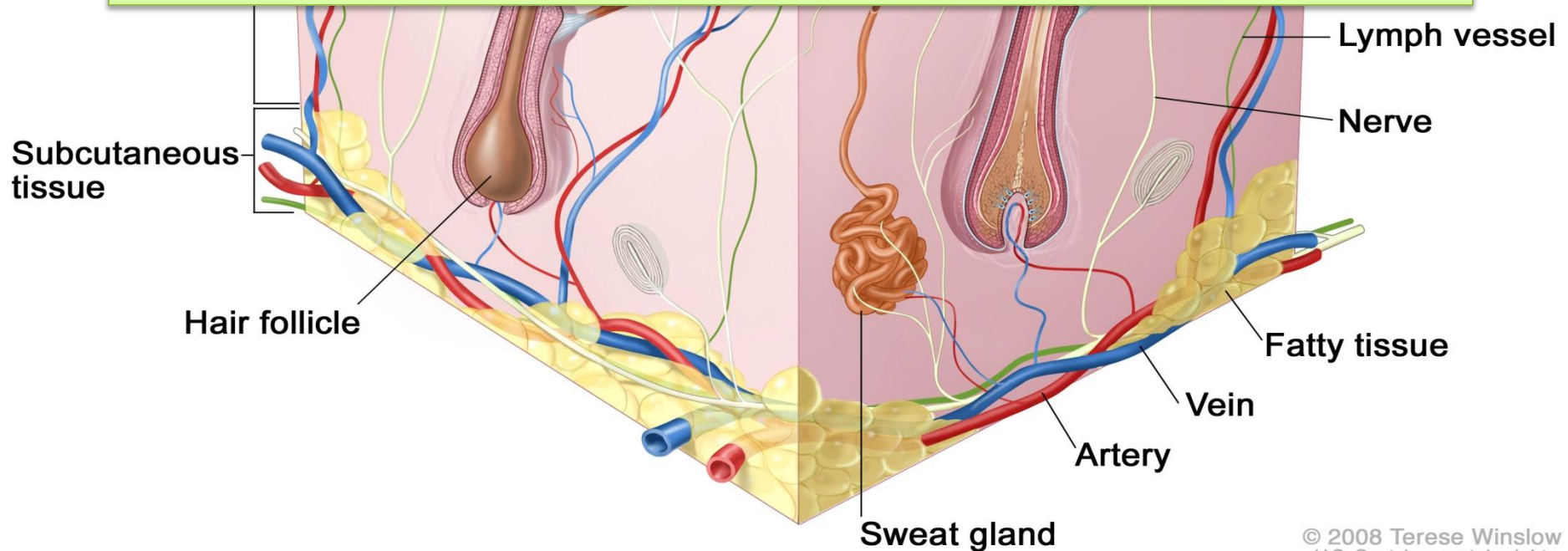
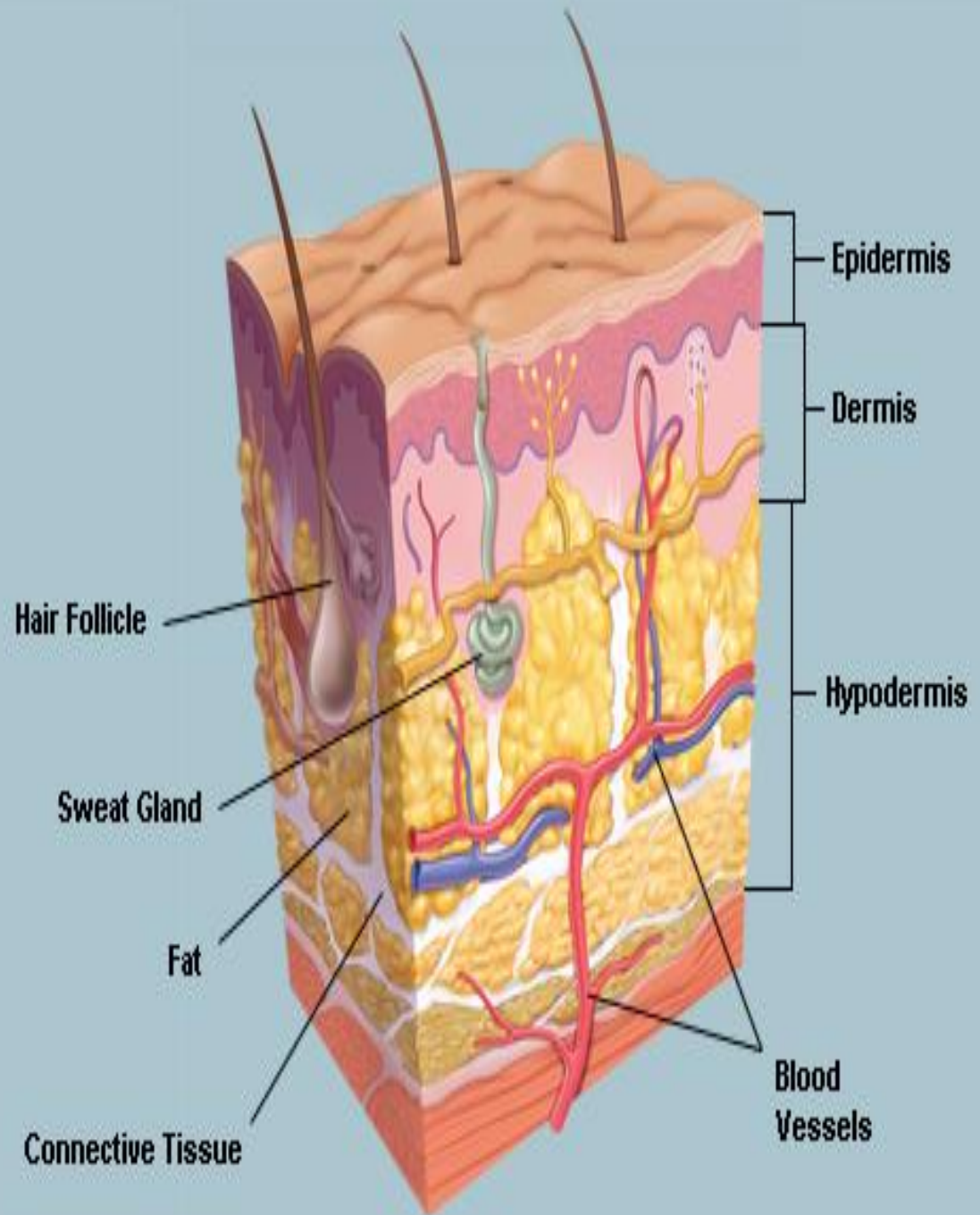


