

1/14/14
Notes for test and new
cell process info!

You will need to TAKE NOTES!

Jan 14-8:51 AM

There are many small things on Earth. Cells are small, but it takes molecules of elements to build a cell and these elements are made up of even smaller things like protons, neutrons and electrons. HOWEVER!

The smallest "LIVING" thing on the planet is a single cell.

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The best way to look at these cells is by using a microscope.

Detailed images from electron microscopes are great, but the cell has to be dead.

To look at "living" cells you will have to use a simple microscope.

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Cells are the basic building blocks of life.

Jan 14-8:27 AM

Cell Theory
1. All living things are made up of cells.
2. Cells are the basic unit of structure and function.
3. All cells come only from other living cells.

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The 3 main parts of the cell:
1. Nucleus *You = have a nucleus*
2. Cell Membrane *Eukaryotic cells = have a nucleus.*
3. Cytoplasm

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Cell Wall VS Cell Membrane

The cell wall provides structure for plants and allow them to grow upright.

The cell membrane controls what will come in and out of the cell.

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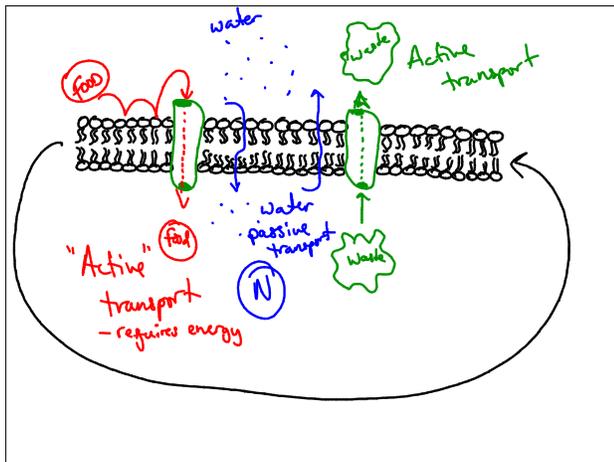
The cell membrane is a selectively permeable membrane. This means it can "choose" what comes in and out of the cell the majority of the time.

Permeable = anything can come in or out

Impermeable = nothing can come in or out

Selectively Permeable = some things can pass and some things cannot (like a vegetable strainer)

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Jan 14-9:16 AM

Where do cells get energy?

FOOD (GLUCOSE)

Your food is processed into usable cellular energy (glucose) and stored in your mitochondria.

Using CELL RESPIRATION the mitochondria can turn this glucose into energy for your cells.

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Cell Respiration:

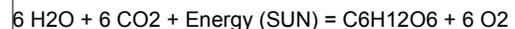
The process of your mitochondria mixing your glucose with oxygen to get cellular energy, water and carbon dioxide! The cell will release the carbon dioxide as a waste product.



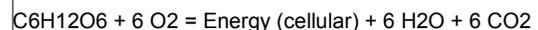
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How does cell respiration compare to photosynthesis?

Photosynthesis



Cell Respiration



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Then there is fermentation which is simply cell respiration without oxygen!

Photosynthesis
 $6 \text{ H}_2\text{O} + 6 \text{ CO}_2 + \text{Energy (SUN)} = \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2$

Cell Respiration
 $\text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2 = \text{Energy (cellular)} + 6 \text{ H}_2\text{O} + 6 \text{ CO}_2$

Fermentation
 $\text{C}_6\text{H}_{12}\text{O}_6 = \text{Very little Energy (cellular)} + \text{some H}_2\text{O} + \text{some CO}_2 + \text{lactic acid}$

Lactic Acid breaks down muscle cells!

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Where does cell respiration and its chemical reaction get the energy that it can convert into cellular energy, or energy the cell can use?

FOOD

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What are the five levels of organization in order?

cell
tissue
organ
organsystem
organism

Jan 14-8:45 AM

What is the Heart?

Organ

Jan 14-8:45 AM

What is the Brain?

Organ

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What is a group of skin cells?

Skin tissue

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What is the esophagus, stomach, liver, gall bladder, small intestine, large intestine?

Organ system (digestive)

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What is a dog?

Organism

Jan 14-8:48 AM

What is the heart, blood, blood vessels?

Organ System

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What is a group of bone cells?

Tissue (Bone)

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What is a human?

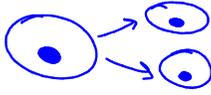
Organism

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Cell Division and Mitosis

Cell Division - all cells do this!

One cell turning into 2 identical cells.



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Mitosis - most cells do this!

