Macromolecules Organizer

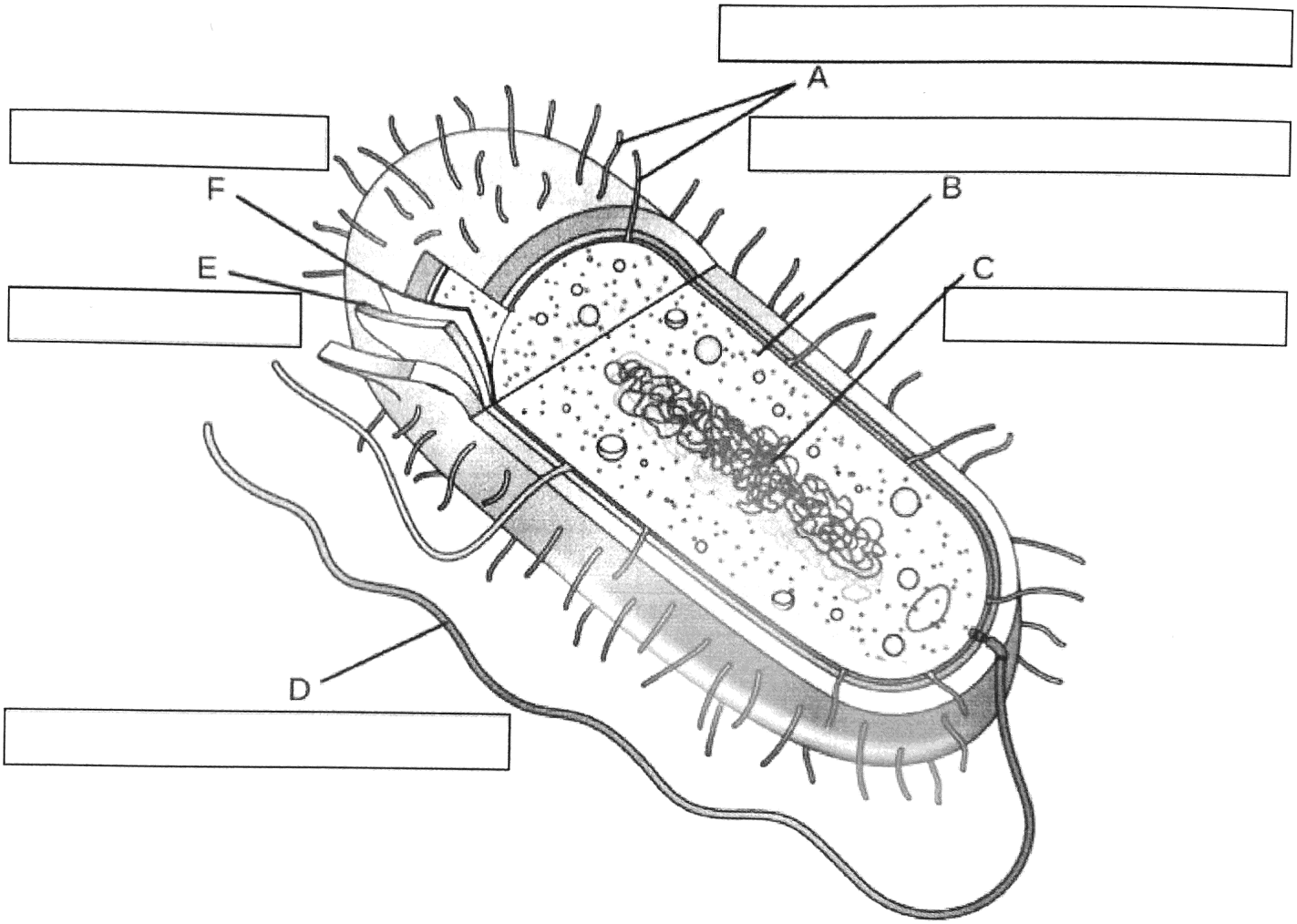
Carbohydrates	**Lipids**
Monomer and Polymer (made up of which elements?)	Monomer and Polymer (made up of which elements?)
Shape:	Shape:
Purpose/Job inside the body:	Purpose/Job inside the body:
Examples:	Examples
Extra info:	Extra info:

Proteins	Nucleic Acids
Monomer and Polymer (made up of which elements?)	Monomer and Polymer(made up of which elements?)
Shape:	Shape:
Purpose/Job inside the body:	Purpose/Job inside the body:
Examples	Examples
Extra info:	Extra info:

