

# Chapter 7 Notes

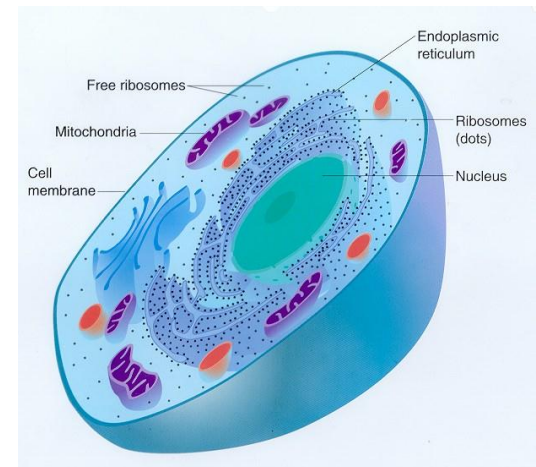
Cell Introduction

Cell Structure

Passive Transport

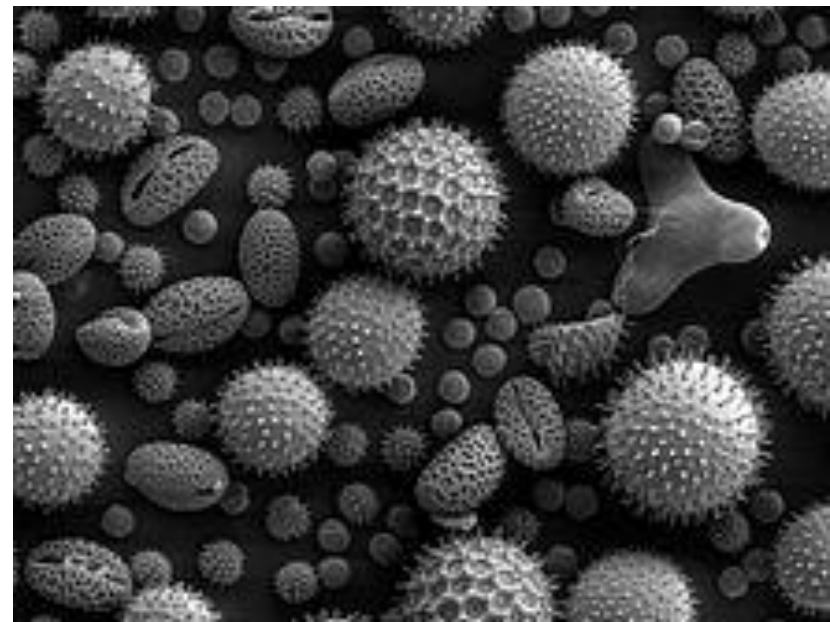
# Cell Theory

- All Living things are made of Cells
- Cells are the basic structure and function of life
- New cells are produced from existing cells



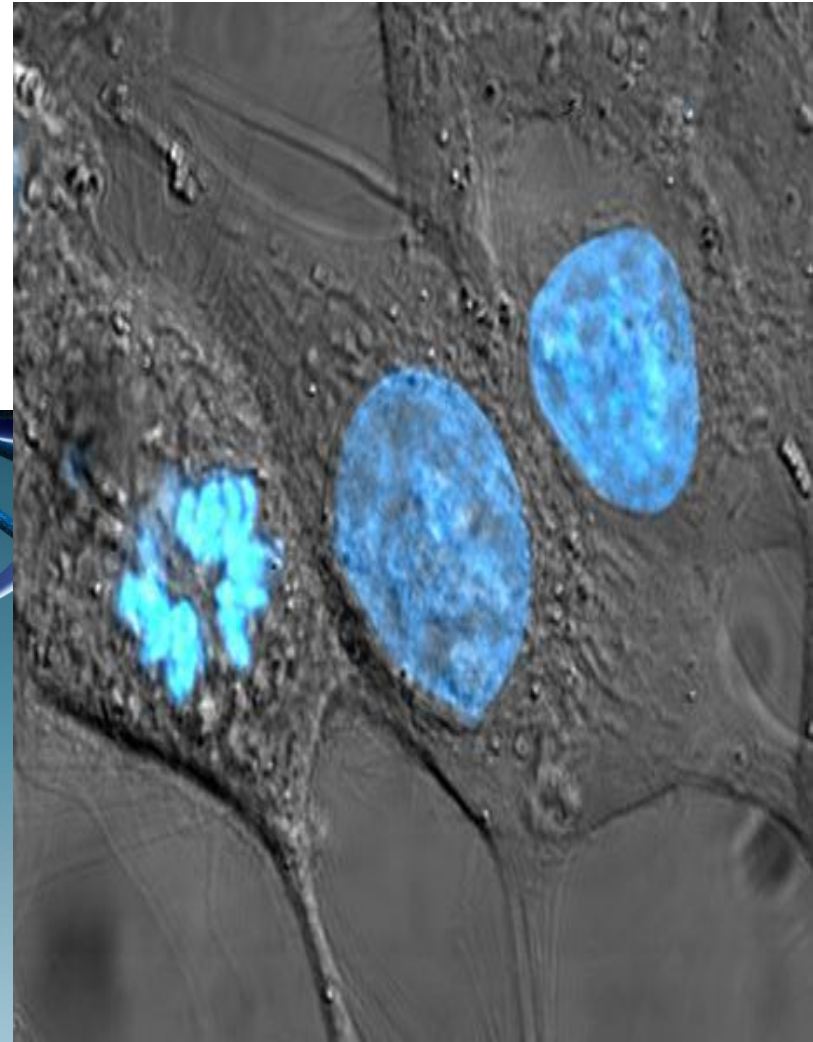
# Microscopes

- Electron Microscopes
  - Transmission Electron Microscope (TEM)
  - Scanning Electron Microscope (SEM)
  - Scanning Probe microscope



