

## Chapter 8 – Human Organization

Complete using BC Biology 12, pages 236 – 255

### 8.1 Types of Tissues

pages 240 - 243

- The tissues in the human body can be categorized into **four** major types
  - epithelial: covers body surfaces and lines body cavities
  - connective: binds and supports body parts
  - muscular: moves the body and its parts
  - nervous: receives stimuli and conducts nerve impulses

#### Epithelial Tissue

- Describe four SPECIFIC functions of the epithelium (include both external AND internal)
  - protect the body from injury and drying out
  - prevent invasion by microbes
  - secretes mucus along digestive tract
  - absorbs molecules from kidneys and intestine
- What connects the epithelium to underlying connective tissue? basement membrane
- Epithelial tissue is classified according to the shape of the cell it is composed of:
  - squamous
  - cuboidal
  - columnar
 and the number of layers in the tissue. One layer is referred to as simple<sup>(a)</sup> epithelium and more than one layer is referred to as stratified<sup>(b)</sup> epithelium.
- Match the type of epithelial tissue to where it is found in the body.
 

a) simple squamous	<u>c</u> lining of kidney tubules, various glands
b) stratified squamous	<u>e</u> lining of trachea
c) simple cuboidal	<u>d</u> lining digestive tract, oviducts
d) simple columnar	<u>b</u> lining of nose, mouth, esophagus, anal canal and vagina
e) pseudostratified, ciliated columnar	<u>a</u> lining of lungs, blood vessels
- When an epithelium secretes a product, it is said to be glandular<sup>(a)</sup>. A gland<sup>(b)</sup> can be a single epithelial cell or can contain many cells. Glands that secrete their product into ducts<sup>(c)</sup> are called exocrine<sup>(d)</sup> glands and those that secrete their products into the bloodstream<sup>(e)</sup> are called endocrine<sup>(f)</sup> glands.

## Connective Tissue

7. Describe the term “matrix” as it applies to connective tissues.

A matrix is a non-cellular material that varies from solid to jellylike to fluid. It separates connective tissue cells.

8. Why do some scientists consider blood as a connective tissue while others do not?

Plasma acts as a matrix for the blood cells, but it is not made by those cells.

9. Give three of the many roles of blood:

- a) transports nutrients and gases
- b) distributes heat
- c) protection from disease  
prevent fluid loss (clotting)

## Muscular Tissue

10. Muscle fibers contain \_\_\_\_\_ actin \_\_\_\_\_<sup>(a)</sup> filaments and \_\_\_\_\_ myosin \_\_\_\_\_<sup>(b)</sup>

filaments, whose interaction accounts for movement.

11. Complete the table

Type of Muscle	Fiber Appearance	Location	Control
<b>Skeletal</b>	- striated - multiple nuclei	Attached by tendons to the endoskeleton	voluntary
<b>Smooth</b>	- smooth - single nuclei	Walls of viscera (intestine, stomach) Blood vessels	involuntary
<b>Cardiac</b>	- branching, striated - single nuclei	Walls of the heart	involuntary

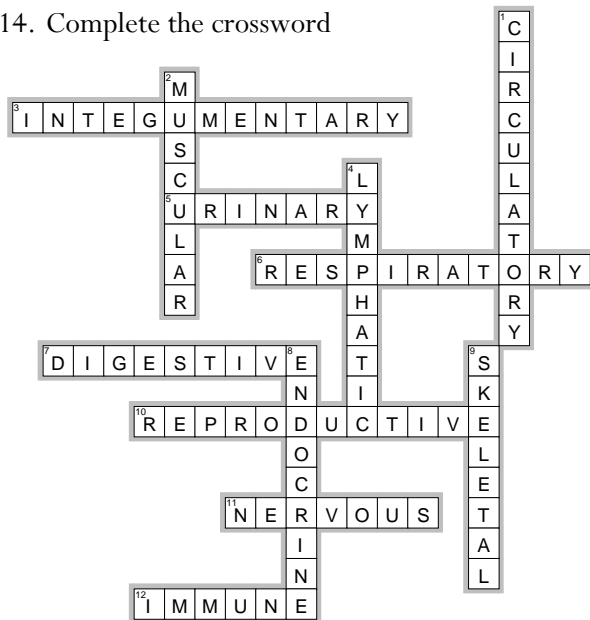
## Nervous Tissue

12. Nerve cells are specialized cells called neurons<sup>(a)</sup>, which are made up of three parts: cell body<sup>(b)</sup>, dendrites<sup>(c)</sup> and an axon<sup>(d)</sup>
13. The nervous system has just three functions:
- sensory input
  - integration of data
  - motor output

## 8.2 Organ Systems

pages 244 - 245

14. Complete the crossword



EclipseCrossword.com

### Across

- Protects the body, helps control temperature, receives sensory input.
- Excretes metabolic wastes, helps control fluid balance, helps control pH balance.
- Exchanges gases at lungs and tissues.
- Ingests food, digests food, absorbs nutrients, eliminates waste.
- Produces and transports gametes, produces sex hormones.
- Receives sensory input initiates motor output, helps coordinate organ systems.
- Protection from disease.

