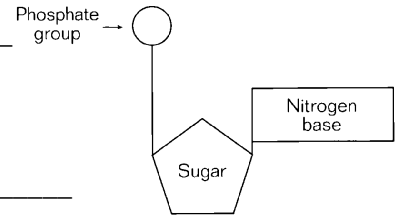


**Biology Semester 1 Study Guide**

Name: \_\_\_\_\_

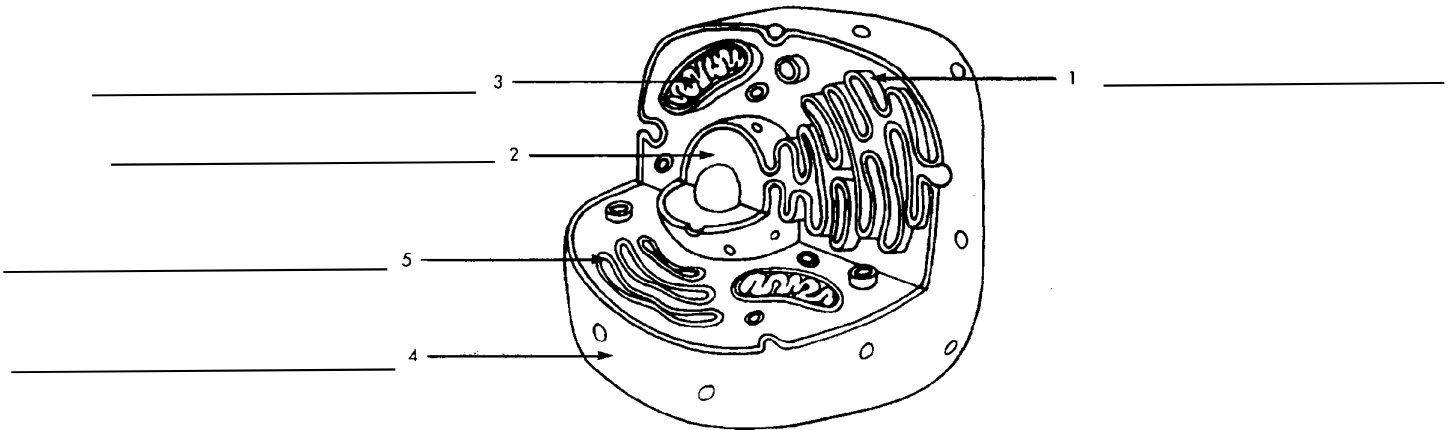
- How does your body maintain homeostasis on a hot day? \_\_\_\_\_
- What is the name of the molecule shown to the right? \_\_\_\_\_
- What is the main function of lipids?  
\_\_\_\_\_



- Fill in each blank with the word **polar** or the word **nonpolar**. Oil is \_\_\_\_\_ so it will not mix with water, which is \_\_\_\_\_.
- Tell whether each statement below is true or false about enzymes. If it is false, correct it so it's true.

- \_\_\_\_\_ Enzymes are used up during a reaction.  
*Corrected:* \_\_\_\_\_
- \_\_\_\_\_ Enzymes lower the activation energy of a reaction.  
*Corrected:* \_\_\_\_\_
- \_\_\_\_\_ Enzymes bond to the active site on a substrate molecule.  
*Corrected:* \_\_\_\_\_

- What cellular organelle produces energy? \_\_\_\_\_
- What cellular organelle makes proteins? \_\_\_\_\_
- What cellular organelle moves proteins and other substances through the cell? \_\_\_\_\_
- Label the parts of the cell below:



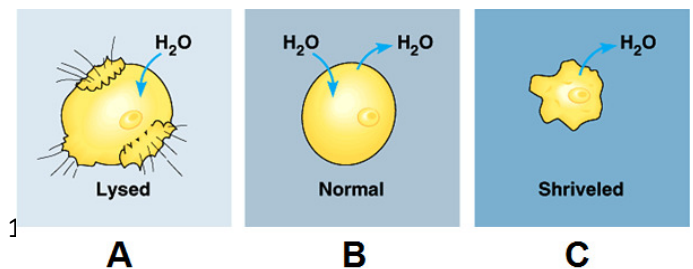
- What type of molecule makes up the cell membrane? \_\_\_\_\_
- What is the function of the cell membrane? \_\_\_\_\_

12. Label each of the following as present in prokaryotic cells (P), eukaryotic cells (E), or both (B):

- |                 |       |                  |       |
|-----------------|-------|------------------|-------|
| a. nucleus      | _____ | d. cell membrane | _____ |
| b. ribosomes    | _____ | e. cytoplasm     | _____ |
| c. mitochondria | _____ | f. chloroplasts  | _____ |

13. Identify each image below as either hypertonic, hypotonic, or isotonic.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



14. List three ways RNA is different from DNA:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

15. What DNA sequence would be complementary to G C A T T G? \_\_\_\_\_

16. In a cell, the amount of guanine always equals the amount of \_\_\_\_\_.

17. List three examples of **mutagenic factors** that can alter DNA.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

18. What type of mutation occurs when one nucleotide is replaced by a different nucleotide? \_\_\_\_\_

19. What base is complementary to adenine **in a molecule of RNA**? \_\_\_\_\_

20. Write the function of each type of RNA in the spaces below.

- mRNA: \_\_\_\_\_
- tRNA: \_\_\_\_\_
- rRNA: \_\_\_\_\_

21. During transcription, \_\_\_\_\_ is made.

22. In humans, having freckles (F) is dominant to not having freckles (f). Complete the Punnett square that shows the possible offspring of two parents that are both heterozygous.

	F	f
F	1	2
f	3	4

- What is the genotype of the children WITHOUT freckles? \_\_\_\_\_
- What percent of the children would NOT have freckles? \_\_\_\_\_
- Describe the genotype of the child in box 1. \_\_\_\_\_

23. If a parent with the genotype Aa has children with a parent with the genotype aa, what percent of their children will show the dominant phenotype? \_\_\_\_\_


24. Tallness (T) is dominant to shortness (t) in pea plants. Write the **genotype** that is heterozygous for tallness. \_\_\_\_\_

25. A \_\_\_\_\_ allele is expressed whenever it is present.

26. In rabbits, black fur (B) is dominant to brown fur (b). Consider the Punnett square below:

	Bb x Bb	
	B	b
B	1	2
b	3	4

- Are the parents homozygous dominant, homozygous recessive, or heterozygous? \_\_\_\_\_
- What color are the offspring represented by box 1? \_\_\_\_\_
- What color are the offspring represented by box 2? \_\_\_\_\_

27. What is a phenotype? \_\_\_\_\_

28. What process do forensic scientists use to make millions of copies of DNA? \_\_\_\_\_

29. What is the name for the image shown to the right? \_\_\_\_\_

30. According to the image at the right, which suspect was present at the crime scene?

\_\_\_\_\_

