

Module 1

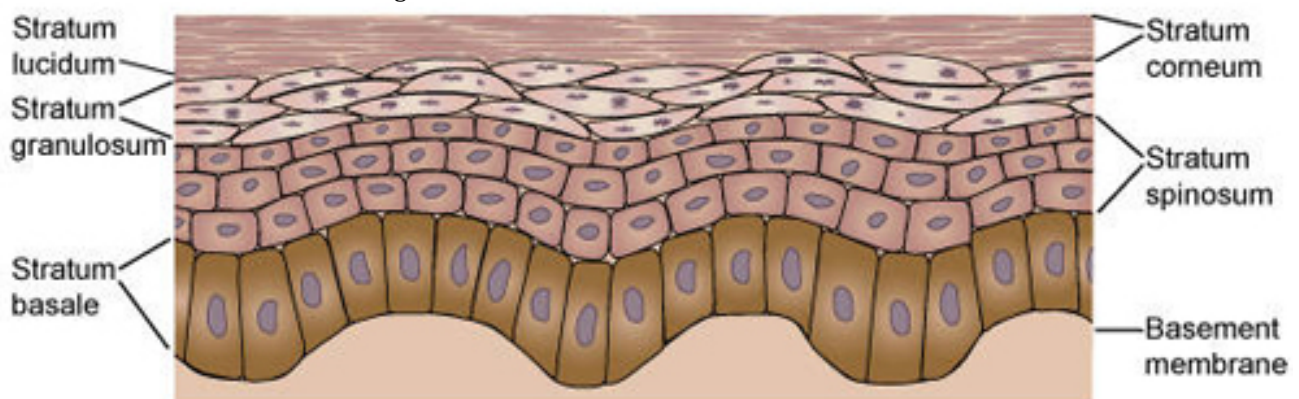
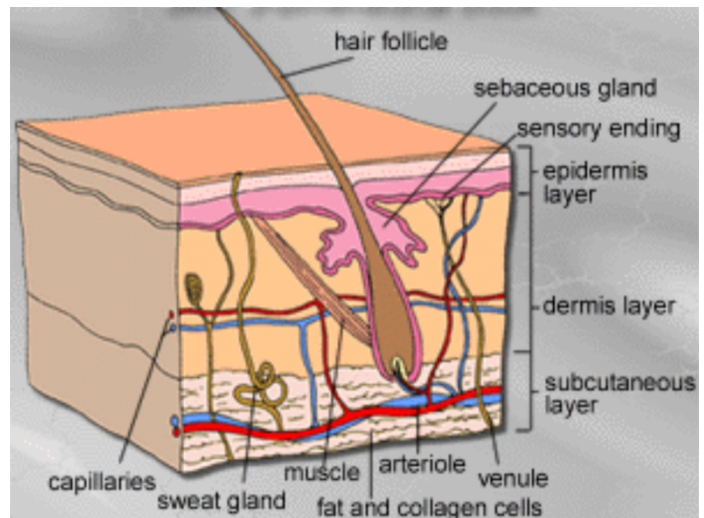
Learning Objective 1: Identify the three layers of skin and the associated structures.

Skin

- Largest organ
- Situated externally
- Consists of two primary layers
 - Epidermis
 - Dermis
- Contains appendages
 - Hair follicles
 - Sebaceous and sweat glands
 - Finger and toe nails
- Main function is protection

Epidermis

- Keratinocytes.
 - Stratum corneum.
 - Stratum lucidum.
 - Stratum granulosum.
 - Stratum spinosum.
 - Stratum basale or germinate



- Other specialised cells include:
 - Langerhans cells.
 - Melanocytes.
 - Meissner's corpuscles.
 - Pacinian corpuscles.

Dermis

- Superficial/papillary dermis.
 - Connective tissue.
 - ECM.
 - Collagen.
 - Elastin.
 - Ground substance
 - Fibroblast.
 - Fibronectin.
 - Hyaluronic acid (HA).
- Deep/Reticular Dermis.
 - Well vascularised – larger vessel networks.
 - Larger collagen fibres – strength.
 - Fibro-elastic tissue.
 - Fibroblasts.

Dermal appendages

- Hair follicles.
- Sebaceous glands.

- Sweat glands.
- Fingernails.
- Toenails.
- All originate in epidermis with migration into dermis.

Skin layers

- Epidermal/dermal attachment.
 - Rete ridges/pegs project from epidermis.
 - Interconnect with papillae of dermis.