### Down

- Transports blood, nutrients, gases, and wastes.
- Maintains posture, moves body and internal organs, produces heat.
- Helps control fluid balance and absorbs fats.
- Produces hormones, helps coordinate organ systems, responds to stress.
- Supports the body, protects body parts, stores minerals.

## 8.3 Homeostasis

pages 246 - 249

15. Define *homeostasis*: maintenance of relatively constant internal environment
- Regular body temperature = 37°C
  - Blood pH level = 7.4
  - Blood sugar level (range) = 0.05 – 0.08%
16. Explain what is meant by the “internal state of the body is in a state of *dynamic equilibrium*”
- Internal conditions fluctuate** above and below a particular value.

17. What is the difference between a negative and positive feedback mechanisms?

Negative feedback: keeps a variable close to a particular value (set point)

Positive feedback: brings about an ever greater change in the same direction

18. Give an example of each type of system, as related to the human body.

a) Negative feedback: body temperature, blood glucose

b) Positive feedback: clotting process, child birth

#### 8.4 Overview of the Endocrine System

pages 249 - 250

19. The endocrine system consists of glands and tissues that secrete hormones which are chemicals that affect the behavior of other glands or tissues.

20. List six major human endocrine glands and at least one of the hormones released by that gland

- hypothalamus : hypothalamic-releasing or inhibiting
- posterior pituitary : oxytocin (uterine contractions)
- anterior pituitary : growth hormone
- thyroid : thyroxine
- pancreas : insulin (regulate blood glucose)
- adrenal medulla : epinephrine (neurotransmitter)

21. How does the homeostatic response differ between the nervous and endocrine systems?

Nervous system response is rapid and fast acting while the endocrine response is slower due to hormone transport through the bloodstream but is often a more prolonged response.

22. Most hormones are controlled by negative feedback<sup>(a)</sup> and by the action of other hormones<sup>(b)</sup>. The effect of a hormone also can be controlled by the release of an antagonistic<sup>(c)</sup> hormone.

Mark using the answer key on page 539 - 540. Ensure your written answers are in your own words.

- |             |              |              |              |
|-------------|--------------|--------------|--------------|
| 1. <u>b</u> | 7. <u>d</u>  | 13. <u>c</u> | 19. <u>d</u> |
| 2. <u>a</u> | 8. <u>c</u>  | 14. <u>a</u> | 20. <u>c</u> |
| 3. <u>c</u> | 9. <u>b</u>  | 15. <u>a</u> | 21. <u>d</u> |
| 4. <u>b</u> | 10. <u>b</u> | 16. <u>c</u> | 22. <u>b</u> |
| 5. <u>c</u> | 11. <u>a</u> | 17. <u>a</u> |              |
| 6. <u>c</u> | 12. <u>d</u> | 18. <u>c</u> |              |

23. Tissue Types: connective (I), epithelial (II), muscle (III) and nervous (IV)

- |               |               |               |
|---------------|---------------|---------------|
| a. <u>IV</u>  | f. <u>II</u>  | k. <u>II</u>  |
| b. <u>I</u>   | g. <u>II</u>  | l. <u>III</u> |
| c. <u>III</u> | h. <u>II</u>  | m. <u>I</u>   |
| d. <u>IV</u>  | i. <u>III</u> | n. <u>IV</u>  |
| e. <u>I</u>   | j. <u>II</u>  | o. <u>II</u>  |

31. Match description to body system (may be more than one system)

- |                            |                        |                  |
|----------------------------|------------------------|------------------|
| a. <u>iv</u>               | e. <u>iii, vi, vii</u> | i. <u>ii, vi</u> |
| b. <u>i</u>                | f. <u>ii</u>           | j. <u>v</u>      |
| c. <u>ix</u>               | g. <u>vii</u>          | k. <u>xi</u>     |
| d. <u>x (wrong in key)</u> | h. <u>iii, viii</u>    |                  |

40. Positive or negative feedback: why?

- |                                   |  |
|-----------------------------------|--|
| a. <u>negative</u>                | : <u>regulated amount of epinephrine</u>                                       |
| b. <u>positive</u>                | : <u>increasing amount of signals until end point reached (e.g. urination)</u> |
| c. <u>negative (wrong in key)</u> | : <u>regulated blood volume</u>  |