

# The Cell

**TEST- Tues, 09/17/19**

## **Unit B Concepts**

**Microscopes**

**Cell Theory**

**Prokaryote vs Eukaryote**

**Diffusion**

**Active Transport**

## 3 Types of Microscopes

★ **Compound Light**

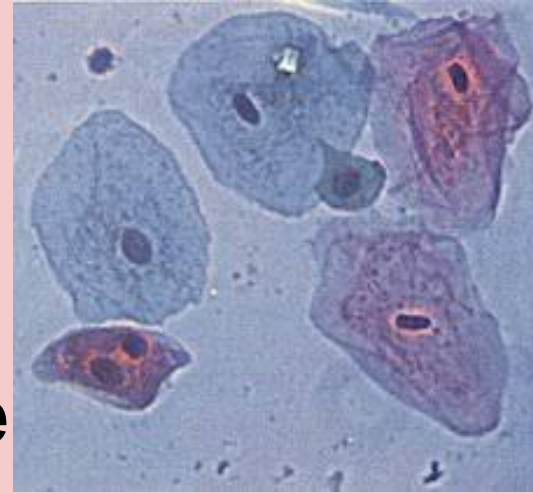
★ **Scanning Electron Microscope**

★ **Transmission Electron Microscope**



# Compound Light Microscope

- **Magnifies 1500x**
- **Visible: nucleus, cell membrane**



# Electron Microscopes

## Scanning vs Transmission



Close up of an insect's head

- **Surface**
- **100,000x**

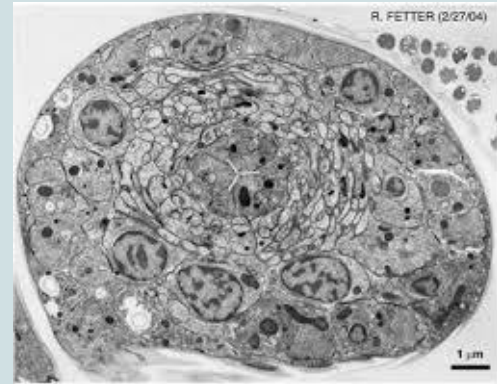


Image of an insect's organ

- **Thin slice**
- **100,000x**

## **3 Principles of Cell Theory**

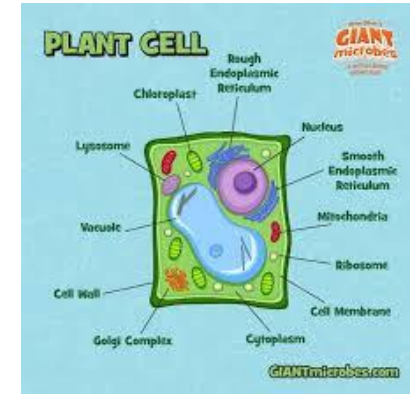
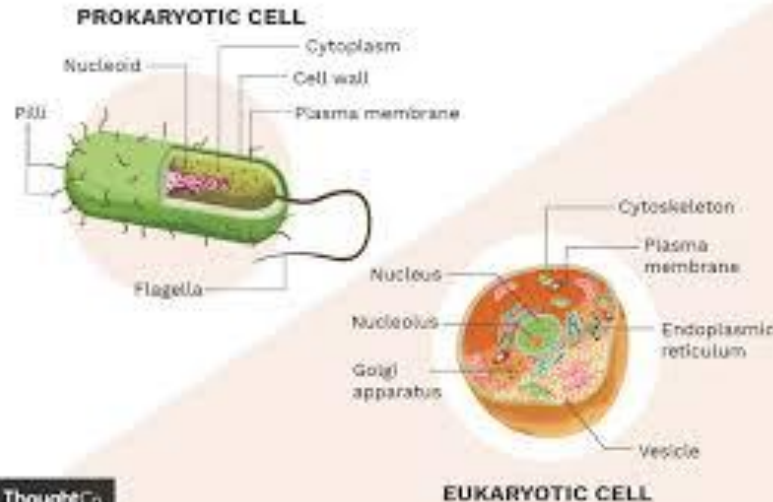
- ❖ **All living things are made up of cells**
- ❖ **Cells come from other cells**
- ❖ **The cell is the basic unit of life**

The cell theory is one of the 1st unifying concepts developed in biology

# Prokaryote vs Eukaryote

- Single-celled
- Bacteria

- Multi-cellular
- Plants, Animals
- Nucleus



**What do prokaryotes and eukaryotes have in common?**

- 1. DNA- genetic info**
- 2. Ribosomes**
- 3. Cytoplasm**
- 4. Cell membrane**

**Hello Kitty International Fan Club**

Name: \_\_\_\_\_

Membership Number: \_\_\_\_\_

Joined: \_\_\_\_\_

The logo for the Hello Kitty International Fan Club is circular. It features the character Hello Kitty in the center, wearing her signature red bow and a blue dress with a yellow collar. The words "HELLO KITTY" are written in a semi-circle above her head, and "FAN CLUB INTERNATIONAL" is written in a semi-circle below her. The entire logo is enclosed in a thin black border.

