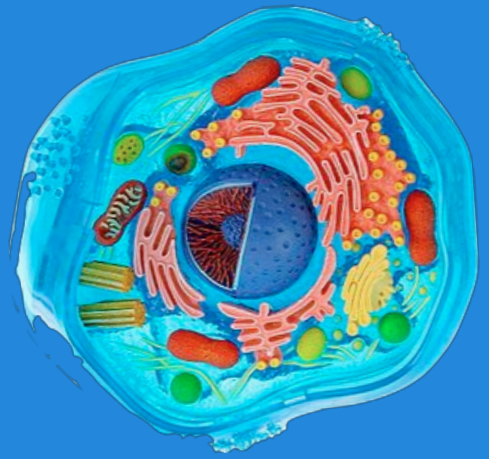


LIFE OF A CELL

Copper:Myrna Yousuf,Taylor Washington, Angelica Owens,Tomy Fleurine

Abstract

Cells vary by species and below are a few points:

- Different kind of cells
- Organelles play an important role
- Respiration and Photosynthesis
- Mitosis and Meiosis
- Reproduction
- Permeability
- Different stimulus responses

Cells MOVE

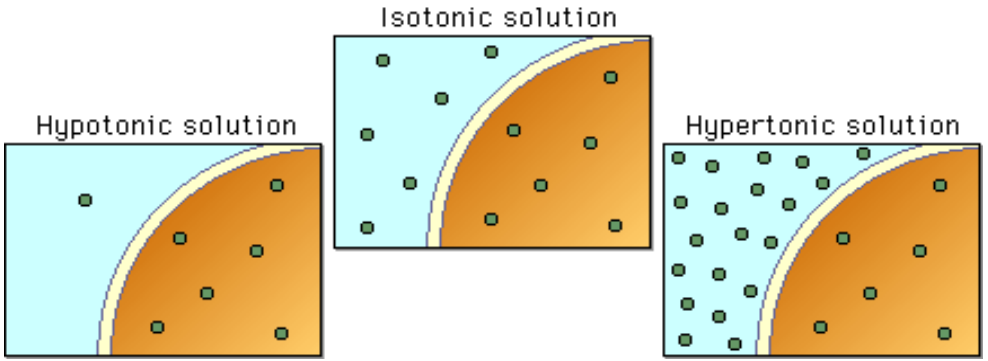
Active Transport:Needs ATP

-Endocytosis: enter

-Exocytosis: leaves

-Hypotonic: low concentration of solvents

-Hypertonic: high concentration of solvents



Passive Transport:No ATP Required

Diffusion-moving molecules from highly concentrated areas to low concentrated areas

Osmosis-the process of molecules that pass through a semipermeable membrane from a less concentrated are to a higher concentrated area

Cells MOVE

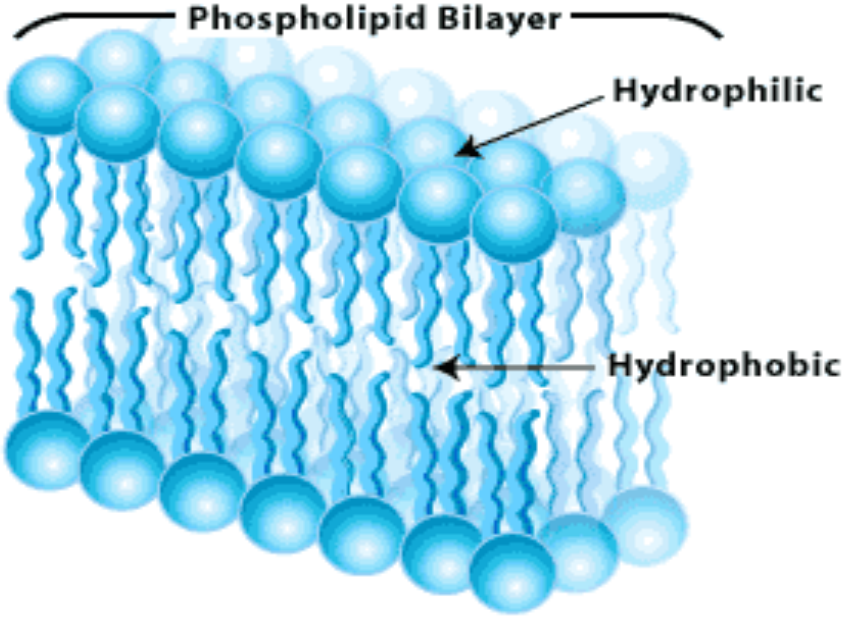
Active transport: Movement of molecules across the membrane. The molecules occurs against their concentration of going from low to high.

Phospholipid bilayer- form a layer around the cell

-Semipermeable: certain things can pass through

Hydrophilic-Likes water

Hydrophobic-Doesn't like water



Cells COMMUNICATE

Cells communicate using proteins

-Blood cells require antigens to be compatible with other blood cells.

