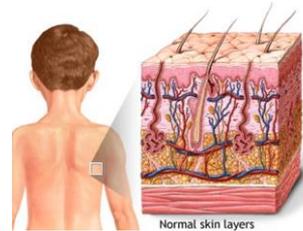


Integumentary System



The integumentary system is commonly known as the **Skin**

- Largest organ of human body
- 10% total body weight and would cover over 20 square feet

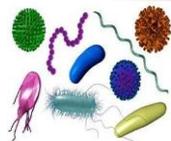


• Functions of Skin

1. Protection

➤ Barrier

- is the body's first line of defense against **viruses and bacteria**



➤ Water Loss

- Cells are extremely close together & packed with **Keratin**
= waterproof protein found in older cells



➤ Ultraviolet Radiation

- specialized cells called melanocytes produce **Melanin**
= dark pigment that absorbs ultraviolet radiation preventing **injury**
- ranges in color from **yellow → red/brown → black**
- racial differences are due to the kind & amount of melanin produced
- concentrated accumulations = **moles & freckles!**



2. Temperature Homeostasis

- Normal temperature: **37° Celsius**

- if the body gets too hot:

: more **blood** is brought to the **surface** the skin to **eliminate heat**
= you become **flushed**

: Sweat - **vaporization of water**

= cools the body

- if the body gets too cold:

: pores in the skin close tight to **reduce water loss**

= Goose Bumps

: body hairs are pulled up by tiny muscles

= traps air for **insulation**



3. Excretion

- Skin plays only minor role

- Sweat contains **water, urea, salts & excess vitamins**

= **wastes** are removed during this process

- this is why sweat tastes salty!



4. Synthesis of Vitamin D

- Skin needs **UV radiation for this** process to occur
- Require Vitamin D for the absorption of Calcium



5. Sensory Perception

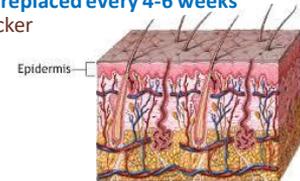
- contains **receptor cells** which are stimulated by touch, pressure, vibration, pain, and temperature = transmit information to the nervous system

• Layers of the Skin

The skin is composed of 2 layers

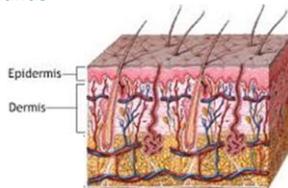
1. Epidermis

- **Outermost layer** of skin
- Composed of 5 layers of cells including:
 - : melanocytes
 - : keratinocytes (produce **keratin** for strength)
- Avascular (**no blood supply**)
 - = Outermost layer **replaced every 4-6 weeks**
- Cellular division occurs in innermost layer continually
- Some regions are thicker than others
 - : ie. sole of foot



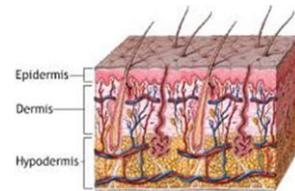
2. Dermis = 'True Skin'

- below the epidermis
- Made of a connective tissue called **collagen & elastic fibers** which decreases as you age = wrinkles
- contains:
 - **sebaceous (oil) glands**
 - **sweat glands**
 - **nerve fibers**
 - **blood vessels**
 - **hair follicles**



Subcutaneous Layer = Hypodermis

- not considered a true layer of skin (**cannot regenerate**)
- connects **skin to underlying muscles**
- composed of connective & adipose (fatty) tissue = **insulates and cushions**
- contains blood vessels
- medication is injected into this layer = hypodermic needle



• Auxiliary Structures

= structures derived from dermal tissue

1. Hair

- grows from **follicles** located in the dermis
- as new hair cells are produced older ones push up through the scalp & die
 - = most of a hair shaft is **dead material**
- follicle shape (round or oval) determines hair texture



2. Nails

- nail cells are produced in a region called the '**nail bed**' and, like hair, are pushed outward
- are **transparent** but appear pink because of the blood vessels beneath the skin

