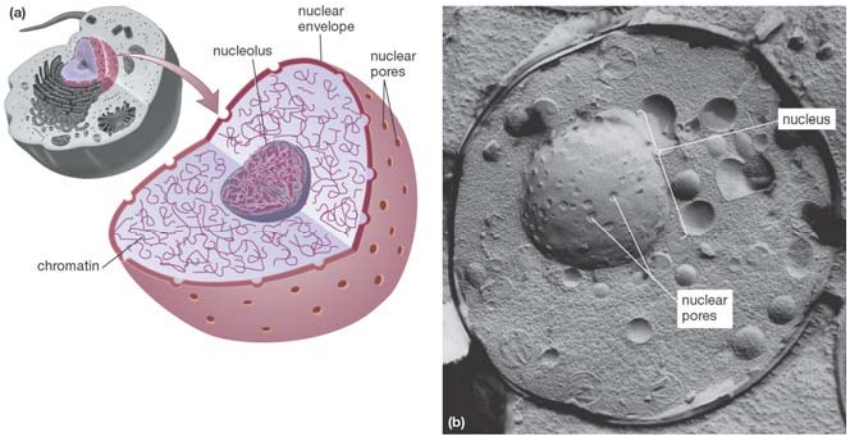
Copyright © 2006 Pearson Prentice Hall, Inc.

Eukaryotic Cell



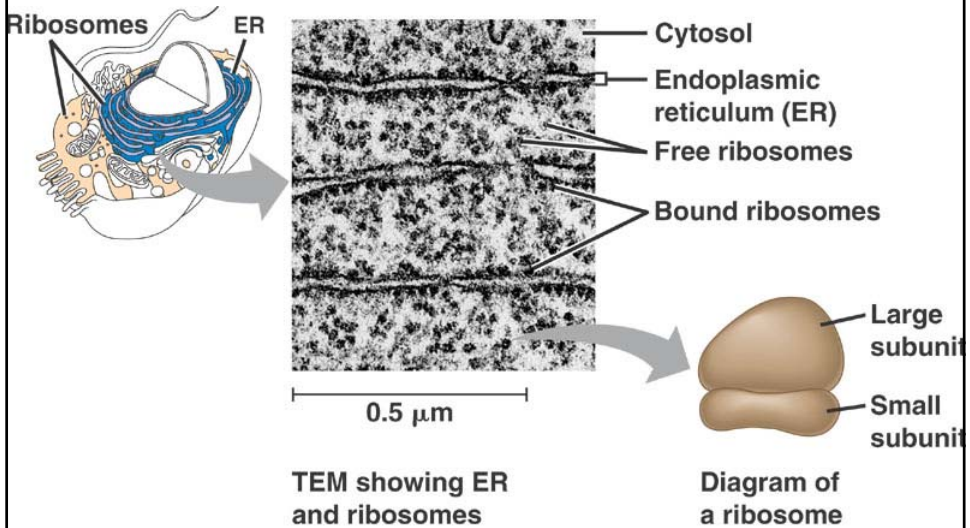
Copyright © 2006 Pearson Prentice Hall, Inc.