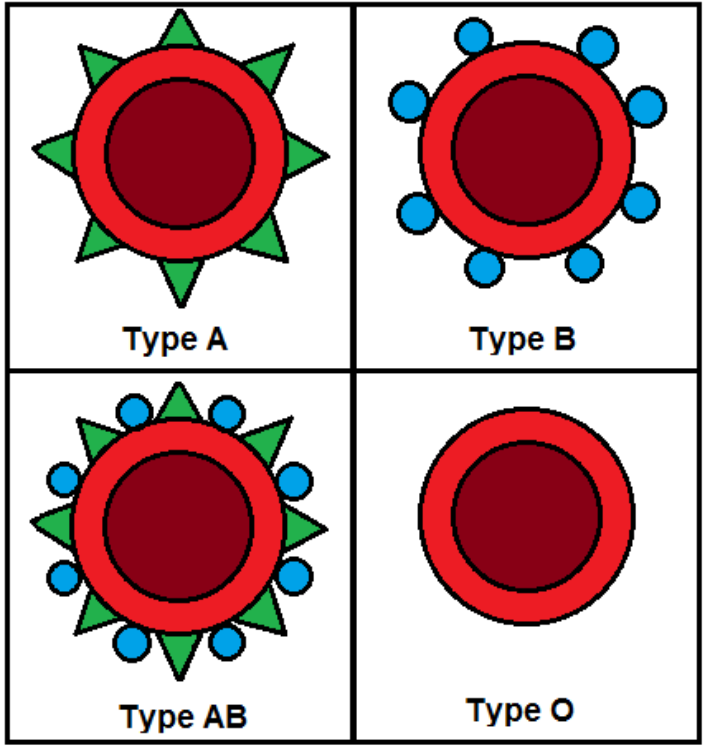
-Blood cells communicate using the proteins that are around them.

Type O- Universal Donor

Type AB-Universal Receiver

Type B- Only B and AB

Type A- Only A and AB



FOOD

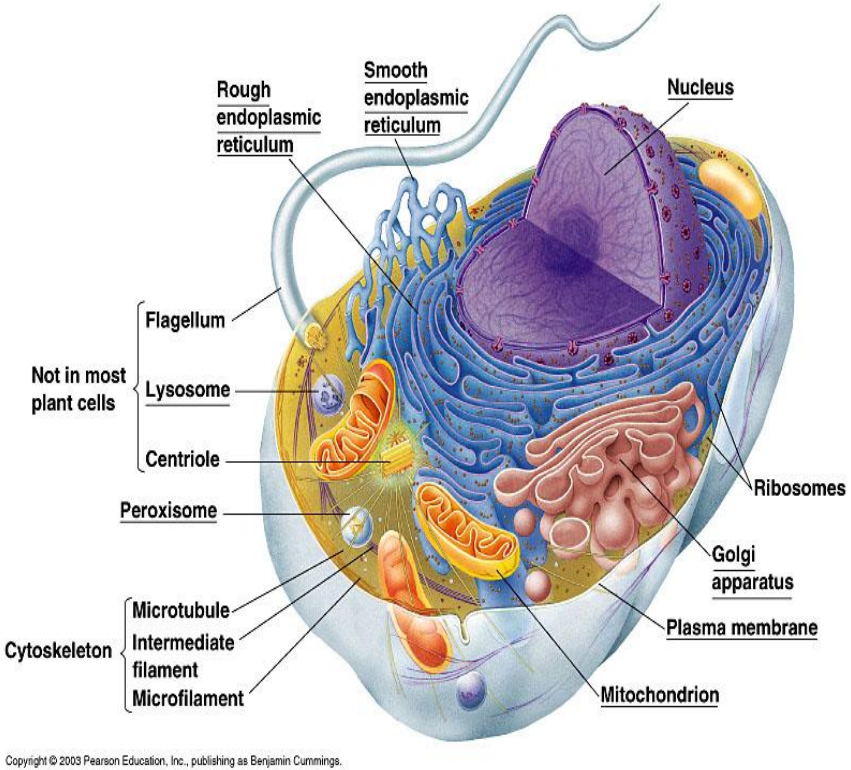
Photosynthesis: Chloroplasts turn carbon dioxide and the energy from the sunlight into sugar (glucose) and oxygen

$6CO_2+6H_2O+energy= C_6H_{12}O_6$

-One way for organisms get food is through glucose

-In photosynthesis, light energy is turned into chemical energy called glucose

-Glucose is made through photosynthesis



FOOD-Organelles help process

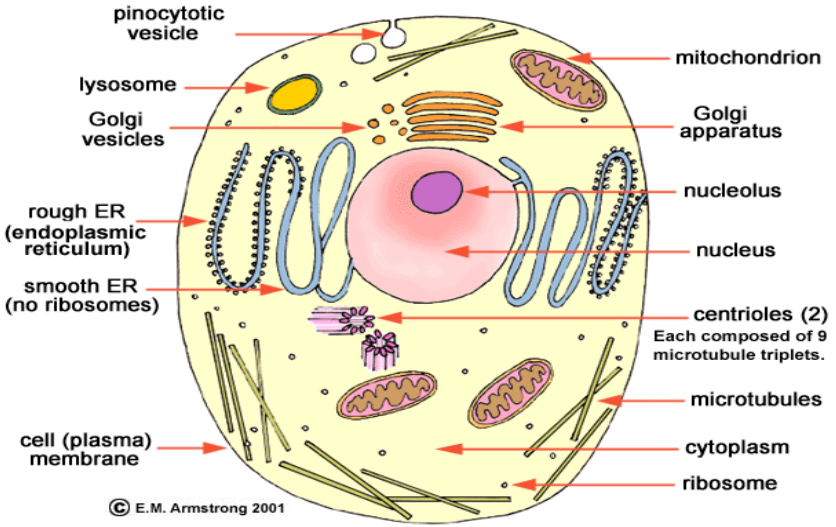
Lysosomes: digests and recycles old/used cell components; use their enzymes to break down molecules