Subcutaneous tissue

- Attaches dermic to underlying structures.
- Ensures ongoing blood supply to dermis.
- Consists primarily of adipose tissue.
 - Cushioning between skin layers and muscle/bone.
- Promotes skin mobility.
- Provides body contour.
- Insulation.

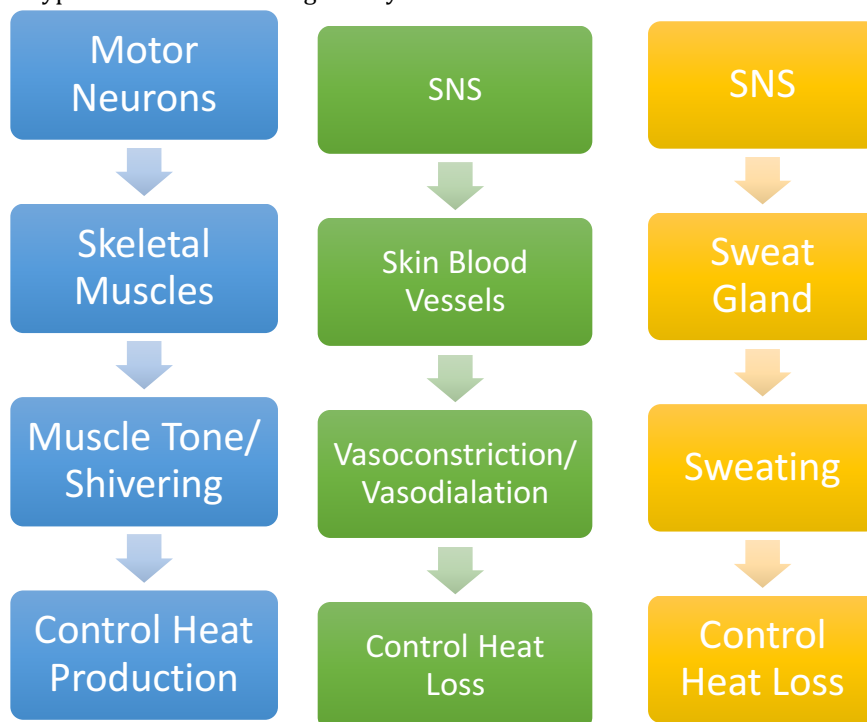
Learning Objective 2: List the functions of the skin.

Protection

- Keratin.
 - Ensures moisture balance.
 - Reduces invasion of irritants.
- Immune cells.
 - Assist in fighting infection.
- pH.
 - Acid mantle on surface of skin.
 - Barrier against bacterial/fungal infections.

Thermoregulation

- Hypothalamus responds to changes in temperature.
 - Core body temperature.
 - Surface skin temperature.
- Hypothalamic Thermoregulatory Centre



Sensation

- Contains an extensive network of nerve cells that detect and relay changes in the environment.

- Correct identification of objects through touch.
- Pleasurable touch.
- Pressure.
- Itch.
- Pain.

Immune response

- Langerhans cells.
- Melanocytes.
- Macrophages.
- Mast cells.

Metabolism

- Important in the synthesis of Vitamin D.

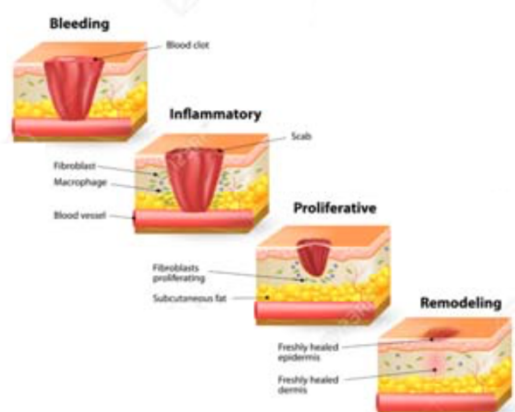
Communication

- Expression.
- Mood.
- Cultural differences.
- Artwork.

Relationship to other systems

Skeletal system	Synthesis of vit D – phosphorus & calcium absorption
Muscular system	Synthesis vit D – calcium absorption
Nervous system	Provides sensation of touch, pressure, vibration, temperature & pain
Endocrine system	Synthesis vit D – precursor of calcitriol
Cardiovascular system	Localised changes in blood flow
Lymphatic system	Physical barrier to pathogens - mast cells trigger inflammation
Respiratory system	Nasal hairs provide barrier
Digestive system	Synthesis vit D
Urinary system	Water/solutes excretion, keratinised layer limits fluid loss
Reproductive system	Sensations stimulating sexual behaviour, mammary gland secretion

Learning Objective 3: Describe the stages of wound healing.



Inflammatory phase