

Module 03: Biomolecules — Study Questions

1. What is the difference between a monomer and a polymer?
2. Describe how dehydration synthesis builds larger molecules from smaller ones.
3. How does hydrolysis break down polymers, and how is this related to digestion?
4. What are the four classes of organic macromolecules essential to life?
5. What is the general formula for carbohydrates, and what does it tell us about their composition?
6. Give examples of a monosaccharide, a disaccharide, and a polysaccharide.
7. How are starch and glycogen similar, and how are they different?
8. Why can humans digest starch but not cellulose, even though both are made of glucose?
9. What are the building blocks of a triglyceride?
10. What is the difference between saturated and unsaturated fatty acids, and how does this affect their properties at room temperature?
11. How is the structure of a phospholipid different from a triglyceride, and why is this important for cell membranes?
12. What is the monomer of proteins, and how many different types are commonly found in living organisms?
13. What type of bond holds amino acids together in a protein chain?
14. Describe the four levels of protein structure and why each level is important.
15. What does it mean when a protein is "denatured"? Give an example of what can cause this.
16. Enzymes are proteins. How does an enzyme's shape relate to its function?

17. What are the three components of a nucleotide?
18. How does the structure of DNA differ from RNA?
19. What is the relationship between DNA, genes, and proteins?
20. Why is the double helix structure of DNA important for copying genetic information?