

**AP 200  
Study Guide – Ch. 1**

1. Another name for the study of prenatal development is
2. The study of tissues is called
3. The study of cells is called
4. A group of similar cells having a common function is known as a
5. A group of tissues serving a common function form a
6. A group of organs that perform the same general function form a
7. Place the following terms in order of increasing complexity:  
*Tissue----atoms----system----cell----molecules---organs---organism*
8. Know (well!!) the concept of the "*complementarity of structure and function*"
9. Identify the system described by the following:
  - a) secretes hormones; regulates many other systems
  - b) protection of vital organs; calcium storage; blood formation; act as levers for movement
  - c) prevents accumulation of excess tissue fluid; returns proteins to the blood; immune functions
  - d) transport of nutrients and gases throughout the body; protection against invading agents
  - e) 1<sup>st</sup> line of defense; prevents dehydration; Vitamin D synthesis;
  - f) voluntary and involuntary movement; thermogenesis
  - g) regulates all other systems; seat of intelligence, thought, planning, etc
  - h) perpetuation of the species
  - i) elimination of metabolic wastes like urea, uric acid, etc
  - j) provides body with respiratory gases (oxygen/carbon dioxide); olfaction; phonation
10. Know the systems to which the major organs belong
11. What are the major extracellular fluids of the body?
12. What are the two major fluid compartments of the body?
13. Explain:   a) Bilateral symmetry                   b) Tube-within-a-tube body plan
14. Review Lab 1 material on planes of section, body cavities, and serous membranes.

## Study Guide – Ch.2

1. Be able to identify all the chemical components of a cell membrane!
2. Does nonpolar mean hydrophobic or hydrophilic?
3. To what molecules or parts of molecules do hydrophilic and hydrophobic apply?
4. Review the functions of the proteins of the cell membrane.
5. Distinguish between integral and peripheral proteins.
6. Which region of a phospholipid is directed towards the cytosol? Towards the extracellular fluid?
7. What function does cholesterol serve in the plasma membrane?

*Identify the following cell parts:*

8. Contains intracellular digestive enzymes; "suicide sac" of the cell
9. Major site of ATP synthesis
10. Ultramicroscopic extensions of the plasma membrane that increase its surface area
11. External boundary of cell; regulates flow of materials into and out of the cell
12. Stores glycogen granules, pigments, fat
13. Membranous system consisting of flattened sacs and vesicles; packages proteins for export.
14. Control center of the cell; necessary for cell division and cell life.
15. Two rod-shaped bodies near the nucleus; direct formation of mitotic spindle
16. The "bones and muscles" of the cell
17. Site of free radical detoxification
18. Site of lipid synthesis
19. *Non-membranous* bodies in cytosol on which protein synthesis occurs
20. Calcium storage in muscles; detoxification of alcohol
21. Site of aerobic respiration
22. Hair-like extensions that propel mucous
23. Gel-like material in which all organelles are suspended
24. Proteins used *within* the cell are synthesized here
25. Highly abundant in macrophages and white blood cells (leukocytes)

26. Which of the cytoskeletal elements performs the following:
- a. Used for amoeboid movement
  - b. Most permanent of cytoskeletal elements
  - c. Act as conveyor belts along which 'motor proteins' may travel
  - d. Form the spindle fibers
  - e. Form the core of cilia and flagellae
27. Mitosis results in the production of \_\_\_\_\_ cells having \_\_\_\_\_ (more/less/the same) number of chromosomes as the parent cell.
28. In which type of cell might meiosis occur?
29. How many chromosomes would each cell have after meiosis?
30. During what stage of the life cycle of a cell does replication of chromosomes occur?
31. To what do the terms "diploid", and "haploid or monoploid" refer? Be specific.
32. What purpose does mitosis serve?

## Study Guide – Chapter 3 Embryology

1. The first 8 weeks of development is commonly called the \_\_\_\_\_ period.
2. The remaining 30 weeks is referred to as the \_\_\_\_\_ period.
3. The fertilized egg is also known as the \_\_\_\_\_
4. When are *blastomeres* produced?
5. How does a *morula* differ from a *blastocyst*?
6. What two distinct cell layers does one find in a blastocyst?
  - 6a. Which of these cell layers takes part in the formation of the placenta
  - 6b. Which of these cell layers gives rise to the various tissues of the body?
7. From what do the *hypoblast* and *epiblast* form?
  - 7a. Which of these layers is closest to the *amniotic cavity*?
8. How does the *bilaminar disc* differ from the *trilaminar disc*?
9. From which layer of the *trilaminar disc* does the *ectoderm* develop?
10. From which layer of the *trilaminar disc* does the *endoderm* develop?
11. From which layer of the *trilaminar disc* does the *mesoderm* develop?
12. The *body axis* is largely determined by a structure known as the \_\_\_\_\_
13. What structures are developed during *neurulation*?
14. What embryonic layer takes part in *neurulation*?
15. Where in the embryo might you find *neural crest cells*?
16. What three major regions develop from the *mesoderm*?
17. From which of these regions do the *somites* develop?
18. What are the three major regions of a somite? (see p. 62)
19. Identify the region of the somite from which each of the following develops:
  - a. Trunk and limb muscles
  - b. Vertebrae and ribs
  - c. Dermis of the dorsal body region
20. What are the two major divisions of the *lateral plate mesoderm*?
21. Identify the region of the *lateral plate mesoderm* from which each of the following develops:
  - a. *Visceral serosa*? (Same layer you studied in lab 1)
  - b. *Parietal serosa*? (Same layer you studied in lab 1)
  - c. Dermis of the ventral body region (see 19c above)
  - d. Heart and blood vessels
  - e. Bones, joints and ligaments of limbs
  - f. Wall of the digestive and respiratory tract