# Human integumentary system (SKIN)

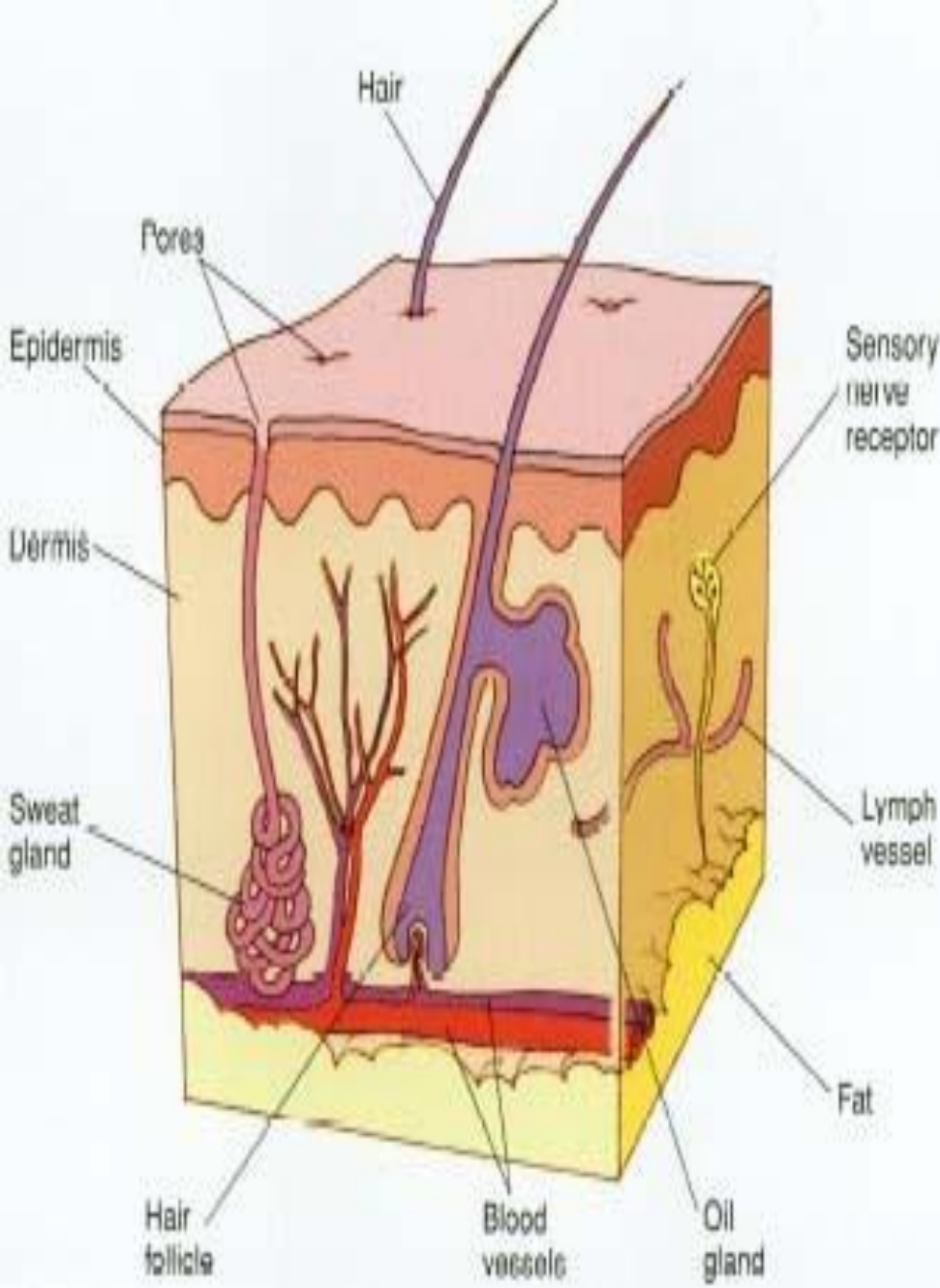


# SKIN

- Humans have a skin composed of one or more layers
- The skin functions as a protective layer