Cells All in One

Prokaryotes	Eukaryotes

Prokaryotic Cell



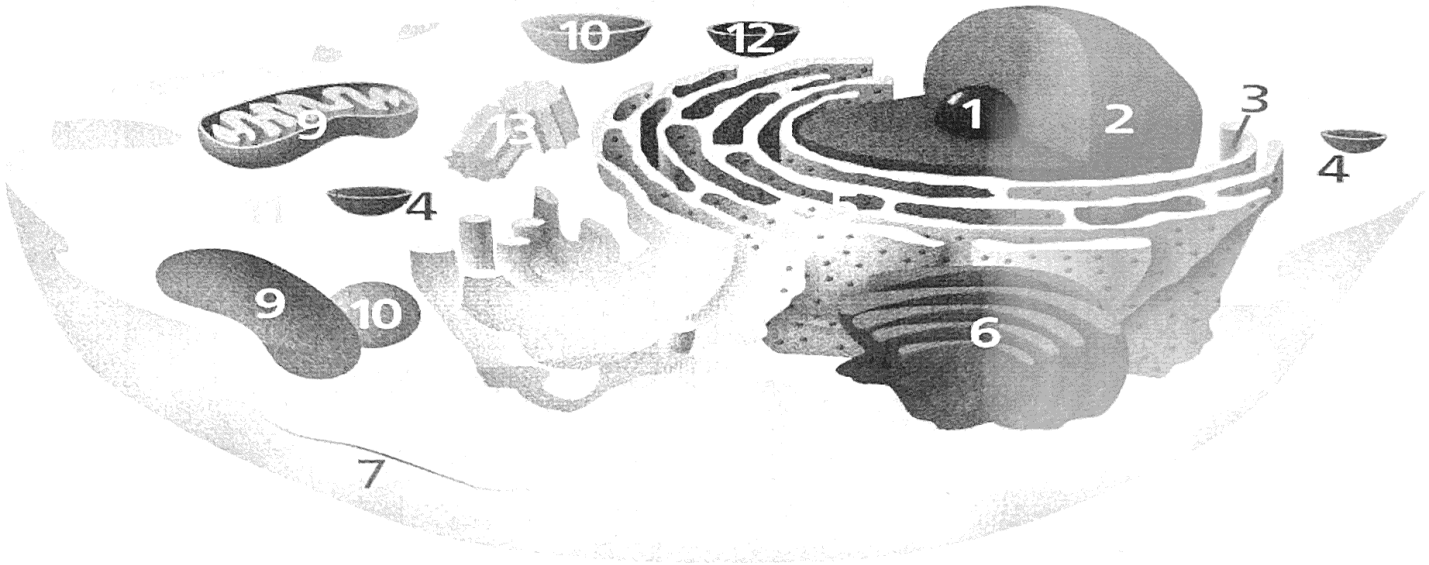
1. What kingdom of bacteria are known as true bacteria?

2. Name some uses for bacteria:

3. What part of the bacterial cell helps it stick to surfaces?

4. What part of the bacterial cell aids in movement?

Eukaryotic Cells (Animal Cell)



Organelles in a Animal Cell

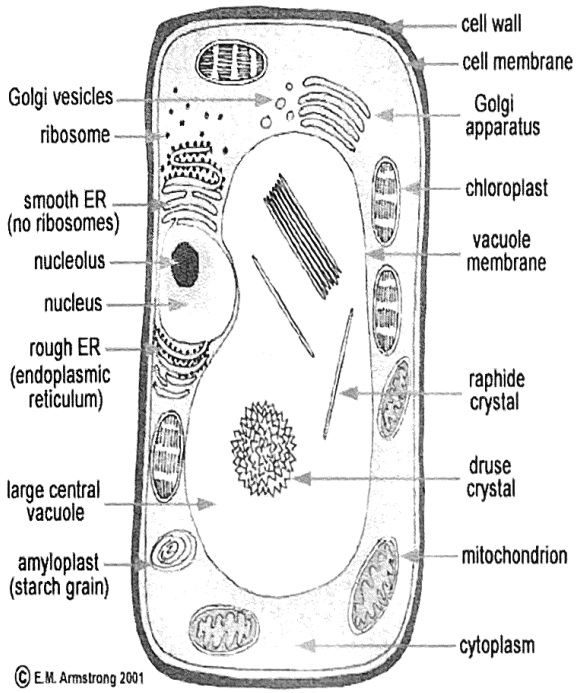
Organelle	Function
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	

5. Which organelles work together to transform the energy of organic compounds into a suitable form for immediate use by the cell?

