**Exam 2 (Modules 3 and 4) Study Guide**

**Test is 10/4!**

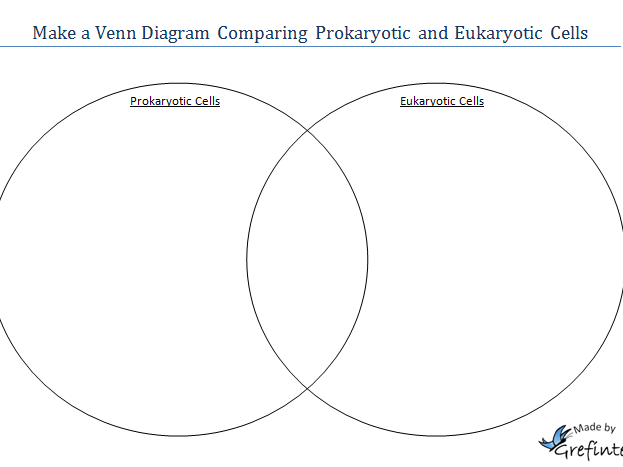
*Answer these questions on your own paper.*

**Biomolecules**

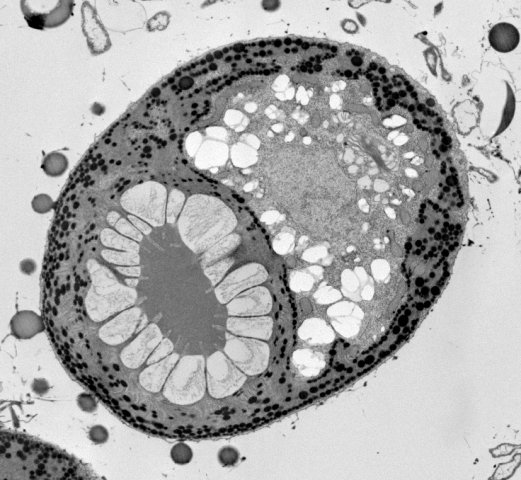
1. The pH scale goes by factors of \_\_\_\_\_\_\_.
2. A substance with a pH of 10 is \_\_\_\_\_ times more \_\_\_\_\_\_\_\_\_\_\_ than a solution with a pH of 8
3. List all of the polymers we learned in class and identify their monomers.
4. List ALL of the examples of carbohydrates talked about in the powerpoint.
5. List ALL of the examples of lipids talked about in the powerpoint.
6. List all of the functions of proteins
7. Write out the Protein levels of organization.
8. Which 2 foods, when eaten together, give us all of the essential amino acids?
9. What are prions?

**Cell Structure**

1. List all of the organelles and ALL of their functions.
2. Complete the following Venn Diagram

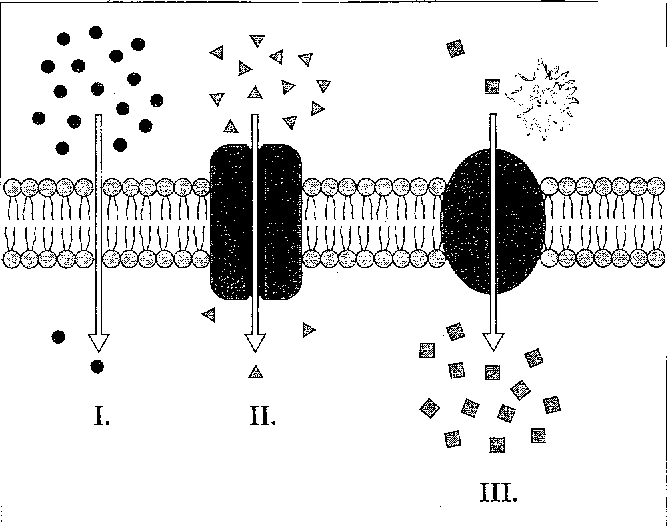


1. Your mitochondrial DNA comes from your \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Understand cell specialization. For example, a muscle cell would need lots of energy and would have a lot of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. List ALL of the evidence supporting The Endosymbiotic Theory
4. Label the microscope used for each of the following images:

**Cell Membrane and Transport**

1. What are the causes of cystic fibrosis, Tay Sachs, and hypercholesterolemia?
2. Label the types of transport occurring in the figure below



1. How does temperature affect membranes? How is a membrane at a high temperature different from a membrane at a low temperature?

**DNA Structure**

1. Explain the structure of DNA. What type of bond holds the 2 strands together? What bases bind to one another.
2. What is Chargoff’s rule?
3. Define the following: gene, chromosome, nucleotide, codon. Put them in order from largest to smallest.

**Protein Synthesis**

1. Fill in the blanks : \_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_to protein
2. What proportion of a cell’s DNA codes for proteins?
3. What is the ENCODE project?
4. Describe the process of transcription in detail including location and enzyme.
5. What causes different types of cells to produce different proteins?
6. True or false: The genetic code used to translate proteins is the same in all organisms
7. What amino acid would the codon GGG code for?
8. Describe the process of translation- include location and enzymes
9. Draw a transfer RNA molecule with an anticodon of AAA. What amino acid is attached at the other end?
10. The DNA sequence GTC translates to what amino acid? (Hint: Don’t forget the mRNA step)
11. What are introns?