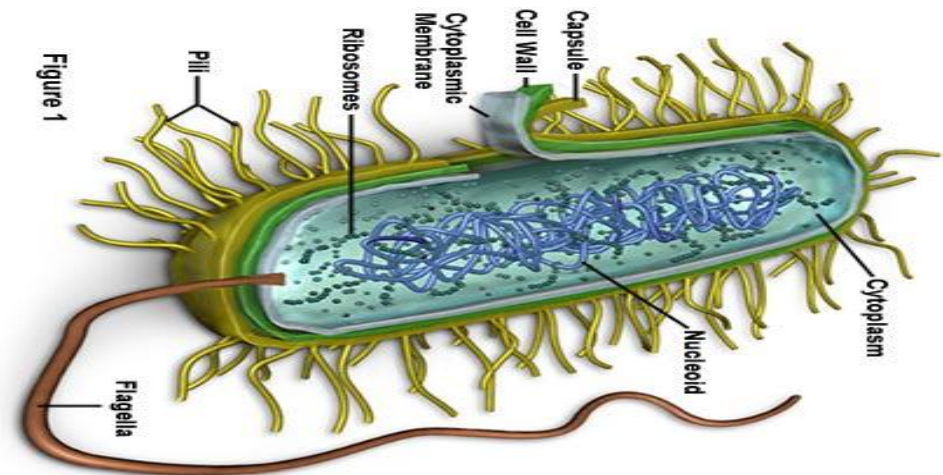
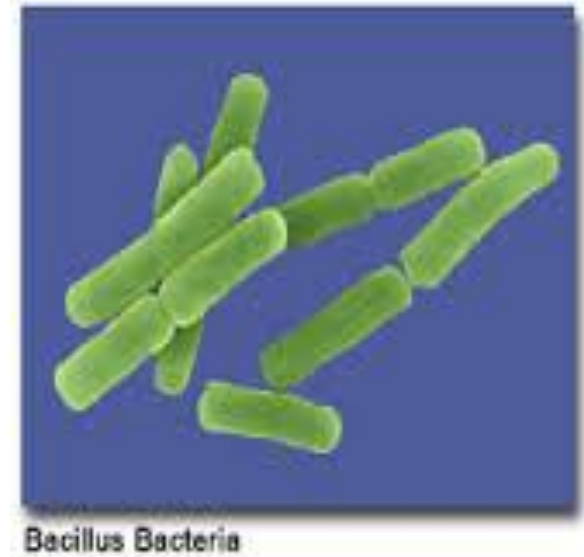
# All Cells Have

- Cytoplasm
- Cell Membrane
- Genetic molecules (DNA)



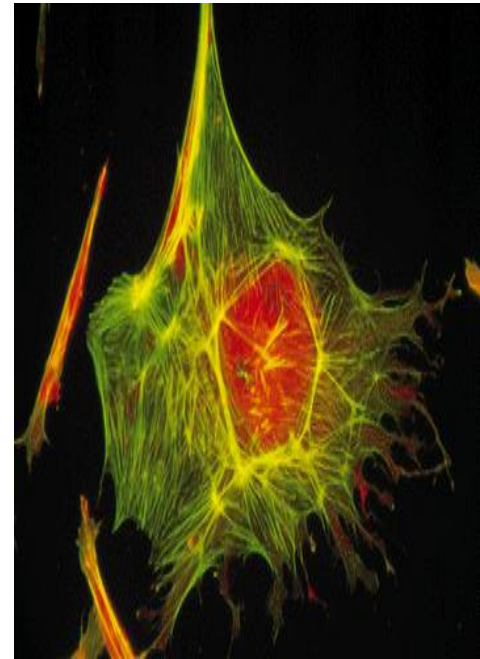
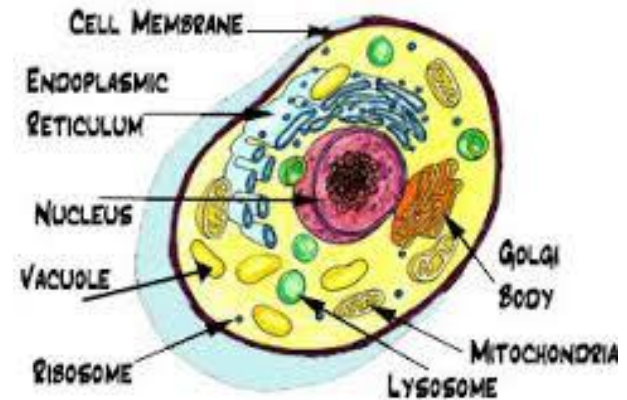
# Prokaryotes

- Oldest cells
- Small
- Simple
- No Nucleus (genetic material is free)
- Have no major organelles
- Have ribosomes
- Example: Bacteria