# ***The functions of skin***

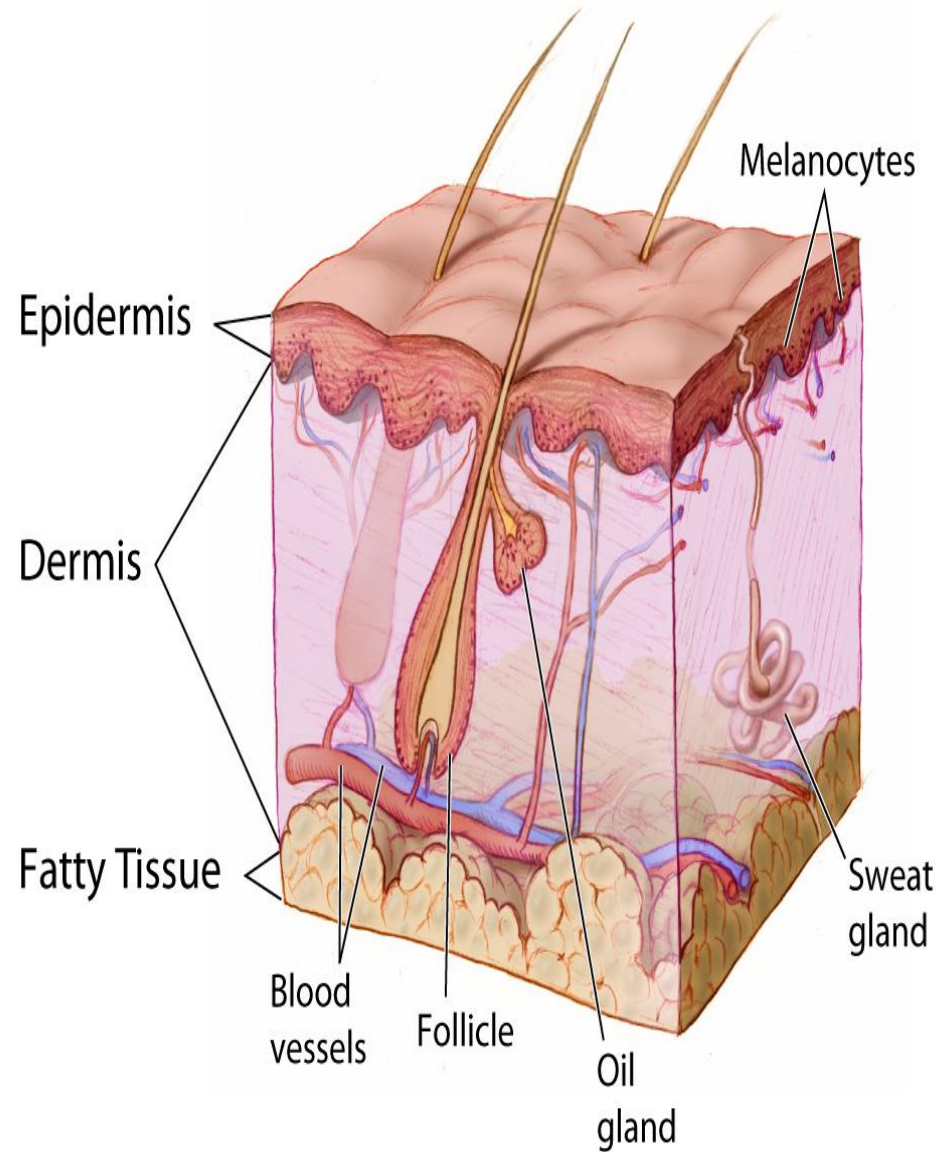


- protection of the body from physical and chemical effects, ultraviolet, microbes
- prevention of water loss
- regulation of body temperature
- In hot conditions, capillaries in the skin dilate and radiate heat.
- The same capillaries constrict in cold conditions to prevent heat loss



