

## The Integumentary System and Body Membranes

**M**ore of our time, attention, and money are spent on the integumentary system than on any other. Every time we look into a mirror we become aware of the integumentary system, as we observe our skin, hair, nails, and the appendages that give luster and comfort to this system. The discussion of the skin begins with the structure and function of the two primary layers called the *epidermis* and *dermis*. It continues with an examination of the appendages of the skin, which include the hair, receptors, nails, sebaceous glands, and sudoriferous glands. The study of skin concludes with a review of one of the most serious and frequent threats to the skin—burns. An understanding of the integumentary system provides you with an appreciation of the danger that severe burns could pose to this system.

Membranes are thin, sheetlike structures that cover, protect, anchor, or lubricate body surfaces, cavities, or organs. The two major categories of membranes are epithelial and connective. Each type is located in specific areas of the body and each is vulnerable to specific disease conditions. Knowledge of the location and function of these membranes prepares you for the study of their relationship to other systems and the body as a whole.

### TOPICS FOR REVIEW

Before progressing to Chapter 7, you should have an understanding of the skin, its appendages, major skin disorders, and infections. Your review should include the classification of burns and the method used to estimate the percentage of body surface area affected by burns. A knowledge of the types of body membranes, their location, and their function is necessary to complete your study of this chapter.

## CLASSIFICATION OF BODY MEMBRANES

Match each numbered term or description with its category and write the corresponding letter in the answer blank.

A. Cutaneous      B. Serous      C. Mucous      D. Synovial

- \_\_\_\_\_ 1. Pleura
- \_\_\_\_\_ 2. Lines joint spaces
- \_\_\_\_\_ 3. Respiratory tract
- \_\_\_\_\_ 4. Skin
- \_\_\_\_\_ 5. Peritoneum
- \_\_\_\_\_ 6. Contains no epithelium
- \_\_\_\_\_ 7. Urinary tract
- \_\_\_\_\_ 8. Lines body surfaces that open directly to the exterior

▶ If you had difficulty with this section, review pages 133-135.

## THE SKIN

Match each term on the left with its description or definition on the right.

### Group A

- |                               |                                     |
|-------------------------------|-------------------------------------|
| _____ 9. Integumentary system | A. Outermost layer of skin          |
| _____ 10. Epidermis           | B. Deeper of the two layers of skin |
| _____ 11. Dermis              | C. Hypodermis                       |
| _____ 12. Subcutaneous        | D. The skin is the primary organ    |
| _____ 13. Cutaneous membrane  | E. Composed of dermis and epidermis |

### Group B

- |                           |  |
|---------------------------|--|
| _____ 14. Keratin         | A. Protective protein  |
| _____ 15. Melanin         | B. Blue-gray color of skin resulting from a decrease in oxygen |
| _____ 16. Stratum corneum | C. Rows of peglike projections                                 |
| _____ 17. Dermal papillae | D. Brown pigment   |
| _____ 18. Cyanosis        | E. Outer layer of epidermis                                    |

Match each numbered term or description with its corresponding skin layer and write A or B in the answer blank.

A. Epidermis      B. Dermis

- \_\_\_\_\_ 19. Tightly packed epithelial cells  
 \_\_\_\_\_ 20. Nerves  
 \_\_\_\_\_ 21. Fingerprints  
 \_\_\_\_\_ 22. Blisters  
 \_\_\_\_\_ 23. Keratin  
 \_\_\_\_\_ 24. Connective tissue  
 \_\_\_\_\_ 25. Follicle  
 \_\_\_\_\_ 26. Sebaceous gland  
 \_\_\_\_\_ 27. Sweat gland  
 \_\_\_\_\_ 28. More cellular than the other layer

► If you had difficulty with this section, review pages 133-144.

Fill in the blanks.