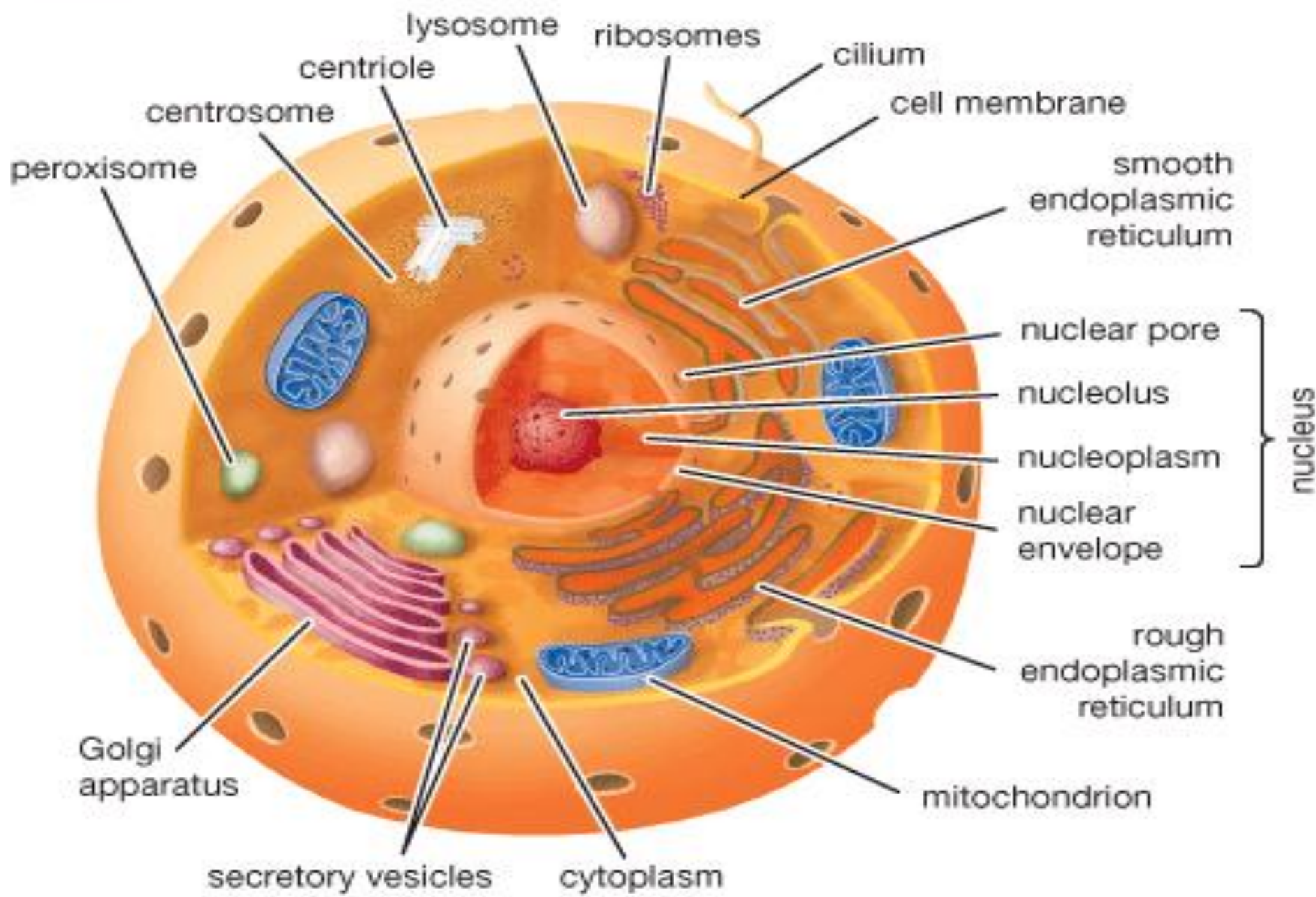


# Eukaryotes

- Younger than Prokaryotes
- Larger
- Complex
- Nucleus with DNA inside
- Have organelles with membranes
- Have ribosomes
- Example: Animal and plant cells



