



CELL STRUCTURES IN  
PLANTS AND  
ANIMALS



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# PLANTS

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- ~Cell Surface Membrane
- ~Cell Wall
- ~Large Permanent Vacuole
- ~Endoplasmic Reticulum

- ~ Mitochondria ~Nucleus
- ~Mitochondrion ~Ribosomes
- ~Golgi Body ~Lysosomes

- ~ Centrioles and Microtubules

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# ANIMALS

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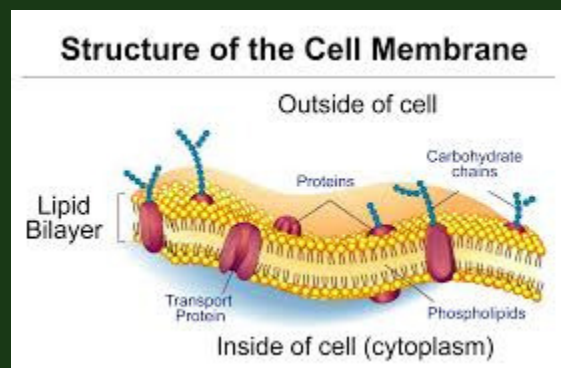
# Plant



## Cell Surface Membrane

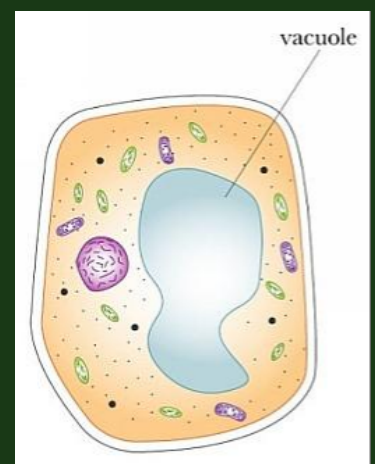
~Controls movements of Substances in and out of the Cell.

~ About 7nm



## Large Permanent Vacuole

~Stores water, ions, sugars, pigments, and pushes chloroplasts to the edge of the cell wall to help support the plant.

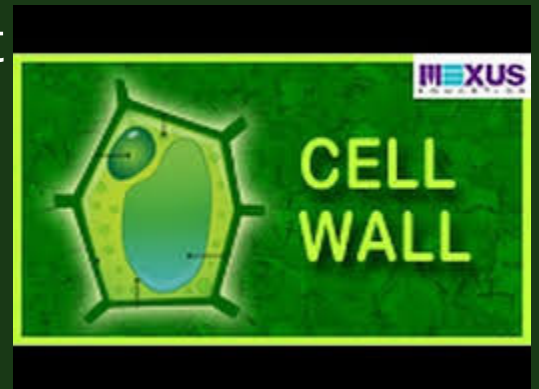


# Plant



## Cell Wall

- ~Provides strength to prevent cell from bursting
- ~Allows water to pass along it
- ~About 0.5  $\mu\text{m}$



## Endoplasmic Reticulum

- ~Located in the Cytoplasm
- ~Provides larger surface area for synthesis of proteins
- ~Forms transport vessels and provides a pathway for transport lipids

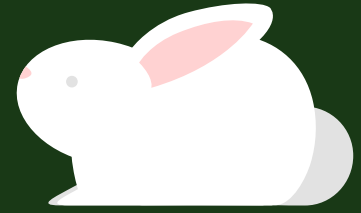
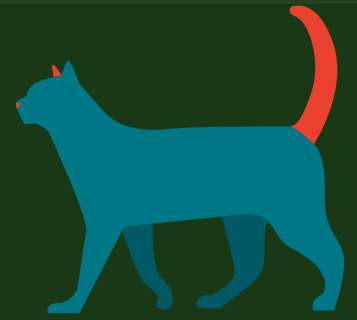
Rough Endoplasmic Reticulum(RER): Ribosomes present

Smooth Endoplasmic Reticulum(SER): Ribosomes absent





Animal

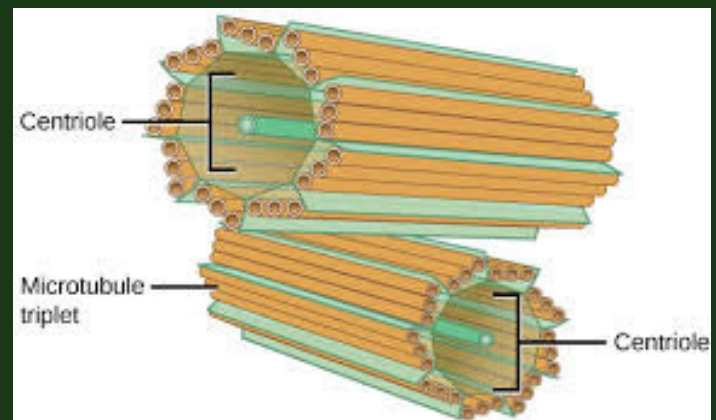


## Centrioles and Microtubules

Functions:

- ~Organising microtubules to form spindle fibres
- ~Organise microtubules to form cilia and flagella
- ~Microtubules for part of cytoskeleton
- ~Microtubules help with the movement and positioning of organelles.
- ~Microtubules involved in the movement of the cell

~About 0.5  $\mu\text{m}$  in length and 0.2  $\mu\text{m}$  in diameter



# Structures Found In Both

## Mitochondria

Used to carry out Aerobic Respiration

About 0.5 - 1.0 micrometer

## Golgi Body

Found in ALL Eukaryotic cells.