- When a nucleus copies itself prior to cell division. (IPMAT)

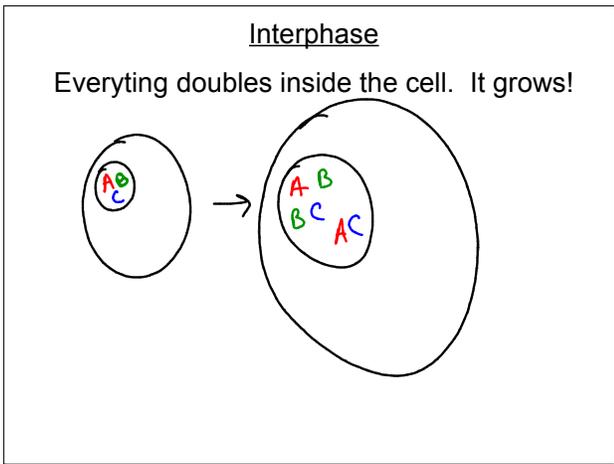
1. Interphase
2. Prophase
3. Metaphase
4. Anaphase
5. Telophase

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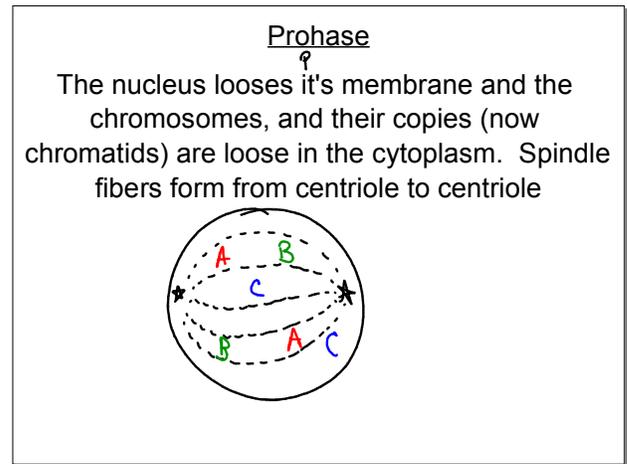
Science

- Continue on with egg lab (day 2)
- Extra Credit and grades
- Finish Mitosis, Diffusion, and Osmosis notes. Quiz tomorrow!

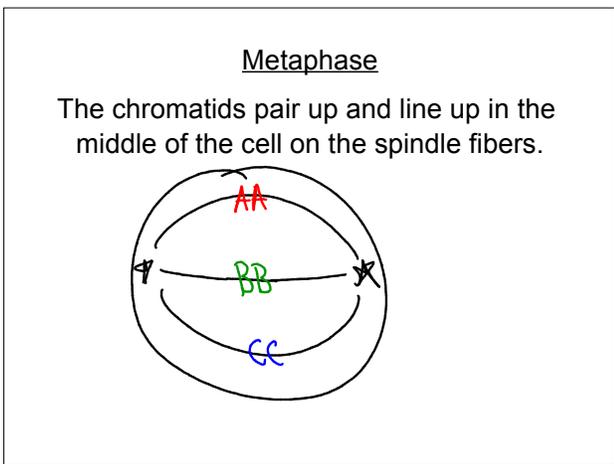
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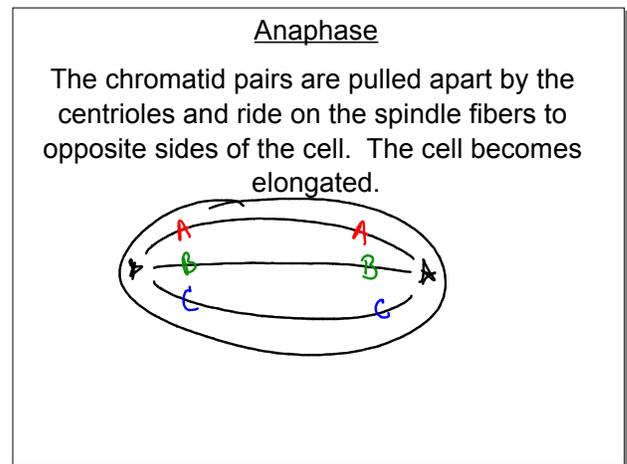
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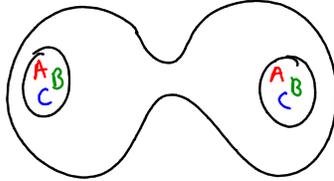
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Telephase

A new nuclear membrane forms around the chromatids (now chromosomes again) and the cell membrane pinches in half - into two identical cells (cell division).



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Diffusion: When any substance moves from a high concentration (meaning where there is a lot of something) to a low concentration (meaning where there is less of something).

Ex: Perfume in the mall

Marbles out of a jar

Water out of a container

Cookie smell from the kitchen

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Osmosis: This IS diffusion. But the substance moving from a high to low concentration HAS to be WATER, AND it has to be crossing through a cell membrane.

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So if there is more "pure" water outside the cell it will go into the cell (across the cell membrane) and make it swell. This is called a "Hypotonic Environment" (it swells like a hippo (hypo)).

Jan 21-8:27 AM

So if there is more "pure" water inside the cell it will go out of the cell (across the cell membrane) and make it shrink. This is called a "Hypertonic Environment" (it shrinks and looks crazy "hyper").

Jan 21-8:29 AM

So if there is about the same amount of "pure" water outside the cell it will go in and out of the cell (across the cell membrane) and make it stay "about the same size". This is called an "Isotonic Environment" (it "IS" (ISotonic) the same size.)

Jan 21-8:30 AM