# Animal cell



# Anatomy of the Plant Cell

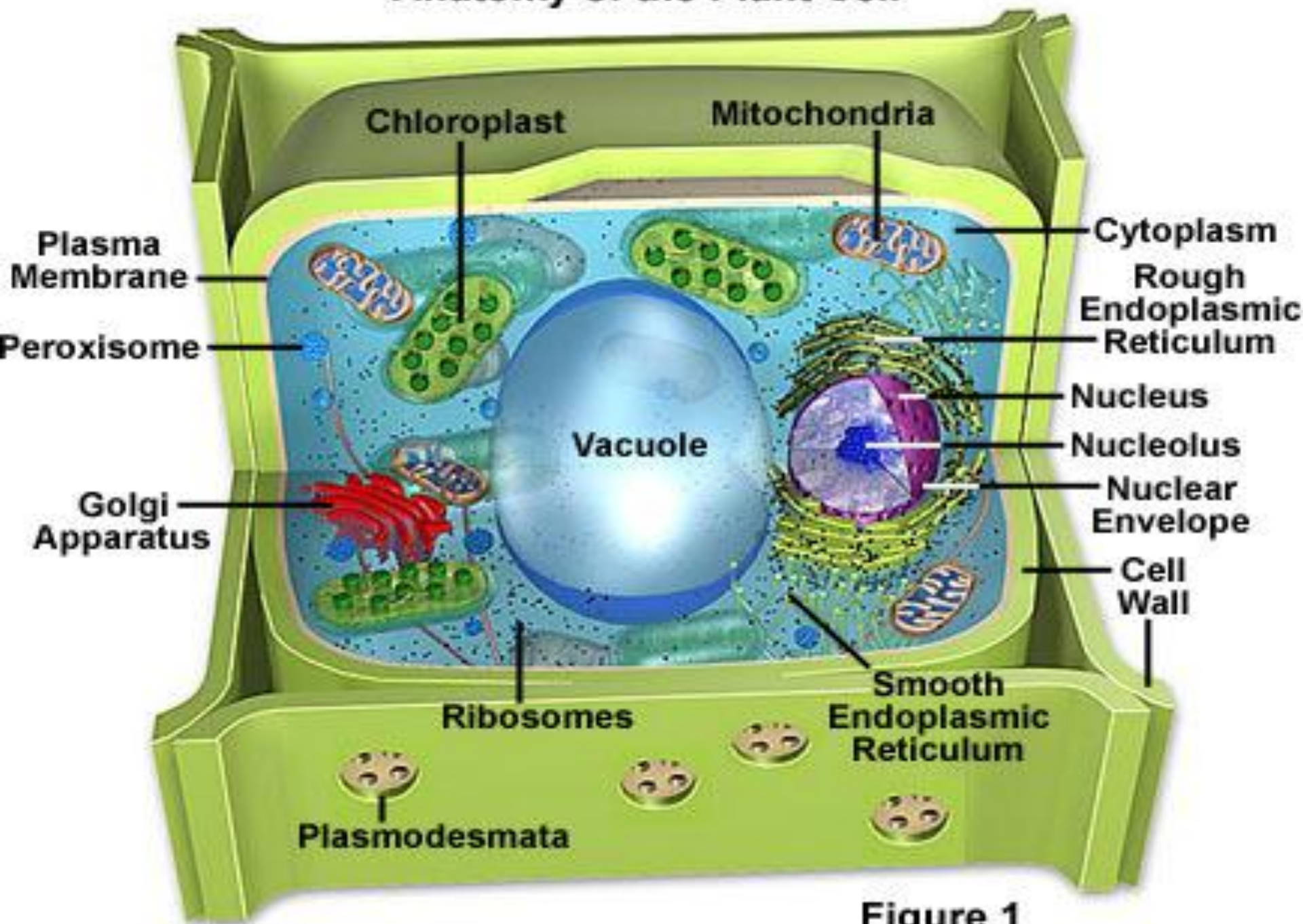


Figure 1



# All Eukaryote Cells contain

- Nucleus (Chromosomes – cell leader)
- Ribosomes (produce proteins)
- Endoplasmic Reticulum
  - Rough – package proteins
  - Smooth – package lipids
- Golgi Apparatus – package send out material
- Lysosomes – break stuff down
- Vacuoles – stores water
- Mitochondria/ Chloroplast – energy producer

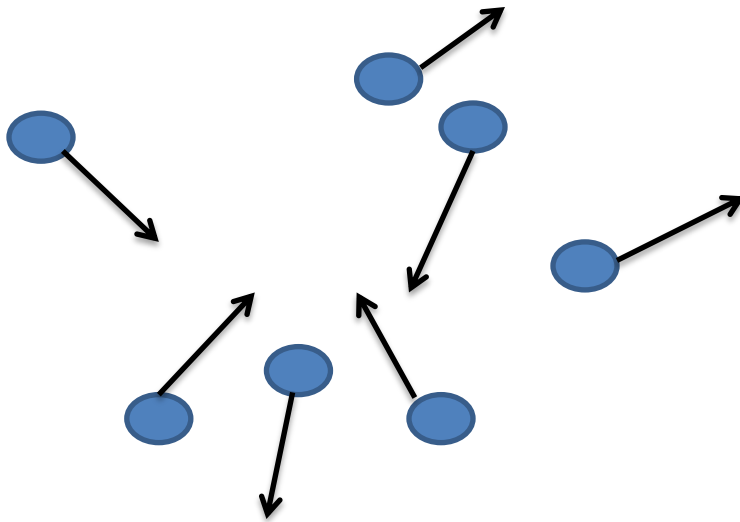
# Plant Cell

- Chloroplast – suns energy into sugar
- Cell Wall – structure and support
- Central Vacuole – stores water and gives turgor

# Osmosis Notes

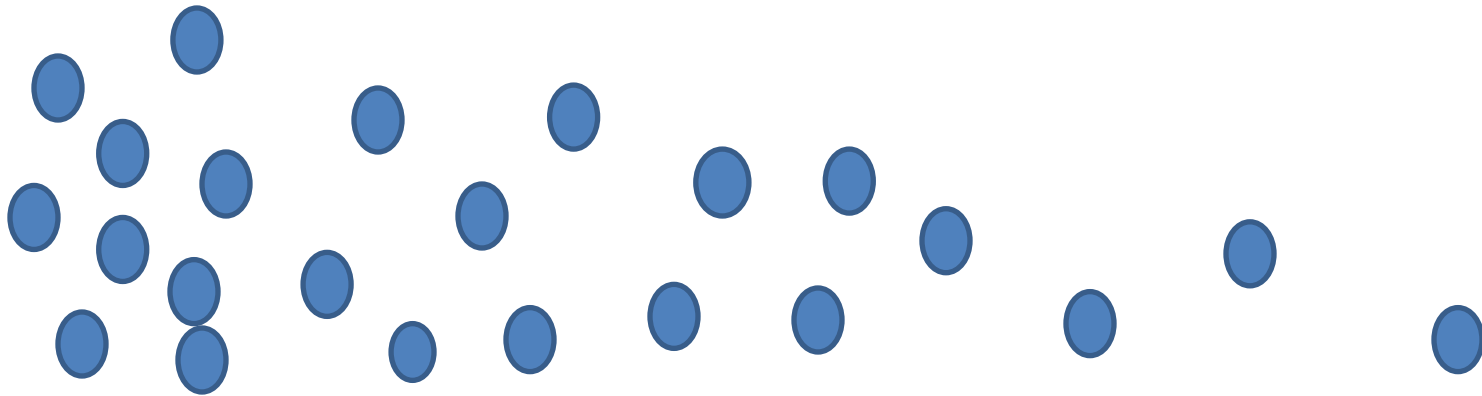
# Passive Transport

- Uses no Energy
- Movement of a substance across a membrane
- Depends on random motion of molecules