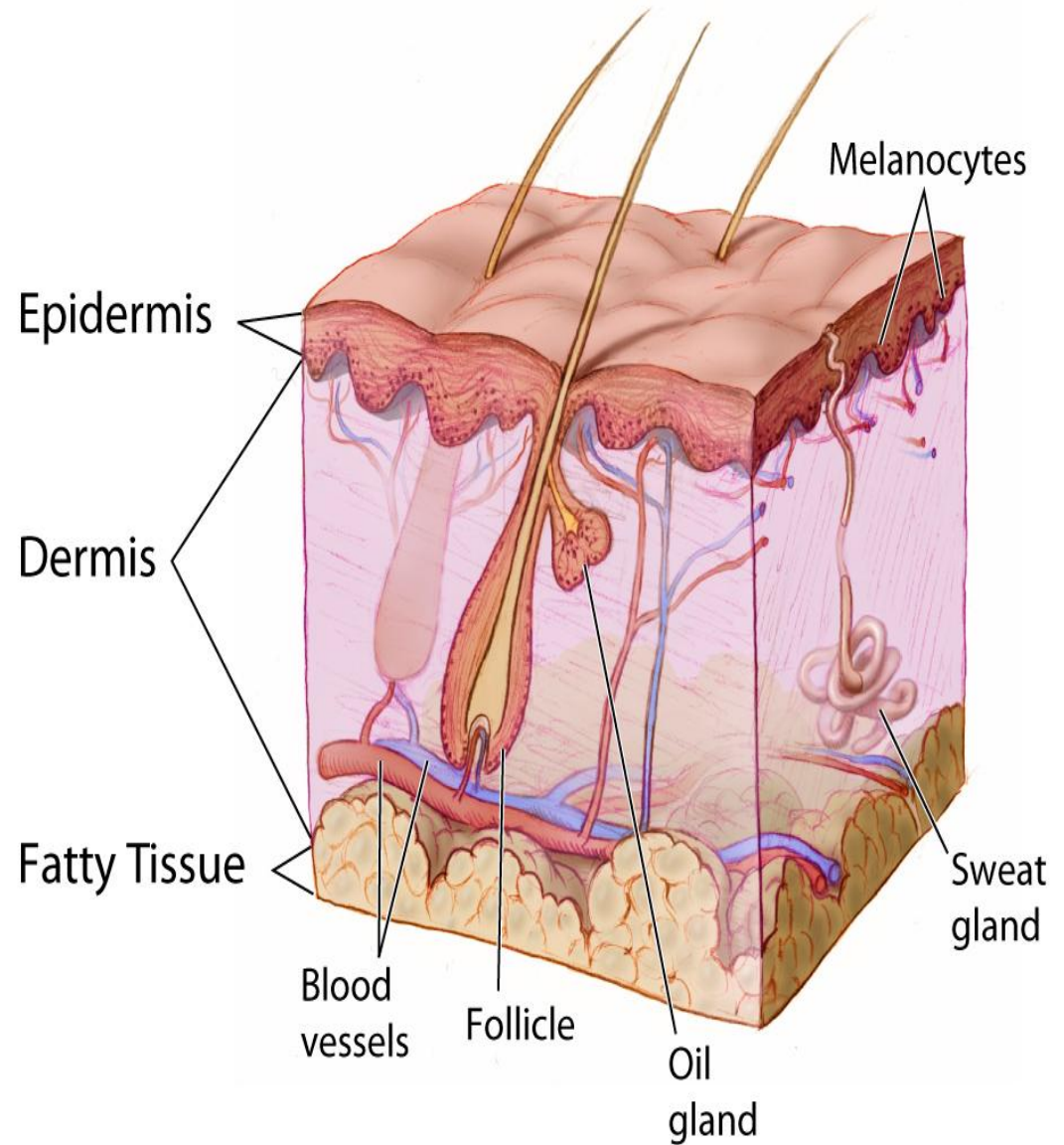
# ***The functions of skin***

- gas exchange
- sensory reception (temperature, pain, pressure and touch)
- excretion of metabolic wastes via sweat glands
- maintenance of a moist body surface
- secretion of fat
- absorption of some medicines

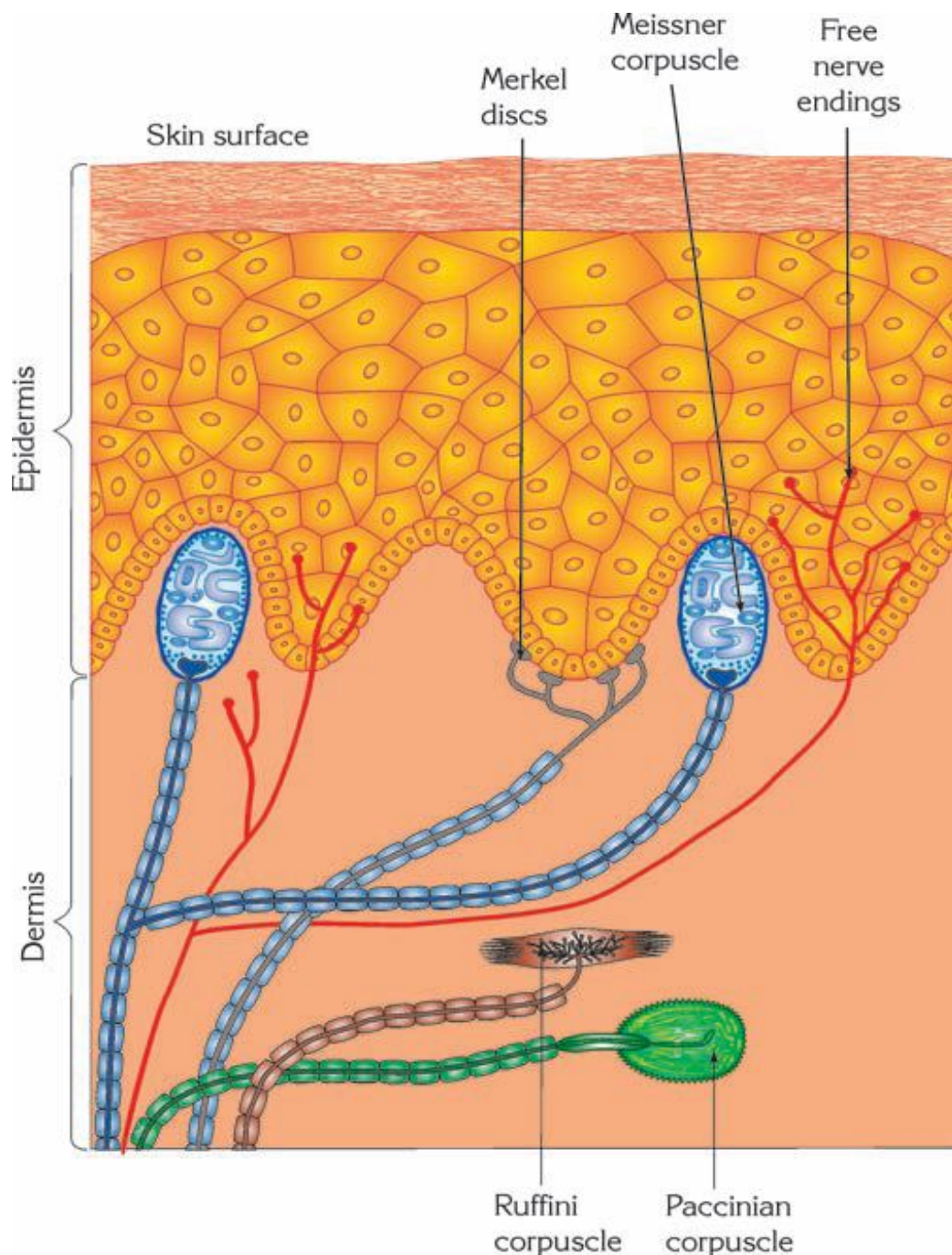


# Layers of skin

- *Skin is composed of two completely different layers:*
- **Epidermis** – outermost layer of body
- **Dermis**



