

NAME _____

LAB TIME/DATE _____

The Skin (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 connective tissue, which makes up the dermis, and 1, which forms the epidermis. Most cells of the epidermis are 2. The protein 3 makes the dermis tough and leatherlike. The specialized cells that produce the pigments that contribute to skin color are called 4.

1. epithelium
2. keratinocytes
3. collagen
4. melanocytes

2. Name four protective functions of the skin: protection from mechanical damage, chemical damage, thermal damage,
and bacterial invasion

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

Key:	stratum basale	stratum lucidum	reticular layer
	stratum corneum	stratum spinosum	epidermis (as a whole)
	stratum granulosum	papillary layer	dermis (as a whole)

stratum granulosum

1. layer containing sacs filled with fatty material or keratin subunits

stratum lucidum/stratum corneum

2. dead cells

papillary layer

3. the more superficial dermis layer

epidermis

4. avascular region

dermis

5. major skin area where derivatives (nails and hair) reside

stratum basale

6. epidermal region exhibiting the most mitoses

stratum corneum

7. most superficial epidermal layer

dermis

8. has abundant elastic and collagenic fibers

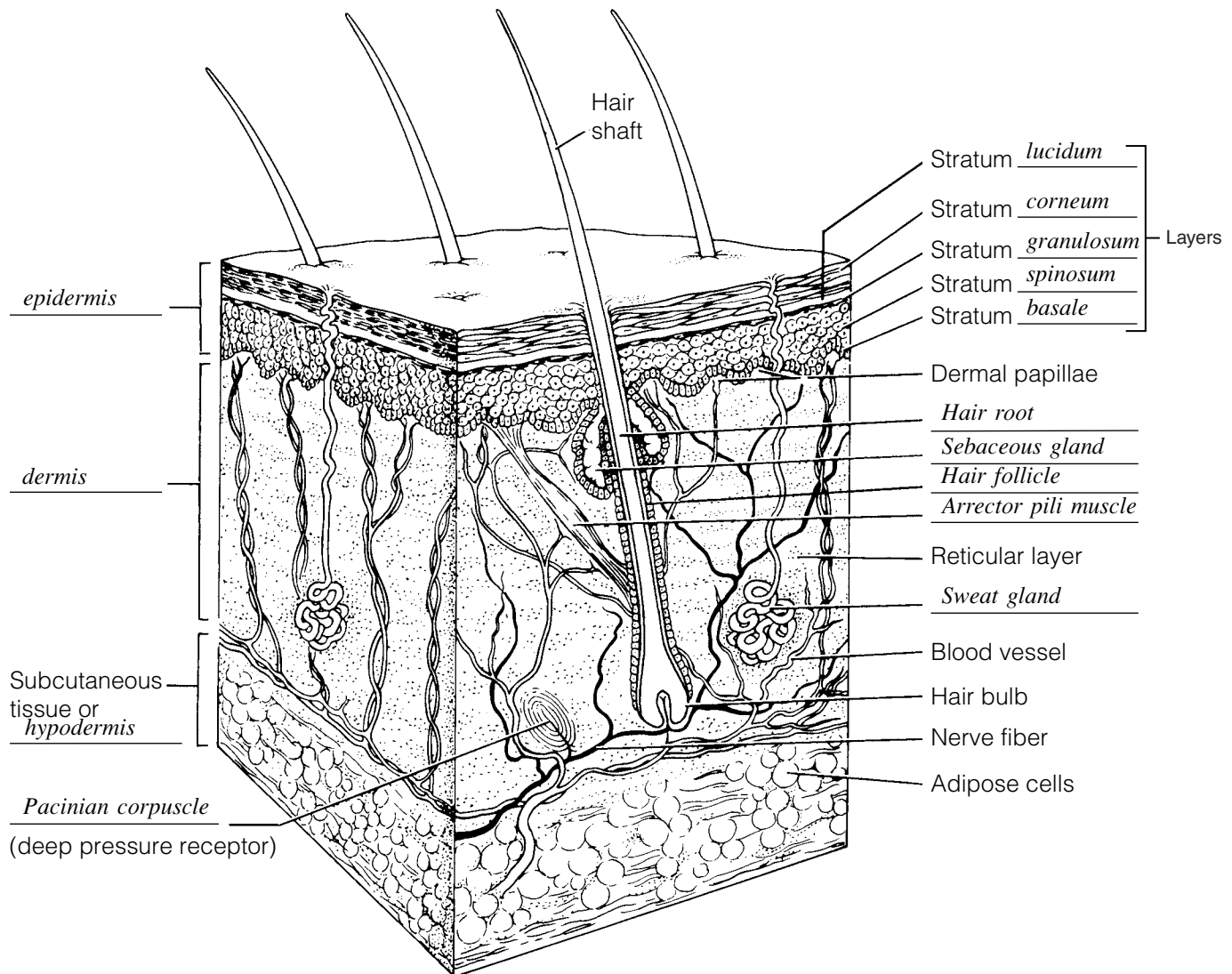
stratum basale

9. region where melanocytes are most likely to be found

stratum corneum

10. accounts for most of the epidermis

4. Label the skin structures and areas indicated in the accompanying diagram of skin.



5. What substance is manufactured in the skin (but is not a secretion) to play a role elsewhere in the body?

The skin is the site of vitamin D synthesis for the body.