29. The three most important functions of the skin are \_\_\_\_\_,  
 \_\_\_\_\_, and \_\_\_\_\_.
30. \_\_\_\_\_ prevents the sun's ultraviolet rays from penetrating the interior  
 of the body.
- ~~31.~~ The hair of a newborn infant is called \_\_\_\_\_.
32. Hair growth begins from a small, cap-shaped cluster of cells called the  
 \_\_\_\_\_.
33. Hair loss of any kind is called \_\_\_\_\_.
34. The \_\_\_\_\_ muscle produces  
 "goose pimples."
- ~~35.~~ A birthmark that appears as a bruise at birth and grows rapidly into a bright red nodule is called a  
 \_\_\_\_\_.
36. The most numerous, important, and widespread sweat glands in the body are the  
 \_\_\_\_\_ sweat glands.
37. The \_\_\_\_\_ sweat glands are found primarily in the axilla and in the  
 pigmented skin areas around the genitals.
38. \_\_\_\_\_ has been described as "nature's skin cream."

► If you had difficulty with this section, review pages 137-144.

*Circle the correct answer.*

39. A first-degree burn (*will or will not*) blister.
40. A second-degree burn (*will or will not*) scar.
41. A third-degree burn (*will or will not*) cause pain immediately.
42. According to the "rule of nines," the body is divided into (9 or 11) areas of 9% each.
43. Destruction of the subcutaneous layer occurs in (*second- or third-*) degree burns.

► *If you had difficulty with this section, review pages 147-149.*

## DISORDERS OF THE SKIN

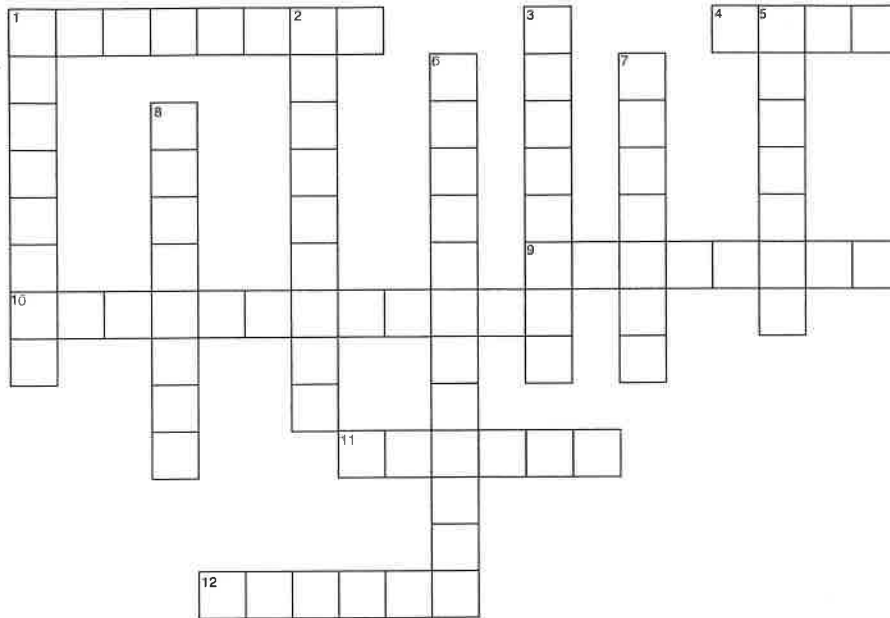
*Circle the correct answer.*

44. Any disorder of the skin may be called:
  - A. Dermatitis
  - B. Dermatitis
  - C. Dermatotomy
  - D. None of the above
45. Any measurable variation from the normal structure of a tissue is known as a/an:
  - A. Lesion
  - B. Burn
  - C. Blister
  - D. Erythema
46. An example of a papule is a:
  - A. Scratch
  - B. Bedsore
  - C. Freckle
  - D. Wart
47. An example of a skin disorder that may produce fissures is:
  - A. Acne
  - B. A bedsore
  - C. Psoriasis
  - D. Athlete's foot
48. The skin is the \_\_\_\_\_ line of defense against microbes that invade the body's internal environment.
  - A. First
  - B. Second
  - C. Third
  - D. Fourth
49. Tinea is a fungal infection and may appear as:
  - A. Ringworm
  - B. Jock itch
  - C. Athlete's foot
  - D. All of the above
50. Furuncles are local staphylococci infections and are also known as:
  - A. Scabies
  - B. Warts
  - C. Boils
  - D. Impetigo
51. The most common type of skin cancer is:
  - A. Squamous cell
  - B. Basal cell
  - C. Melanoma
  - D. Kaposi sarcoma

► *If you had difficulty with this section, review pages 146-152.*

## SKIN/BODY MEMBRANES

Fill in the crossword puzzle.