Nucleus

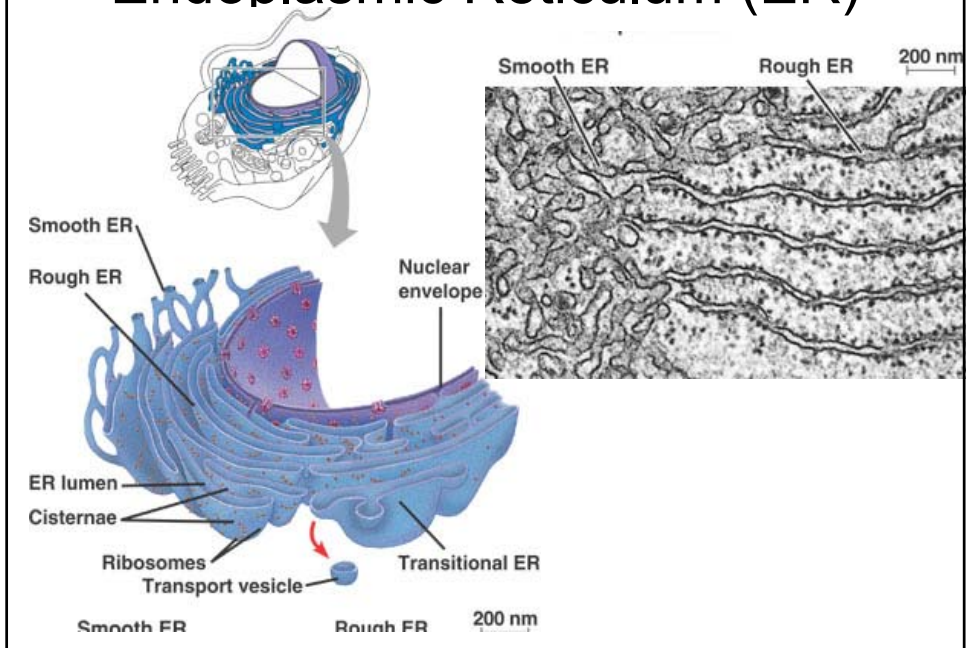


Copyright © 2006 Pearson Prentice Hall, Inc.

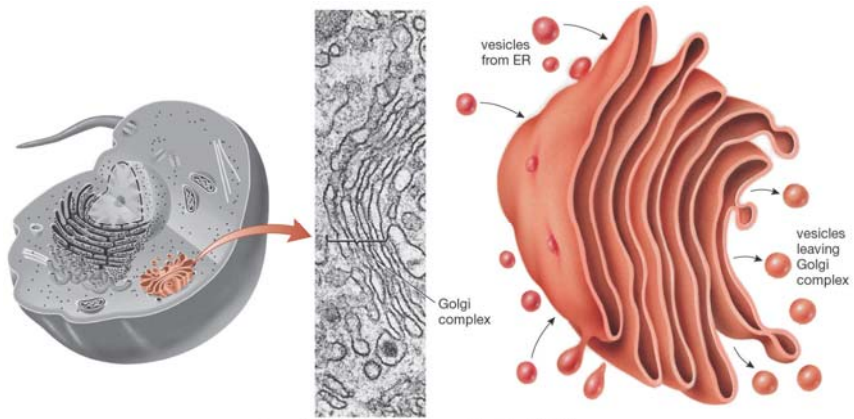
Ribosomes



Endoplasmic Reticulum (ER)

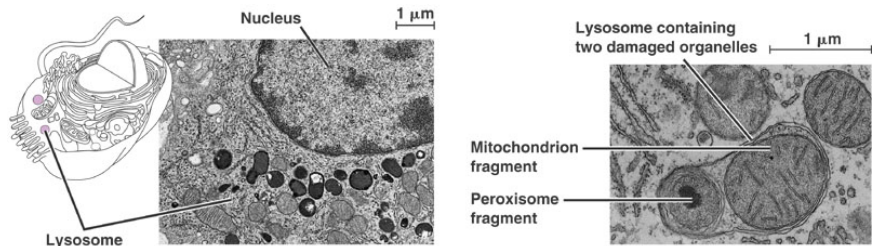


Golgi



Copyright © 2006 Pearson Prentice Hall, Inc.

