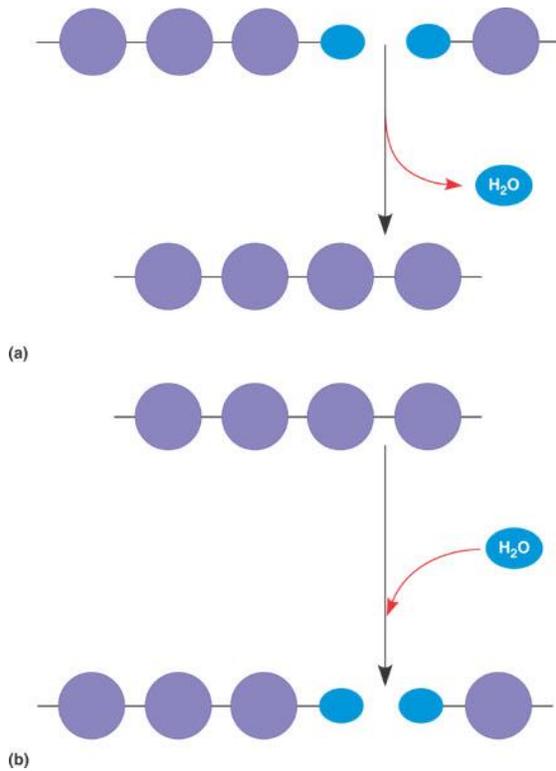


## Chapter 5

### Chapter 5: Structure and Function of Large Biological Molecules **Guided Reading**

This chapter reviews the biomolecules you learned in freshmen biology, and goes into a greater detail which is necessary for AP biology.

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



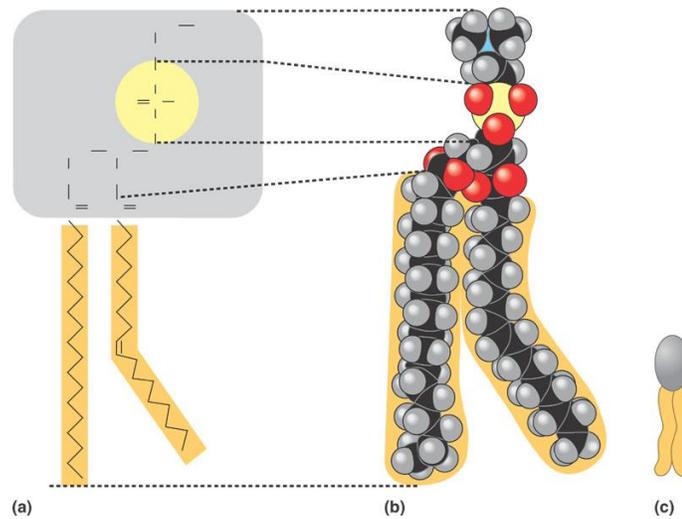
2. What is a hexose? Identify the three hexose monosaccharaides and include their formula.
  
  
  
  
  
  
  
  
  
  
3. Draw the linear form and abbreviated ring structure of glucose. Number the carbons in both drawings.

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4. What is a disaccharide?
5. What is a glycosidic linkage and what do the numbers 1-4 and 1-2 relate to?
6. What are the three disaccharides mentioned in your text book, and what are they formed from?
7. Compare (similarities) and contrast (differences) the two storage polysaccharides.
8. Compare and contrast the two structural polysaccharides.
9. Why are lipids grouped together?
10. What are the building blocks of fats?
11. Contrast saturated and unsaturated fats – how does this relate to the concept that structure determines function?

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12. Label the molecule below.



13. How does the structure of a phospholipid determine its function? Think about the cell membrane, and how a phospholipid reacts when exposed to water.

14. How would you recognize a basic steroid molecule?

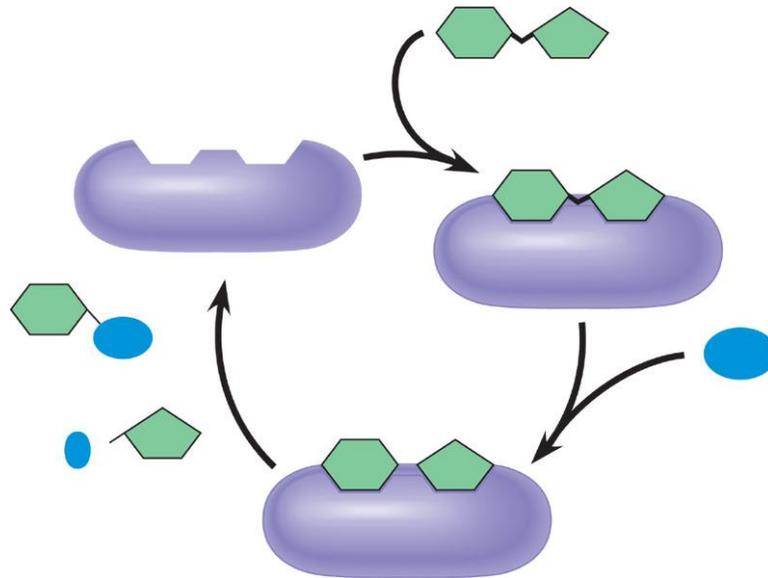
15. List the eight types of proteins and their basic function.