Lipids pass through the Golgi Body

Functions:

Adds carbohydrates to proteins to form glycoproteins

Secretes carbohydrates

Forms Primary Lysosomes



# BOTH

## NUCLEUS:

Contains most of the cell's genetic material.

**Nuclear Envelope- Surrounds the Nucleus**

**Nuclear Pores- Allows RNA out .**

**~Too Small to allow DNA**

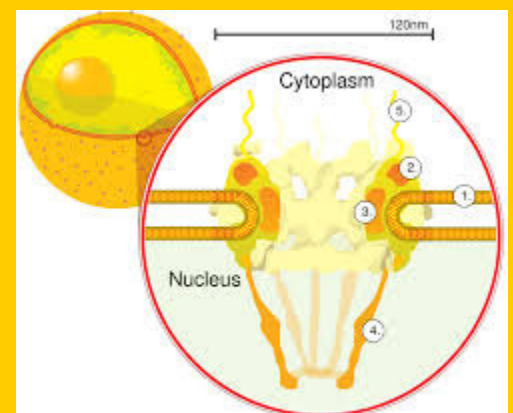
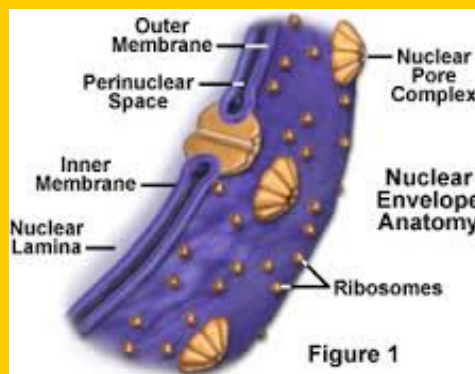
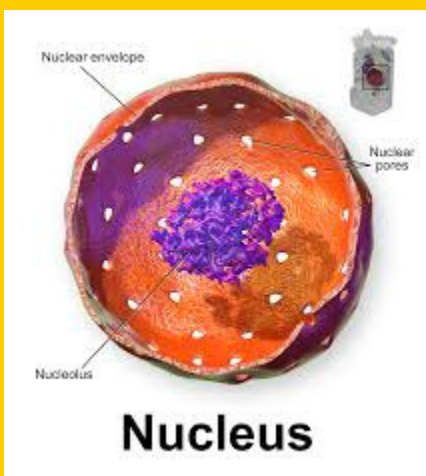
**Nucleolus- Takes up 25% volume of nucleus.**



25%

### FUNCTIONS:

- ~Control Center of Cell
- ~Protect DNA
- ~Manufacture Ribosomes and rRNA



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# BOTH

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## MITOCHANDRIAN

1-7 um in length, 0.5-1.0 um in diameter

### Double Membrane:

Controls exit and entry in the cell

### Cristae:

provides large surface area for aerobic respiration

### Matrix:

contains proteins, lipids, 70S Ribosomes



### Functions:

~ Controls production of proteins

~ Acts as site for Krebs Cycle





# RIBOSOMES

Small spherical structures found in both cells

25% Dry mass in a cell



## 70S Ribosome

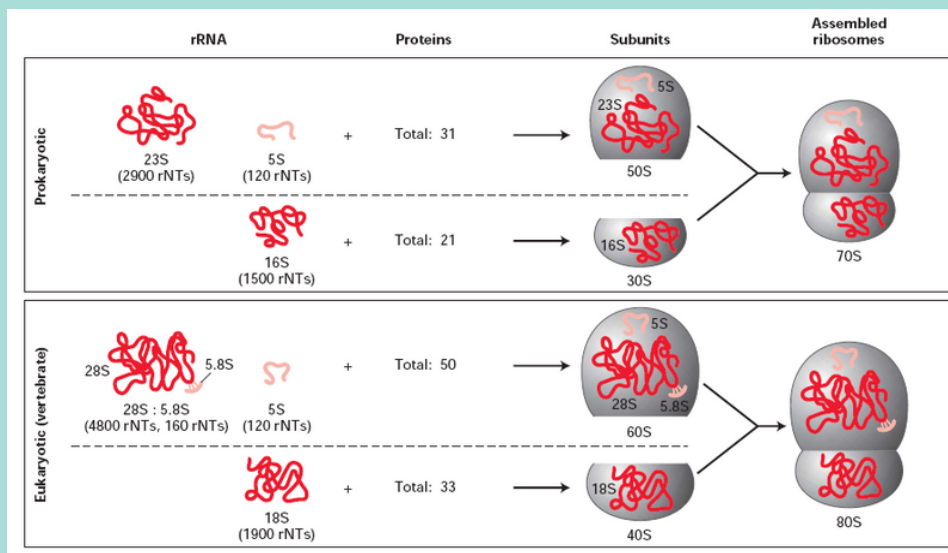
FOUND IN PROKARYOTIC CELLS

ABOUT 17 NM DIAMETER

## 80S Ribosome

FOUND IN EUKARYOTIC CELLS

ABOUT 22 NM DIAMETER



# LYSOSOMES

UP TO 50 ENZYMES CAN BE CONTAINED IN A SINGLE LYSOSOME

Functions:

- ~Breakdown material
- ~Digest worn out organelles
- ~Completely break down dead cells
- ~Destroy material around cell

*About  
1.0  $\mu\text{m}$  Diameter*

