XV. INTEGUMENTARY SYSTEM

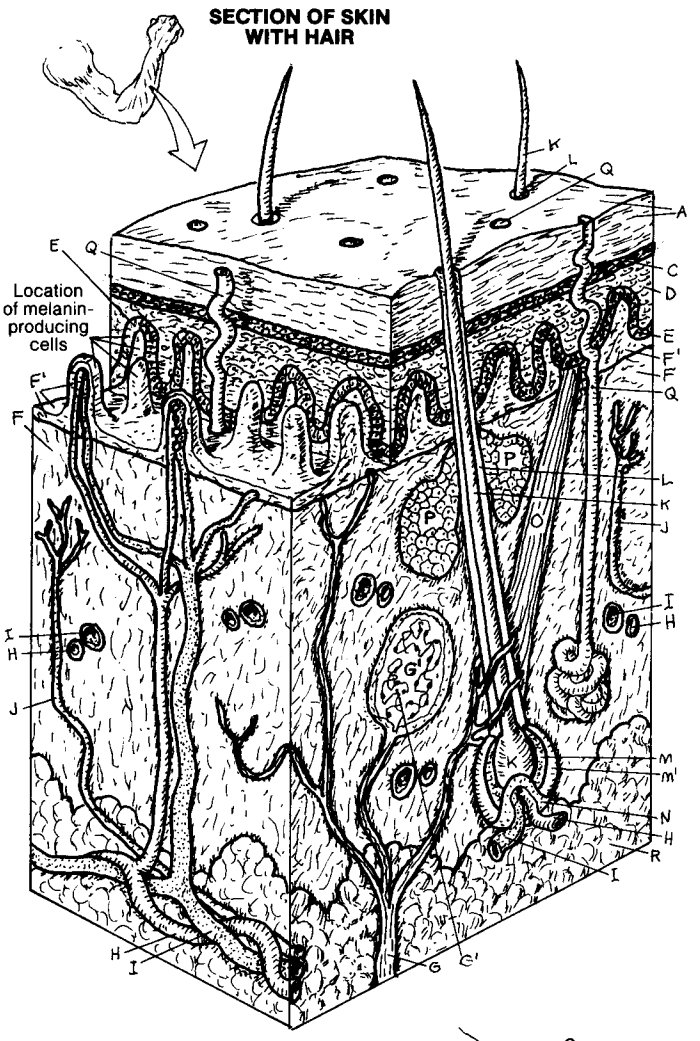
THE INTEGUMENT

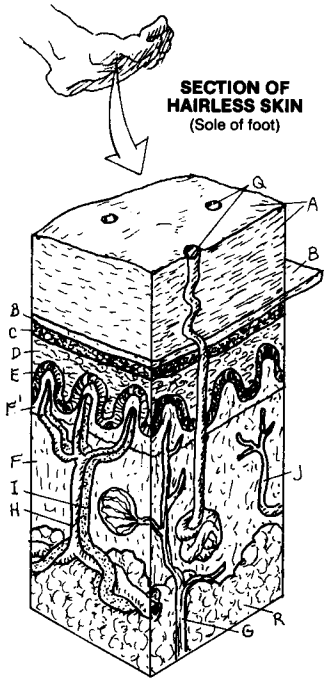
CN: Use yellow for G, red for H, blue for I, and green for J. Use light colors for A, D F, P, and Q. (1) Note that for every structure shown, there are many more within each section. (2) The stratum lucidum (B) is found only in sections of hairless skin.

EPIDERMIS:*
- STRATUM CORNEUM A
  - STRATUM LUCIDUM B
- STRATUM GRANULOSUM C
- STRATUM SPINOSUM D
- STRATUM BASALE E
  - (GERMINATING LAYER) E

DERMIS:*
- CONNECTIVE TISSUE F
  - PAPILLAE F'
- NERVE G / RECEPTOR G'
- ARTERY H VEIN I
- LYMPHATIC VESSEL J
- HAIR:*
  - SHAFT K
  - FOLLICLE L
    - BULB M MATRIX M'
  - DERMAL PAPILLA N
  - ARRECTOR PILI MUS. O
  - SEBACEOUS GLAND P
- SWEAT GLAND Q

SUPERFICIAL FASCIA R





"There is no magician's mantle to compare with the skin in its diverse roles of waterproof, overcoat, sunshade, suit of armour and refrigerator, sensitive to the touch of a feather, to temperature, and to pain, withstanding the wear and tear of three score years and ten, and executing its own running repairs. This vital organ of the body, 16-20 square feet in extent (the child at birth has three times the area relative to the body weight), holds the mirror to age and health even revealing general conditions such as fever, jaundice, syphilis, deficiency diseases and poisons."[1]

The integument is variably thick, from the sole of the foot with tens of layers of keratinized stratified squamous epithelia to the eyelid skin with about four layers of epidermis. Some skin is hairy, some is not. Some skin is exquisitely sensitive (face, finger tips) and some not (back, soles). It comes in a variety of colors. No matter these variations, all skin has common structural characteristics. It has an epidermal layer of stratified squamous epithelium with a number of different layers. The *stratum basale* (germanitivum) is the germinating layer from which all epidermal cells arise. This is convenient, for a significant vascular network (nutritional source) lies just deep to the avascular epidermis in the dermal cones or *papillae*. As epidermal cells get further away from this nutritional source, they dehydrate (*stratum corneum*) and die to be cast off with sweat or bath. Pigment-containing cells (melanin, carotene) are found in the stratum germanitivum layer; skin color is a function of the concentration of these pigments primarily, but is influenced by the number of blood vessels, and the degree of vasoconstriction.

The dermis is replete with thick bundles of fibrous *connective tissue*, *blood* and *lymphatic vessels, sensory receptors and related nerves*, and glands. *Sweat glands* help stabilize body temperature by excreting in response to excessive body heat. *Sebaceous glands*, associated with *hair follicles*, excrete an oily substance (sebum) that resists dehydration. Hair arises from an ingrowth of epidermal (follicle) cells that pushed down into the dermis during development. The base or bottom of the follicle is the *hair bulb* which is invaginated (*dermal papilla*) and encloses capillaries. The follicle consists of a *hair shaft* (central medulla, outer cortex, outermost cuticle) surrounded by layers of cells (root sheaths, membranes).

Non-striated *arrector pili muscles* attach to the hair follicles and to the upper parts of the dermis. They straighten the hairs, perhaps enhancing preservation of body temperature. The skin is contiguous with the *superficial fascia*, a more fatty, loose connective tissue layer. Sense receptors of the skin are presented in Plate 154.

[1] Quote taken, with permission, from Lockhart, R.D., Hamilton, G.F., and Fyfe, F.W., ANATOMY OF THE HUMAN BODY, 2nd ed., Faber and Faber, Publishers, Ltd., London, 1965.