6. There is a group of disorders related to a particular organelle that can affect many different organ systems. Some common symptoms of these disorders include lack of energy, muscle weakness, difficulty when exercising, muscle pain, and poor growth. Based on the role of the organelle in cell functioning, which organelle would **MOST LIKELY** be responsible for causing these symptoms?

7. What is Homeostasis?

Eukaryotic Cells (Plant Cell)



-All Plant cells have the same organelles as the Eukaryotic cells except for the following:

1. Central Vacuole-

2. Chloroplast-

3. Cell Wall-

The Cell City

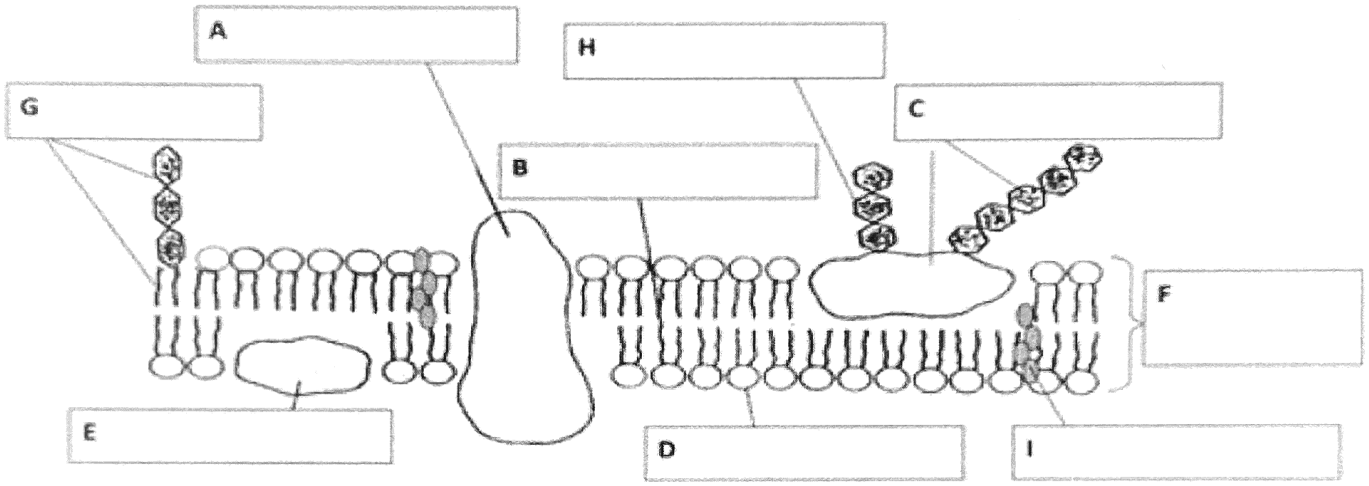
Organelle	Plant/Animal/Prokaryotic	Their Role in the Cell City
DNA		
Cell membrane		
Cytoplasm		
Ribosome		
Flagella		
Pili		
Cell wall		

Nucleus		
Nuclear membrane		
Nuclear pores		
Nucleolus		
Golgi		
Rough ER		
Smooth ER		
Mitochondria		
Centrioles		
Lysosomes		
Microtubules / Microfilaments (Cytoskeleton)		
Food Vacuole		
Central Vacuole		
Chloroplast		

While in Science class, Jacob's teacher asked the class to create an explanation of two organelles that work together to maintain homeostasis and transport proteins out of a eukaryotic animal cell. Provide the BEST explanation of the two organelles that work together to maintain homeostasis and transport proteins out of the cell?

Cell Transport All in One Notes

Functions of the Cell Membrane
-
-
-
-
-
-
-
-



MEMBRANE STRUCTURE: FLUID-MOSAIC MODEL

What is a phospholipid?
-
-
-

What are the components of the Cell Membrane?

