
5. Figure 3–2: 1. A; Crenated.  2. B; The same solute concentration inside and outside the cell.  3. C; They are bursting (lysis); water is moving by osmosis from its site of higher concentration (cell exterior) into the cell where it is in lower concentration, causing the cells to swell.

6. 1. C or endocytosis, phagocytosis, D or exocytosis, F or solute pumping.  2. A or diffusion, simple, B or diffusion, osmosis.  3. E or filtration.  4. A or diffusion, simple, B or diffusion, osmosis.  5. F or solute pumping.  6. D or exocytosis.  7. B or diffusion, osmosis.  8. F or solute pumping.  9. C or endocytosis.  10. A or diffusion, simple.  11. C or endocytosis.

7. Figure 3–3: Oxygen and fats will move from the cell exterior into the cell by moving passively through the lipid portion; the lipid portion is indicated as the major part of the membrane composed of small spheres, each with two “tails.” Amino acids and glucose also enter the cell from the exterior but do so by attaching to a protein carrier (indicated as large, solid, irregularly shaped structures extending part or all of the way through the membrane). Carbon dioxide, like oxygen, passes by diffusion through the lipid part of the membrane, but in the opposite direction (i.e., from the cell interior to the cell exterior).

Cholesterol and sugar groups (which attach to externally facing proteins) are not shown in the diagram.

8. 1. P or proteins.  2. K or helix.  3. O or phosphate.  4. T or sugar.  5. C or bases.  6. B or amino acids.  7. E or complementary.  8. F or cytosine.  9. V or thymine.  10. S or ribosome.  11. Q or replication.  12. M or nucleotides.  13. U or template, or model.  14. L or new.  15. N or old.  16. H or genes.  17. I or growth.  18. R or repair.


10. 1. C or prophase.  2. A or anaphase.  3. D or telophase.  4. D or telophase.  5. B or metaphase.  6. C or prophase.  7. C or prophase.  8. E or none of these.  9. C or prophase.  10. C or prophase.  11. D or telophase.  12. A or anaphase, B or metaphase.  13. E or none of these.


12. Figure 3–5: 1. transcription.  2. translation.  3. anticodon; triplet.

Body Tissues


14. The neuron has long cytoplasmic extensions that promote its ability to transmit impulses over long distances within the body.
15.  1. B or epithelium.  2. C or muscle.  3. D or nervous.  4. A or connective.  5. B or epithelium.  6. D or nervous.  7. C or muscle.  8. B or epithelium.  9. A or connective.  10. A or connective.  11. C or muscle.  12. A or connective.  13. D or nervous.
16.  1. E or stratified squamous.  2. B or simple columnar.  3. E or stratified squamous.  4. A or pseudostratified columnar (ciliated).  5. A or pseudostratified columnar (ciliated).  6. F or transitional.  7. D or simple squamous.
17. **Figure 3–7:**

20.  1. C or dense fibrous.  2. A or adipose.  3. C or dense fibrous.  4. D or osseous tissue.  5. B or areolar.  6. F or hyaline cartilage.  7. A or adipose.  8. F or hyaline cartilage.  9. D or osseous tissue.  10. E or reticular.

**Developmental Aspects of Cells and Tissues**


**The Incredible Journey**


**At the Clinic**

24.  The oxidases of ruptured peroxisomes were converting the hydrogen peroxide to water and (free) oxygen gas (which causes the bubbling).
25.  Generally speaking, stratified epithelia consisting of several cell layers are more effective where abrasion is a problem than are simple epithelia (consisting of one cell layer).
26.  Streptomycin inhibits bacterial protein synthesis. If the bacteria are unable to synthesize new proteins (many of which would be essential enzymes), they will die.
27.  Since connective tissue is the most widespread tissue in the body, and is found either as part of or is associated with every body organ, the physician will most likely tell her that she can expect the effects of lupus to be very diffuse and widespread.
28.  Granulation tissue secretes substances that kill bacteria.
29.  Mitochondria are the site of most ATP synthesis and muscle cells use tremendous amounts of ATP during contraction. After ingesting bacteria or other debris, phagocytes must digest them, explaining the abundant lysosomes.
30.  Recovery will be long and painful because tendons, like other dense connective tissue structures, are poorly vascularized.