1. Functions of the Skin

List five functions of the integumentary system.

1) **Protection**
2) **Excretion**
3) **Temperature regulation**
4) **Sensory perception**
5) **Synthesis of vitamin D**

2. Structure of the Skin

Select the structure described by each statement.

Dermis Epidermis Stratum basale Stratum corneum Hypodermis

1) Contains abundant adipose tissue. **Hypodermis**
2) Innermost layer of the epidermis. **Stratum basale**
3) Composed of stratified squamous epithelium. **Epidermis**
4) Contains collagen and elastic fibers. **Dermis**
5) Attaches skin to underlying tissues. **Hypodermis**
6) Lacks blood vessels. **Epidermis**
7) Outermost layer of the epidermis. **Stratum corneum**
8) Contains sensory receptors of the skin. **Dermis**
9) Forms new epidermal cells. **Stratum basale**
10) Formed of dead keratinized cells. **Stratum corneum**
11) Provides insulation for the body. **Hypodermis**
12) Provides strength and elasticity of skin. **Dermis**
13) Inner layer of the skin. **Dermis**
14) Outer cells are continuously sloughed off. **Stratum corneum**
15) Formed of fibrous connective tissue. **Dermis**

3. Skin Color

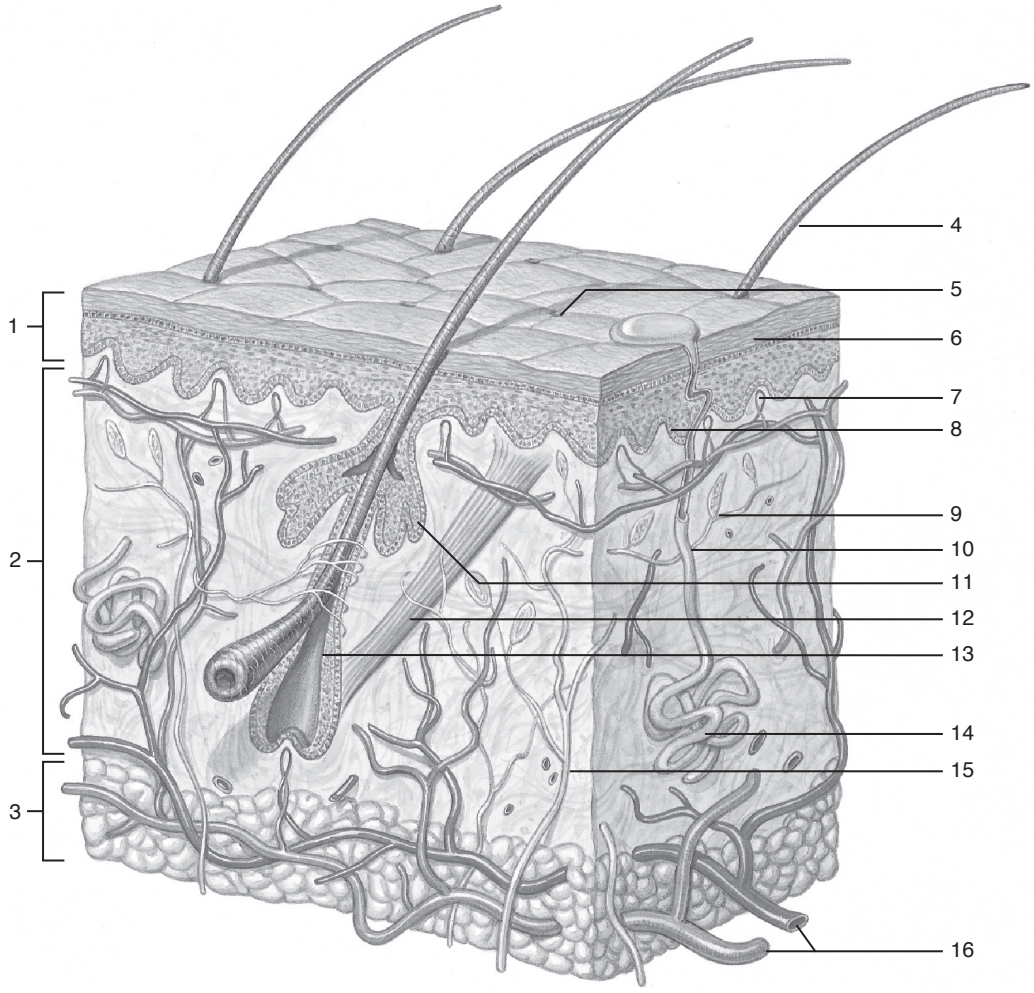
a. Provide the term described by each statement.

