The Integumentary System

OBJECTIVES

After studying this chapter, you should be able to:

1. Name the layers of the epidermis.
2. Define keratinization.
3. Explain why there are skin color differences among people.
4. Describe the anatomic parts of a hair.
5. Compare the two kinds of glands in the skin based on structure and secretion.
6. Explain why sweating is important to survival.
7. Explain how the skin helps regulate body temperature.
8. Name the functions of the skin.

ACTIVITIES

A. Completion

Fill in the blank spaces with the correct term.

1. One of the ways the skin helps regulate body temperature is through the evaporation of ___.
2. The epidermis is a layer of ___ tissue.
3. The second layer is the ___.
4. The dermis is a layer of ___ tissue.

NAME: ___________________________ DATE: ___________
5. The epidermis is composed of __, __, and __ cells.
6. The skin is thickest on the __ of the hands and the __ of the feet.
7. As cells move up from the basement membrane, they eventually __.
8. The protein material of hair and nails is __.
9. There are __ layers of the epidermis.
10. Dead cells converted to protein make up the __.
11. A callus on the foot is called a(n) __.
12. Cells lose their nuclei and become compact and brittle in the __.
13. The stratum spinosum contain cells that are __ in structure.
14. Cells of the epidermis that are capable of dividing are found in the __.
15. Those cells responsible for skin color are __.
16. Racial variation in skin color is determined by __.
17. An absence of melanin produces a condition called __.
18. True skin is the __.
19. A specialist concerned with inflammatory responses of the skin and reactions of the immune system is a(n) __.
20. Besides mammary glands, __ is a main characteristic of mammals.
21. A bluish tinge to the skin is called __.
22. Goose bumps are caused by the __ muscle.
23. Hair growth begins in the __.
24. A nail will grow from the __.
25. The eponychium is the __.
26. __ is the oily substance responsible for lubrication of the skin and is a product of the __.
27. The hands and feet are the site of many __.
28. Sweating causes odor because of __ activity.
29. Sensations recorded by the skin are __ and __.
30. Inhibition of water loss by the skin is due to its __ content.
31. A common chronic skin disorder is __.
32. Herpes simplex causes __.
33. The varicella (chickenpox) virus is responsible for __.
34. Sweat glands are activated by __.
35. A patchy skin disease is __.
36. A vaccine is available for children 12 months or older to prevent __, caused by the virus varicella-zoster.
37. Impetigo is caused by the bacterium __.
38. The dermis is also known as the __.
B. Matching

Match the term on the right with the definition on the left.

39. skin modifications  a. epidermis
40. epidermal cellular links  b. shaft
41. clear layer  c. sweat
42. varies skin pigmentation  d. keratin
43. affected by first-degree burns  e. appendages
44. subcutaneous layer  f. warts
45. hair’s principal portion  g. nail body
46. hair’s visible portion  h. desmosomes
47. hair texture  i. hypodermis
48. visible nail  j. melanin
49. oily gland  k. melanoma
50. salty liquid secretion  l. stratum lucidum
51. skin function  m. cortex
52. skin cancer  n. thermoregulation
53. human Papillomavirus  o. sebaceous

C. Key Terms

Use the text to look up the following terms. Write the definition or explanation.

54. Basal cell carcinoma:

55. Callus:

56. Cold sores:

57. Cortex:

58. Desmosome:
59. Hair follicle: 

60. Keratinization: 

61. Lunula: 

62. Medulla: 

63. Papillary portion: 

64. Partial-thickness burns: 

65. Reticular portion: 

66. Sebaceous glands: 

67. Second-degree burns: 

68. Squamous cell carcinoma: 

69. Strata:
70. Stratum basale:

71. Stratum lucidum:

**D. Labeling Exercise**

72. Label the parts of the skin as indicated in Figure 6-1.

![Figure 6-1](image-url)
73. Label the parts of the hair as indicated in Figure 6-2.

![Figure 6-2]

A. ________________________
B. ________________________
C. ________________________
D. ________________________
E. ________________________
F. ________________________
G. ________________________

**E. Coloring Exercise**

74. Using Figure 6-3, color the matrix red, the cuticle brown, and the nail blue.

![Figure 6-3]
F. Critical Thinking

Answer the following questions in complete sentences.