# Diffusion

- Molecules move from an area of high concentration to an area of low concentration

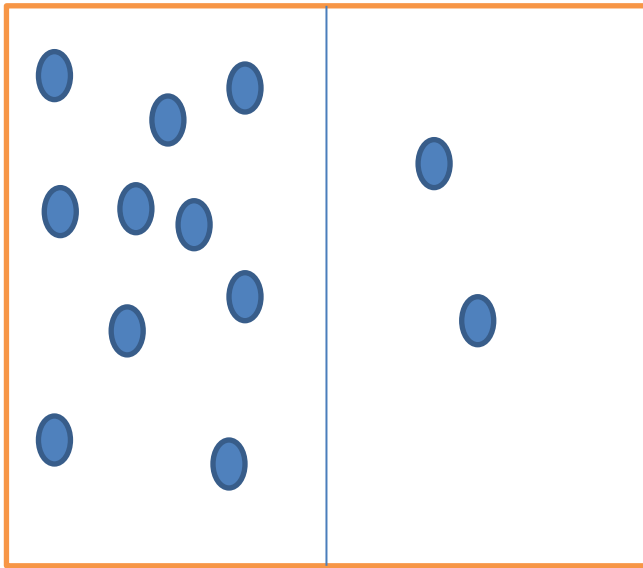


**High Concentration**

-----> **Low concentration**

Which Box (A or B) is at Equilibrium?  
Which side (1 or 2) is high/low concentration?

