

Name: _____

Delve: AP Biology Problem Set #3

Due: Sunday, October 9 at the beginning of class

Multiple Choice Questions

1. What condition leads to selective pressure on organisms, allowing for adaptations?
 - a. organisms have DNA that dictates their traits
 - b. organisms inherit genetic information from their parents
 - c. some organisms are more appealing/attractive to potential mates
 - d. organisms must compete for limited resources

2. What is a simple way to know where a species might be put into, of one of the different kingdoms of the Eukarya domain? (Hint: ignore protists for this question.)
 - a. organisms are divided by what they look like
 - b. organisms are divided by how they get their food
 - c. organisms are divided by size and complexity
 - d. organisms are divided by level of intelligence

3. Which of the following do prokaryotes have?
 - a. nucleus
 - b. ribosomes
 - c. mitochondria
 - d. lysosomes

4. Which of the following pairs of organelle and organelle function is matched incorrectly?
 - a. endoplasmic reticulum - an organelle that helps modify proteins
 - b. golgi apparatus - an organelle that contains digestive enzymes to help the cell break down macromolecules
 - c. chloroplast - an organelle found in plants that is where photosynthesis takes place
 - d. ribosome - an organelle that helps synthesize proteins

Fill-in-the-Blank Questions

1. Natural _____ among organisms in the species is evident in how not all organisms look, behave, or function exactly the same. This comes from _____, where genetic information is mixed and matched from parents to offspring, or from _____, where random changes in the DNA occur.

2. All cells are surrounded by a _____, which serves as a _____ barrier only allowing certain things in or out of the cell. Additionally, all cells have _____ inside that make _____, the molecules that allow cells to function.

3. Instead of having a nucleus, prokaryotes store their genome in a region called the

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_____. Prokaryotic genomes are _____, unlike eukaryotic genomes which are _____.

4. Plant cells have a _____ in addition to a plasma membrane. There are little pores called _____ so plant cells can communicate with each other. In animal cells, there are three types of cell-cell junctions: _____, _____, and _____.

Short Answer Questions

1. Describe the concept of **descent with modification** and how it contributes both to the **unity** of all living organisms as well as the **diversity** of living species we observe.

2. What is the significance of using **DNA** sequence comparisons to classify living organisms into different groups in **taxonomy**? Why is this more advantageous than previous methods?

3. Make a Venn diagram showing which cell structures are found only in **plant** cells, which ones are found only in **animal** cells, and which ones are found in **both**.

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4. Name the three types of animal **cell-cell junctions** and provide an example of each one.

5. What are **viruses**? Why are viral diseases so difficult to eradicate? Name one example of a viral disease that has been successfully eradicated.

Challenge Problems

1. Prokaryotic Energy Use

If prokaryotes do not have organelles that produce energy like mitochondria or chloroplasts, how do prokaryotes produce the ATP they need to survive?