Biology 1 Lab Study Guide for Lab Exam #2

Hello my Bio 1 lab students! Yes, it's time to prepare for the second laboratory exam. My goal is for everyone to do better than last time. If you have attended each of these labs, study your lab write ups and study this guide along with your textbook, you should do well. Remember, this is only a guide, not the actual test questions. Use the guide , view the PowerPoint pre-lab lectures and re-read the appropriate text sections to maximize your studying. I will be on campus on Wednesday, 11-1 and then before class on Thursday for extra-help.

Lab 4

What are indicators? For this sections you should also be very familiar with the macromolecules. Review them. View the **PowerPoint on Proteins as this will help you also with the hydrolysis and biosynthesis process.**

Macromolecules and Indicators: (Know all indicators and for which biomolecule they indicate)
Questions we analyzed included:

1. Which indicator test for starch? How does it look in presence of starch?
2. What are the monomers which make up a carbohydrate?
3. What is an isomer? What are two isomers that make up maltose?
4. What are two isomers of sucrose?
5. **Know that Buiret solution (for proteins) does not work on free amino acids! Remember? That is because Buiret reacts with the PEPTIDE bond (C-N bond between two adjacent amino acids) to turn color!**
6. Remember that BENEDICT"s solution was heated to test for monosaccharides
7. Where do you find cellulose?
8. Where do you find Glycogen?
9. **You must know the structure of an amino acid. Around the alpha carbon there is always for every amino acid: an amino group, carboxylic acid group, a Hydrogen and then your side or R group which varies with amino acid.**
10. Compare and contrast a saturated with an unsaturated fatty acid.
11. What are the 3 types of lipids? Give an example of each type and where you would find each in a living system. Ex. what is function of a phospholipid?

Nucleic Acids: Go over the lab sections on lab write-up. These answers were reviewed in class and are in text :

Lab 5

To study for this section of the exam be sure to **view the powerpoint slides on OSMOSIS AND CELLS**. I have included microscope slides from the lab that you may not have seen or have mis-

sketched! Also I have uploaded a graph that depicts what happened with one class data. It shows the relative expansion and shrinking of the dialysis tubing in different osmotic settings. Although most of you got this correct, some did not . You know who you are. View the graph and make sure you understand hypertonic, hypotonic and isotonic solutions and osmosis.

Special Terms: **Plasmolysis** What does this mean? We saw it in plant cells . In blood cells a special term **crenation** is used. **Turgor Pressure** : Know this too.

See EXCEL GRAPH on Osmosis Lab.

Remember differences between: Autotrophs and Heterotrophs

ProKaryotes and Eukaryotes

Unicellular and Multicellular

What **cyanobacteria? Sometimes referred to as "blue-green algae" Is it an autotroph or heterotroph? ANSWER: This is prokaryote with chlorophyll. It is, thus, a unicellular autotroph. Do you know why?**

Remember that both Plants and Bacteria have cell walls; plant cell walls are made of **cellulose,** bacteria cell walls are made up of **peptidoglygan .**

Plant Cell Vs. Animal Cell – Know the differences between the two.AND know the organelles and a brief function of each.

Lab 6: View the PowerPoint on Enzymes.

Some key Points about Enzymes (also summarized in PowerPoint):

Enzymes are specific WHAT DOES THIS MEAN? For every reaction there is one enzyzme to catalyze.

Enzymes are globular proteins (tertiary level or higher) and have considerable folding and are relatively large proteins!

The reactants bind to the ACTIVE SITES of the Enzyme.

There is an optimal range, which can be very narrow , depending on enzyme, for temperature and pH for each enzyme. Know what the Graphs look like for enzyme active w/ temperature/pH. (See PowerPoint and Text)

Know that enzymes do know work in low temperatures and are denatured in high temperatures. DENATURED- The protein is distorted , hence its active site is also distorted and no longer can accurately fit its substrate. Similarly extremes in pH will also distort the protein and its active site (denaturation) and its activity. We also observed this in lab.

Know two of the reactions that enzymes catalyzes are SYNTHESIS (anabolic) reactions and HYDROLYSIS (Catabolic) reactions. To distinguish the two remember the muscle builder for anabolic.

Is it possible to have enzymes of difference pH specificity (one of pH 2 and PH 7) in the same organism? Of course it is! Just look at our digestive system! Check out slide on PowerPoint.