Golgi Apparatus: processes proteins generated in endoplasmic reticulum, transport lipids around the cell, create lysosomes

Endoplasmic Reticulum: creates highway of membranes throughout the cell

Phagocytosis:cellular eating

Pinocytosis:cell absorbs liquids



RESPIRATION

Cells take carbohydrates into their cytoplasm through a metabolic process, they break down the carbohydrates to release energy.

-The energy is used to combine ADP (adenosine diphosphate) with phosphate irons to form ATP (adenosine triphosphate) molecules.

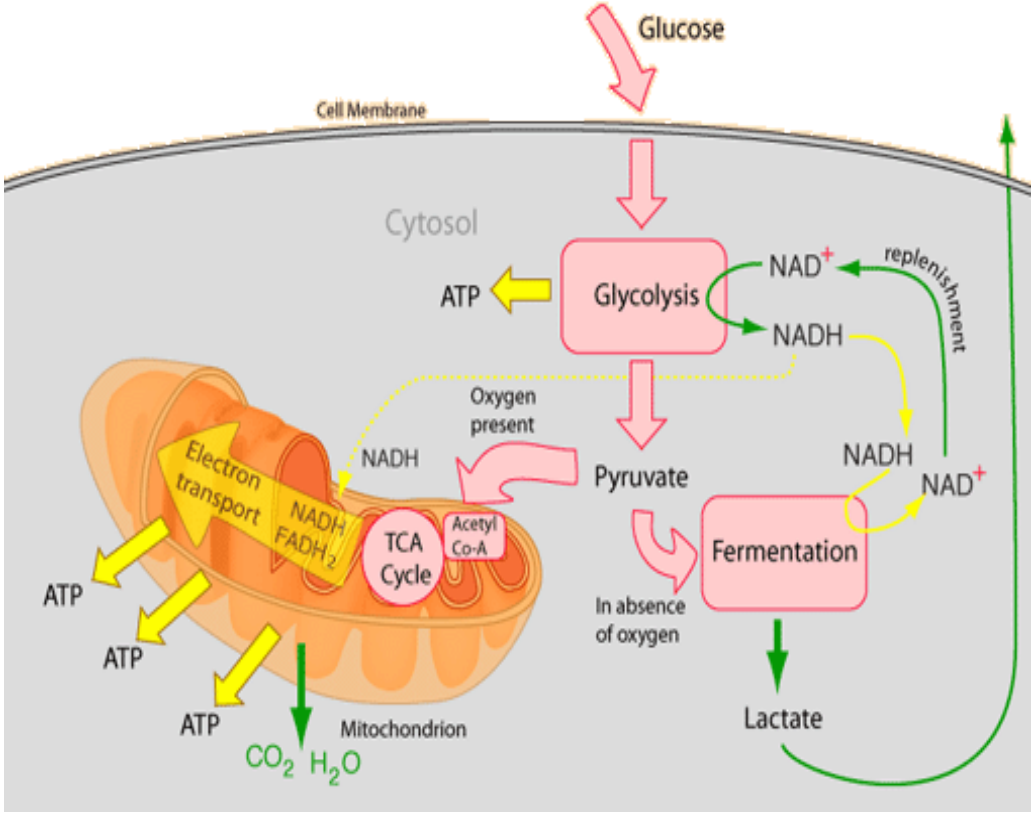
-ATP is made through 4 steps:

Glycolysis-glucose molecules are broken down

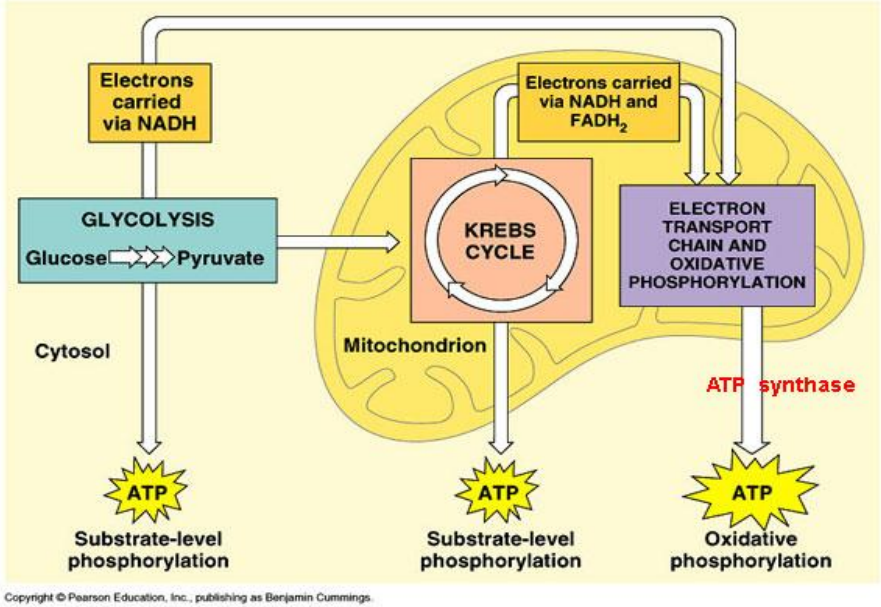
Krebs cycle-Acid broken down to form high energy compounds