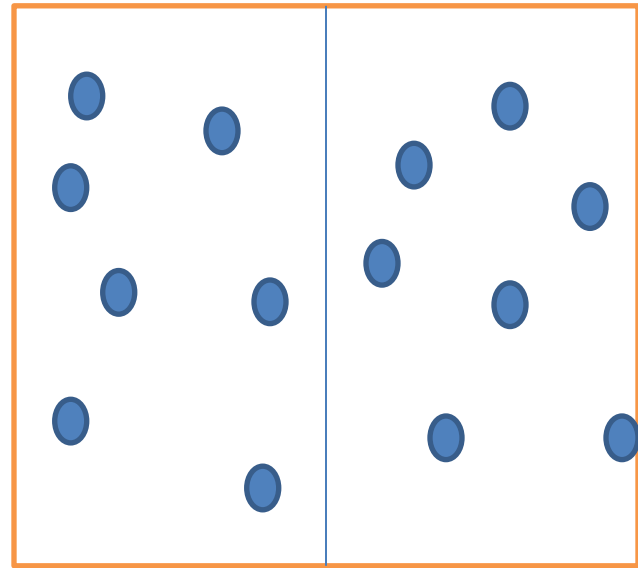
**A**



**1**

**2**

**B**

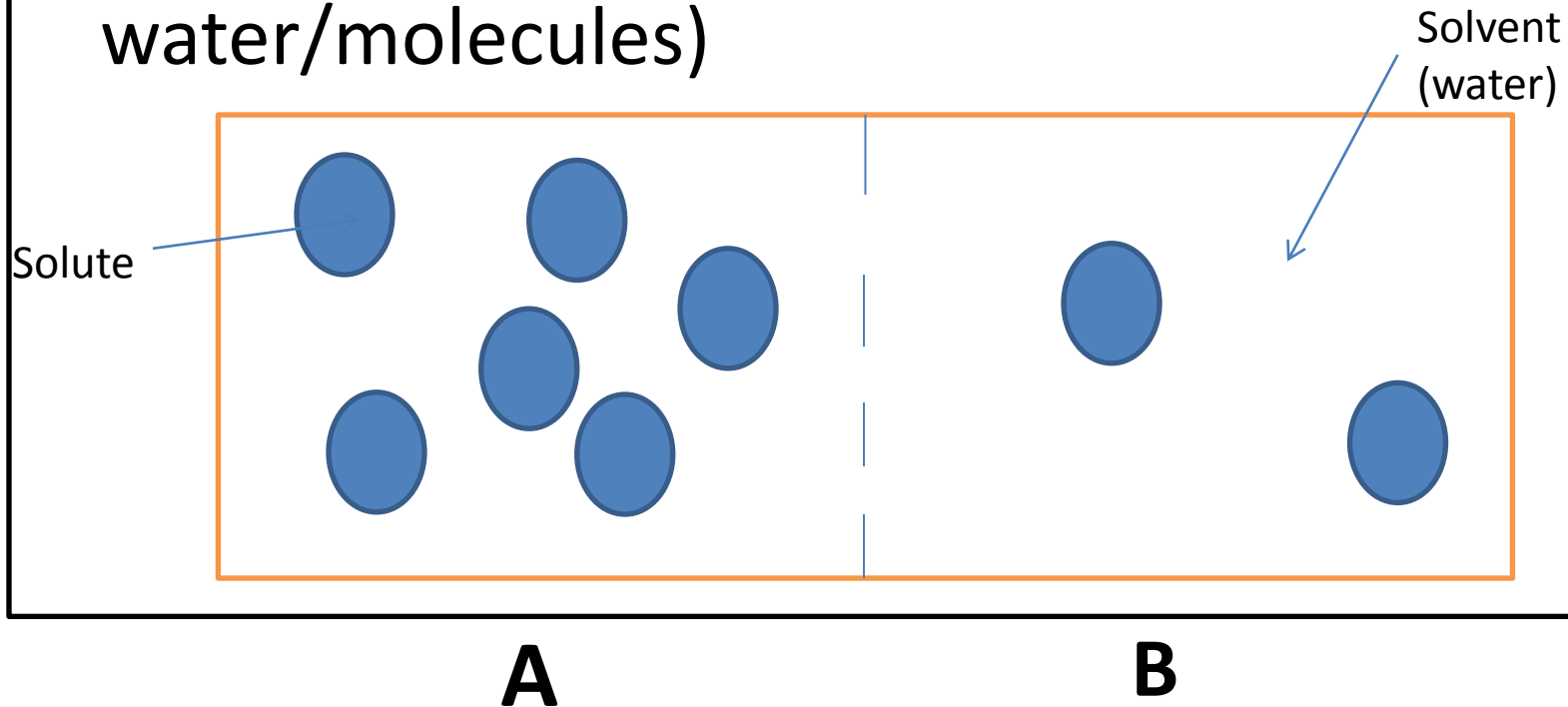


# Diffusion

- Concentration Gradient: Difference in concentration (side 1 to side 2)
- Equilibrium is when the concentration is equal in a space

# Osmosis

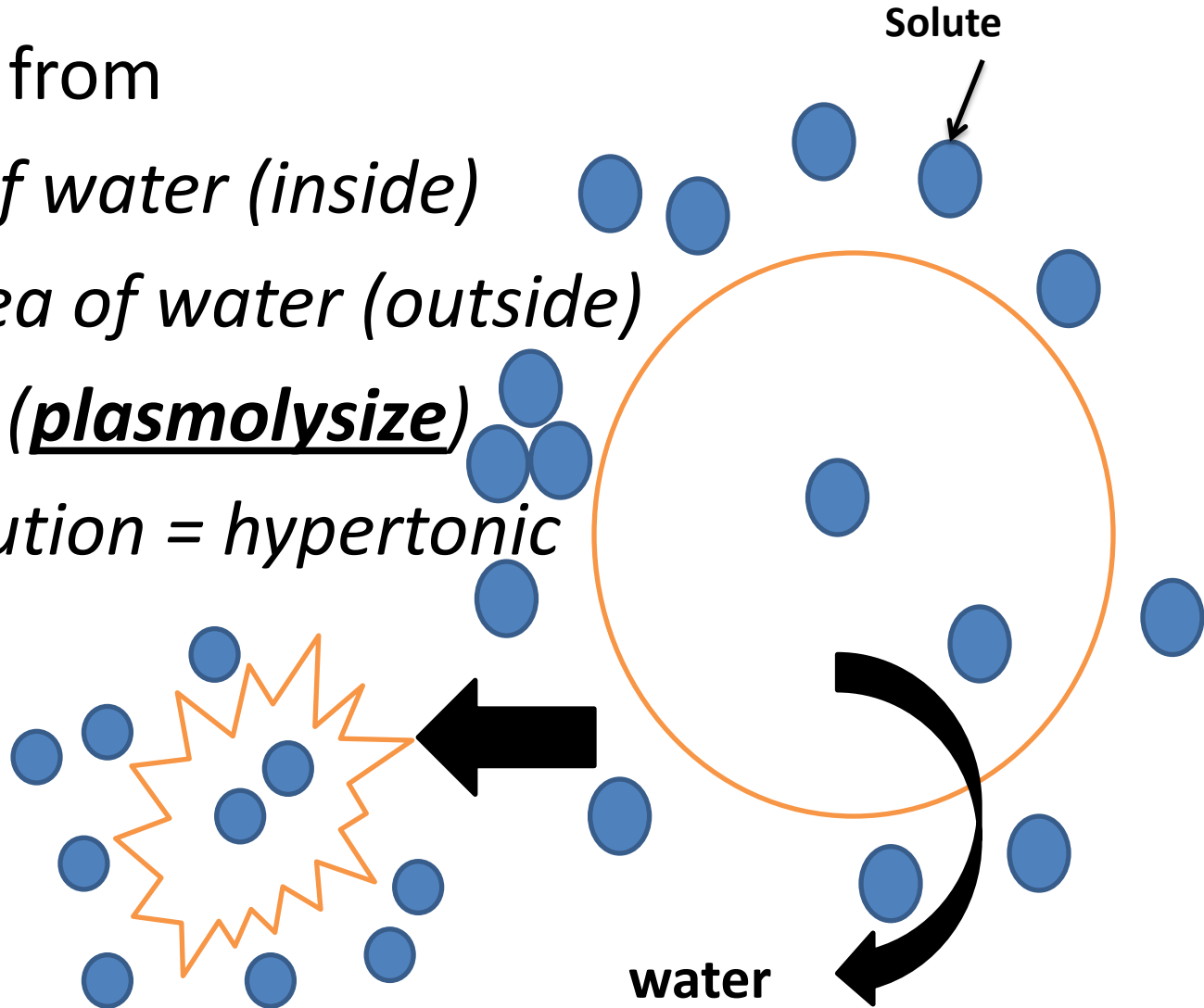
- Osmosis: Diffusion of water across a membrane (water moves from an area of a lot of water/molecule to an area of less water/molecules)