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

17. What is a protein?

18. Label the diagram below concerning the catalytic cycle of the enzyme sucrase, and briefly explain the four basic steps. (You may need to look this up on the internet)  
Words to label in diagram: Fructose, Enzyme (sucrase), Substrate (sucrose) Glucose, Active Site, Enzyme Substrate Complex, H<sub>2</sub>O



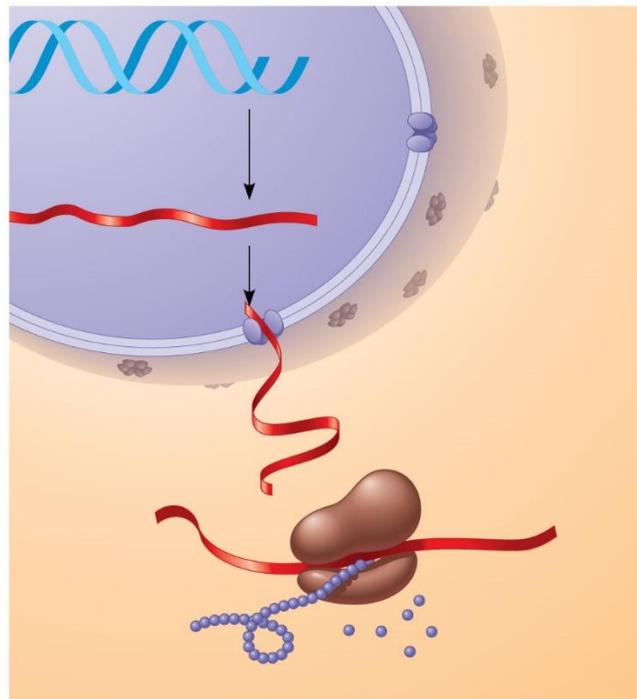
Steps:

19. 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.



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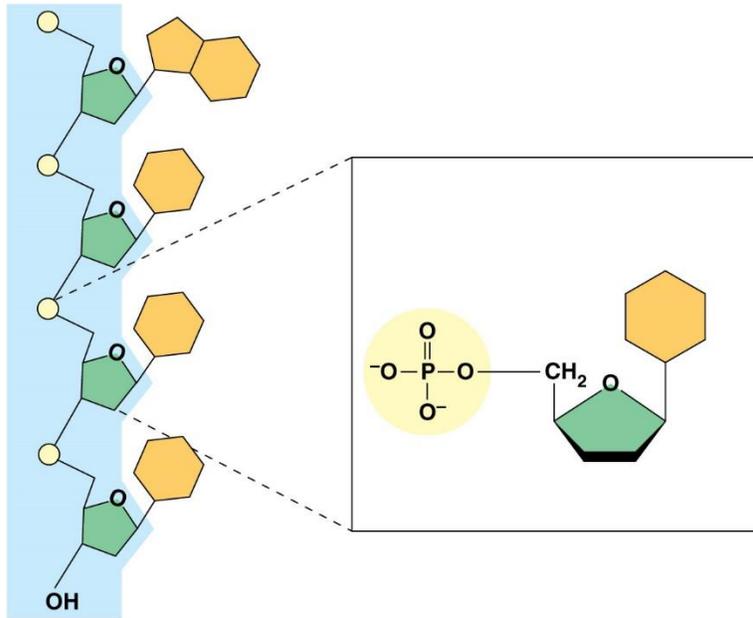
24. What are chaperonins and what is their role in protein structure?
  
25. Describe the technique of x-ray crystallography.
  
26. The text says “proteins are required to implement genetic programs.” What does this mean?
  
27. What is a simple definition of gene expression?
  
28. What is the flow of genetic information in a cell?
  
29. Label the diagram below. All organelles & structures must be identified.



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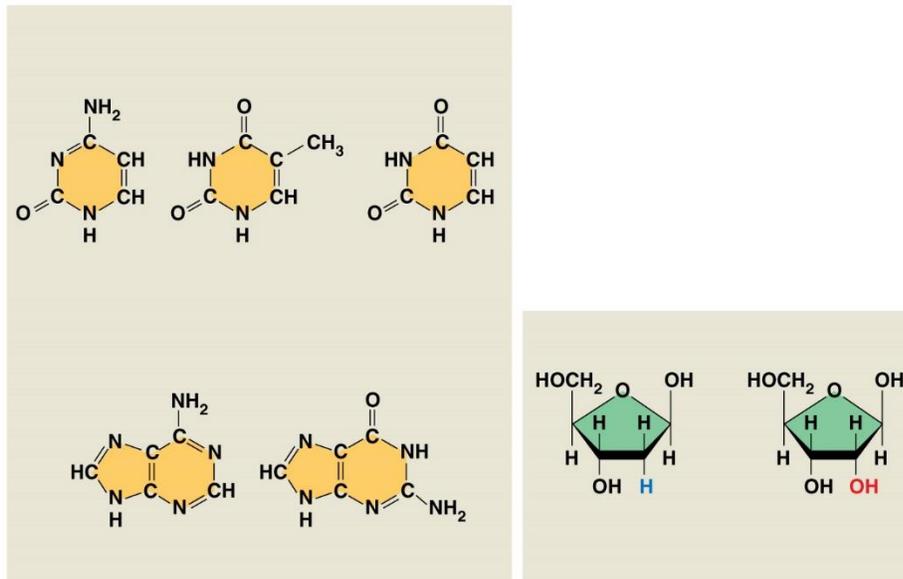
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30. Label the diagram below.



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31. Label the diagrams below.



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## Chapter 5

32. Contrast purines and pyrimidines.
  
33. Identify the complementary base pairs. Include the bases, and their classification as a purine or pyrimidine.
  
34. Contrast ribose and deoxyribose.
  
35. What is meant by the term that DNA is antiparallel?
  
36. What would we expect to see in the DNA of closely related species? Give an example.
  
37. Test your Understanding
  1. \_\_\_\_\_
  2. \_\_\_\_\_
  3. \_\_\_\_\_
  4. \_\_\_\_\_
  5. \_\_\_\_\_
  6. \_\_\_\_\_
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8.

9.