

The Integumentary System

Basic Structure of the Skin

1. Complete the following statements by writing the appropriate word or phrase on the correspondingly numbered blank:

The two basic tissues of which the skin is composed are dense irregular connective tissue, which makes up the dermis, and 1, which forms the epidermis. The tough water-repellent protein found in the epidermal cells is called 2. The pigments melanin and 3 contribute to skin color. A localized concentration of melanin is referred to as a 4.

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

2. Four protective functions of the skin are

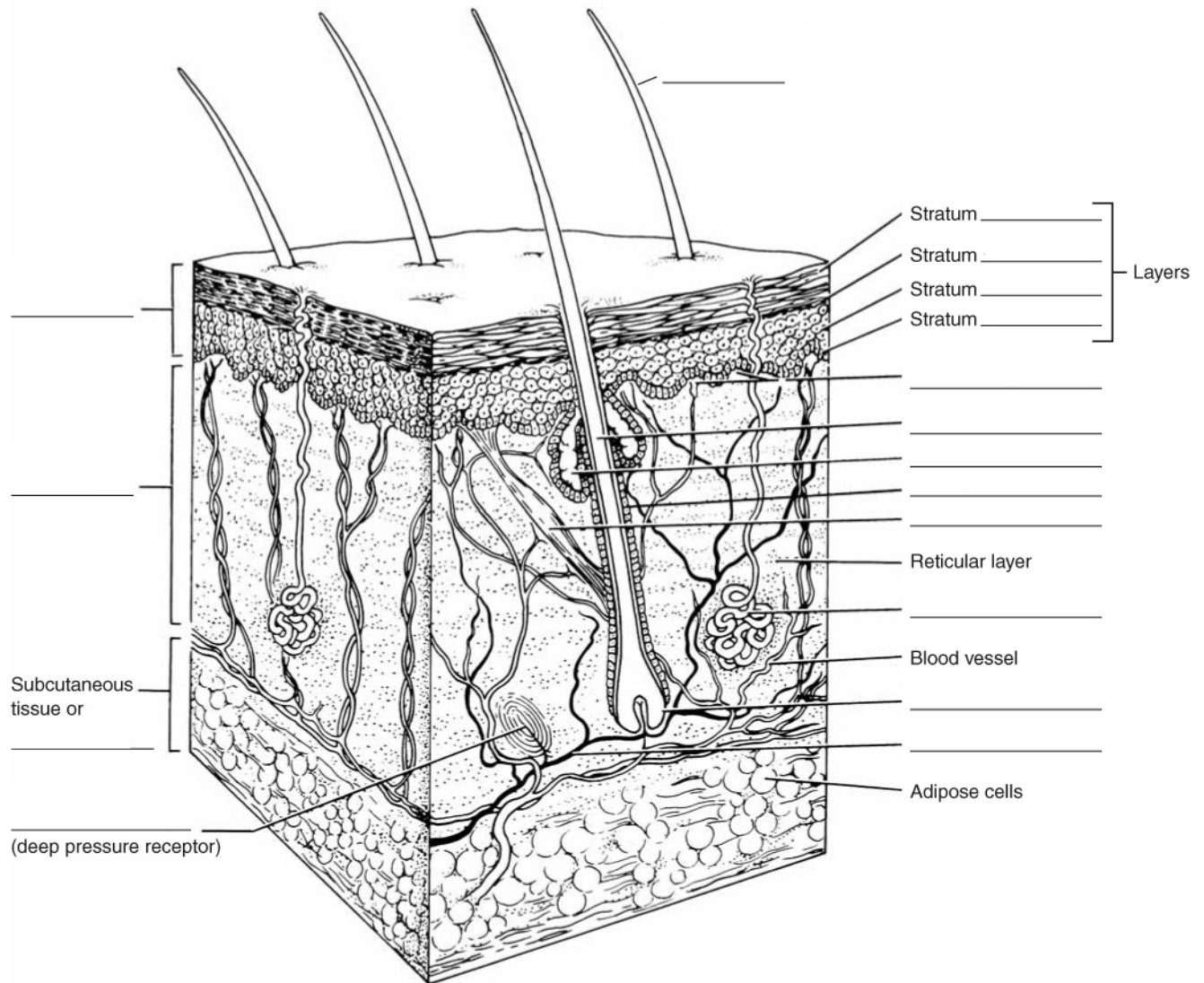
- | | |
|----------|----------|
| a. _____ | c. _____ |
| b. _____ | d. _____ |

3. Using the key choices, choose all responses that apply to the following descriptions.

- Key:
- | | | |
|-----------------------|---------------------|-------------------------|
| a. stratum basale | d. stratum lucidum | g. reticular layer |
| b. stratum corneum | e. stratum spinosum | h. epidermis as a whole |
| c. stratum granulosum | f. papillary layer | i. dermis as a whole |