Components	Function of Component
-Proteins (Peripheral and Integral)	
-Cholesterol	
-Carbohydrates	

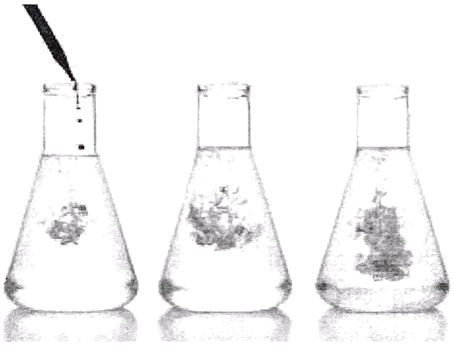
Types of Transport

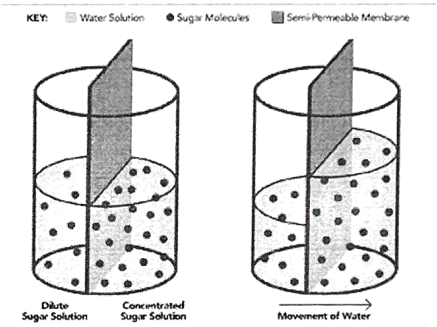
Passive Transport	Active Transport
Types of Passive Transport	Types of Active Transport

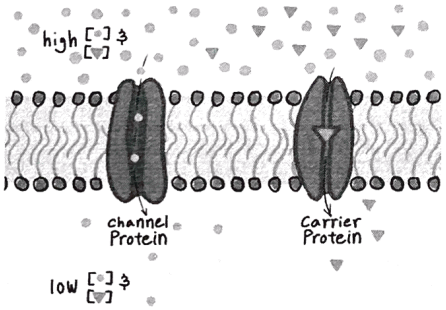
Types of Passive Transport

-Diffusion:
-Osmosis:
-Facilitated Diffusion:

Name the type of Passive Transport below:

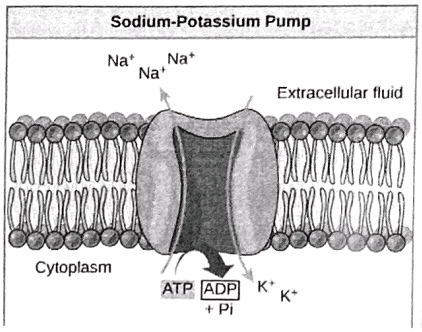


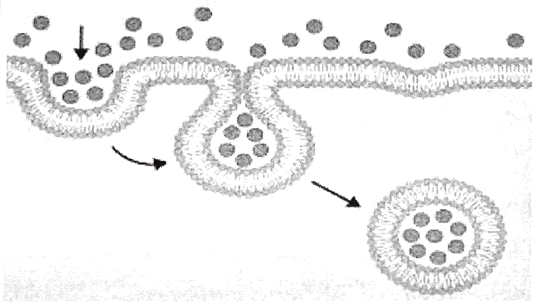


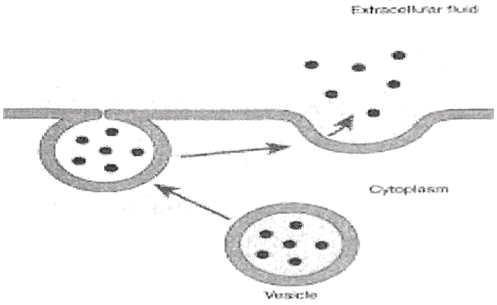


Types of Active Transport

-Ion Channels:
-Endocytosis:
-Exocytosis:





