

## Review questions for Cells and Tissues lecture

### Multiple choice review questions:

- 1) The cell membrane is composed primarily of a double layer of \_\_\_\_ molecules.
  - A) phospholipid
  - B) carbohydrate
  - C) nucleic acid
  - D) amino acid
  
- 2) Which of the following organic molecules is **not** commonly found in the cell membrane?
  - A) lipids
  - B) protein
  - C) cholesterol
  - D) nucleic acids
  
- 3) The organelle that supplies energy to the cell is known as the
  - A) ribosome.
  - B) lysosome.
  - C) Golgi complex.
  - D) mitochondria.
  
- 4) Cytokinesis occurs during
  - A) receptor binding
  - B) membrane transport
  - C) ATP-production
  - D) mitosis
  
- 5) Most receptor proteins are found in which part of the cell?
  - A) cytoplasm
  - B) nucleus
  - C) membrane
  - D) mitochondria
  
- 6) Which term is used to describe the part of a neuron that detects stimulation?
  - A) matrix
  - B) dendrites
  - C) axon
  - D) myosin

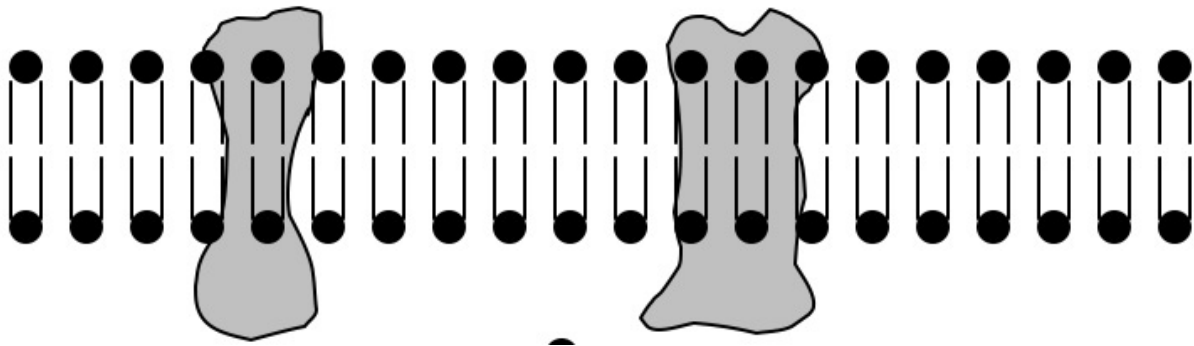
- 7) The fibrous protein abundant in dense connective tissue is:  
A) insulin.  
B) cartilage.  
C) collagen.  
D) dentin.
- 8) All organs  
A) produce pigments.  
B) are composed of at least two tissues.  
C) keep pathogens from infecting the body.  
D) allow the body to detect sensory stimuli.
- 9) Adipose tissue is a type of  
A) cartilage  
B) endoplasmic reticulum  
C) connective tissue.  
D) blood.
- 10) How many types of muscle tissue are there?  
A) 3  
B) 4  
C) 6  
D) 2

**Answers to multiple choice problems:**

- 1 = A  
2 = D  
3 = D  
4 = D  
5 = C  
6 = B  
7 = C  
8 = B  
9 = C  
10 = A

**Fill-in-the-blank review questions:**

- 1) The smallest living unit of the body is the \_\_\_\_\_.
- 2) The cell membrane blocks the passage of most \_\_\_\_\_.
- 3) The cell membrane is hydrophobic because it is composed primarily of the hydrophobic molecules \_\_\_\_\_ and \_\_\_\_\_ molecules. In addition to these hydrophobic molecules, cell membranes have \_\_\_\_\_ molecules that can do things such as detect solutes outside the cell or form tunnels to bring solute molecules through the membrane.
- 4) The drawing below shows the cell membrane. Answer the questions below the drawing. Some answers require more than one word.



What specific molecule do the black shapes represent? \_\_\_\_\_

The gray shapes represent proteins. What two types of proteins that interact with solutes outside the cell are found in membrane? Be as specific as possible.

- 5) A double layer of phospholipids (as is shown in problem 5 above) is known as a phospholipid \_\_\_\_\_.
- 6) The watery material that fills the cell and the organelles inside the cells are together known as the \_\_\_\_\_.
- 10) The region in a human cell that houses the genetic material (the DNA) is the \_\_\_\_\_. The DNA is found in tightly coiled structures called \_\_\_\_\_ that can be seen as thread-like shapes under a microscope.
- 11) \_\_\_\_\_ are channels that connect the membranes of neighboring cells that allow solutes to pass from the cytoplasm of one cell to another cell.
- 12) The \_\_\_\_\_ organelle generates cellular energy
- 13) The mitochondria generate energy for the cell by making a molecule called \_\_\_\_\_. The mitochondria make this energy-rich molecule using glucose by a process called \_\_\_\_\_ (three words).

14) The process by which cells reproduce themselves is called \_\_\_\_\_. The first step in the process is for the \_\_\_\_\_ to divide. Once this has happened, the rest of the cell (the cytoplasm and the membrane) divide in a process called \_\_\_\_\_.

15) The small round membrane-bound organelles in the cell used for storage and transportation of materials within the cell are called \_\_\_\_\_

16) Cancer is \_\_\_\_\_ cell division.