6. How did the results you obtained in Activity 2, "Visualizing Changes in Skin Color Due to Continuous External Pressure," relate to formation of decubitus ulcers? (Use your textbook if necessary.)

Any restriction of the normal blood supply to the skin results in cell death and, if severe or prolonged, will cause decubitus ulcers.

7. Some injections hurt more than others. On the basis of what you have learned about skin structure, can you determine why this is so? The dermis has a rich nerve supply; some with nerve endings that respond to pain. If these bare nerve end-

ings are stimulated by injection, a pain message will be transmitted to the central nervous system for interpretation.

8. Two questions regarding general sensation are posed below. Answer each by placing your response in the appropriately numbered blanks to the right.

1–2. Which two body areas tested were most sensitive to touch? 1–2. lips, fingertips

3–4. Which two body areas tested were the least sensitive to touch? 3–4. back of calf, back of neck

9. Define *adaptation of sensory receptors*: Decline in receptor sensitivity and stimulation with prolonged unchanging stimuli.

10. Why is it advantageous to have pain receptors that are sensitive to all vigorous stimuli, whether heat, cold, or pressure?
Because all of these stimuli, if excessive, cause tissue damage.

Pain receptors do not adapt. Why is this important? Pain is a warning of actual or potential tissue damage.

11. Imagine yourself without any cutaneous sense organs. Why might this be very dangerous? Many external stimuli (heat, cold, pressure), which can threaten homeostasis, might go undetected and proper protective measures might not be taken.

Appendages of the Skin

12. Using the key choices, respond to the following descriptions. (Some choices may be used more than once.)

Key: arrector pili
cutaneous receptors
hair

hair follicle
nail
sebaceous glands

sweat gland—apocrine
sweat gland—eccrine

sebaceous glands

hair follicle

sweat gland—eccrine

hair follicle

sweat gland—apocrine

sebaceous glands/hair follicle

hair/nail

arrector pili

sebaceous glands

nail

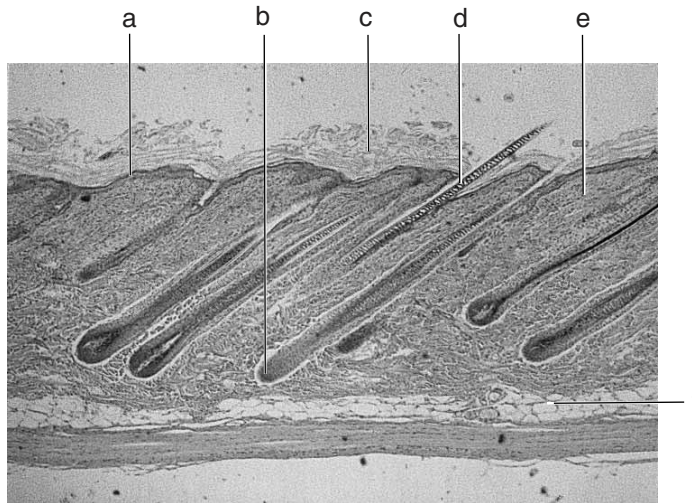
1. Acne is an infection of a(n) _____.
2. Structure that houses a hair.
3. More numerous variety of perspiration gland that produces a secretion containing water, salts, and vitamin C; activated by rise in temperature.
4. Sheath formed of both epithelial and connective tissues.
5. Type of perspiration-producing gland that produces a secretion containing proteins and fats in addition to water and salts.
6. Found everywhere on body except palms of hands and soles of feet.
7. Primarily dead/keratinized cells.
8. Specialized structures that respond to environmental stimuli.
9. Its secretion contains cell fragments.
10. “Sports” a lunula and a cuticle.

13. How does the skin help to regulate body temperature? (Describe two different mechanisms.) _____

1. Capillaries in the papillary layer of the dermis allow heat to radiate to the skin surface to cool off the body and
will constrict blood flow to the dermis temporarily when body heat needs to be conserved.

2. Sweat glands secrete perspiration that evaporates and carries large amounts of body heat with it.

14. Several structures or skin regions are lettered in the photomicrograph below. Identify each by matching its letter with the appropriate description that follows.



_____ *f* _____ adipose cells

_____ *b* _____ hair follicle

_____ *e* _____ dermis

_____ *d* _____ hair shaft

_____ *a* _____ epidermis

_____ *c* _____ sloughing stratum corneum cells

Plotting the Distribution of Sweat Glands

15. With what substance in the bond paper does the iodine painted on the skin react? Starch

16. Which skin area—the forearm or palm of hand—has more sweat glands? Palm of hand

Which other body areas would, if tested, prove to have a high density of sweat glands? Soles of feet, underarms,
forehead

17. What organ system controls the activity of the eccrine sweat glands? Nervous system