### ACROSS

- 1. Inflammation of the serous membrane that lines the chest and covers the lungs
- 4. Cutaneous
- 9. Membrane that lines joint spaces
- 10. "Goose pimples" (two words)
- 11. Cushionlike sacs found between moving body parts
- 12. Deeper of the two primary skin layers

### DOWN

- 3. Forms the lining of serous body cavities
- 2. Oil gland
- 3. Bluish-gray color of skin due to decreased oxygen
- 5. Tough waterproof substance that protects body from excess fluid loss
- 6. Sweat gland
- 7. Brown pigment
- 8. Covers the surface of organs found in serous body cavities

## CHECK YOUR KNOWLEDGE

### Multiple Choice

Circle the correct answer.

- 1. What type of serous membrane that covers organs is found in all body cavities?
  - A. Visceral
  - B. Pleural
  - C. Parietal
  - D. Synovial
- 2. Which of the following statements about synovial membranes is true?
  - A. They are classified as epithelial.
  - B. They line joints.
  - C. They contain a parietal layer.
  - D. All of the above are true.

3. Which of the following statements about hair follicles is true?
  - A. Arrector pili muscles are associated with them.
  - B. Sudoriferous glands empty into them.
  - C. They arise directly from the epidermis layer of skin.
  - D. All of the above are true.
4. Which of the following statements about apocrine glands is true?
  - A. They can be classified as sudoriferous.
  - B. They are found primarily in armpit and genital regions.
  - C. They secrete a thick substance that has a strong odor associated with it.
  - D. All of the above are true.
5. Which of the following, if any, is *not* found in the dermis layer of the skin?
  - A. Nerves
  - B. Melanin
  - C. Blood vessels
  - D. All of the above are found in the dermis.
6. What characterizes second-degree burns?
  - A. Blisters
  - B. Swelling
  - C. Severe pain
  - D. All of the above
7. Blackheads can result from the blockage of which of the following glands?
  - A. Lacrimal
  - B. Sebaceous
  - C. Ceruminous
  - D. Sudoriferous
8. Keratin is found in which layer of the skin?
  - A. Dermis
  - B. Epidermis
  - C. Subcutaneous
  - D. Serous
9. What is the fold of skin that hides the root of a nail called?
  - A. Lunula
  - B. Body
  - C. Cuticle
  - D. Papillae
10. Which of the following is *not* an important function of the skin?
  - A. Sense organ activity
  - B. Absorption
  - C. Protection
  - D. Temperature regulation

## Matching

Match each term in column A with its corresponding description in column B. (Only one answer is correct for each.)

### Column A

- \_\_\_\_\_ 11. Melanin
- \_\_\_\_\_ 12. Epithelial membrane
- \_\_\_\_\_ ~~13~~ Pacini corpuscle
- \_\_\_\_\_ 14. Sebaceous
- \_\_\_\_\_ 15. Waterproofing
- \_\_\_\_\_ 16. Hair
- \_\_\_\_\_ 17. Lunula
- \_\_\_\_\_ 18. Connective tissue membrane
- \_\_\_\_\_ 19. Dermal papillae
- \_\_\_\_\_ 20. Sudoriferous

### Column B

- A. Fingerprint
- B. Skin receptor
- C. Brown pigment
- D. Pleura
- E. Synovial membrane
- F. Perspiration
- G. Oil
- H. Follicle
- I. Keratin
- J. Little moon