- | | |
|-------|--|
| _____ | 1. translucent cells in thick skin containing keratin fibrils |
| _____ | 2. dead cells |
| _____ | 3. dermal layer responsible for fingerprints |
| _____ | 4. vascular region |
| _____ | 5. major skin area that produces derivatives (nails and hair) |
| _____ | 6. epidermal region exhibiting the most rapid cell division |
| _____ | 7. scalelike dead cells, full of keratin, that constantly slough off |
| _____ | 8. mitotic cells filled with intermediate filaments |
| _____ | 9. has abundant elastic and collagenic fibers |
| _____ | 10. location of melanocytes and Merkel cells |
| _____ | 11. area where weblike pre-keratin filaments first appear |
| _____ | 12. region of areolar connective tissue |

4. Label the skin structures and areas indicated in the accompanying diagram of thin skin. Then, complete the statements that follow.



- _____ granules extruded from the keratinocytes prevent water loss by diffusion through the epidermis.
- Fibers in the dermis are produced by _____.
- Glands that respond to rising androgen levels are the _____ glands.
- Phagocytic cells that occupy the epidermis are called _____.
- A unique touch receptor formed from a stratum basale cell and a nerve fiber is a _____.
- What layer is present in thick skin but not in thin skin? _____
- What cell-to-cell structures hold the cells of the stratum spinosum tightly together? _____

5. What substance is manufactured in the skin that plays a role in calcium absorption elsewhere in the body?

6. List the sensory receptors found in the dermis of the skin. _____

7. A nurse tells a doctor that a patient is cyanotic. Define *cyanosis*. _____

What does its presence imply? _____

8. What is a bedsore (decubitus ulcer) ? _____

Why does it occur? _____

Accessory Organs of the Skin

9. Match the key choices with the appropriate descriptions.

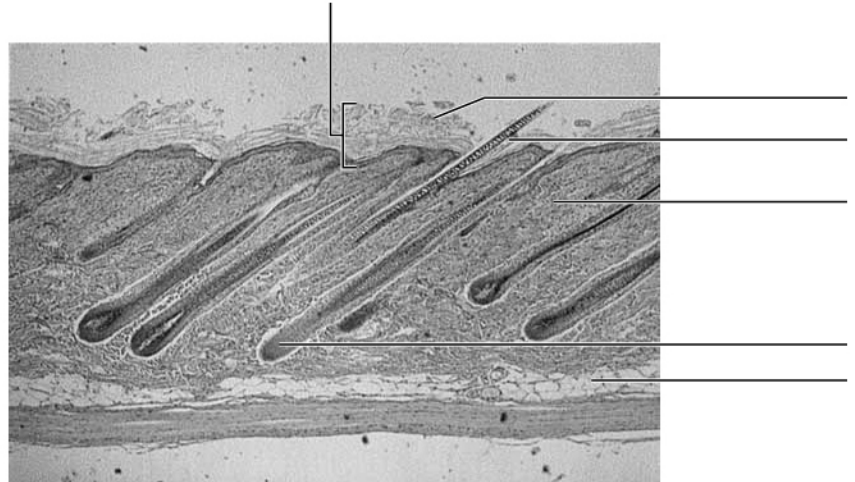
Key: a. arrector pili d. hair follicle g. sweat gland—apocrine
b. cutaneous receptors e. nail h. sweat gland—eccrine
c. hair f. sebaceous glands

- _____ 1. produces an accumulation of oily material that is known as a blackhead
- _____ 2. tiny muscles, attached to hair follicles, that pull the hair upright during fright or cold
- _____ 3. perspiration glands with a role in temperature control
- _____ 4. sheath formed of both epithelial and connective tissues
- _____ 5. less numerous type of perspiration-producing gland; found mainly in the pubic and axillary regions
- _____ 6. found everywhere on the body except the palms of hands and soles of feet
- _____ 7. primarily dead/keratinized cells
- _____ 8. specialized nerve endings that respond to temperature, touch, etc.
- _____ 9. secretes a lubricant for hair and skin
- _____ 10. “sports” a lunula and a cuticle

10. Describe two integumentary system mechanisms that help in regulating body temperature. _____

11. Several structures or skin regions are listed below. Identify each by matching its letter with the appropriate area on the figure.

- a. adipose cells
- b. dermis
- c. epidermis
- d. hair follicle
- e. hair shaft
- f. sloughing stratum corneum cells



Plotting the Distribution of Sweat Glands

12. With what substance in the bond paper does the iodine painted on the skin react? _____

13. Based on class data, which skin area—the forearm or palm of hand—has more sweat glands? _____

Was this an expected result? _____ Explain. _____

Which other body areas would, if tested, prove to have a high density of sweat glands? *Face, axillae* _____

14. What organ system controls the activity of the eccrine sweat glands? _____

Dermography: Fingerprinting

15. Why can fingerprints be used to identify individuals? _____

16. Name the three common fingerprint patterns. _____, _____, and _____