

3:1A

The Cell

Cell History

- The study of cells is called cytology.
- Robert Hooke was the first scientist to use the word cell.
- Robert Brown discovered the nucleus in 1833.
- Theodor Schwann discovered that animals were made of cells in 1838.

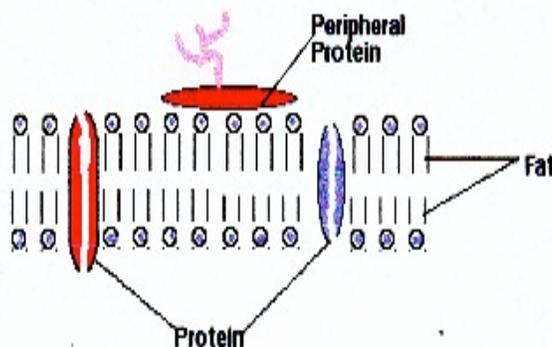
Cell Theory

The Cell Theory states that:

1. All living things are composed of a cell or cells.
2. Cells are the basic unit of life.
3. All cells come from preexisting cells.

Cellular Organelles

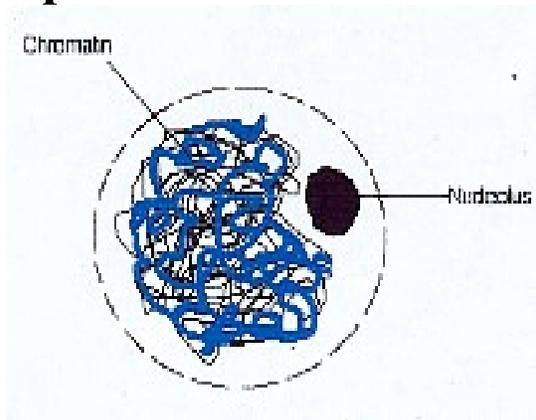
- The Plasma membrane
- The boundary of the cell.
- Composed of three distinct layers.
- Two layers of fat and one layer of protein.



3:1B

The Nucleus

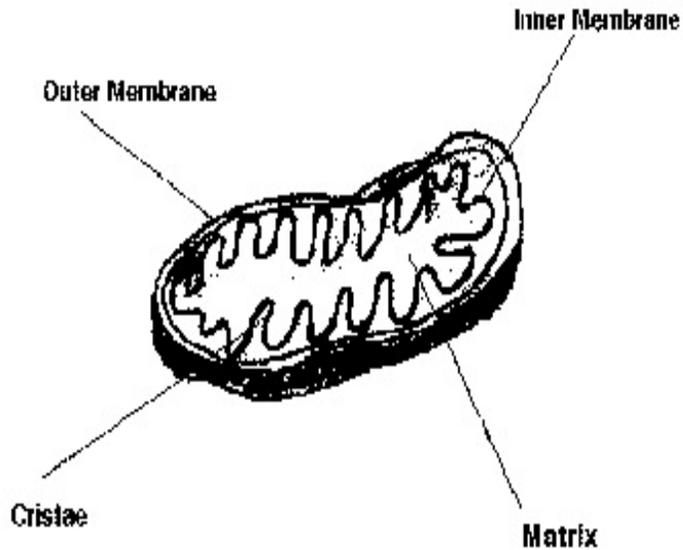
- **The center of cellular activity.**
- **Bordered by a porous membrane.**
- **Contains thin fibers of DNA and protein called Chromatin.**
- **Contains a small round nucleolus, which produces ribosomes.**



The Mitochondrion

- **It contains two membranes.**
- **It's the size of a bacterium.**
- **Contains its own DNA.**
- **Produces the high-energy compound ATP.**