# Cell Organelles

Both

Animal

Plant

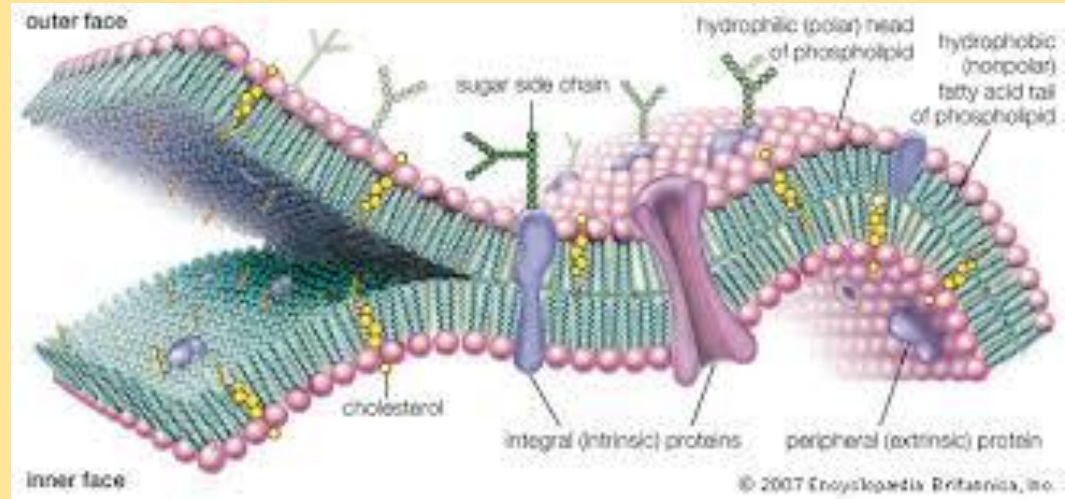
- Nucleus: protects DNA (genetic info)
- Mitochondria: supplies energy
- Ribosomes: makes protein
- **centrioles= mitosis**
- chloroplast= photosynthesis
- Cell wall= supports plants





# Cell Membrane a&p

- ALL CELLS
- aka **FLUID MOSAIC MODEL**
  - Carbohydrate
  - Cholesterol
  - Protein
- **Selective permeable**
- **Concentration Gradient:** the direction of how particles enter &/or exit the cell
- Method of how particles ENTER &/or EXIT the cell



# Passive Transport

- ❑ DEF: concentration gradient movement from hi → low concentration w/out energy

- ❑ 3 Types:
  - ❑ Diffusion
  - ❑ Facilitated
  - ❑ Osmosis



# PASSIVE TRANSPORT

	<b>DIFFUSION</b>	<b>FACILITATED</b>	<b>OSMOSIS</b>
<b>ENTRANCE</b>	<b>Lipid bilayer</b>	<b>Protein channel</b>	<b>Both</b>
<b>PARTICLE</b>	<b>Gas Solids</b>	<b>Bigger solids</b>	<b>water</b>

I'M BEGINNING TO WONDER ABOUT LARRY'S COMMITMENT TO THE FAITH

# Osmosis- who controls which direction water flows?

- The relationship of how much water is **INSIDE** of the cell vs. **OUTSIDE** of the cell (**solution**)

	Isotonic	Hypertonic	Hypotonic
The Cell	Water is = to the solution	Shrinking < water in the cell	Bursting > water in the cell
The Solution	Water is = to the cell	> water in solution	< water in solution

**Active Transport** low → high concentration; the direction is against the concentration gradient

- **Requirements**

- **A protein channel**
- **Energy (ATP)**



- **What happens if the cell's needs are > the protein channel?**

- **En(ters)docytosis:** (pinocytosis) drinking & (phagocytosis) eating
- **Ex(its)ocytosis:** removes