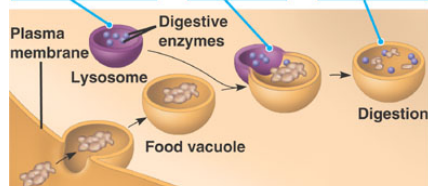
Lysosome



Lysosome contains active hydrolytic enzymes

Food vacuole fuses with lysosome

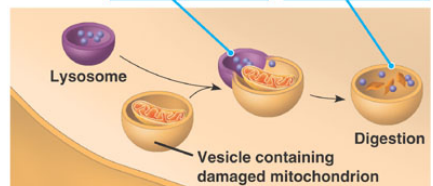
Hydrolytic enzymes digest food particles



(a) Phagocytosis: lysosome digesting food

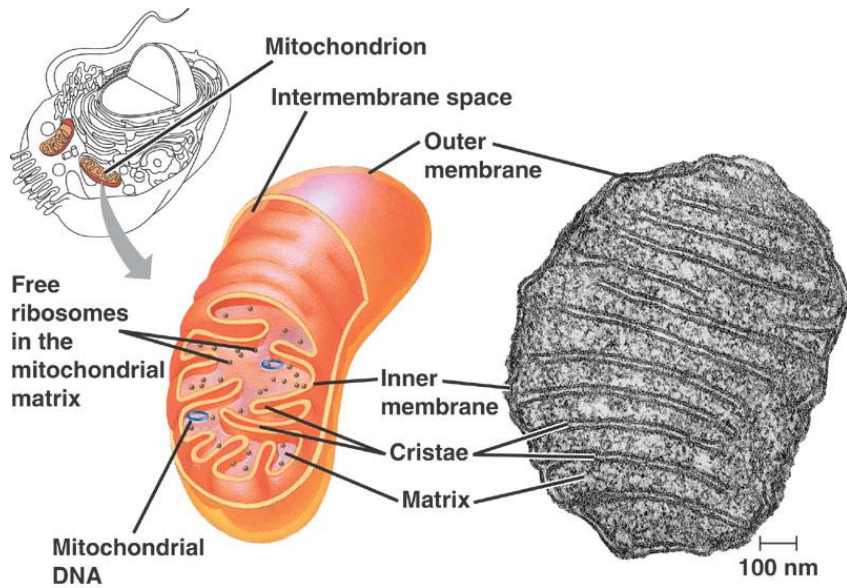
Lysosome fuses with vesicle containing damaged organelle

Hydrolytic enzymes digest organelle components



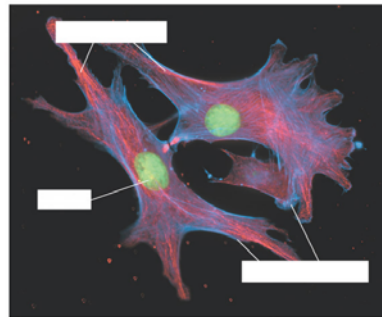
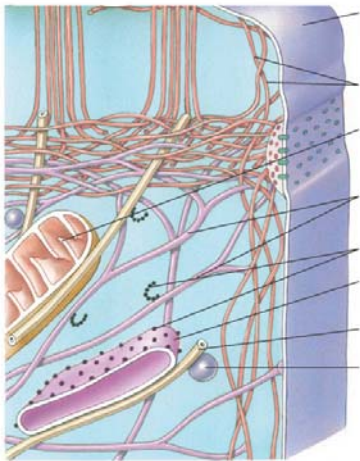
(b) Autophagy: lysosome breaking down damaged organelle

Mitochondria



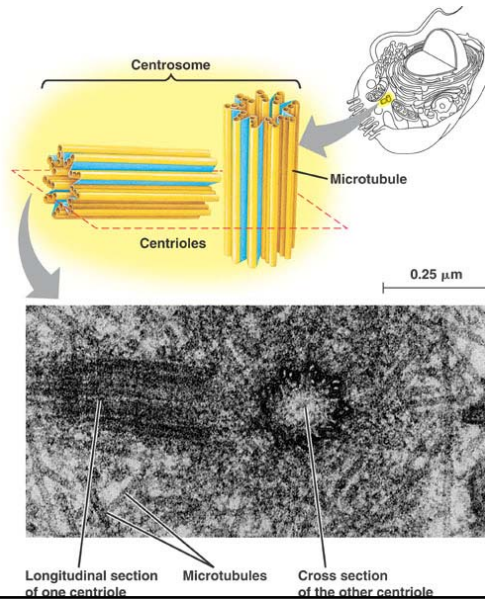
Cytoskeleton

(a)

