Skin

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- Skin is the outer most covering of the body and covers the entire body.
- It has a surface area of 1.5-2 meters and accounts for 12-15% of the total body weight.
- The skin along its derivatives constitutes the integumentary system.

Structure of the Skin

Skin is made up of two main components they are

- Skin proper
- Skin derivatives
- Skin Proper

The skin is composed of two layers

- Epidermis
- Dermis
- The epidermis is the outer layer of the skin which is formed by stratified squamous epithelium layers which are arranged in horizontal layers.

1. **Outermost cornified layer**
2. **Granular layer**
3. **Malpighian layer**

- Dermis is the innermost layer of the skin
- The dermis consists of the elastic connective tissue

- It is made up of blood vessels, sweat glands, oil glands and nerve endings

Functions of the Skin

- Protection – The skin provides protection to the body from mechanical injury, ultraviolet rays, from disease causing microbes and prevents desiccation.
- Temperature regulation – The skin helps in the maintenance of body temperature at a constant.
- The skin contains numerous sense receptors which help in perceiving the surroundings.
- The skin also synthesizes vitamins like vitamin D.
- The skin also helps in disposing of the excess water and salt by evaporation.

Melanin is the pigment present in the cells of the epidermis that decides the skin colour.

Derivatives are structures which are formed from the same precursors. Some of the derivatives of skin are

- Hair: Hair is formed in the hair follicles, which are the invaginations of the dermis.
- Sebaceous glands: The sebaceous glands produce oil and they open into the hair follicles.
- Sweat glands: They produce sweat, which is a weak solution of sodium chloride with some urea and lactic acid. The sweat produced is passed on to the epidermis, where it evaporates.
- Nails: Keratinous structures, which arise from the nail root, which lies in the dermis.
- Mammary glands: They are modified sweat glands, which produce milk.
- Meibomian glands: Modified sebaceous glands that are found at the margins of the eyelids. They lubricate margins of the eyelids and prevent the overflow of the tears.

- Ceruminous glands: Another modification of sebaceous glands which are found in the auditory canal. They secrete earwax or cerumen, which lubricates and protects the delicate parts of the ear.

- **Role of Skin in Heat Regulation**

- Within the body, heat is produced as a result of the various metabolic activities. This heat is transported to the rest of the body through the blood. The extra heat is radiated from the skin's surface.

- Heat is lost from body through the skin by convection, radiation and to a lesser extent by conduction.

- By evaporation of sweat from the body surface

- Through expired air from the lungs

- Through urine and faces

- **Poikilothermic Animals:** They do not have a constant body temperature.

- **Homioithermic Animals:** can maintain a constant body temperature irrespective of the outside temperature

- On a warm day, when the external temperature is high, nerve impulses are sent to the hypothalamus from the temperature receptors and the excess heat is lost by sweat.

- On a cold day, vasodilatation occurs so that the body retains the heat produced within and the metabolic rate increases and sweat gland become less active.