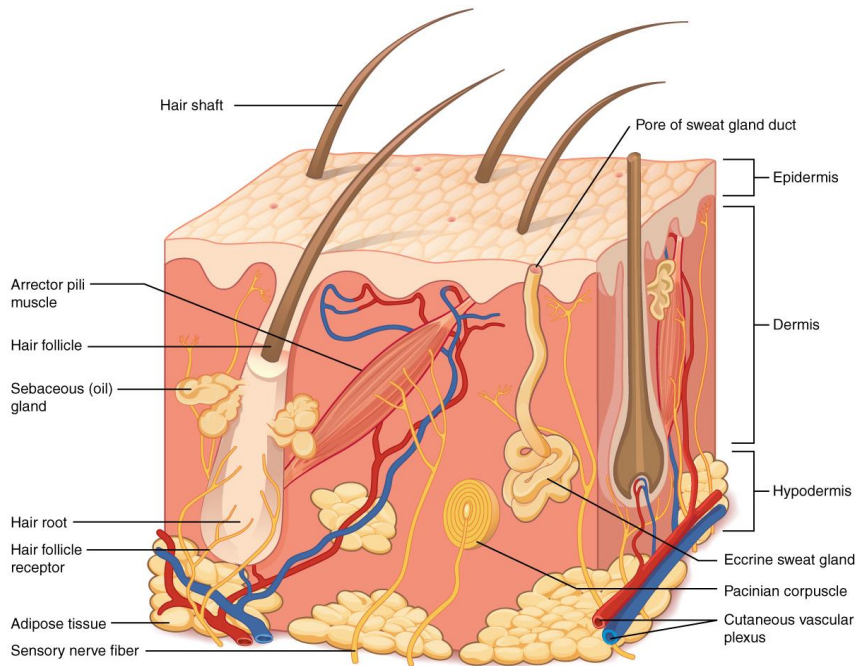
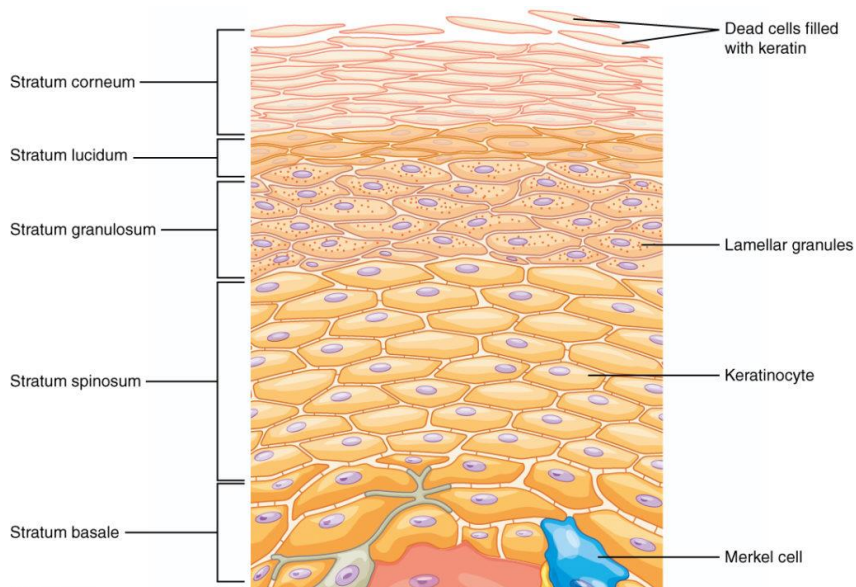


Integumentary System

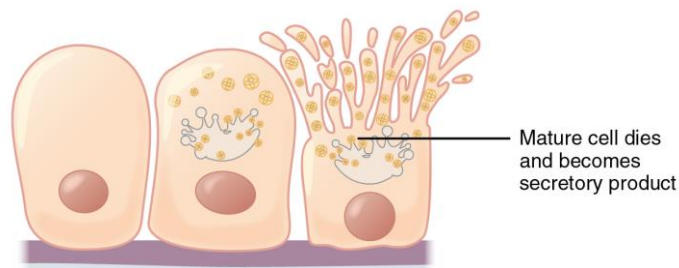
- **Functions**
 - **Protection**
 - Against pathogens, bacteria, viruses, and chemicals
 - **Secretion**
 - Sebum waterproofs the skin
 - Sweat allows thermoregulation
 - **Communication**
 - Sensory receptors send info about pressure, touch, and temperature to brain
 - **Production of vitamin D**
 - Allow absorbing certain chemicals (medications for example)
- **Layers of skin**



1. Epidermis



- Most superficial layer
 - Made of epithelial cells
 - Not vascularized
 - Deepest epidermis layer is called stratum basale
 - Constantly undergoes mitosis in order to push old cells outside and wear them off
 - Keratinized
 - Keratin: a waxy protein that give waterproof characteristics to skin
2. Dermis
- Under epidermis
 - Made of mostly connective tissues
 - Contains elastin and collagen fibers
 - Vascularized and innervated
 - Houses sensory receptors, hair follicles, sebaceous glands, and sweat glands
3. Subcutaneous layer (hypodermis)
- Not really part of “skin”
 - Mainly made of connective tissue which allows the skin to bind to underlying muscles
 - Contains fat which cushions and insulates our body
- Temperature homeostasis/thermoregulation
 - Controlled by sweat glands
 - Negative feedback mechanism
 - Consists of receptor, control center, and effector
 - Receptors: sensory cells in dermis
 - Control center: hypothalamus
 - Effectors: sweat glands, blood vessels, and muscles (shivering)
 - Vasodilation
 - Blood vessels near the surface of skin releases heat to lower body temperature
 - Sebaceous glands and sweat glands
 - Sebaceous glands
 - Holocrine glands



- Secrete sebum (oily mixture of lipids and proteins)
 - Inhibits water loss from skin and protects against bacterial and fungal infections
 - Connected to hair follicles
- Sweat glands: eccrine or apocrine
 - Eccrine
 - Not connected to hair follicles
 - Triggered by high body temperature (thermoregulation functions)
 - All over body but mostly in forehead, neck, and back

- Secrete substance made of electrolytes and water made of sodium chloride, potassium,, bicarbonate, glucose, and antimicrobial peptides
- Apocrine
 - Secrete oily solution made of fatty acids, triglycerides, and proteins
 - Located under armpit, groins, palms, and soles of feet
 - Activated in times of stress of anxiety
 - Can be stinky due to bacterial feed