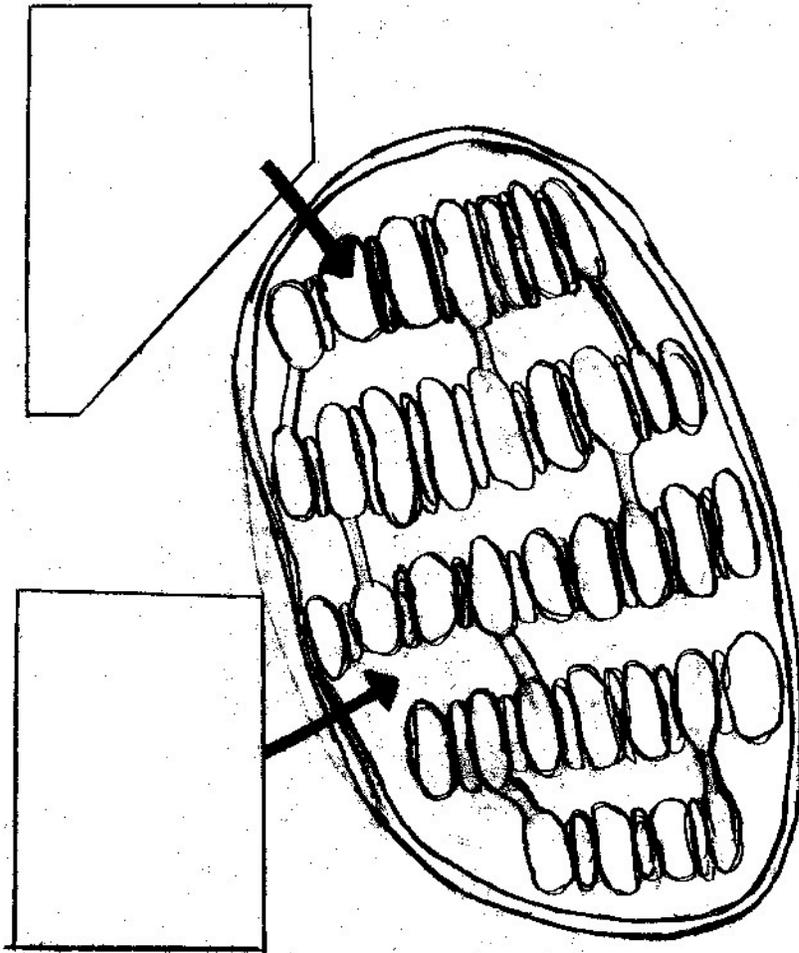
3:1C



The Chloroplast

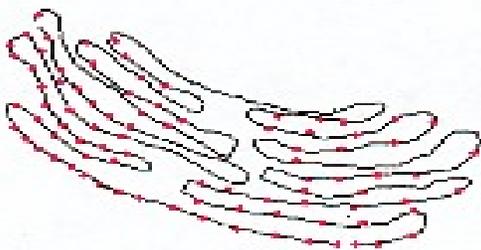
- **Contains a double membrane.**
- **The center section contains stacks of coin-like grana.**
- **A gel-like material called the stroma surrounds the grana.**
- **Found in plants and algae.**

3:1D



Ribosomes

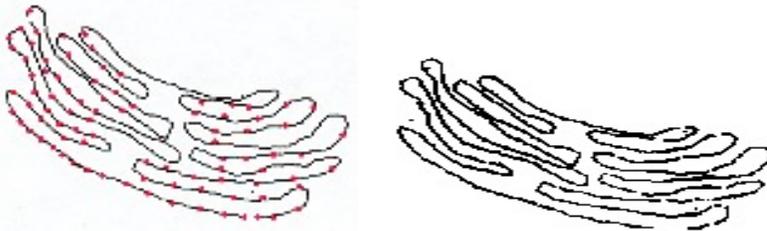
- **Small non-membrane bound organelles.**
- **They contain two sub units.**
- **The center of protein synthesis.**
- **They are either free floating or attached to the Endoplasmic Reticulum.**



3:1E

Endoplasmic Reticulum

- A complex network of transport channels.
- Two types: Smooth and Rough.
- The smooth is ribosome free and functions in poison detoxification.
- The rough contains ribosomes and releases newly made protein from the cell.



Golgi Apparatus

- A series of flattened sacs that modifies, packages, stores, and transports materials out of the cell.
- Works with the ribosomes and Endoplasmic Reticulum.



Lysosomes

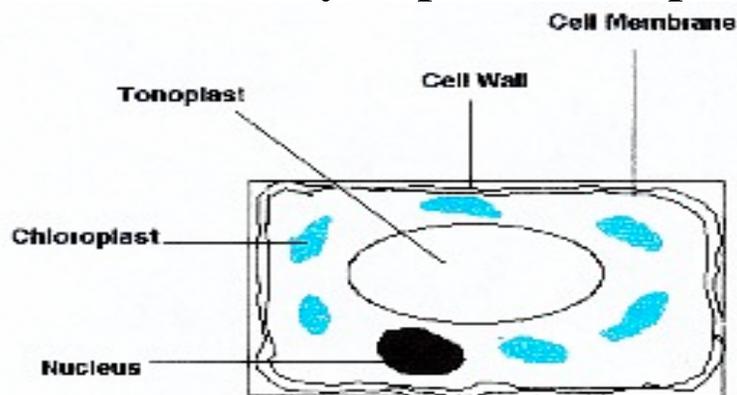
- A membrane bound organelle containing a variety of enzymes.
- Their internal pH is 5.

3:1F

- They help digest food particles inside or outside the cell.
- They are instrumental in recycling cellular debris.

The Vacuole

- Sacs that help in food digestion or helping the cell maintain its water balance.
- Found mostly in plants and protists.



Cytoskeleton

- Framework of the cell
- Contains small microfilaments and larger microtubules.
- They support the cell, giving it its shape and help with the movement of its organelles.

Cell Wall

- Plants, algae, fungi, and bacteria contain an extra structure surrounding its plasma membrane.

3:1G

- It is called a cell wall.
- Cellulose, Chitin, and peptidoglycan are the materials found in these cell walls.

Cell Types

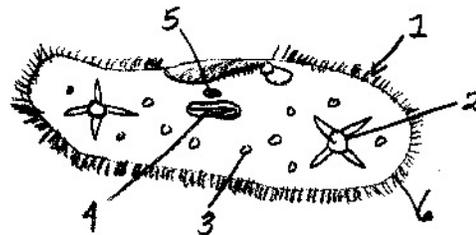
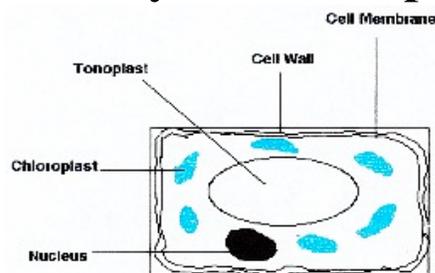
Eukaryotic

1. Contains a nucleus and other membrane bound organelles.
2. Rod shaped chromosomes
3. Found in all kingdoms except the Eubacteria and Archaeobacteria

Prokaryotic

1. Does not contain a nucleus or other membrane bound organelles.
2. One circular chromosome
3. Found only in the Eubacteria and Archaeobacteria Kingdoms

Eukaryotic Example



3:1H

Prokaryotic Examples