Electron transport system: electrons transported through coenzymes and cytochromes

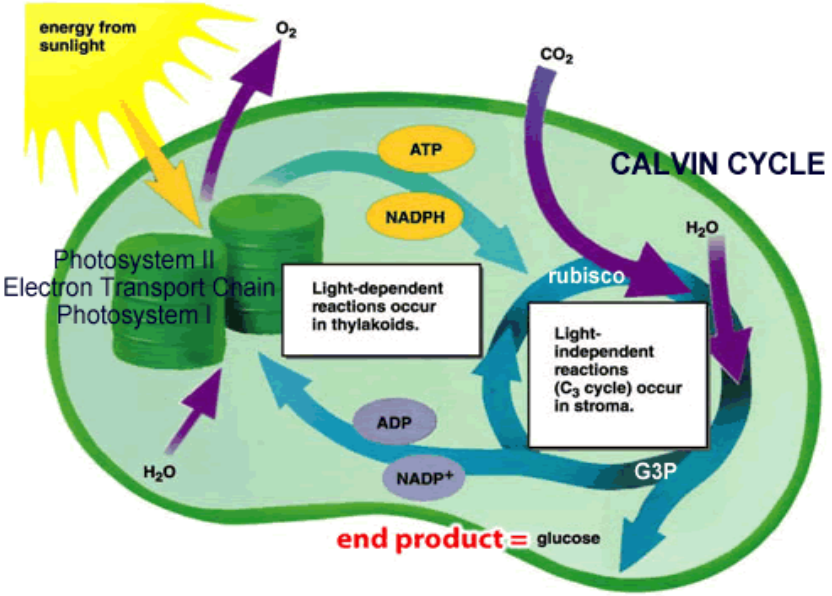
Chemiosmosis: energy is given off by electrons across a membrane



Respiration vs Photosynthesis



Respiration: ATP is made from glucose



Photosynthesis: sun energy is used to make glucose

REPRODUCTION-Meiosis

Sex cells are made by Meiosis

1) A somatic cell divides into two new cells that are identical to the original one

2) When the cells divide, each one of them replicate to produce another one.

8 phases of Meiosis

Prophase I (homologous pair up and form tetrad)

Metaphase I (Chromosomes line up along equator, not in homologous pairs)

Anaphase I (Spindle fibers move homologous chromosomes to opposite sides)

Telophase I (Cytoplasm divides, 2 daughter cells are formed)

Prophase II (Crossing over occurs)

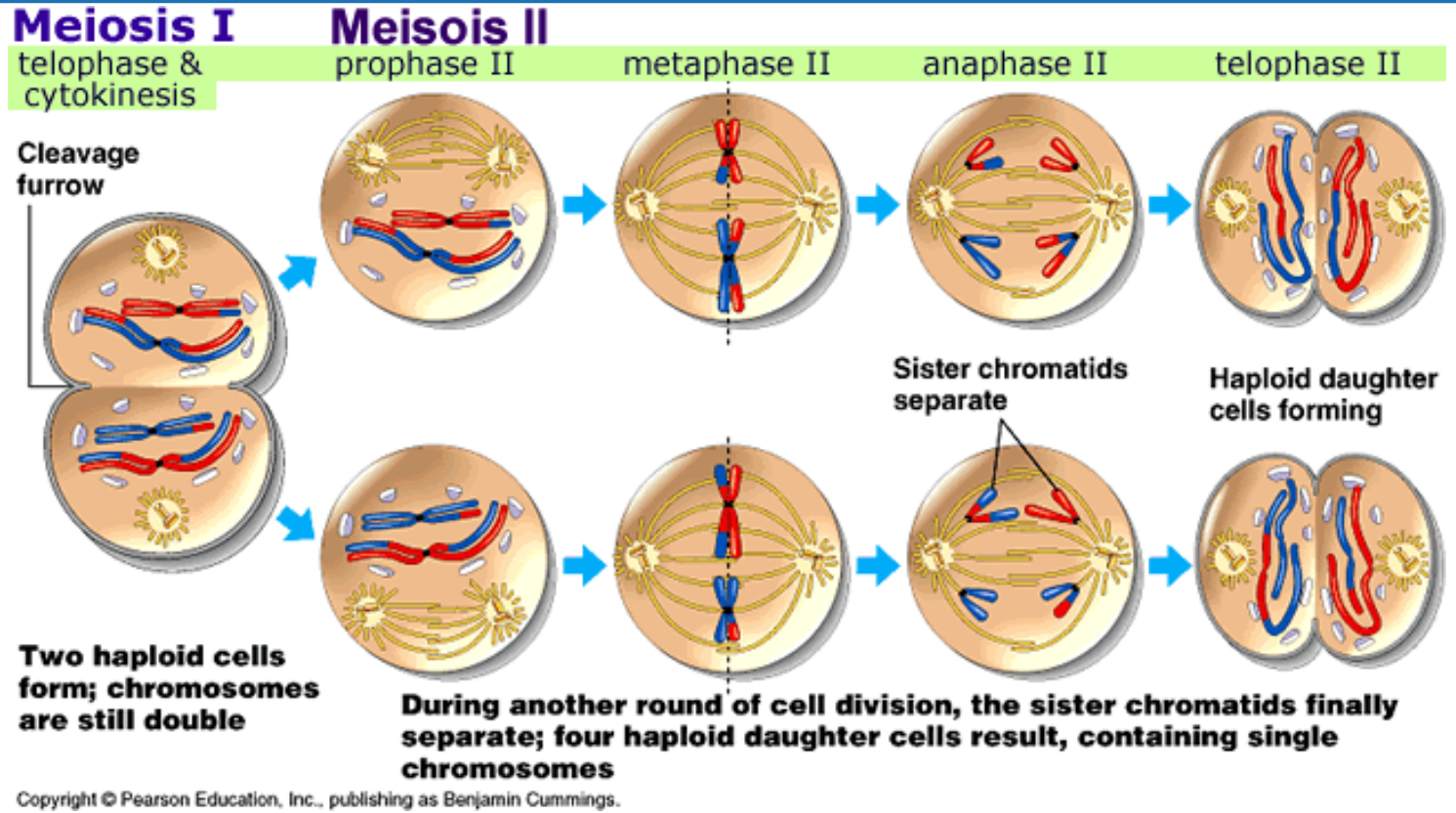
Metaphase II (Homologue line up along equator)