# Epidermis

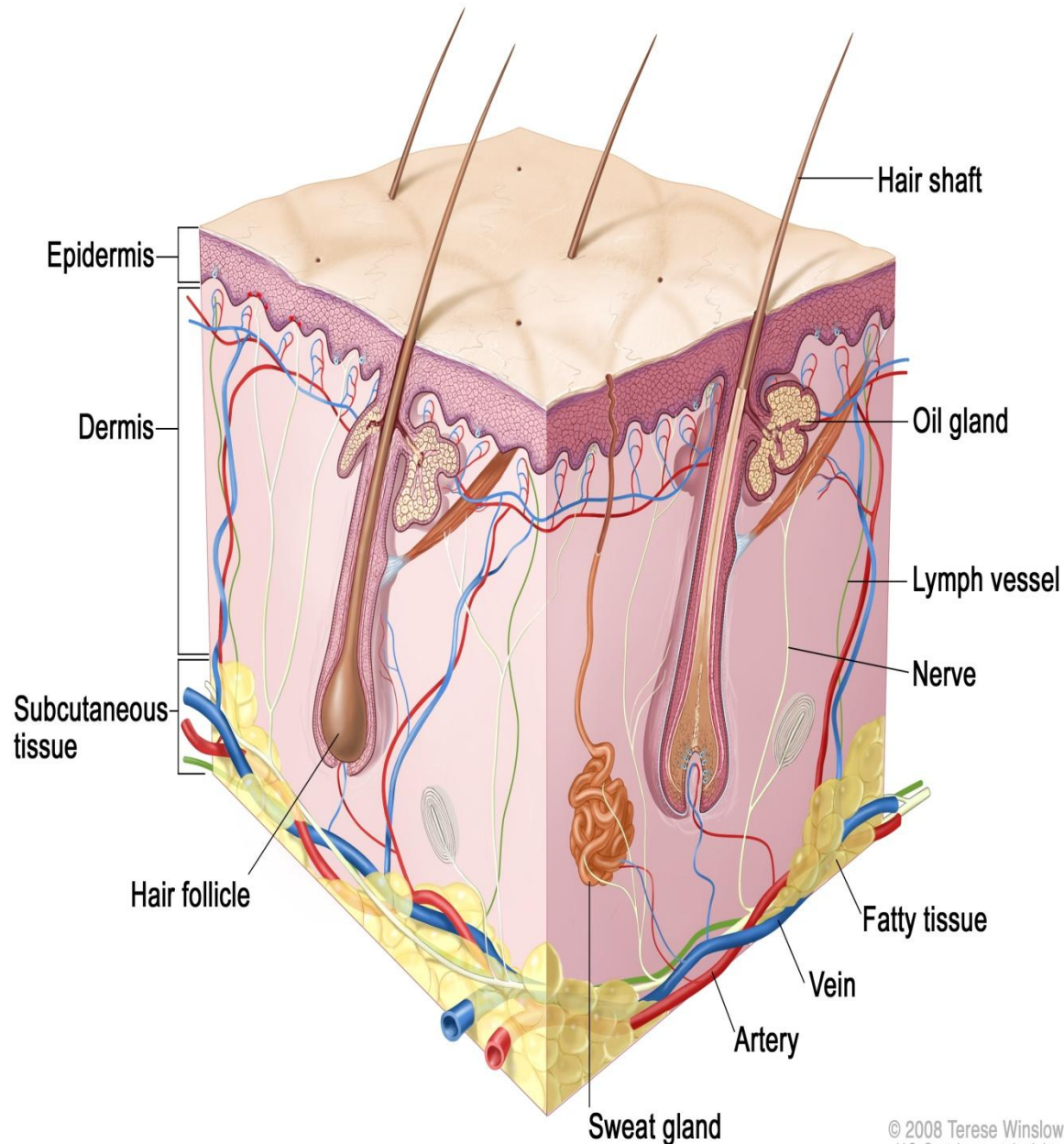


- It is composed of ***keratinized epithelial cells***
- Do not contain blood vessels
- Upper section consists of non-living cells (contains protein ***keratin***), about 0.7 mm
- This layer is shed over a period of time and is replaced by the dividing cells of the inner layer
- The color of the skin is conferred with ***melanin*** pigment