75. How does the stratum corneum protect against disease?

76. Why is the stratum germinativum so important?

77. Why are third-degree burns so traumatic?

78. Why is the dermis called the true skin?

79. Why would deep tissue trauma cause hair loss?

80. If a nail is completely torn out, why does it grow back?
81. Explain why adolescents experience more acne than adults.

82. Is the sweat gland an exocrine or endocrine gland?

83. Why are sports drinks so important to athletes?

84. How can impetigo cause other diseases?

85. Is ringworm a correct term for the disease?

86. What changes occur in the integumentary system as the body ages?
G. Crossword Puzzle

Complete the crossword puzzle using the following clues.

ACROSS
1. Skin cell process
4. Subcutaneous tissue
5. Cellular links
8. Oily glands
10. Distinctive layers
11. White crescent of the nail
12. Outer layer of skin
15. Fungus-caused skin disease
18. Thickened skin area
19. Visible part of hair
20. Bacteria-caused skin disease
22. System that secretes hormones
24. Skin pigmentation
26. Middle part of hair

DOWN
2. Produces skin color
3. Means a covering
6. True skin
7. Protein material
8. Cools skin
9. Principal portion of hair
13. Shedding scalp cells
14. Absence of skin color
16. Irregular patches of skin pigmentation
17. Groupings of melanocytes
18. Bluish skin discoloration
19. Disease caused by the chickenpox virus
21. Caused by human Papillomavirus
23. Eponychium
25. Oil for skin lubrication
CASE STUDY

Deniz, a 52-year-old woman, is hospitalized following the removal of a cancerous section of her colon. Deniz is having difficulty coping with her situation, and she repeatedly states that she feels very “stressed out and doesn’t know how she will ever recover.” During the night, Deniz tells her health care provider she is experiencing severe pain beneath her left arm and across the left side of her back. The health care provider examines Deniz and finds vesicular skin eruptions across the left side of her back that extend beneath her left arm.

QUESTIONS

1. What condition might Deniz have suddenly developed?

2. What is the cause of this condition?

3. Deniz's medical history should document that she had which childhood infection?

4. How is this condition treated?

CHAPTER QUIZ

1. A bony prominence on the foot receiving excess friction may develop a
   a. ringworm infection  d. corn
   b. wart  e. none of the above
   c. blackhead

Answer:

2. Albinism is caused by a lack of
   a. desmosome  d. mast cells
   b. osteocytes  e. none of the above
   c. melanocytes

Answer:

3. Excessive production of sebum may cause
   a. psoriasis  d. shingles
   b. callus  e. none of the above
   c. corns

Answer:
4. Keratinized cells contain no
   a. nucleus  
   b. cell wall  
   c. fluid  
   d. cell membrane  
   e. none of the above

**Answer:**

5. Flexibility, entirety, and whole continuous structure are qualities of the skin due to
   a. a callus  
   b. desmosomes  
   c. melanocytes  
   d. osteocytes  
   e. corns

**Answer:**

6. The layer of the epidermis in which mitosis takes place is the stratum
   a. stratum spinosum  
   b. stratum granulosum  
   c. stratum germinativum  
   d. stratum corneum  
   e. stratum lucidum

**Answer:**

7. A lipid covering of cells is found in the stratum
   a. stratum spinosum  
   b. stratum granulosum  
   c. stratum germinativum  
   d. stratum corneum  
   e. stratum lucidum

**Answer:**

8. Cells of the stratum corneum contain as many as
   a. 10 layers  
   b. 5 layers  
   c. 20 layers  
   d. 25 layers  
   e. none of the above

**Answer:**

9. Stratum basale is found in the stratum
   a. stratum spinosum  
   b. stratum granulosum  
   c. stratum germinativum  
   d. stratum corneum  
   e. stratum lucidum

**Answer:**

10. Racial color differences are a result of variation in quantity of
    a. astrocytes  
    b. desmosomes  
    c. melanocytes  
    d. kerocytes  
    e. none of the above