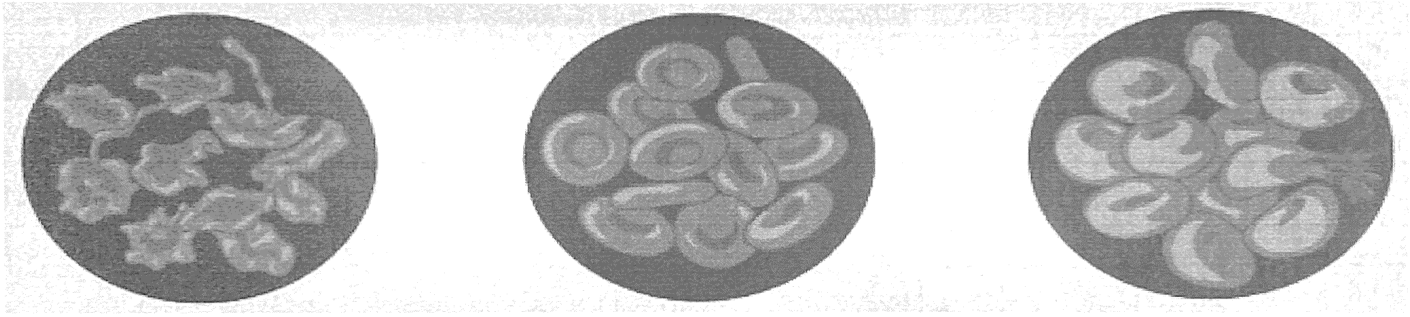


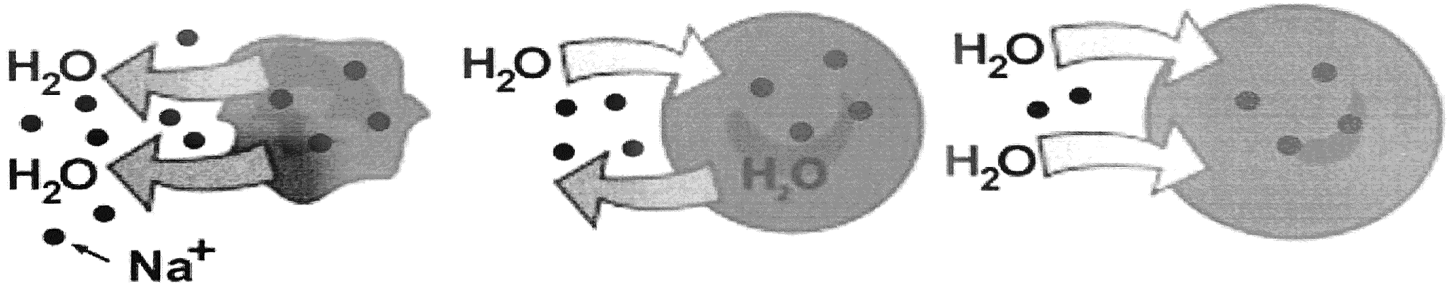
Tonicity

"Water follows Salt and Sugar"

-Hypertonic:
-Isotonic:
-Hypotonic:

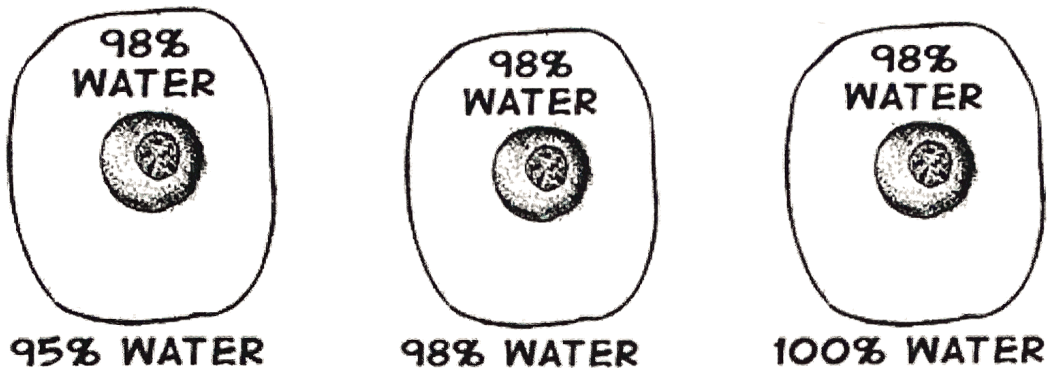
Hypertonic	Isotonic	Hypotonic





- In HYPERTONIC solutions, water moves _____ the cell.
- Hypertonicity causes cells to _____.
- Plants cells _____ water and start to _W_ ___ ___ ___.
- _____ cells need isotonic solutions to be at homeostasis.
- Water DOES or DOES NOT stop moving.
- Cells reach a point called Dynamic _____ in isotonic solutions. equilibrium
- Equal amounts of water are _____ and _____ the cell.
- In HYPOTONIC solutions, water moves _____ a cell.
- Animal cells _____ in size and _____ or lyse in these solutions
- Bursting of cells is called C_____. cytolysis
- _____ cells need this tonicity to be at homeostasis.

Use arrows to show the direction of water movement into or out of each cell. ***Color and label*** the cell in an isotonic environment light blue, the hypotonic environment yellow, and the hypertonic environment light green.



Match the description or picture with the osmotic condition:

A. Isotonic

_____ **solution with a lower solute concentration**

_____ **solution in which the solute concentration is the same**

B. Hypertonic

_____ **condition plant cells require**

_____ **condition that animal cells require**

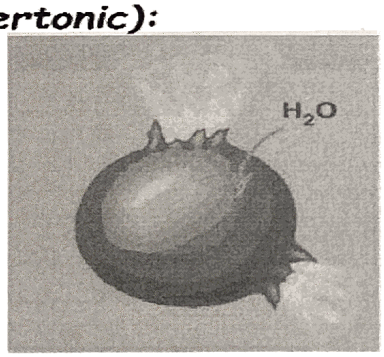
C. Hypotonic

_____ **red blood cell bursts (cytolysis)**

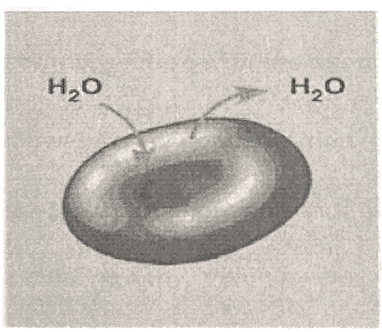
_____ **solution with a higher solute concentration**

_____ **solution with a high water concentration**

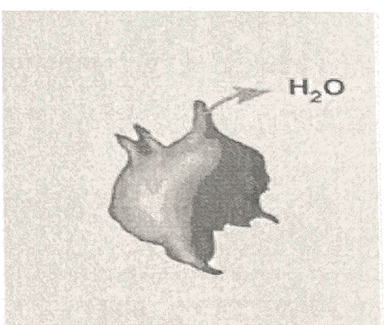
Label the tonicity for each solution (isotonic, hypotonic, or hypertonic):



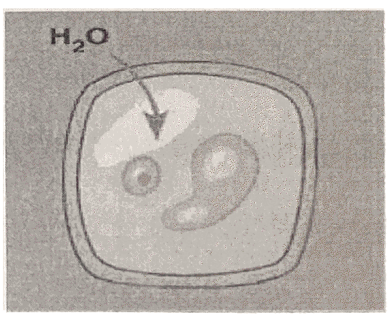
_____



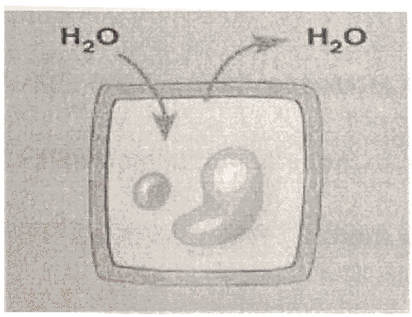
_____



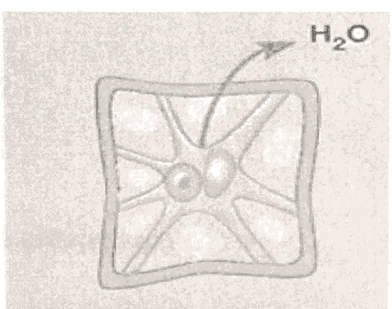
_____



_____



_____



_____

Photosynthesis and Cell Respiration All in One

Draw a picture of the process of Photosynthesis and Cell Respiration:

1. Where do all living things get their energy?

2. What are the two types of organisms? Define their characteristics?

Draw a picture of the ATP-ADP-AMP cycle:

Part 1: Energy and ATP-ADP-AMP cycle:

3. What is Energy? What is ATP?

4. Which type of macromolecule (protein, carb, nucleic acid, or lipid) is ATP?

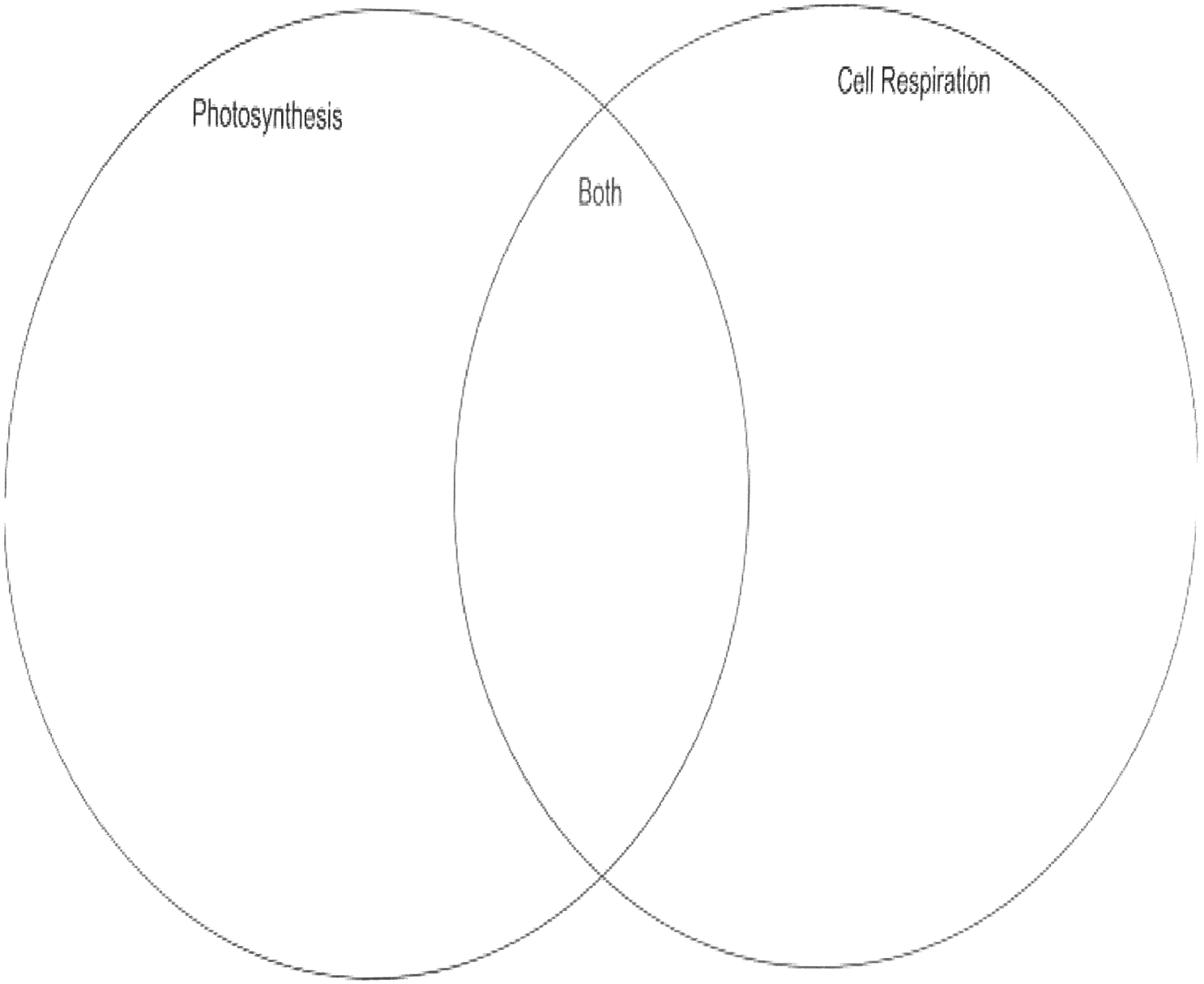
5. Explain what happens in the ATP/ADP cycle?

6. Which structure, ATP or ADP, contains more stored energy? Where is the energy stored?

Part 2: Compare Photosynthesis to Cellular Respiration:

	Photosynthesis	**Cellular Respiration**
Type of cell(s) it occurs in? (Plant, animal and/or bacterial?)		
Which organelle does it occur in?		
Purpose of the process? (Why does it occur in the cell?)		
Reactants involved?		
Products produced?		
Steps of the Process: List the steps and explain the role of each step.		
Removes carbon dioxide from the atmosphere (yes or no?)	YES	NO
Adds carbon dioxide to the atmosphere (yes or no?)	NO	YES
Equations		

Fill in the Venn Diagram below by double clicking on the image



$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

Animal cells

Mitochondria

Produces oxygen

Chloroplasts

Sunlight → Chemical

Plant cells

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + Energy$

Produces carbon dioxide

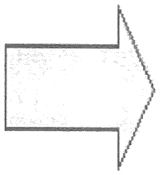
Chlorophyll

Arrange the components of the chemical equations by clicking on the image

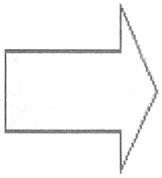
$6\ CO_2$ $6\ CO_2$ $C_6H_{12}O_6$ $6\ O_2$ Heat from Sunlight

$6\ H_2O$ $6\ O_2$ $6\ H_2O$ $C_6H_{12}O_6$ Heat from ATP

Photosynthesis



Cell Respiration



Cellular Reproduction All in One

Part 1: Overview of Cell Reproduction

2 main groups of cells

- _____- body cells
- _____- cells in your reproductive organs.
- _____- sex cells
  - Egg cells- aka: _____
  - Sperm cells- aka: _____

Cell Growth

Two reasons why cells divide rather than continue to grow:

- The larger the cell grows, the _____increases and _____ decreases.
- The larger the cell grows, the more substances that have to come across the cell membrane. It puts too much strain on the cell membrane.

