

Chapter 5: Integumentary System

I. Overview of the Integumentary System

A. List the five major functions of the integumentary system:

1. _____
2. _____
3. _____
4. _____
5. _____

II. Skin

A. Epidermis

1. The epidermis consists of _____
2. Most cells of the epidermis are _____
3. Where are new cells formed? _____
4. What is it called when surface cells slough off? _____

5. What does the process of keratinization refer to: _____
6. Stratum Basale - deepest layer of epidermis
 - a. This is composed of _____
 - b. What anchors this layer to the basement membrane? _____
 - c. This layer produces new cells by the process of _____
 1. One daughter cell _____
 2. The other daughter cell _____
 - d. How long does it take a cell to desquamate? _____
7. Stratum Spinosum
 - a. This layer is composed of _____
 - b. The spine like appearance in the microscope is due to _____
 - c. What does the term "Stratum Germinativum" refer to: _____
8. Stratum Granulosum
 - a. This layer is composed of _____
 - b. Contains protein granules of _____

c. The nucleus and organelles _____ & the cell _____

9. Stratum Lucidum

a. This layer appears as _____

b. This layer consists of _____

10. Stratum Corneum - the most superficial layer

a. This layer consists of _____

b. What is a "cornified cell"? _____

c. What is keratin? _____

d. The structural strength of the stratum corneum is due to _____
and _____

B. Thick and Thin Skin

1. Thick skin has how many epithelial strata? _____

2. Where would you find thick skin? _____

3. What is responsible for the ridges of thick skin? _____

4. Functionally the ridges _____ & _____

5. What layer is absent from thin skin? _____

6. Which type of skin is more flexible? _____

7. Which type of skin will have hair? _____

8. What causes a callus to develop? _____

9. Where would you find a corn? _____

C. Skin Color

1. Melanin

a. What amino acid is used to produce melanin? _____

b. Melanin is produced by _____

c. What is a melanosome? _____

d. Describe how melanin gets inside keratinocytes: _____

e. Melanin production is determined by:

1. _____

2. _____

3. _____

f. Genetics determines the:

1. _____ and _____ of melanin produced by melanocytes

2. _____, _____ & _____ of melanosomes

g. Hormones usually increase melanin production during _____

h. Exposure to ultraviolet light _____ & _____

2. Carotene

a. Is a _____ pigment commonly found in _____

b. Excess carotene accumulates in the _____ & _____

1. This gives the skin a _____

3. Hemoglobin

a. Blood flowing through the skin gives it a _____

b. What does cyanosis mean? _____

D. Dermis

1. The dermis is responsible for most of _____

2. What is the main connective tissue fiber present? _____

3. Reticular Layer - main layer of dermis

a. Is this layer deep or superficial? _____

b. This layer is composed of _____

c. What is responsible for cleavage or tension lines?

d. When the dermis ruptures it may produce _____

4. Papillary Layer

a. The layer is named for _____

b. The layer is composed of _____

III. Hypodermis

A. It consists of _____ with _____ & _____

B. When not part of the skin it is also called _____ or _____

IV. Accessory Skin Structures

A. Hair

1. Define the following three hair terms:
 - a. Lanugo _____
 - b. Vellus hairs _____
 - c. Terminal hairs _____
2. Hair structure
 - a. What part of the hair is found above the skin surface? _____
 - b. What is the name for the hair part below the skin surface? _____
 - c. What is the hair bulb? _____
 - d. What is the dermal root sheath? _____
 - e. What is the epithelial root sheath? _____
 - f. Where is the matrix found? _____
 1. What is produced by the matrix? _____
3. Hair Growth
 - a. During the growth stage _____
 - b. What happens to the hair at the end of the resting stage? _____
4. Hair Color
 - a. Color is due to the amount of _____
 - b. What causes hair color to fade or become white? _____

B. Muscles

1. What are the arrector pili? _____
2. How does hair position change when the arrector pili contract? _____
 - a. The raised areas produced by this movement are called _____
3. What two events can cause the arrector pili to contract?
 - a. _____
 - b. _____
4. What two benefits do most animals receive from this response?
 - a. _____
 - b. _____

C. Glands

1. Sebaceous Glands

- a. The glands are located in the _____
- b. Structurally they are simple _____
- c. These glands produce _____
 1. This substance is _____ rich in _____
- d. How do sebaceous glands release sebum? _____
 1. Therefore functionally sebaceous glands are classified as _____
- e. Most sebaceous glands are connected to _____
- f. What are the two functions of sebum?
 1. _____
 2. _____

2. Sweat Glands or Sudoriferous Glands

- a. Which type of sweat gland is most common? _____
- b. Describe the composition of merocrine (eccrine) sweat gland secretions: _____
- c. What does sweat do for a person? _____
- d. Where are apocrine sweat glands found in humans? _____
- e. Apocrine sweat glands become active at _____
- f. Body odor from sweat is the result of _____

3. Ceruminous Glands

- a. Ceruminous glands are located in _____
- b. Cerumen is the combined secretions of _____ & _____
- c. Functionally cerumen _____

D. Nails

1. List three functions of nails:

- a. _____
- b. _____
- c. _____

2. Define the following terms related to nails:

- a. Nail root _____
- b. Nail body _____
- c. Nail fold _____
- d. Nail groove _____
- e. Eponychium _____
- f. Hyponychium _____
- g. Nail bed _____
- h. Nail matrix _____
- i. Lunula _____

3. The nail is composed of _____

V. Summary of Integumentary System Functions

A. Describe six ways in which the integumentary system is involved in protection:

- 1. _____

- 2. _____

- 3. _____

- 4. _____

- 5. _____

- 6. _____

B. Sensations

1. What sensations do we experience because of receptors in the integumentary system? _____

2. The epidermis and dermal papillae are well supplied with _____
3. The dermis and deeper tissues contain receptors for:
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____

C. Temperature Regulation

1. For the body to lose excess heat:
 - a. Blood vessels in the dermis _____
 - b. Sweat spreads over the skin _____
2. For the body to conserve heat dermal blood vessels _____
3. Does contraction of arrector pili in humans prevent heat loss? _____

D. Vitamin D Production

1. Functionally Vitamin D is important in raising blood levels of:
 - a. _____
 - b. _____
2. Vitamin D production requires the skin to be exposed to _____

E. Excretion

1. List three waste products contained in sweat:
 - a. _____
 - b. _____
 - c. _____
2. The quantity of waste products in sweat is _____

VI. Effects of Aging on the Integumentary System

- A. List two reasons the skin is more easily damaged as a person gets older:
 1. _____
 2. _____
- B. What causes the skin to sag and wrinkle? _____ &

C. Why does the skin become drier? _____

D. Elderly often suffer from heat prostration because _____

E. Generally the number of functioning melanocytes _____

F. What causes age spots? _____