1) Three pigments that determine skin color. Indicate the color of each pigment.
   Hemoglobin, red
   Carotene, yellow
   Melanin, black
2) Protects against ultraviolet radiation. **Melanin**
3) Cells producing melanin. **Melanocytes**
4) Stimulates melanin production. **U-V radiation**
5) Ultimate determiner of skin color. **Genes (heredity)**

b. Explain why a summer tan is only temporary. **Epidermal cells with increased melanin move to the surface and are sloughed off within a few weeks.**

4. Diagram of the Skin

Label the diagram



12 Arrector pili muscle
16 Blood vessels
7 Capillary
2 Dermis
14 Eccrine sweat gland
1 Epidermis
13 Hair follicle
4 Hair shaft
15 Nerve fiber
11 Sebaceous gland
8 Stratum basale
6 Stratum corneum
3 Subcutaneous layer
10 Sweat gland duct
5 Sweat gland pore
9 Touch receptor

5. Accessory Structures

Provide the term that matches each statement.

1) Tubular sheath surrounding hair root. **Hair follicle**
2) Gland producing sebum. **Sebaceous**
3) Muscle raising hair more erect. **Arrector pili**
4) Gland producing perspiration. **Sweat (sudoriferous)**
5) Gland producing cerumen. **Ceruminous**
6) Sweat gland opening into hair follicle. **Apocrine**

7) Sweat gland producing watery perspiration. **Exocrine**
8) Protein in cells forming hair and nails. **Keratin**
9) Basic function of hair and nails. **Protection**
10) Secretion containing salts and urea. **Perspiration**
11) Oily secretion that helps keep skin soft. **Sebum**
12) Waxy secretion found in external ear canal. **Cerumin**
13) Normal color of nail beds. **Pink**

6. Temperature Regulation

Provide the missing words in the paragraph below.

Humans have a normal body temperature of ____1___°C, or____2___°F. The heat that maintains the body temperature is generated as a by-product of cellular ____3___ , especially in active organs like the liver and skeletal ____4___ . Overall regulation of body temperature is controlled by the ____5___ , while the ____6___ serves as an important regulatory organ.

1) **37°C**
2) **98.6°F**
3) **respiration**
4) **muscles**
5) **brain**
6) **skin**

When the body temperature falls below normal, the flow of ____7___ to the skin is decreased, which reduces secretion of ____8___ by sweat glands and minimizes heat ____9___ by radiation. Shivering increases cellular respiration in muscles, which generates more ____10___ .

7) **blood**
8) **perspiration**
9) **loss**
10) **heat**

When the body temperature rises above normal, blood flow to the skin is ____11___ , which increases heat loss by ____12___ and activates ____13___ glands to produce perspiration. The ____14___ of perspiration from the surface of the skin increases ____15___ loss and cools the body surface.

11) **increased**
12) **radiation**
13) **sweat**
14) **evaporation**
15) **heat**

7. Aging of the Skin

Indicate whether each statement is true (T) or false (F).

__**T**__ A baby's skin is thinner than an adult's.
__**T**__ A decrease in melanin production often occurs in the elderly.
__**F**__ Wrinkled skin results from an excess of active elastic fibers.
__**T**__ Ultraviolet radiation accelerates the aging of the skin.
__**F**__ Excess subcutaneous fat increases sensitivity to temperature changes.

8. Disorders of the Skin

Write the name of the disorder described by each statement.

1) Results from a chronic deficiency of circulation to a portion of skin. **Bedsores**
2) Cancer of the melanocytes. **Melanoma**
3) Numerous red, itchy bumps resulting from an allergic reaction. **Hives**
4) Skin-colored tumors caused by a virus. **Warts**
5) Slow-growing, pigmented tumors. **Moles**
6) A burn that destroys all of the dermis. **Third degree**
7) Loss of hair as in male pattern baldness. **Alopecia**
8) Thickened areas of skin on hands and feet. **Calluses**
9) Inflammation causing red, itching, scaling skin; may involve sebaceous glands. **Eczema**
10) Contagious infection in which pustules rupture and form a yellow crust. **Impetigo**
11) Reddish, raised scaly patches on scalp, knees, or elbows. **Psoriasis**
12) Condition caused by excessive shedding of epidermal cells of the scalp. **Dandruff**
13) Blisters on lips caused by *Herpes simplex.* **Fever blisters**
14) Itching, flaking skin between toes due to a fungus infection. **Athlete's foot**
15) Bacterial infection of a hair follicle, sebaceous gland, and surrounding tissues. **Boil**
16) The general term for any inflammation of the skin. **Dermatitis**

9. Clinical Applications 

a. Name two major clinical problems expected in a patient with third-degree burns. **Dehydration; Infection**

b. Subcutaneous injections of medications are frequently used. Why is the subcutaneous layer especially good for rapid absorption of medications? **Because it contains many blood vessels.**