Chromosomes

- Chromosome- _____wrapped around a _____ called a histone. Located in the nucleus of eukaryotic cells.
- Every organism has a set number of chromosomes. Ex: fruit flies-8 chromosomes, humans 46 chromosomes.
- They become visible during _____ because they condense.
- They _____ before cell division. They are still joined by a _____ in the center.
- Each individual arm and leg is called _____

Chromosome Number

- Chromosomes are arranged in _____. Example: Humans have ____ chromosomes, ___ pairs(sets) of ___.
- _____- 1 set of chromosomes; one set from the mother the other set came from the father.
- _____- chromosomes that are not related to the sexual characteristics of an organism.
- **Sex chromosomes-**

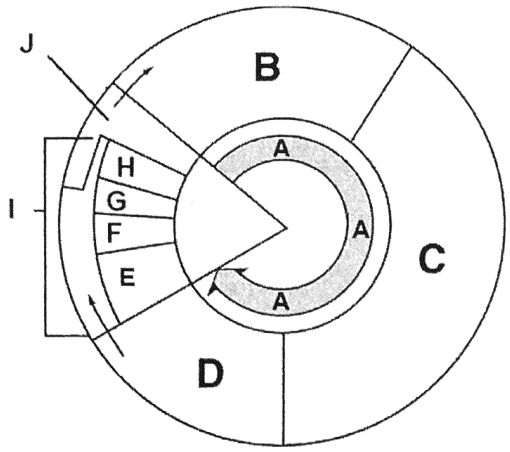
Diploid & Haploid

- **Diploid(2N)**-
- **Haploid(N)-**

Cell Division

- _____- The process by which a cell divides into two new daughter cells.
  - Before cell division occurs, the cell will_____ its DNA
  - What does replicate mean?

Part 2: The Cell Cycle

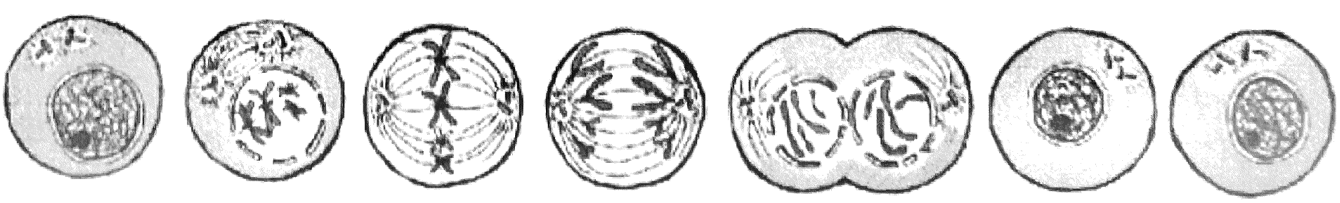


Label the parts of the cell cycle diagram and briefly describe what is happening:

A	**Interphase –**
B	**G1 –**
C	**S –**
D	**G2-**
E	**Prophase –**
F	**Metaphase –**
G	**Anaphase –**
H	**Telophase-**
I	**Mitosis –**
J	**Cytokinesis –**

Label the phases of the Cell Cycle and Mitosis by clicking on the image below

Prophase Interphase Anaphase Metaphase Telophase Interphase



Complete the table by checking the correct column for each statement:

Statement	Interphase	Mitosis
1. Cell growth occurs		
2. Nuclear division occurs		
3. Chromosomes are finishing moving into separate daughter cells.		
4. Protein production is high		
5. Chromosomes are duplicated		
6. DNA synthesis occurs		
7. Cytoplasm divides immediately after this period		
8. Mitochondria and other organelles are made.		

Results of mitosis

- Mitosis starts with _____ _____with a _____ set of chromosomes and ends with _____; both have a _____set of chromosomes. The daughter cells are _____ cells.

Controls on Cell division

¡ Cells in a Petri dish will continue to grow until_____

Cells respond to _____

¡ _____- proteins that stimulate cell division

¡ _____- programmed cell death

¡ Uncontrolled cell Growth=_____

¡ Cancer cells do not respond to _____.

¡ As a result, they form masses of cells called _____ that can damage surrounding tissue.

¡ _____- cancer cells are clustered together and can be removed

¡ _____- a tumor that cancer cells may have broken away (metastasize) and possibly gotten into other parts of the body.

Cellular Organization

_____-->_____-->_____-->_____