Anaphase II (Chromatids separate)

Telophase II (Nuclear membrane reforms , cytoplasm divides, 4 daughter cells formed)

Cytokinesis (Cells split)

Cell Reproduction



ORGANIZATION (PROTEINS)

Nucleus holds DNA stored in it's chromosomes

The nucleus communicates with the cell by using their genetic DNA to send out instructions for the cell activities

DNA has the code for proteins

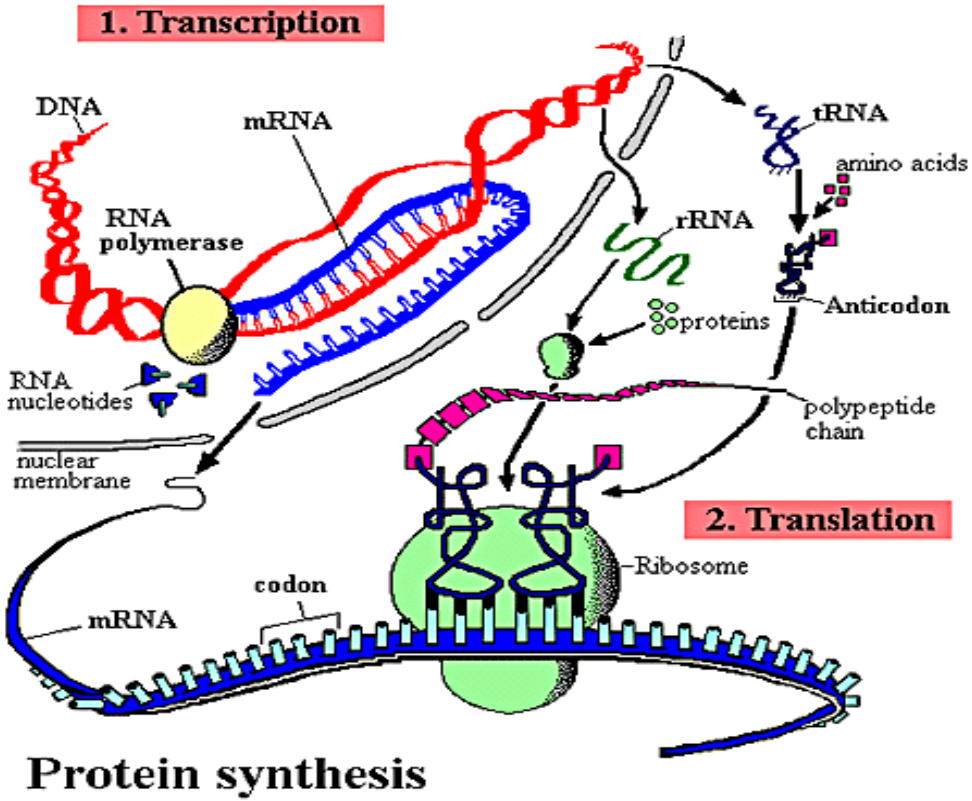
RNA reads the code

mRNA carries the code

rRNA reads the code

tRNA carries amino acids to rRNA

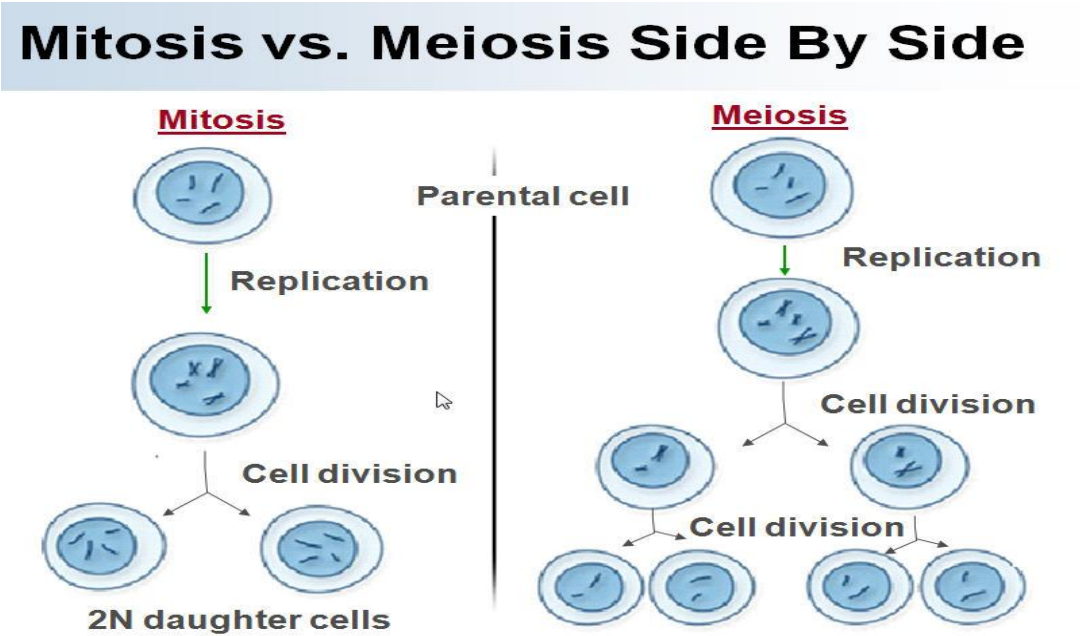
Protein Synthesis: All these molecules are organized in order to make proteins



GROWTH

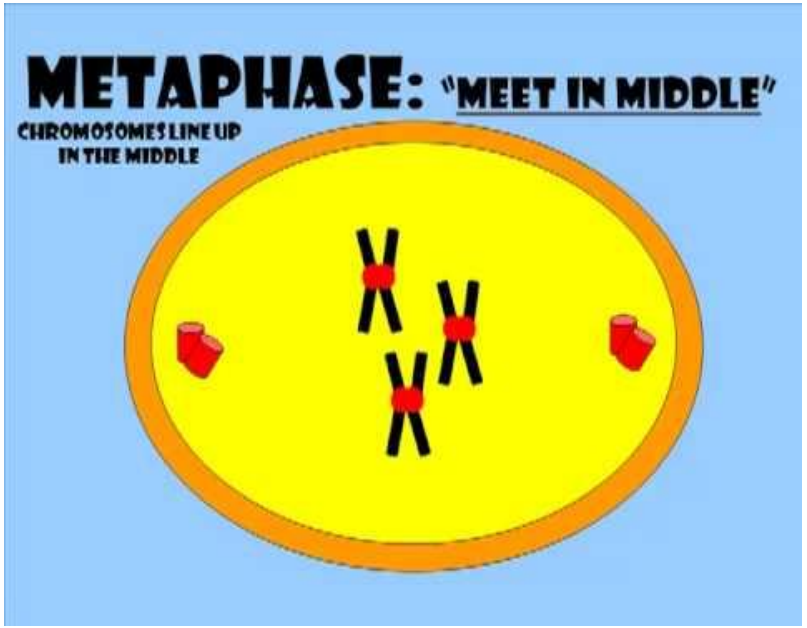
Mitosis- body cell division, producing more cells

Meiosis- sex cell division for sexual reproduction

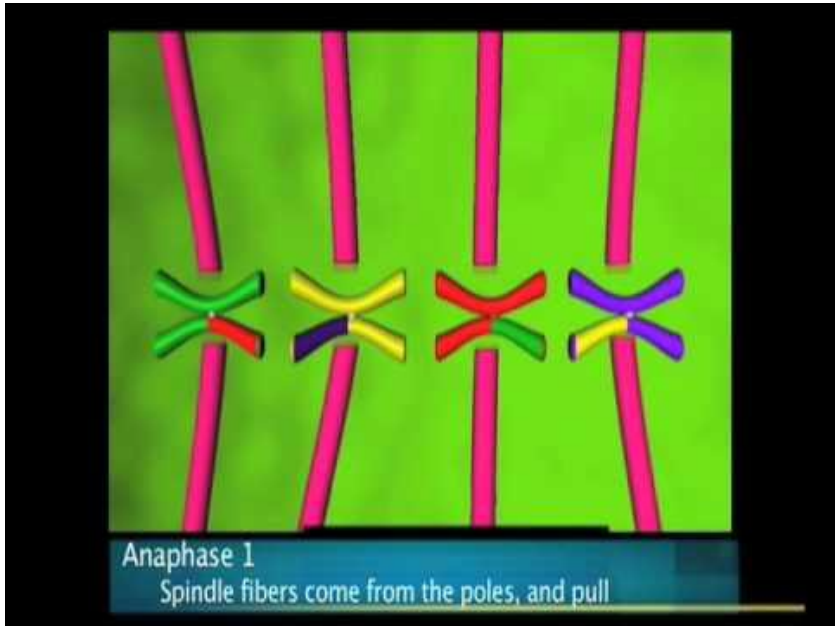


GROWTH-The Phases

Phases of Mitosis (Interactive)