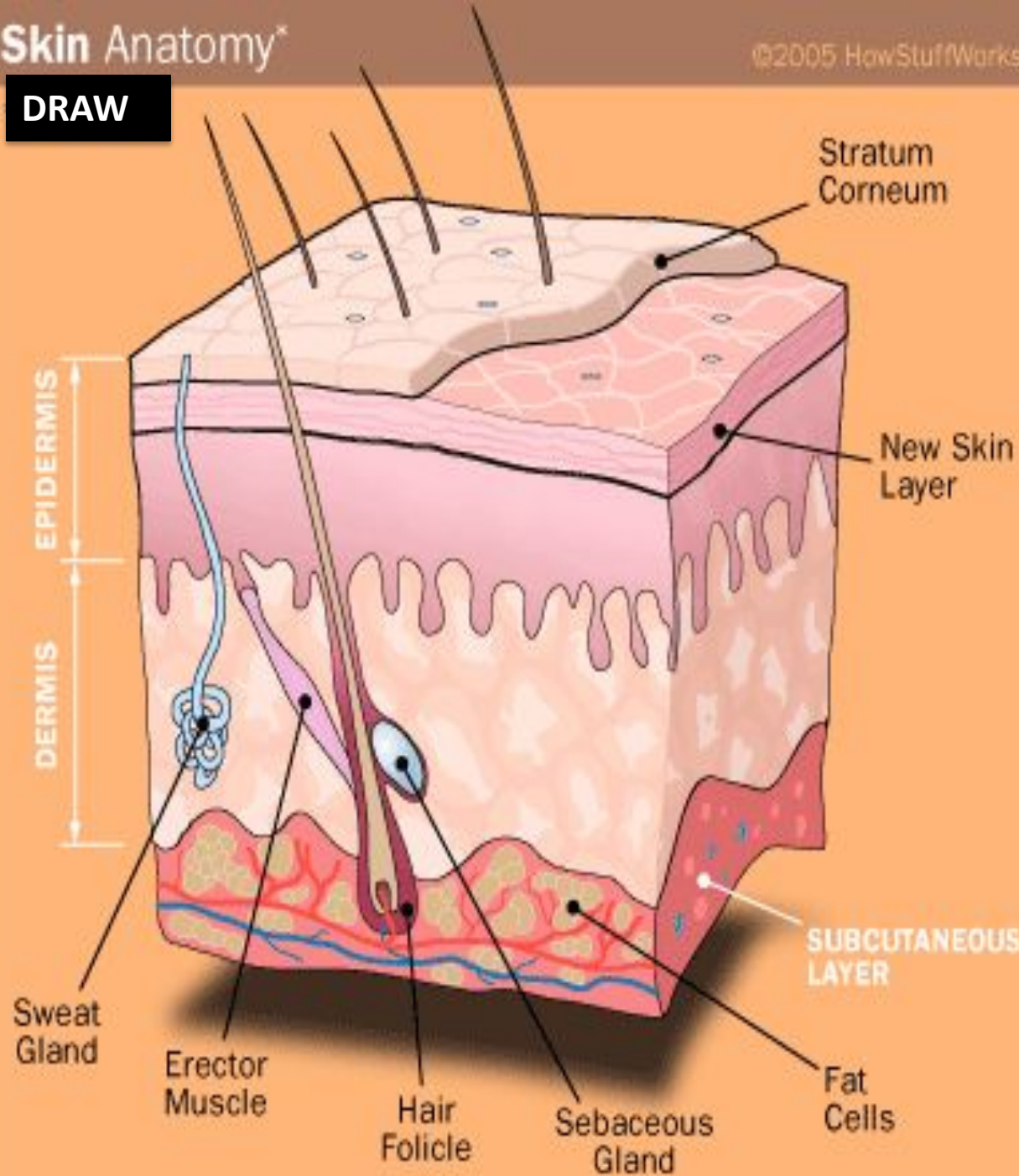


# Dermis

- It consists of ***collagen*** and ***elastin*** proteins
- The dermis is rich in blood vessels and nerve endings
- The receptors located in the skin are connected to the nerve endings



