

**Chapter 40.1- .2 Basic Principles of Animal Form and Function
Guided Reading (10ed)**

1. Animals need to exchange materials with their environment. This process occurs as substances dissolved in aqueous medium move across the plasma membrane of each cell. Regardless of size, every cell must be bathed in fluid and have access to oxygen, nutrients, and other resources. For each of the following organisms, describe and explain how this is possible. Try to relate your responses to what you learned in Chapter 6 about surface area/volume ratios.

Amoeba

Hydra

Tapeworm

Whale

2. What is *interstitial fluid*, and how does it aid this exchange of materials?
3. Under each tissue type, give a general description of the unique features of it in column 1. Then, working from the more specific examples of each tissue, complete the chart by giving function and location.

Tissue Type	Examples	General Function	Locations
Epithelial	Cuboidal Simple columnar Simple squamous Stratified squamous		
Connective	Cartilage Adipose Blood Bone		
Muscle	Skeletal Smooth Cardiac		
Nervous	Neurons Glial cells		

4. Coordination and control requires communication between different locations in the animal's body. The major systems that transmit information are the endocrine and nervous systems. Fill in the following table to show how they differ in terms of the aspects listed on the left.

	Endocrine	Nervous
Signal type		
Transmission		
Speed and duration		
Response		

5. Explain the difference between animals that are *regulators* and those that are *conformers*.
6. The example in the text is related to temperature regulation. Would an ectotherm, such as a snake, be a regulator or a conformer?
7. Throughout the text, a common theme has been regulation of homeostasis by feedback loops. We discuss feedback loops again as we look at hormone levels. What is meant by a *set point*?
8. Describe an example of a *negative feedback loop*. Clearly identify the *set point*, the *stimulus*, and the *response*.

9. We sometimes say that in negative feedback “more gets you less,” and in positive feedback “more gets you more.” Describe an example of a *positive feedback loop*.
10. Both plants and animals show *circadian rhythms*. What are some examples of human metabolic activities that show daily cycles? How can these be regulated or changed?
11. If you wanted to successfully summit a high mountain such as Kilimanjaro in Africa, *acclimatization* would be important. What physiological changes would be involved? Would this be adaptation in the evolutionary sense?