

Introduction to Anatomy and Physiology  
Chapter One Study Guide

1. What is biology?
2. What is physiology?
3. What is anatomy?
4. What is gross anatomy?
5. What is histology?
6. What is cytology?
7. Why is it important to teach physiology and anatomy together?
8. What is the purpose of science?
9. What do humans and bacteria have in common?
10. What is the cell theory? Significance
11. What is the “scientific method”?
12. What is the difference between a hypothesis, a scientific fact, a theory, and a myth?
13. What is evolution?
14. What is natural selection?
15. What is the relationship between evolution and natural selection?
16. How may you demonstrate evolution is a scientific fact in less than 30 days? Why can't you demonstrate evolution/natural selection in humans in 30 days?
17. When scientists and laypeople (i.e. non-scientist) debate topics, they often use the same words, however. Laypeople do not understand the strict definition of scientific terminology. This breakdown in “language” results in mistrust and misunderstanding. This often then results in bad public policy. How are the terms hypothesis and theory used differently by scientist and laypeople? How has this resulted in a confused public discourse? Give an example.
18. What is the modern synthesis theory of evolution?
19. What is epigenetics? How is epigenetics different than classical genetics?
20. Explain the significance of the “hierarchy of complexity”. Define the functions of each division from an atom to an organism in the hierarchy of organization.
21. What is the definition of metabolism? Where is metabolism located?
22. What are the two forms of metabolism?
23. What is a metabolic pathway? Give an example.
24. What molecule is necessary for metabolic pathways? What is this molecule's nickname? What are the characteristics of this molecule?
25. Is there another “new class of molecule” that may also mediate the conversion of one molecule into another molecule? (Hint: this is new science)
26. What are the three components of a reflex arc?
27. What event must occur to initiate a reflex arc? Significance?
28. Current research suggests our brains process information by trying to predict the content of incoming signals. Explain how this “predictive nature of our brain” works in visual processing.
29. What is homeostasis?
30. What is the internal environment?
31. What phase best describes the “state of the internal environment”?
32. What two feedback mechanisms are used to “regulate” homeostasis?

33. Which regulatory mechanism “returns or restores” the body to its normal state following a change?
34. Which regulatory mechanism is “self-amplifying”? What does this mean?
35. What are examples (3) for negative and positive feedback mechanisms?
36. What feedback mechanism is potentially more dangerous?
37. What two systems regulate homeostasis?
38. What brain structure is the “boss of homeostasis”? Why? Is this boss influenced by another “greater brain structure”? Explain.
39. What is the allostatic condition? How is the allostatic condition related to homeostasis? Explain this in reference to breaking your big toe.