Phases of Meiosis (Interactive)



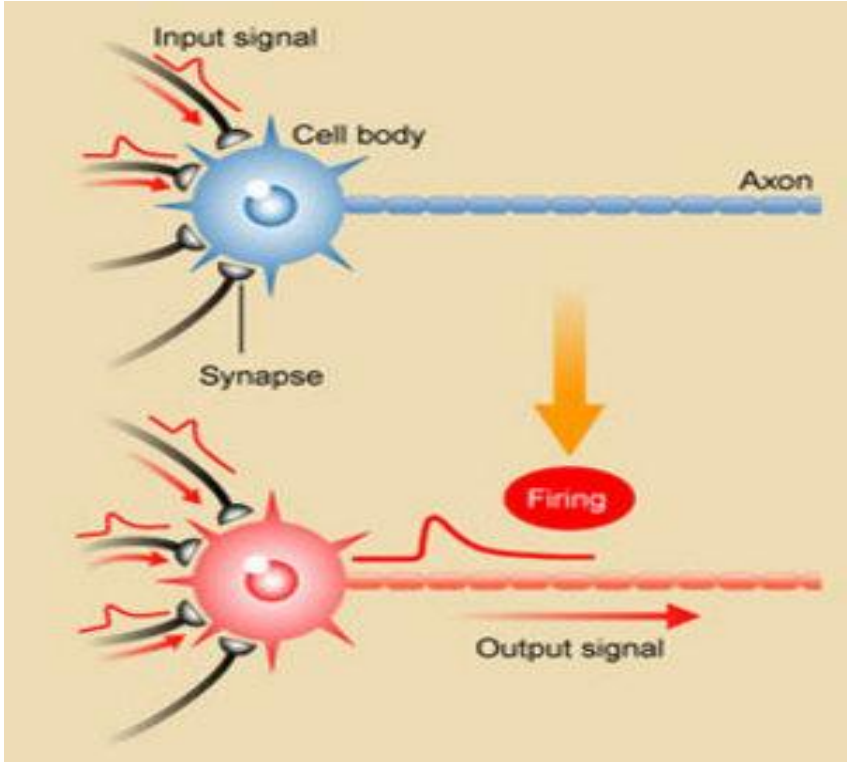
STIMULUS-Response

Cells perceive a stimulus through their environment. Cells process signals and send messages to the brain

- Neurotransmitters- signaling molecules that travel between neurons
- Receptors-create a physiological response by binding to signaling molecules

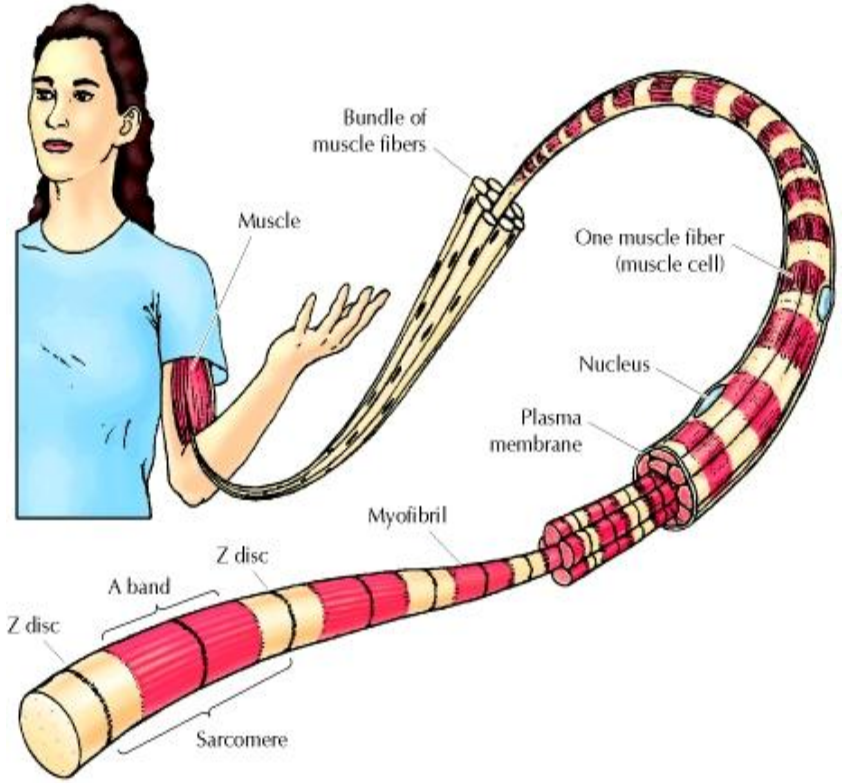
Example: Mechanical stimuli

- Skin responds to touch
- Ear react to sound waves
- Circulatory system detect changes in blood pressure



STIMULUS-Muscle Contraction

- Single large cells called muscle fibers
- Each fiber contains actin/myosin
- Myosin helps convert ATP to mechanical energy which generates movement
- helps with muscle contraction and cell division



