

Questions for Cellular Form and Function

1. What are the principles of modern cell theory?
2. Draw the following cell shapes: Match the type of cell with the cell shape:
 - a. cells lining the small intestine
 - b. egg cells
 - c. liver cells
 - d. cells lining esophagus
 - e. nerve cells
 - f. blood cells
 - g. smooth muscle cells

Squamous:

Spheroid:

Polygonal:

Stellate:

Discoid:

Cuboidal:

Columnar:

Fusiform:

Fibrous:

3. What limits cells size?
4. What is the largest cell?
5. Why are electron microscopes useful for studying cells?
6. Draw a cell, and label its parts:

24. Clinical application question

As a medical examiner, it is part of your job to identify unknown bodies brought in. Suppose that two torsos were fished out of the river. You know that there is a missing person who was an alcoholic and long-time barbiturate user. Both of the bodies fit the description of that person in some other ways. Using the information in chapter 3, what might you look for in the bodies to help you narrow the search down?

Critical thinking questions:

1. Human red blood cells (primarily carriers of oxygen to tissues) are among the smallest in the body. Why is it advantageous that they are so small?
2. Why are fat-soluble toxins more rapidly taken in through diffusion than water-soluble poisons?
3. What diseases and abnormal conditions might a person be more prone to having if an outside chemical immobilized the cilia?
4. Why will cardiac muscle cells have more mitochondria than a typical adult fat cell? Keep in mind that energy is required if one is to move matter about.
5. Leslie boiled a hen's egg (a cell), placed it in beet juice for some days, and then opened it and saw the red coloration in the egg. What process took place: diffusion, active transport, or phagocytosis?