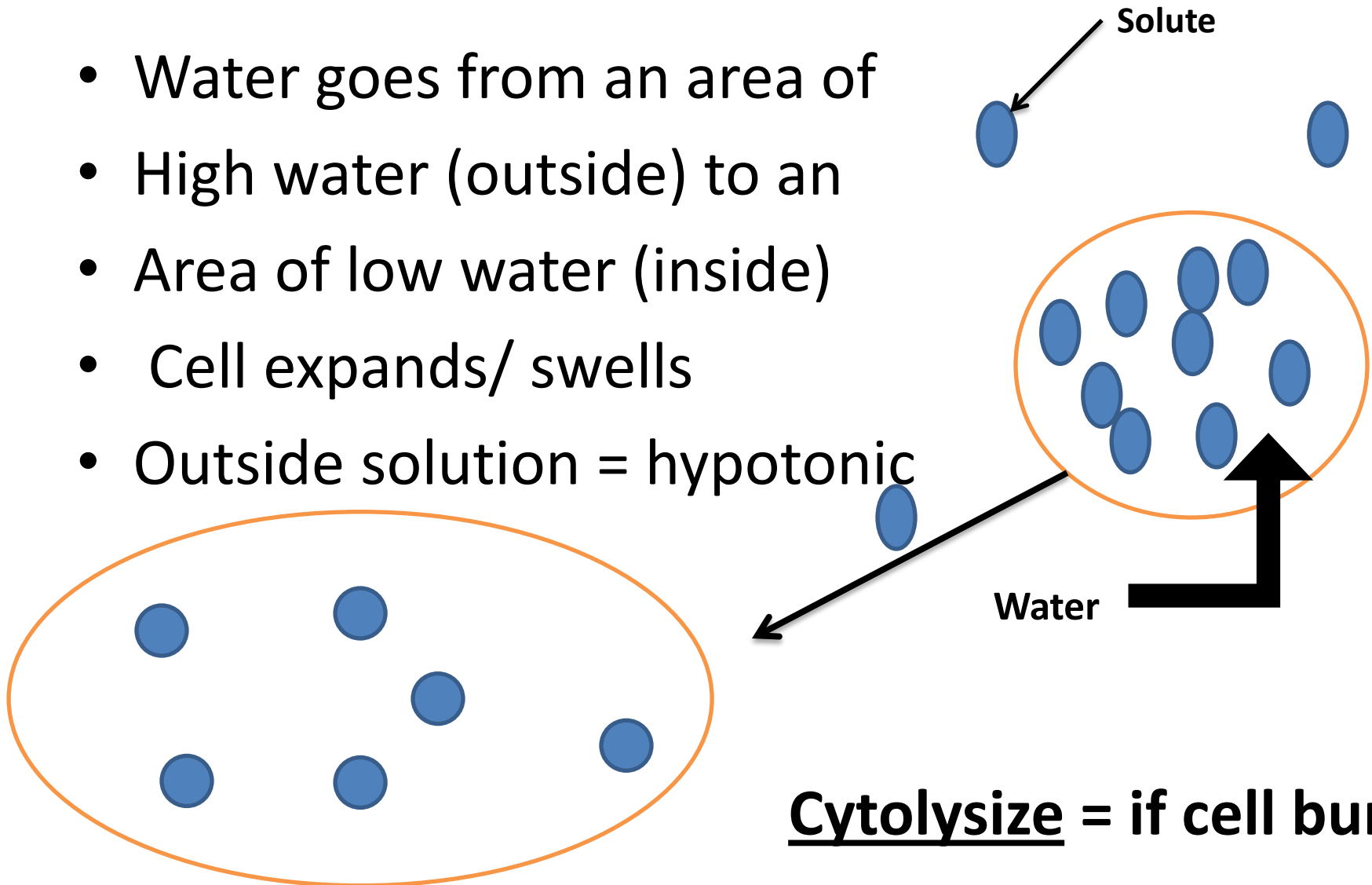
# Water Can Move out of a Cell

- Water goes from
- *High area of water (inside)*
- *To a low area of water (outside)*
- *Cell Shrinks (**plasmolyze**)*
- *Outside solution = hypertonic*



# Water can move into a Cell

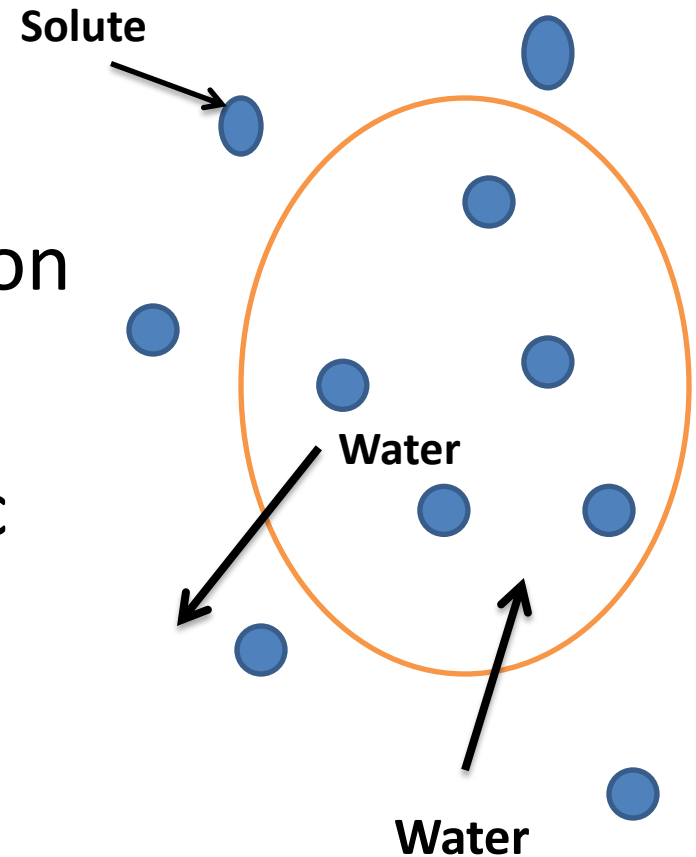
- Water goes from an area of
- High water (outside) to an
- Area of low water (inside)
- Cell expands/ swells
- Outside solution = hypotonic