DRAW



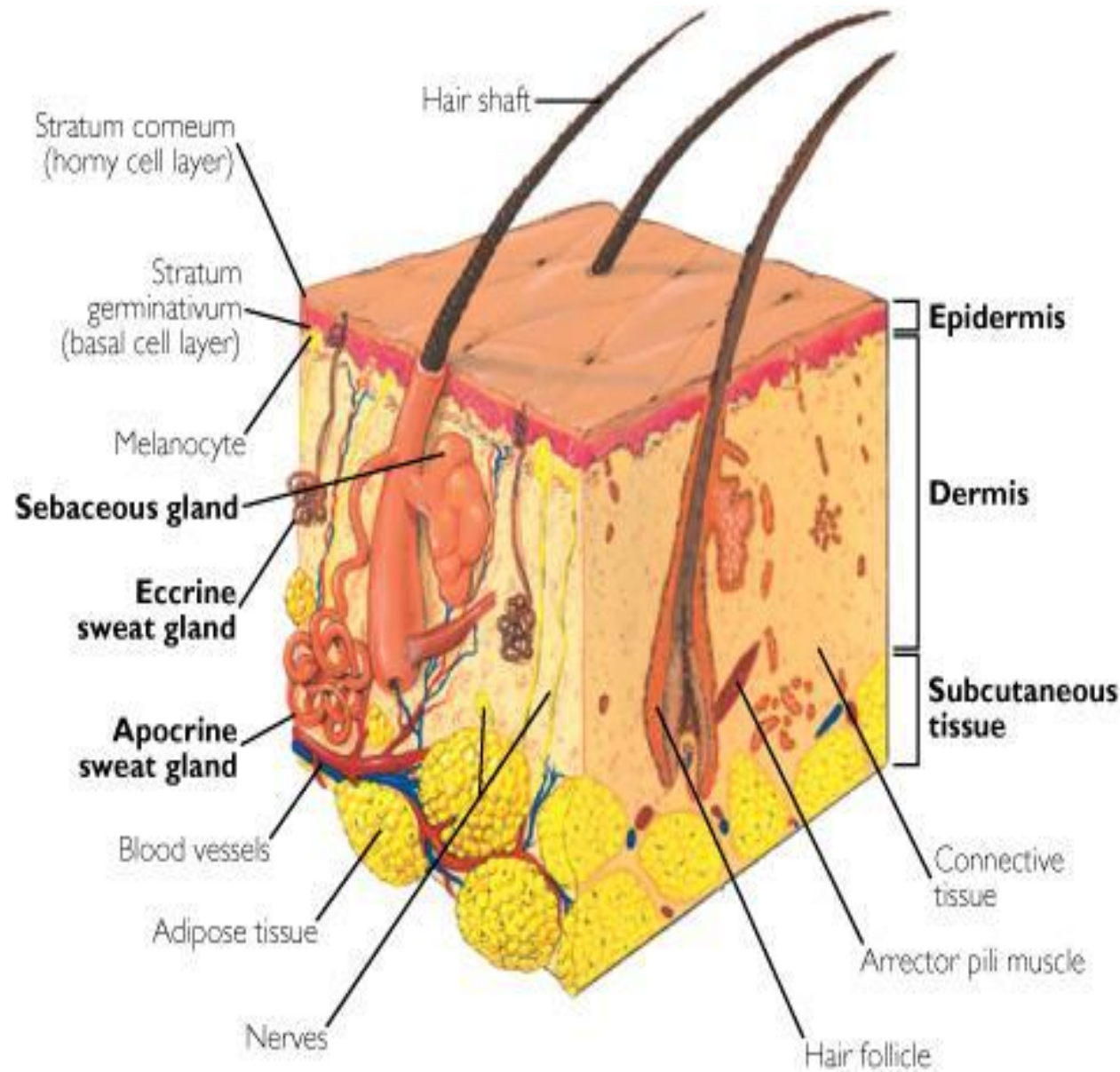
## Dermis

- The dermis contains ***smooth muscles, sweat and sebaceous (oil) glands, hair follicles, touch receptors and lymph vessels***

