

Integumentary system(Skin)

Skin is the largest organ in the body. It covers the body's entire external surface, serving as a first-order barrier against pathogens, UV light, and chemicals, and provides a mechanical barrier to injury. It also regulates temperature and amount of water released into the environment.

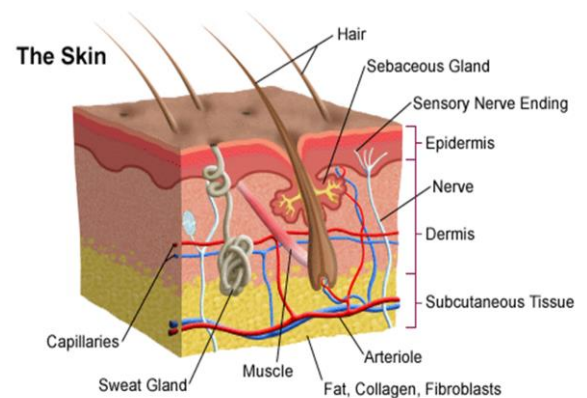
Function of skin

- 1- Protections -Barrier to harmful exogenous substance & pathogens.
- 2- Homeostasis -Regulates body temperature and water loss.
- 3- Immunological.
- 4- Sensory organ protects against physical injury(Sensory - touch, heat/cold).
- 5- Endocrine - Vitamin D production by absorbing UV.
- 6- Exocrine - secretion of sweat, sebum, etc.

Structure of skin

- A- Epidermis.
- B- Dermis.
- C- Hypodermis.

- skin appendages - hair, sweat glands, sebaceous glands, nails.



A- Epidermis: Layers of epiderms

- 1- **Stratum basale** (stratum germinativum) – The deepest layer of the epidermis is the stratum basale, composed of a single row of cuboidal or columnar keratinocytes.
- 2- **Stratum spinosum** (prickle cell layer) - Superficial to the stratum basale is the stratum spinosum, arranged in 8 to 10 layers of many-sided keratinocytes fitting closely together.
- 3- **Stratum granulosum** - At about the middle of the epidermis, the stratum granulosum consists of three to five layers of flattened keratinocytes.
- 4- **Stratum lucidum** - is present only in the thick skin of areas such as the fingertips, palms, and soles.
- 5- **Stratum corneum** - consists on average of 25 to 30 layers of flattened dead keratinocytes.

B-Dermis

It consists of two layers of connective tissue which merge together, no clear demarcation.

- **Papillary layer** - Outer layer, thinner, composed of loose connective tissue and contacts epidermis.
- **Reticular layer** - Deeper layer, thicker, less cellular, and consists of dense connective tissue/ bundles of collagen fibers.

The dermis houses the skin appendages (sweat glands and hairs), many sensory neurons, and blood vessels.

C-Hypodermis

Also called subcutaneous fascia,

- Deepest layer of skin.
- Contains adipose lobules along with some skin appendages (hair follicles), sensory neurons, and blood vessels.

skin appendages

A-Sweat gland :-Simple coiled tubular gland ,Secretory portion(gland), Excretory portion(duct) and secretions.

B-Sebaceous gland:-simple branched aciner gland, large vacuolated cells by the side of a hair follicle.

C-Hair and Hair Follicles: The hair follicles with it's attached sebaceous gland.

D-Nails:- are plates of dead cells packed with keratin.

Skin Color

due to combination of three different pigments:

- 1) **Melanin** : a yellow-red or brown-black pigment produced by melanocytes located mostly in the epidermis where it absorbs uv radiation, difference in skin color is due to the amount of pigment produce.
- 2) **Carotene**: yellow, orange pigments (found in the stratum corneum, dermis, and subcutaneous layer).
- 3) **Hemoglobin**: red color (located in erythrocytes flowing through dermal capillaries).

Skin Color & Texture in Diagnosis

- 1) **cyanosis** = bluish - poor oxygenation.
- 2) **erythema** = redness - emotional, hypertension, inflammation.
- 3) **pallor** = paleness - emotion, anemia, low blood pressure.
- 4) **jaundice** = yellowing - liver disorder __bile pigments in blood.
- 5) **bruising** =hematoma - escaped blood has clotted.
- 6) **photosensitivity** = to antibiotics & antihistamines.