17) The four major tissues types of the body are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

18) \_\_\_\_\_ tissue has tightly packed cells that form protective linings, such as the skin and the inner lining of hollow organs.

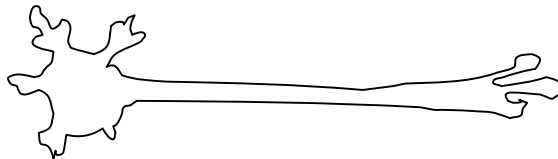
19) The cells of \_\_\_\_\_ tissue can contract (make themselves smaller).

20) Why do the cells of the muscle tissue contract?

21) What tissue type is the inner lining of all hollow organs of the body?

22) \_\_\_\_\_ tissue is characterized by cells that carry signals rapidly between body parts.

23) The cell below is a \_\_\_\_\_.



24) The single long extension of the neuron is called a \_\_\_\_\_. Its function is to \_\_\_\_\_.

25) The smaller numerous tree-like extensions from the neuron are called \_\_\_\_\_. Their function is to \_\_\_\_\_.

26) The cells of connective tissue do/don't (circle one) touch their neighbors.

27) The \_\_\_\_\_ is the term for all the material that fills the spaces between the cells of connective tissues.

28) Which of the connective tissue types is...

a) A soft jelly-like tissue that surrounds and protects many organs in the body? \_\_\_\_\_

b) Is part of tendons and ligaments? \_\_\_\_\_

29) \_\_\_\_\_ is a tough, extremely strong fibrous protein which gives dense connective tissue strength.

- 30) The extracellular matrix of bone tissue contains a rock-like mineral called \_\_\_\_\_.
- 31) The rubber-like tissue of the body is called \_\_\_\_\_ tissue.
- 32) The tips of bones are covered by a protective layer of \_\_\_\_\_ tissue.
- 33) The tissue that stores fat molecules is called \_\_\_\_\_ tissue.
- 34) The tissue that transports materials throughout the body is \_\_\_\_\_ tissue.
- 35) In lecture, we listed three examples of substances that are transported by the blood. Name the three transported substances that were listed in lecture.
- 37) The six major classes of connective tissue are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
- 39) An organ is a structure made of several types of \_\_\_\_\_ working together.
- 40) Several organs working together on a common task form a(n) \_\_\_\_\_.
- 41) Arrange the following terms in the proper order, from smallest to largest:
- Organ
  - Tissue
  - Organ system
  - Cell
  - Organelle
- 42) We discussed three types of muscle tissue in class. In the blank after each description, name the muscle tissue type(s) that match the description. Some blanks may have more than one answer. Write all answers.
- a) You cannot make it contract whenever you want: \_\_\_\_\_
  - b) It is found only in the heart: \_\_\_\_\_
  - c) It is the only voluntary type of muscle: \_\_\_\_\_
  - d) It is usually found as part of hollow organs: \_\_\_\_\_
  - e) It has actin and myosin inside: \_\_\_\_\_

**Answer to fill-in-the-blank review questions:**

- 1) Cell
- 2) Solute molecules
- 3) Phospholipids
  - Glycerol
  - Protein
- 4) Phospholipids
  - Receptor proteins
  - Membrane transport proteins
- 5) Bilayer
- 6) Cytoplasm
- 10) Nucleus
  - Chromosomes
- 11) Gap junctions
- 12) Mitochondria
- 13) ATP
  - Cellular aerobic respiration
- 14) Mitosis
  - Nucleus
  - Cytokinesis
- 15) Vesicles
- 16) Uncontrolled
- 17) Epithelial
  - Muscle
  - Nervous
  - Connective
- 18) Epithelial
- 19) Muscle
- 20) To cause movement
- 21) Epithelial
- 22) Nervous
- 23) Neuron
- 24) Axon
  - Carry nervous signals
- 25) Dendrites
  - Detect stimuli
- 26) Don't
- 27) Extracellular matrix
- 28)
  - a) Loose connective tissue
  - b) Dense connective tissue
- 29) Collagen
- 30) Calcium phosphate
- 31) Cartilage
- 32) Cartilage
- 33) Adipose
- 34) Blood
- 35) Oxygen, nutrients, wastes
- 37)
  - Loose connective
  - Dense connective
  - Bone
  - Cartilage
  - Adipose
  - Blood
- 39) Tissue
- 40) Organ system
- 41)
  - Organelle
  - Cell
  - Tissue
  - Organ
  - Organ system
- 42)
  - Smooth and cardiac muscle
  - Cardiac muscle
  - Skeletal muscle
  - Smooth muscle
  - Skeletal, smooth, and cardiac muscle

**Short answer review questions:**

- 1) A tissue is defined as:
- 2) You decide to raise your thumb (to do a "thumb's up" approval gesture). Which type of muscle tissue do you use to raise your thumb? How do you know that that is the muscle tissue type that you use?

**Answer to short answer review questions:**

- 1) A tissue is a group of cells of the same type performing some function together.
- 2) You use skeletal muscle tissue to raise your thumb.

It must be skeletal muscle tissue because raising your thumb is a voluntary action (meaning that you consciously decide to raise your thumb). Skeletal muscle tissue is the only voluntary muscle type. The other two muscle tissue types (smooth muscle and cardiac muscle) are involuntary so their contraction and relaxation cannot be consciously controlled.