## Study Guide – Chapter 4 Histology

1. What is the outer germ layer?
  - a. What does it form
2. Identify the type of epithelium described below:
  - a. single layer of cube-shaped cells
  - b. multiple layers of tall, thin cells
  - c. single layer of very flat, often hexagonal cells
  - d. single layer of cells; all cells are attached to the basement membrane, but only some of them reach the free surface
  - e. multiple layers of cells; outer cells are dead and dry.
  - f. layers of cells that appear cubelike when an organ is relaxed and flattened when the organ is distended by fluid
3. Fill-in the missing term:
  - a. Epithelial cells have very little \_\_\_\_\_ material between them.
  - b. Epithelium is sometimes referred to as a \_\_\_\_\_ or \_\_\_\_\_ tissue based on where it is found in the body.
  - c. Most epithelial tissues have one \_\_\_\_\_ surface that rests on the basement membrane, and an \_\_\_\_\_ surface that faces the lumen or exterior of the body.
  - d. Epithelial tissues have no blood vessels and therefore are called \_\_\_\_\_
4. KNOW WELL THE FUNCTIONS AND LOCATIONS OF THE EPITHELIAL TISSUES DISCUSSED IN LECTURE AND LAB.
5. What is the word *suffix* for a cell that forms or creates new extracellular matrix or tissue?
6. What is the *suffix* for a cell that breaks down the extracellular material or tissue?
7. What are the three major components of all connective tissue?
8. Name the type of cell found in the following tissues:
  - a. Fat: \_\_\_\_\_
  - b. Cartilage: \_\_\_\_\_
  - c. Bone \_\_\_\_\_
  - d. Nerve tissue: \_\_\_\_\_
  - e. Antibody secreting cells: \_\_\_\_\_
  - f. Large phagocytic cells of c.t.: \_\_\_\_\_
  - g. Contain *heparin* & *histamine* \_\_\_\_\_
9. The connective tissue cell responsible for the synthesis and secretion of connective tissue fibers is the \_\_\_\_\_.
10. Name the connective tissue fiber described below:
  - a. Large, strong, flexible, inelastic: \_\_\_\_\_
  - b. Short, thin collagen fibers that branch for to form a *stroma*: \_\_\_\_\_
  - c. Gives the tissue an elastic quality: \_\_\_\_\_

11. KNOW WELL THE FUNCTIONS AND LOCATION OF THE CONNECTIVE TISSUES DISCUSSED IN LECTURE AND LAB.
12. This type of membrane consists of epithelial cells and their basement membrane, which rests on a thick layer of loose connective tissue called the *lamina propria*; \_\_\_\_\_
13. This membrane consists of simple squamous epithelium (mesothelium), its basement membrane, and a delicate layer of loose connective tissue. \_\_\_\_\_
14. A gland that secretes its product into a *duct* is a type of \_\_\_\_\_ gland.
15. A gland that secretes its product into the blood and is *ductless* is a type of \_\_\_\_\_ gland.
16. The mesoderm gives rise to a slightly more differentiated tissue called \_\_\_\_\_ from which all other connective tissues arise.
17. \_\_\_\_\_ is the unstructured material that fills the space between the cells of connective tissue and also contains the fibers. It is composed of \_\_\_\_\_ fluid (aka tissue fluid), proteins that serve as the *glue* of connective tissue called \_\_\_\_\_ and complex molecules of protein and sugar called \_\_\_\_\_. These latter molecules have a \_\_\_\_\_ core and \_\_\_\_\_ (aka, GAG's) that stick out from the core protein like the fibers of a bottle brush (Fig. 4.7).
18. What function do the GAG's perform? \_\_\_\_\_
19. In general, the higher the GAG content, the more \_\_\_\_\_ the ground substance.

## Study Guide—Chapter 5 The Integument

1. What are the 2 major layers of the skin?
2. Another name for the layer that lies just deep to the skin is the
3. Pigment-producing cells of the epidermis are the
4. Macrophage cells of the epidermis are known as
5. The majority of the cells of the epidermis are known as
6. The primary function of the cells described in question 5 is
7. List the 5 major layers of the epidermis starting with the bottom-most layer.
8. Which of these layers is continually shed from the skin?
9. Which of the layers produces new cells for the epidermis?
10. Which of the layers is found ONLY in thick skin?
11. In which of these layers are keratohyaline granules found?
12. Name the two layers of the dermis.
13. Which of these layers is closest to the overlying epidermis?
14. Peg-like projections of the upper layer of the dermis are known as
15. These projections are responsible for producing what visible characteristic on our fingers?
16. What type of tissue makes up the reticular layer of the dermis?
17. The scientific name for sweat glands is
18. Where are sweat glands NOT found on the body?
19. Sweat glands on the palms, soles, and forehead are known as \_\_\_\_\_ glands.
20. Sweat glands found in the axillae and perianal region are known as \_\_\_\_ glands.
21. Where does the duct of an eccrine gland open onto and where does the duct of an apocrine

gland open into?

22. Ceruminous glands are most commonly found in the
23. Another name for oil glands is
24. Where are oil glands NOT found on the body?
25. What is the function of a Pacinian corpuscle and where are they found in the skin?
26. What is the function of a Meissner's corpuscle and where are they found in the skin?
27. Besides the skin itself what other structures are members of the integumentary system?
28. Review at least 5 different functions of the skin.
29. How does the epidermis serve as an example of the "complementarity of structure and function"
30. Distinguish between 'hard keratin' and 'soft keratin'.
31. True or False: Dark-skin individuals have a greater number of melanocytes than light skin individuals?