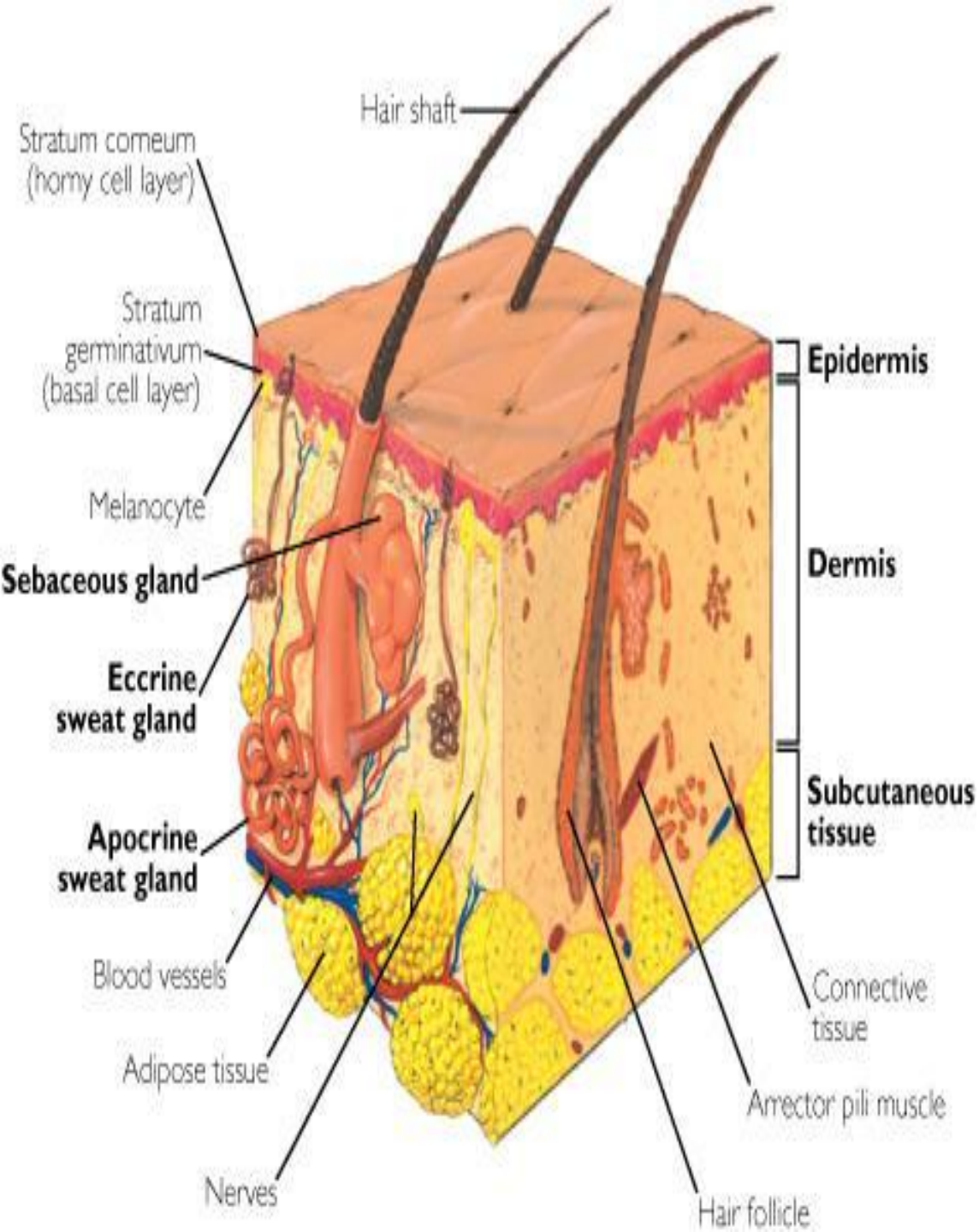


# Accessory structures of the skin

- The accessory organs are:
- - Skin glands
- - Hair
- - Nails

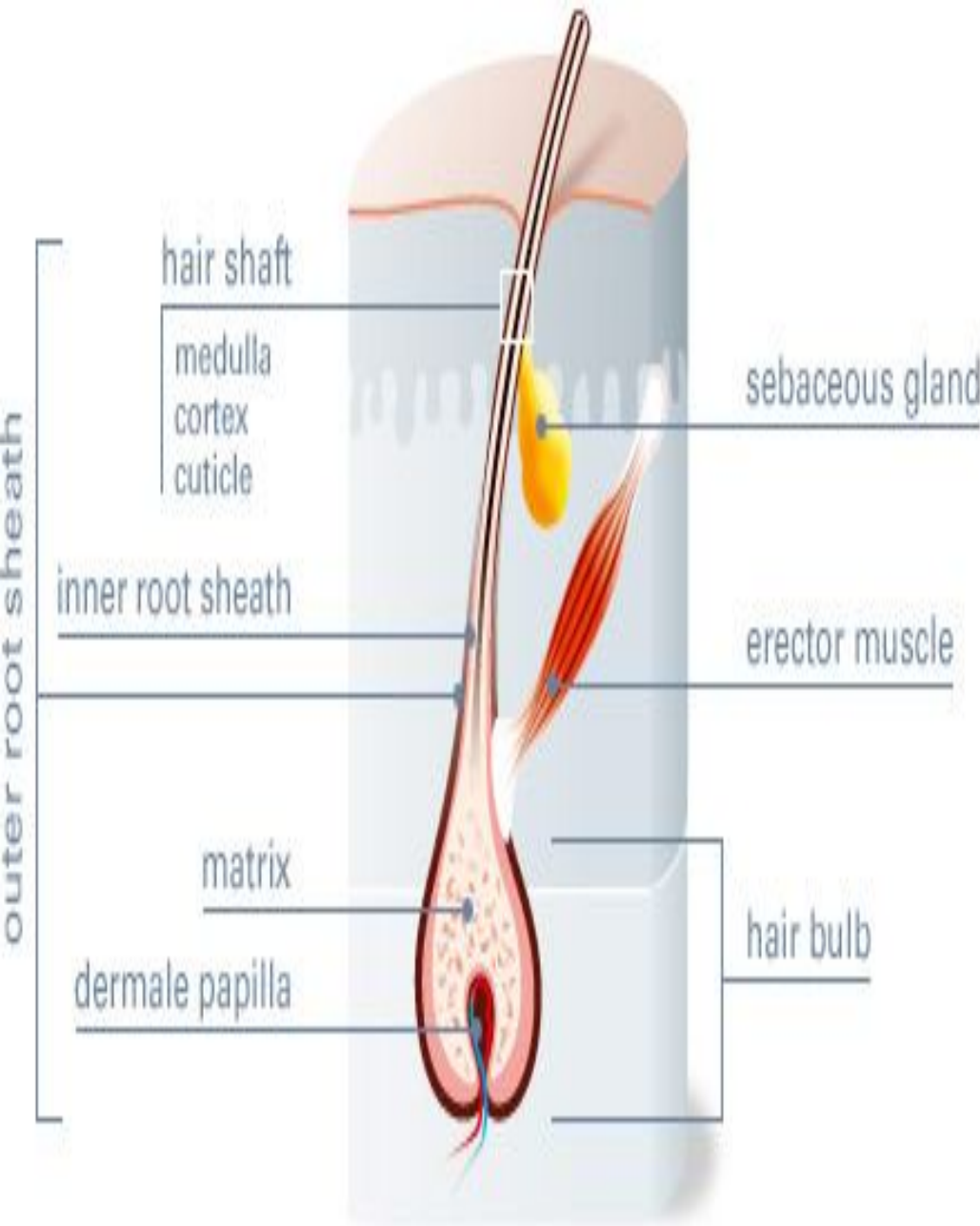


# Skin glands



- The skin includes two types of glands: ***sebaceous glands*** and ***sweat glands***
- Sebaceous glands produce oily secretions in order to protect from microbes
- Mainly located near hair
- Not found on palm (ладонь) and sole (ступня)

# Hair follicles



- The root of the hair in the dermis is termed the **hair follicle**, whereas the visible portion of it is termed the **hair shaft**
- Each hair follicle has a sebaceous gland (сальная железа) and smooth muscle
- **Hair color** is determined by pigment (**melanin**) produced by melanocytes located at the base of the hair follicle
- **Red color** is determined by pigment **trichosiderin**



# Nails

- Each nail is composed of a nail plate (ногтевой пластины) and a nail bed (ногтевое ложе)
- The nail plate is a continuation of the epithelium of the skin
- The base of the plate resembles the shape of a half-moon and contains rapidly dividing epithelial cells
- After division, impregnation (пропитывание) with keratin forms a horny (роговой) structure

