

Introduction to Anatomy and Physiology
Chapter One Study Guide
Tortora & Derrickson

1. What is biology?
2. What is physiology?
3. What is anatomy?
4. What is gross anatomy?
5. Why do we study physiology and anatomy together?
6. What is histology?
7. What is cytology?
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, and a theory?
13. When scientists and laypeople (i.e. non-scientist) debate topics, they often communicate using the same words but their words have different meanings. Unfortunately, this breakdown in “language” results in mistrust and misunderstanding. This then often results in bad public policy. How are the terms hypothesis and theory used differently by scientist and lay-people? How has this resulted in a confused public discourse? (Do this in the context of evolution.)
14. What is evolution?
15. What is natural selection?
16. Explain the relationship between evolution and natural selection.
17. Explain how you can demonstrate evolution as a scientific fact. Why can't you demonstrate natural selection?
18. Modern synthesis theory?
19. What is epigenetics? How does epigenetics differ from classical genetics as it relates to evolution?
20. Explain the significance of the “hierarchy of complexity”. Define the functions of each division of the hierarchy from atoms to organism.
21. What is metabolism? Where does it occur?
22. What are the two forms of metabolism?
23. What is a metabolic pathway?
24. What molecule is necessary for a metabolic pathway to occur? What is this molecule's nickname? Characteristics of this molecule? Can another class of molecule play a similar cellular function? (Hint: new science)
25. What are the three components of a reflex arc? What do we call the event detected by reflex arc? How significant is this mechanism? What is the significance of the predictive nature of brain function as an expression of the reflex arc?
26. What is homeostasis?
27. What phase best describes the “state of the internal environment”?
28. What two feedback mechanisms are used to “regulate” homeostasis?
29. Which regulatory mechanism “returns or restores” the body to its normal state following a change?

30. Which regulatory mechanism is “self-amplifying”? What does this mean?
31. Site example of both negative and positive feedback mechanisms:
32. What two “communication networks” directs (i.e. mediates) homeostasis?
33. Who is the “actual” boss of homeostasis? Does the boss accept suggestions from others? Explain.