

## Chapter 3 Objectives

Some of these objectives will not be specifically covered in class but you are responsible for being able to answer all of them.

1. Describe the structure of the plasma membrane and explain its functional significance.
2. Describe the structure of cilia, flagella, and microvilli, and state some of their functions.
3. Describe the processes of phagocytosis, pinocytosis, receptor-mediated endocytosis, and exocytosis.
4. State the functions and describe the structure of the cytoskeleton, lysosomes, mitochondria, and both the granular and agranular endoplasmic reticulum.
5. Explain why microtubules and microfilaments can be thought of as the skeleton and musculature of a cell.
6. Describe the structure of the cell nucleus and explain its significance.
7. Define *chromatin*.
8. Explain the function of DNA and RNA.
9. Explain the difference between transcription and translation (i.e., what is formed, the location of the process, which comes first, etc.)
10. Describe the structure and function of ribosomes.
11. Distinguish between the four types of RNA and know where they are found and what they do. Be able to state whether they play a role in transcription and/or translation.
12. Explain which RNA is used for transcription and translation.
13. Describe how proteins are produced according to the information contained in messenger (mRNA). What is this process called? And where does it occur?
14. Describe the structure of the rough endoplasmic reticulum and Golgi complex (apparatus) and explain how they function together in the secretion of proteins. Do all proteins go through

this process? If not explain which ones do and which ones don't.

15. Explain what is meant by Semiconservative mechanism of DNA replication.
16. Describe the function of cyclins and their physiological significance.
17. Define cell ***death***, ***apoptosis***, and ***programmed cell death***.
18. Define the terms ***hypertrophy*** and ***hyperplasia*** and explain their physiological importance.

You will need to refer back to Chapter 2 for the following objectives:

19. Describe the characteristics of a lipid.
20. Relate the functions of phospholipids to their structure and explain the significance of the prostaglandins.
21. Describe how peptide bonds are formed and broken.
22. Describe and account for the different levels of protein structure.
23. Describe the different categories of protein function in the body and explain why proteins can serve functions that are so diverse.