Chapter 2 Biology Review

Scientific Method

* Parts to the Scientific Method
	+ Problem – Observing
	+ Hypotheses- educated guess
	+ Experiment
		- Control- never changes
		- Variable- the change
			* Independent- what you manipulate
			* Dependent- what is measured (outcome)
* Conclusion
* Items in an experiment
	+ Safety goggles, gloves, apron
	+ Graduated Cylinder
* What does a graduated cylinder measure?
	+ Liquid volume
* Interpreting Graphs
	+ X –independent variable- the thing you manipulate
	+ Y – Dependent variable – the outcome, what you’re trying to find out.
* Microscope-magnifies
	+ How do I get total magnification power?
	+ Objective times the eyepiece (or ocular)
* Biochemistry
	+ Organic Compounds: What makes them organic?
		- Contains Carbon
* Water (H20) is inorganic
* Water is a polar compound: it dissolves
* A water molecule is slightly positively charged on one side and slightly negatively charged on the other side. Makes it cohesive; sticks to itself.
* Anything polar can dissolve in water.
* Non polar does not dissolve in water (fats, lipids)
* Four Organic Compounds
	+ Carbohydrates
		- Sugars and starches
		- Sugars, glucose, sucrose
		- Monosaccharide, disaccharides, polysaccharides
		- Gives Energy
		- Organelle associated with energy; mitochondria
* Lipids (Fats)
	+ Non polar: doesn’t dissolve in water
	+ Cell Membrane made of lipids
	+ Lipids store energy
	+ It is important for a cell membrane to be a lipid because a rigid wall would break down
	+ Other examples, oil, steroids, wax
* Proteins
	+ Made up of smaller units (monomers) of amino acids
	+ Enzymes are made of proteins
	+ Function of enzymes; speeds of chemical reactions
	+ Most enzymes end in *ase*
	+ What can change an enzyme? pH and temperature, changes the shape of the enzyme
	+ If an enzyme changes shape, it doesn’t work.
* Nucleic Acids
	+ DNA and RNA
	+ Stores genetic information
	+ Found in chromosomes
	+ Found in the nucleus
	+ DNA- double helix, dexyribose nucleic acid, ATCG, has thymine
	+ RNA- single strand, ribose nucleic acid, AUCG, has uracil
	+ Replication: DNA copies DNA
	+ A nucleotide is a section of DNA, consist of a sugar, phosphate, and a nitrogen base.
* Enzymes
	+ Affected by pH and temperature
	+ Enzymes have certain shapes
	+ Change the shape and the enzyme doesn’t work
	+ Substrates
	+ Substance the enzyme works on
	+ Enzymes end is *ase*
	+ Lact*ase* acts on Lact*ose*
	+ Enzymes made of amino acids
* Homeostasis and Metabolism
	+ Metabolism: all of the chemical activities that take place in an organism
	+ Homeostasis: Balance or equilibrium
		- All of your body systems work together
* Levels of organization
	+ Cells
	+ Tissues
	+ Organs
	+ Organ system
	+ Organism

* OSMOSIS
(DIFFUSION OF WATER)
	+ **WATER** MOVES FROM AN AREA OF HIGH CONCENTRATION TO AN AREA OF LOW CONCENTRATION THROUGH A **MEMBRANE.**
	+ IS WATER PART OF A SOLUTION?
	+ WHAT ARE THE TWO PARTS TO A SOLUTION?
	+ 1. SOLVENT AND SOLUTE.
* *DIFFUSION*
* *GIVE EXAMPLES:*
	+ 1. SUGAR GOING INTO A CELL.
	+ 2. WASTE LEAVING A CELL.
	+ 3. OXYGEN GOING INTO A CELL.
	+ 4. CARBON DIOXIDE GOING OUT OF THE CELL.
* MOVEMENT OF SUBSTANCES FROM AREAS OF HIGH CONCENTRATION TO LOW CONCENTRATION.
* WHAT IS A SOLVENT?
	+ 1. THAT WHICH CAUSES THE DISSOLVING.
* WHAT IS A SOLUTE?
	+ THAT WHICH IS DISSOLVING.
* TYPES OF SOLUTIONS
	+ 1. ISOTONIC – A BALANCED SOLUTION.
	+ 2. HYPOTONIC – MORE SOLVENT THAN SOLUTE. MORE WATER THAN SUGAR.
	+ 3. HYPERTONIC – MORE SOLUTE THAN SOLVENT. MORE SUGAR THAN WATER.
* DRAW A CELL WHICH IS HYPOTONIC SURROUNDED BY A SOLUTION WHICH IS HYPERTONIC IN SALT.
* DRAW A CELL WHICH IS HYPERTONIC IN SALT SURROUNDED BY A SOLUTION WHICH IS HYPOTONIC.
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* PH SCALE
* THE SCALE MEASURES?
	+ 1. ACIDS AND BASES
* WHAT NUMBERS MAKE UP THE SCALE?
	+ 1. ZERO (0) TO FOURTEEN (14).
* WHAT NUMBERS SHOW AN ACID?
	+ 0 TO 6
* WHAT NUMBERS SHOW A BASE?
* 7 TO 14
* WHAT DOES THE NUMBER 7 SHOW?
	+ NEUTRAL: NOT AN ACID OR A BASE.