C H A P T E R F I V E

Content Review

1. Cells filled with keratin are strong, so they assist the protective and physical barrier functions of the integument.
2. Vasodilation of blood vessels in the dermis allows heat to dissipate through the skin to help cool off the body. Additionally, sweat glands secrete a thin, watery fluid called perspiration that helps remove heat from the body as it evaporates.
3. From deep to superficial, the layers of the epidermis are the stratum basale, stratum spinosum, stratum granulosum, stratum lucidum, and stratum corneum. The stratum basale is a single layer of low cuboidal to columnar cells in contact with the basement membrane. It contains keratinocytes, melanocytes, and tactile cells. The stratum spinosum has several layers of keratinocytes attached to neighbors by desmosomes. Some epidermal dendritic cells may be present. The stratum granulosum is composed of three to five layers of keratinocytes with distinct granules in their cytoplasm. The stratum lucidum is composed of two to three layers of anucleate, dead cells, and is seen only in thin skin. The stratum corneum is the most superficial layer. It has 20 to 30 layers of dead, flattened, anucleate, keratin-filled keratinocytes called corneocytes.
4. Lanugo is fine, unpigmented, downy hair that first appears on the fetus in the last trimester. Vellus is the primary type of human hair found on the arms and legs. Terminal hair is coarser, pigmented, and longer than vellus.
5. Along the length of a hair, the hair bulb consists of epithelial cells and is a swelling at the base where the hair originates in the dermis; the root is the remainder of the hair within the follicle; and the shaft is that portion of the hair that extends beyond the skin surface.
6. Apocrine sweat glands are coiled, tubular glands that release their secretion into hair follicles. They secrete a viscous, cloudy, protein- and lipid-containing solution that is probably used as a communicating material. Merocrine sweat glands are simple, coiled tubular glands that are smaller and more numerous than apocrine sweat glands. Their secretory product is a thin, watery solution that functions in thermoregulation, excretion, and antibacterial protection.
7. Sensible perspiration, or sweat, is a protein-free filtrate of blood plasma. It is primarily composed of water (about 99%), with the remainder consisting of electrolytes, metabolites, and waste products. Its presence on the skin surface aids in thermoregulation and the loss of excess water and electrolytes. Sweat also provides some protection by diluting harmful chemicals. Insensible perspiration is the process by which some interstitial fluids penetrate the epidermis and evaporate at the skin surface.
8. Sebum is produced by sebaceous glands. It is an oily, waxy secretion that has some bactericidal properties.
9. Effective regeneration occurs in the epithelial and connective tissue components of the skin because both contain stem cells.
10. Aging causes the following changes in the integument: increased time to repair damage, decreased elasticity, diminished immune response due to fewer epidermal dendritic (Langerhans) cells, increased dryness, altered pigmentation, diminished

sweat production, thinning or loss of hair, and diminished vitamin D production.