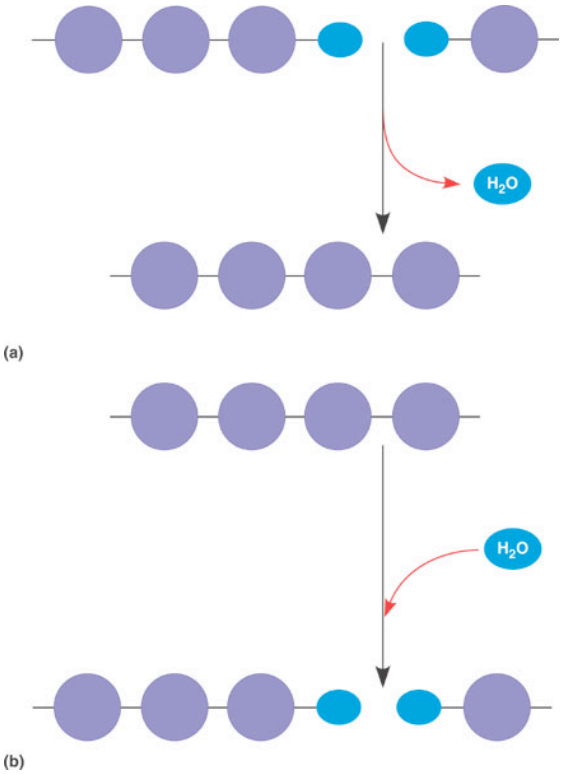
Name _____

AP Biology
Chapter 5 - The Structure and Function of Large Biological Molecules
Guided Reading Assignment Campbell's 10th Edition

Essential Knowledge:
3.A.1 DNA, and in some cases RNA, is the primary source of heritable information
4.A.1 The subcomponents of biological molecules and their sequence determine the properties of that molecule
4.B.1 Interactions between molecules affect their structure and function
4.C.1 Variations in molecular units provides cells with a wider range of functions

LO 4.1 The student is able to explain the connection between the sequence and the subcomponents of a biological polymer and its properties.
LO 4.2 The student is able to refine representations and models to explain how the subcomponents of a biological polymer and their sequence determine the properties of that polymer.
LO 4.3 The student is able to use models to predict and justify that changes in the subcomponents of a biological polymer affect the functionality of the molecule.
LO 4.17 The student is able to analyze data to identify how molecular interactions affect structure and function.
LO 4.22 The student is able to construct explanations based on evidence of how variation in molecular units provides cells with a wider range of functions.

1. Label the diagram – identify a monomer, polymer, condensation reaction, and hydrolysis.



2. What are the three hexose monosaccharides?

3. What is a glycosidic linkage and what do the numbers 1-4 and 1-2 relate to?

4. Compare and contrast the two storage polysaccharides.

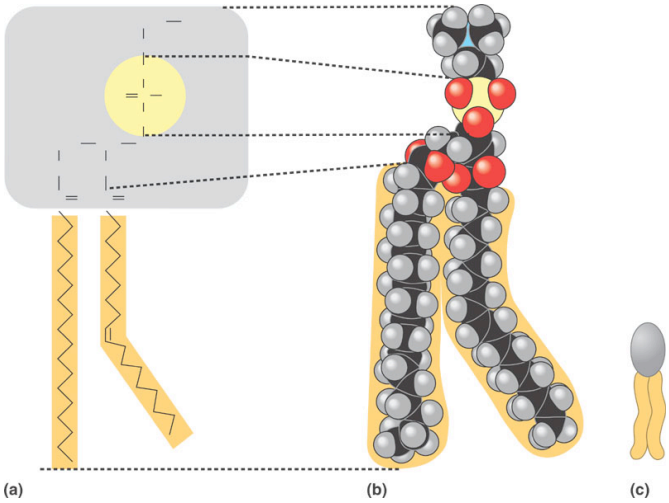
5. Compare and contrast the two structural polysaccharides.

6. Why are lipids grouped together?

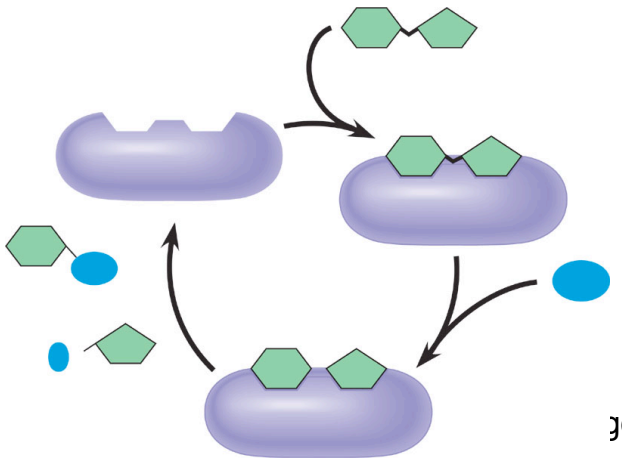
7. What are the building blocks of fats?

8. Contrast saturated and unsaturated fats – how does this relate to the concept that structure and function are linked?

9. Label the molecule



10. How would you recognize a basic steroid molecule?



11. List the eight types of proteins and their basic function.

12. What are the names for the monomers and polymers of proteins?

13. Label the diagram concerning the catalytic cycle of an enzyme -

14. Draw two amino acids – note the amino group, the carboxyl group and the alpha carbon, circle the water molecule to be removed and then note the peptide bond formed when the two are joined.

15. Explain the four levels of protein structure –
    a. Primary

    b. Secondary

    c. Tertiary

    d. Quaternary

16. How does the characteristics of an amino acid – nonpolar, polar, acidic or basic relate to the issue of tertiary and quaternary structure?

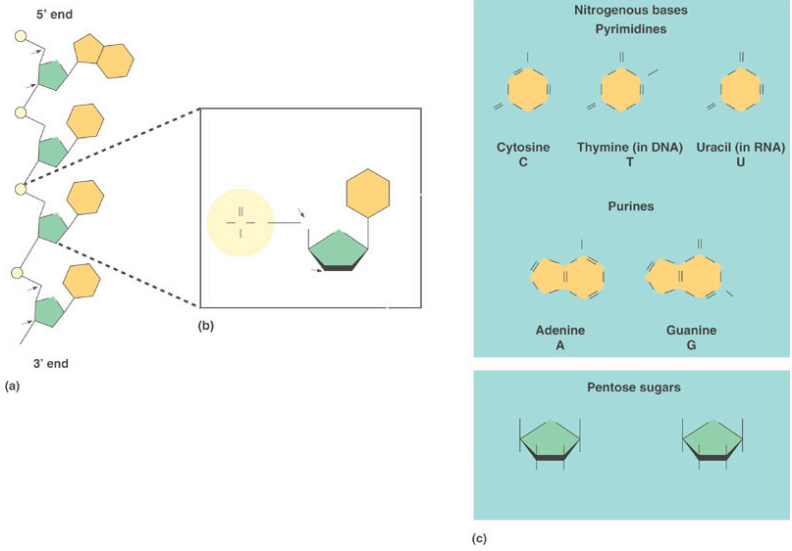
17. What does denaturation mean and why is it important?

18. What are chaperonins and what is their role in protein structure?

19. Describe the technique of x-ray crystallography.

20. What are the roles of nucleic acids?

21. Label the blank diagram



22. What is meant by the term that DNA is antiparallel?