**Cytolysis = if cell bursts**

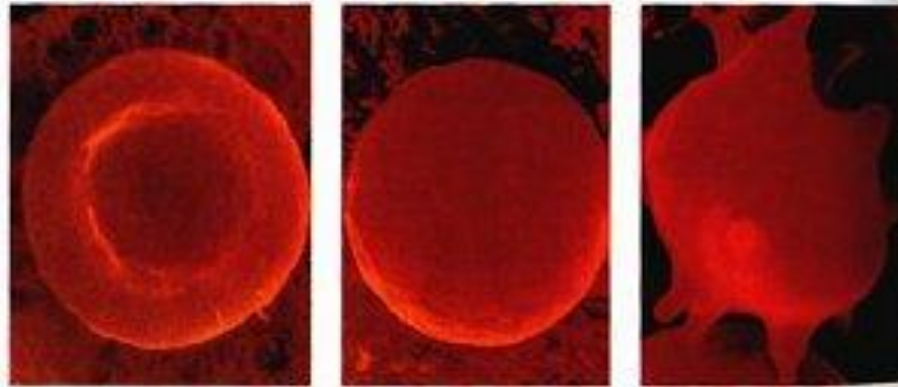
# Water can move both in and out

- Water moves both in
- And out of cell because
- There is equal concentration
- Cell remains same size
- Outside solution = isotonic



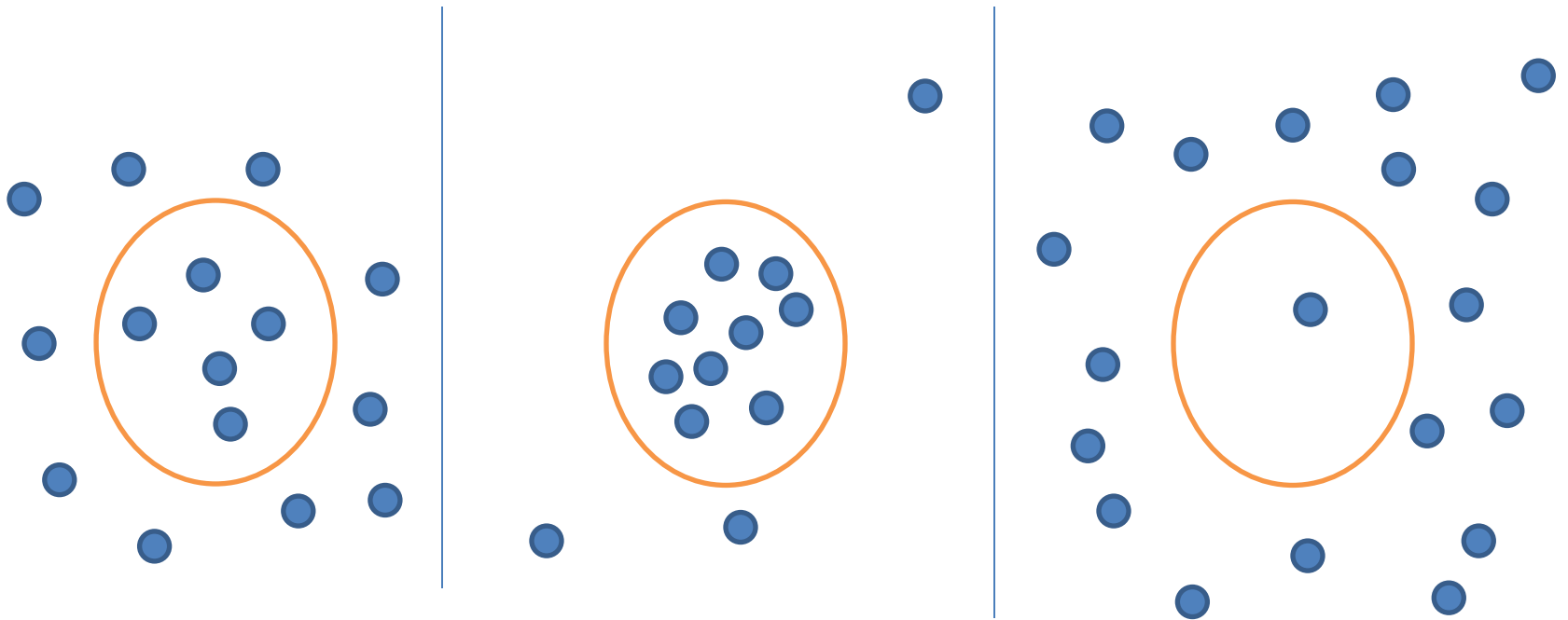
# Dealing with Hypotonic Solution

- If not dealt with the cell could explode (**cytolysize**)



- Plants have rigid cell walls (so in hypotonic solution pressure (turgor) increases)
- Some Eukaryotes have “Contractile Vacuole” – pumps out water
- Others remove the solutes from their cell

# Which solution is Hypertonic, hypotonic and isotonic



**A**

**B**

**C**

Which direction will the water move in all three cases (A, B, and C)?