Classification of Tissues

Tissue Structure and Function: General Review

1. Define tissue: **GROUPS OF CELLS THAT ARE SIMILAR IN STRUCTURE AND FUNCTION**

2. Use the key choices to identify the major tissue types described below. (Some choices may be used more than once.)

   **Key:**
   - connective
   - epithelium
   - muscular
   - nervous

   **EPITHELIUM**  1. lines body cavities and covers the body’s external surface
   **MUSCULAR**  2. pumps blood, flushes urine out of the body, allows one to swing a bat
   **NERVOUS**  3. transmits waves of excitation
   **CONNECTIVE**  4. anchors and packages body organs
   **EPITHELIUM**  5. cells may absorb, protect, or form a filtering membrane
   **NERVOUS**  6. most involved in regulating body functions quickly
   **MUSCULAR**  7. major function is to contract
   **CONNECTIVE**  8. the most durable tissue type
   **CONNECTIVE**  9. abundant nonliving extracellular matrix
   **NERVOUS**  10. forms nerves

Epithelial Tissue

3. On what bases are epithelial tissues classified? **SHAPE + NUMBER OF LAYERS**

4. How is the function of an epithelium reflected in its arrangement? **CELLS CONNECTED TO EACH OTHER FORM UNIFORM SURFACE FOR PROTECTION, LINING CAVITIES, SECRETION**

5. Where is ciliated epithelium found? **TRACHEA**
   What role does it play? **MOVES MUCUS OUT OF LUNGS**
6. Transitional epithelium is actually stratified squamous epithelium, but there is something special about it.

   How does it differ structurally from other stratified squamous epithelia? IT HAS CUBOIDAL CELLS ON SURFACE.

   How does this structural difference reflect its function in the body? THESE CELLS STRETCH & FLATTEN AS ORGAN FILLS WITH FLUID & EXPANDS.

7. Use the key choices to respond to the following. (Some choices may be used more than once.)

   Key: pseudostratified ciliated columnar simple cuboidal simple squamous

   STRATIFIED SQUAMOUS

   PSEUDOSTRATIFIED CILIATED COLUMNAR

   SIMPLE SQUAMOUS

   SIMPLE CUBOIDAL

   PSEUDOSTRATIFIED CILIATED COLUMNAR

   TRANSITIONAL

   SIMPLE COLUMNAR

   STRATIFIED SQUAMOUS

   TRANSITIONAL

   SIMPLE SQUAMOUS

   1. best suited for areas subject to friction

   2. propels substances across its surface

   3. most suited for rapid diffusion

   4. tubules of the kidney

   5. lines much of the respiratory tract

   6. stretches

   7. lines the small and large intestines

   8. lining of the esophagus

   9. lining of the bladder

   10. alveolar sacs (air sacs) of the lungs

Connective Tissue

8. What is the makeup of the matrix in connective tissues? GROUND SUBSTANCE (GLYCOPROTEINS + LARGE POLYSACCHARIDES) + FIBERS (COLLAGEN, ELASTIC, RETICULAR)

9. How are the functions of connective tissue reflected in its structure? THE FUNCTIONS OF CONNECTIVE TISSUE ARE RELATED TO THE TYPE OF EXTRACELLULAR MATRIX LAIDED DOWN BY THE CELLS
10. Using the key, choose the best response to identify the connective tissues described below.

**Key:**
- adipose connective tissue
- areolar connective tissue
- dense fibrous connective tissue
- reticular connective tissue
- hyaline cartilage
- osseous tissue
- fibrocartilage
- blood

1. attaches bones to bones and muscles to bones
2. forms your hip bone
3. composes basement membranes; a soft packaging tissue with a jellylike matrix
4. forms the larynx and the costal cartilages of the ribs
5. firm matrix heavily invaded with fibers; appears glassy and smooth
6. matrix hard; provides levers for muscles to act on
7. insulates against heat loss; provides reserve fuel
8. makes up the intervertebral discs

**Muscle Tissue**

11. The terms and phrases in the key relate to the muscle tissues. For each of the three muscle tissues, select the terms or phrases that characterize it, and write the corresponding letter of each term on the answer line.

**Key:**
- a. striated
- b. branching cells
- c. spindle-shaped cells
- d. cylindrical cells
- e. active during birth
- f. voluntary
- g. involuntary
- h. one nucleus
- i. many nuclei
- j. forms heart walls
- k. attached to bones
- l. intercalated discs
- m. in wall of bladder and stomach
- n. moves limbs, produces smiles
- o. arranged in sheets

Skeletal muscle: **a, d, e, f, i, k, n**

Cardiac muscle: **a, b, c, h, j, l**

Smooth muscle: **c, e, g, h, m, o**

**Nervous Tissue**

12. In what ways are nerve cells similar to other cells? **They have cell body with organelles**

How are they different? **Have long membrane extensions**

How does the special structure of a neuron relate to its function? **Signals are communicated to other cells via these long membrane extensions**
For Review

13. Write the name of each tissue type in illustrations a through d, and label all major structures.

a. **Simple Columnar Epithelium**

b. **Pseudostratified Ciliated Columnar Epithelium**

c. **Stratified Squamous Epithelium**

d. **Transitional Epithelium**
e. **Areolar connective tissue**

f. **Dense connective tissue**

g. **Bone connective tissue**

h. **Vascular cartilage**
i. ADIPOSE CONNECTIVE TISSUE

j. SMOOTH MUSCLE

k. SKELETAL MUSCLE

l. CARDIAC MUSCLE