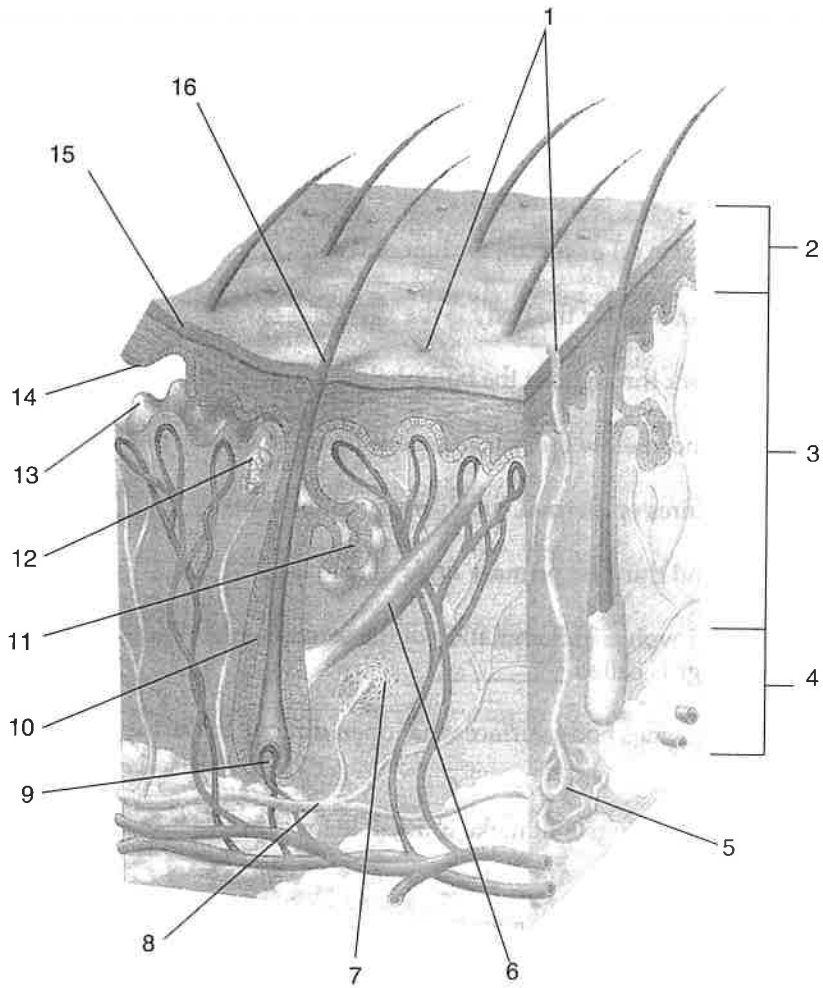
## Completion

Complete the following using the terms below. Write the corresponding letter in the answer blank.

- |                         |                        |                   |
|-------------------------|------------------------|-------------------|
| A. Skin                 | E. Epidermis           | H. Sebaceous      |
| B. Eccrine sweat glands | F. Fourth-degree burns | I. Hair follicles |
| C. Peritonitis          | G. Pleurisy            | J. Receptors      |
| D. Mucous               |                        |                   |

- \_\_\_\_\_ 21. Which glands secrete oil or sebum for hair and skin?
- \_\_\_\_\_ 22. The first line of defense for the body is the \_\_\_\_\_.
- \_\_\_\_\_ 23. Which glands work throughout the body, helping to regulate body heat?
- \_\_\_\_\_ 24. Which burn extends below the subcutaneous tissue to muscle or bone?
- \_\_\_\_\_ 25. Hair growth requires epidermal, tubelike structures called \_\_\_\_\_.
- \_\_\_\_\_ 26. The outermost and thinnest primary layer of skin is \_\_\_\_\_.
- ~~\_\_\_\_\_ 27.~~ A condition that involves inflammation of the serous membranes lining the chest cavity and covering the lungs is called \_\_\_\_\_.
- \_\_\_\_\_ 28. Which membrane lines body surfaces that open directly to the exterior of the body and produces mucus?
- \_\_\_\_\_ 29. Specialized nerve endings that make it possible for skin to act as a sense organ are called \_\_\_\_\_.
- ~~\_\_\_\_\_ 30.~~ An inflammation of the serous membranes lining the abdominal cavity and abdominal organs is called \_\_\_\_\_.

## LONGITUDINAL SECTION OF THE SKIN



- |                     |                      |
|---------------------|----------------------|
| 1. _____            | 9. _____             |
| 2. _____            | 10. _____            |
| 3. _____            | 11. _____            |
| 4. _____            | <del>12. _____</del> |
| 5. _____            | 13. _____            |
| 6. _____            | 14. _____            |
| <del>7. _____</del> | 15. _____            |
| 8. _____            | 16. _____            |