STIMULUS-Immune Response

Innate Immunity:defense system you were born with

- First line of defense
- proteins that are known as antigens

-Cough reflex

-Stomach acid

-Skin

Acquired Immunity:immunity you develop over time from exposure

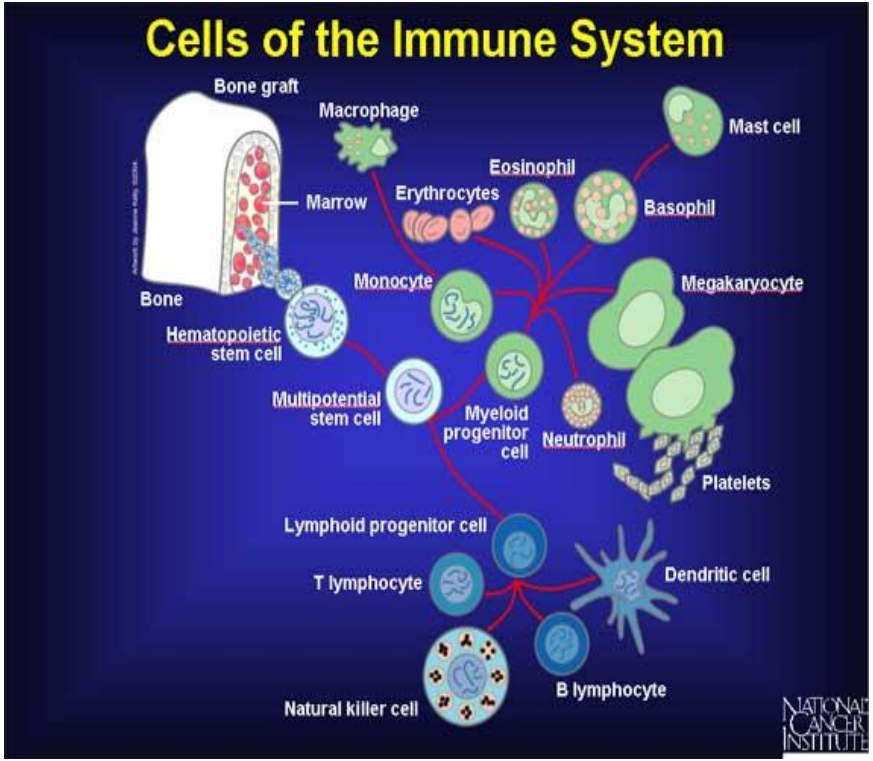
Passive Immunity:Antibodies produced from another

-antibodies transferred to placenta from mother

Immunization:Vaccination

-Small doses of antigens

-activates immune system memory



Normal cell vs. Cancer cell

Growth:When enough cells are present, normal ones stop growing and cancer cells don't

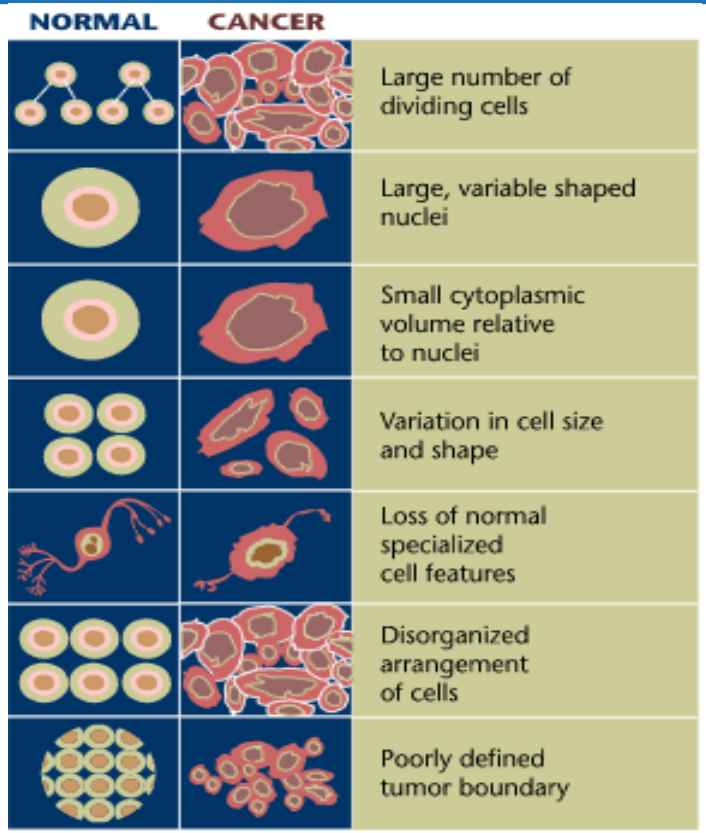
Communication: normal cells interact with each other and cancer cells don't. Normal cells await signals, cancer cells don't care about communication.

Functions: Cancer cells not functional like normal cells

Cell repair and death: Normal cells have the necessary mechanisms to repair themselves while cancer cells don't

Spread: Normal cells stay where they are meant to, cancer cells are able to travel to different places

Immune system: Normal damaged cells are removed, cancer cells trick the immune system in order to grow into tumor



Conclusion

- Cells have a very interesting and complicated life
- Cells use different things like chloroplast to turn into food
- How cells reproduce
- Cells sexually reproduce using meiosis
- DNA send out instructions for cell activity
- Cancer cell vs. Normal cells

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