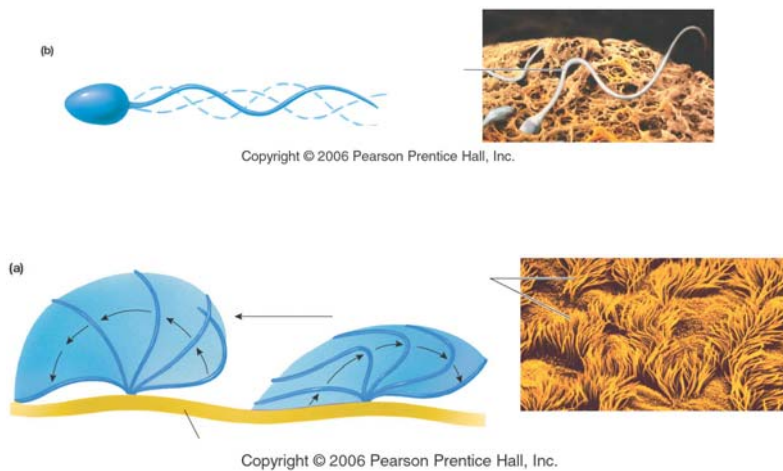


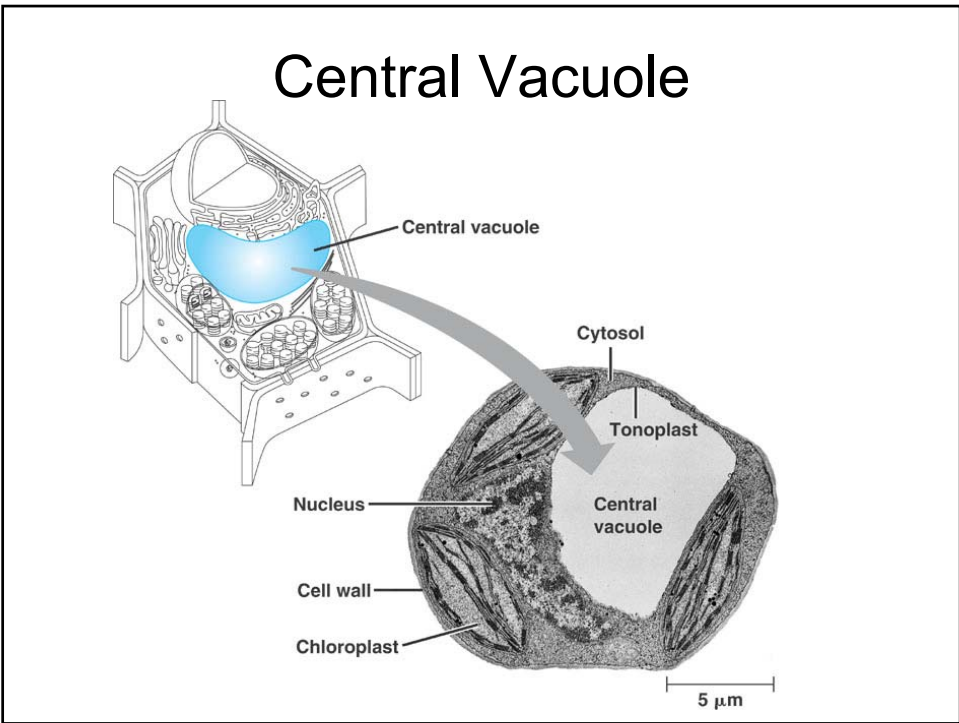
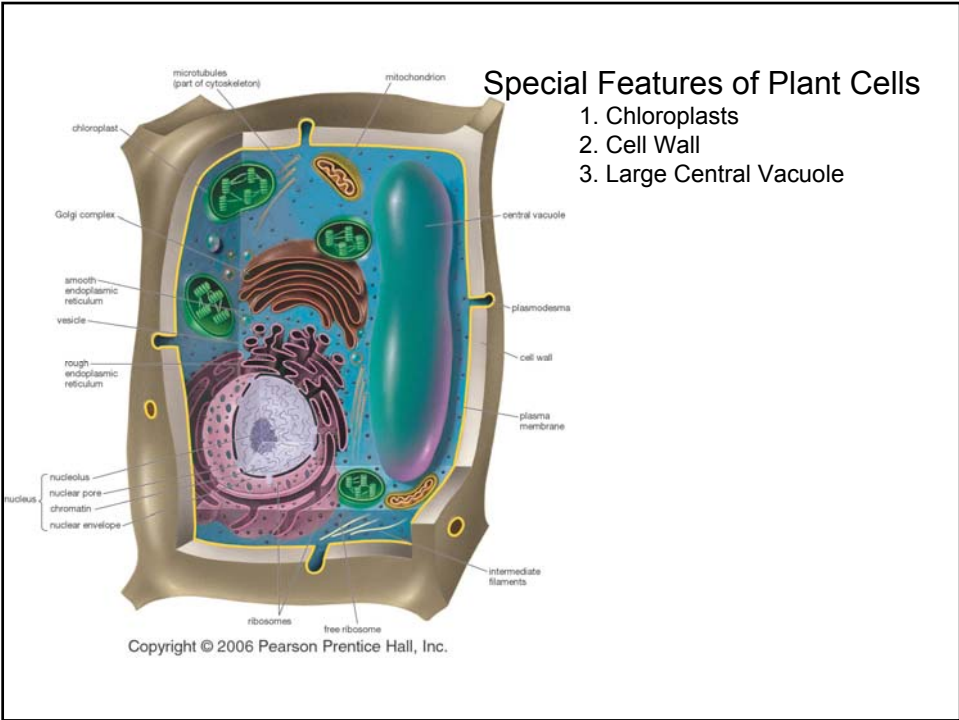
Copyright © 2006 Pearson Prentice Hall, Inc.