**Answer:**

11. True skin contains which of the following?
    a. papillary portion  
    b. hypodermis  
    c. areolar tissue  
    d. adipose tissue  
    e. none of the above

**Answer:**
12. A bluish tinge of the skin is called
   a. psoriasis   d. ringworm
   b. cyanosis   e. none of the above
   c. shingles

   **Answer:**

13. Besides hair, another main characteristic of mammals is
   a. sweat glands   d. adrenal glands
   b. ceruminous glands   e. none of the above
   c. mammary glands

   **Answer:**

14. Hair covers all of the body EXCEPT the
   a. arms   d. palms of the hands
   b. legs   e. none of the above
   c. face

   **Answer:**

15. Arrector pili muscles engage when we get
   a. a chill   d. shingles
   b. psoriasis   e. cold sores
   c. a papillomavirus

   **Answer:**

16. Texture of hair is a result of
   a. melanocytes   d. melanin
   b. astrocytes   e. keratin
   c. desmosomes

   **Answer:**

17. A white crescent located at the proximal end of the nail is the
   a. nail bed   d. root
   b. lunula   e. none of the above
   c. cuticle

   **Answer:**

18. Another name for the eponychium is
   a. cuticle   d. lunula
   b. nail body   e. nail root
   c. nail bed

   **Answer:**

19. Shiny hair is a result of
   a. melanocytes   d. callus
   b. sebum   e. cerumen
   c. sweat

   **Answer:**
20. Sebaceous secretion is controlled by the
   a. exocrine system  
   b. lymphatic system  
   c. endocrine system  
   d. circulatory system  
   e. none of the above

   **Answer:**

21. Besides fatty oils, blackheads are produced in the presence of
   a. water  
   b. heat  
   c. cold  
   d. air  
   e. none of the above

   **Answer:**

22. Sweat odor is caused by
   a. melanocytes  
   b. astrocytes  
   c. desmosomes  
   d. bacteria  
   e. yeast

   **Answer:**

23. External environmental changes are registered by receptor sites; these changes are
   a. wet and dry  
   b. temperature and moisture  
   c. pressure and moisture  
   d. temperature and pressure  
   e. none of the above

   **Answer:**

24. Which of the following are NOT protective functions?
   a. sunlight  
   b. bacteria  
   c. some chemical agents  
   d. water loss  
   e. organic pesticides

   **Answer:**

25. Temperature regulation is critical due to excessive heat affecting
   a. enzymes  
   b. blood  
   c. urea  
   d. sugar  
   e. water

   **Answer:**

26. A condition characterized by baldness that is influenced by genetic factors, hormones, malnutrition, diabetes, drug interactions, and/or chemotherapy is
   a. molds  
   b. alopecia  
   c. psoriasis  
   d. vitiligo  
   e. impetigo

   **Answer:**

27. The skin is involved in the production of
   a. ATP  
   b. phosphate  
   c. calcium  
   d. vitamin D  
   e. none of the above

   **Answer:**
28. The most dangerous type of skin cancer is
   a. malignant melanoma          d. keratinized carcinoma
   b. basal cell carcinoma        e. none of the above
   c. squamous cell carcinoma

   Answer:

29. A children's disease that can cause a related disease in adults is
   a. ringworm                        d. impetigo
   b. chickenpox                      e. none of the above
   c. psoriasis

   Answer:

30. The herpes simplex virus causes
   a. warts                          d. cold sores
   b. impetigo                       e. psoriasis
   c. shingles

   Answer:

31. The nail is a modification of
   a. sebaceous glands               d. dermal cells
   b. muscle cells                   e. epidermal cells
   c. hair cells

   Answer:

32. Which of the following transmit information from receptor sites in the skin to the brain and spinal cord?
   a. sensory neurons                d. melanocytes
   b. sweat glands                   e. viruses
   c. chemical agents

   Answer:

33. Keratinization produces distinct layers of the epidermis called
   a. strata                          d. integuments
   b. neurons                         e. melanocytes
   c. desmosomes

   Answer: