

❖ Structure of the Skin:

- A. Integumentary system is made up of the skin and its accessory organs.
- B. The skin is also called the cutaneous membrane or the integument.

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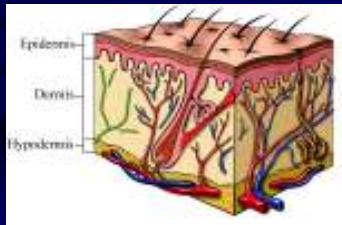
C. The skin is a large organ responsible for maintaining homeostasis through

- protection of underlying tissues
- prevention of water loss
- temperature regulation
- excreting wastes
- housing sensory receptors
- synthesizing certain chemicals

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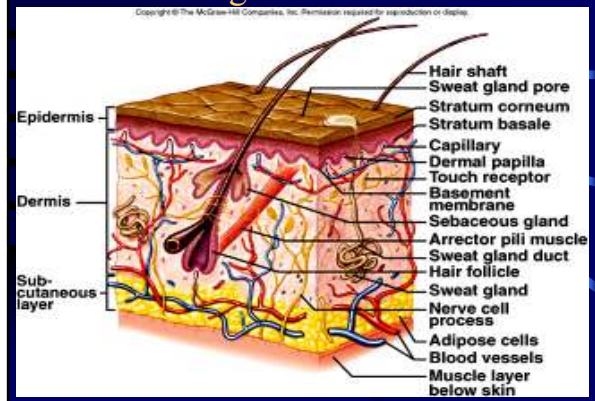
D. The skin has 2 regions:

1. epidermis (outer layer)
2. dermis (inner layer)



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Skin Regions & Structures



E. Epidermis

1. The epidermis is made up of stratified squamous epithelium and lacks blood vessels.
2. There are 5 layers of epidermis:
 - 1) stratum basale (or germinativum)
 - 2) stratum spinosum
 - 3) stratum granulosum
 - 4) stratum lucidum (only sometimes)
 - 5) stratum corneum

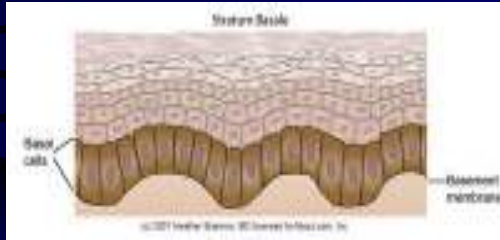
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1) Stratum basale

- Deepest layer of epidermis
- single row of columnar or cuboidal cells
- contains dividing cells
- new cells die as they are pushed to the surface

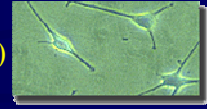
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Stratum basale



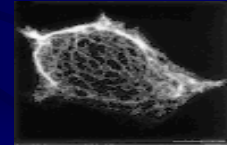
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Stratum basale (continued)



- Contains **Merkel cells** (sense touch)
- Contains **melanocytes** (cells that produce **melanin**, the primary pigment for skin color)

Freckles & moles=
patches of melanin



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Melanocytes & Melanin



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2) Stratum spinosum

- several layers of polygonal “spiny” cells
- Contains **keratinocytes** (cells that produce tough, fibrous protein **keratin**).
- Contains **Langerhans cells** (white blood cells that phagocytize microbes)



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3) Stratum granulosum

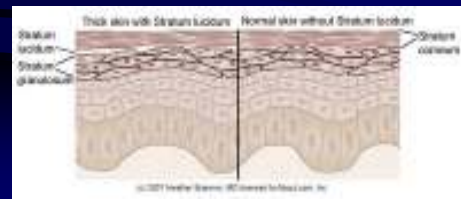
- 3-5 layers of cells
- contains keratinocytes that have lost their nuclei
- keratinocytes are filled with dark clumps of **keratin** and water-proofing lipids.



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4) Stratum lucidum

- only present in **thick skin** (palms & soles)
- Consists of **clear, flat, dead cells**
- helps reduce friction and shear forces between the adjacent layers.



5) Stratum corneum

- The uppermost layer of epidermis
- Consists of flat, hard, dead cells that are shed continuously.
- composed mainly of keratin protein which provides strength to the layer



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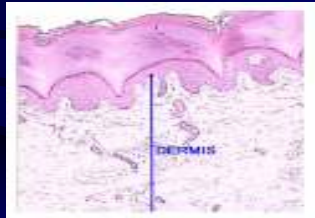
Keratinization: a process by which older cells (keratinocytes) harden as they produce a waterproof protein keratin and are pushed toward the skin surface.

- 15-30 days from the stratum basale to stratum corneum.
- 2 weeks in the stratum corneum

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F. Dermis

1. Dermis consists largely of dense irregular connective tissue.



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2. Components of dermis

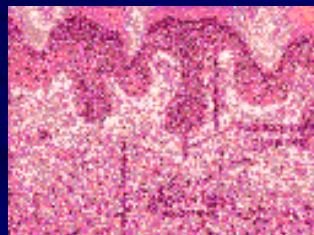
- 1) **Collagenous fibers** are flexible and offer great resistance to overstretching
- 2) **Elastic fibers** stretch to allow movement of underlying muscles and joints.



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3. Dermis consists of 2 layers:

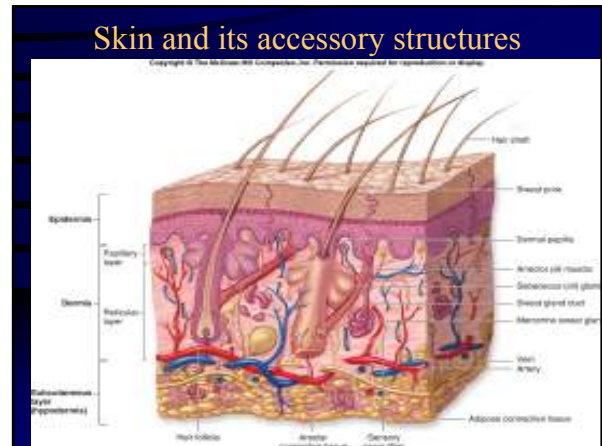
- 1) **Papillary layer** = layer closest to epidermis and attached to basement membrane.
- 2) **Reticular layer** = layer closest to hypodermis



3. **Dermal papillae**: fingerlike projections of dermis that cause epidermal ridges; provide unique fingerprints and a better gripping surface



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4. Dermal blood vessels carry nutrients to upper layers of skin and help to regulate temperature.
 4. The dermis also contains nerve fibers, sensory fibers, hair follicles, oil glands, and sweat glands.
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- ### G. Subcutaneous Layer
1. Hypodermis is composed of loose connective tissue and insulating adipose tissue.
 2. Hypodermis binds the skin to underlying organs and contains the blood vessels that supply the skin.
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