Centrosomes and Centrioles

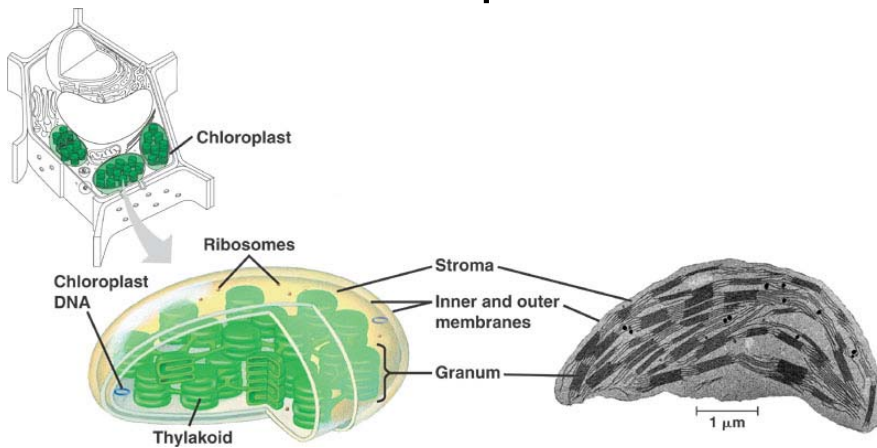


Flagellum and Cilia





Chloroplast



Animal vs. Plant

Animal Cells

- Lysosome
- Centriole

Plant Cells

- Chloroplast
- Central Vacuole
- Cell Wall

Both have Nucleus, Ribosomes, ER, Golgi, Mitochondria, Cytoskeleton,