

# 2.2 Integumentary System

## General Structure

Layers from superficial to deep

- stratum corneum
- stratum lucidum
- stratum granulosum
- stratum spinosum
- stratum germinativum/basale

epidermis

Basement Membrane

- papillary layer
- reticular layer

dermis

adipose tissue ————— subcutaneous  
NOT SKIN!!!!

## Aging SKIN

- wrinkling/sagging: no elasticity
- age spots: excess melanin
- can't control body temp: loss of sweat glands
- shrinking capillary beds
- decline in vitamin D: lack calcium absorption

## General Functions

- Protection
  - mechanical } keratin
  - chemical } sensory receptors
  - bacterial - acid mantle
  - thermal - thermoreceptors
  - UV - melanin
- Desiccation (extreme dryness)
- Waste Removal
  - sweat
- Heat Regulation
  - sweat glands (cool down)
  - cutaneous capillaries (both cool & warm)
  - adipose (insulation)
  - arrector pili (goosebumps)

- Sensory Receptors
  - Meissner's - touch
  - Pacinian - pressure
  - Nociceptors - pain
  - Thermoreceptors - heat
- Vitamin D Synthesis
  - UV activates cholesterol
  - Cholesterol → vitamin D
  - Vitamin D absorbs calcium

- S - secretion
- H - heat regulation
- A - absorption
- P - protection
- E - excretion
- S - sensation

## Characteristics of Epidermis

- stratified squamous E.T
- avascular
- keratinization
- occurs as cells die

- cells die as they move away from dermal blood vessels

KEYWORDS

- o corneum: dead keratinized cells that fall off
- o lucidum: dead cells; only present in palms & soles
- o granulosum: dying cells filled w/ keratin
- o spinosum: living
- o basale / germinativum: living and undergoing mitosis; contain melanocytes

Pigmentation

- melanin: brown / black; no melanin = albinism, loss through life = vitiligo, too much = melanoma (cancer)
- Carotene: orange - yellow
- Bilirubin: yellow; accumulation = jaundice
- Hemoglobin: red
- Cyanosis: blue due to poorly oxygenated
- Pallor: white due to reduced amount of oxygenated blood
- Erythema: redness due to infection

Dermis

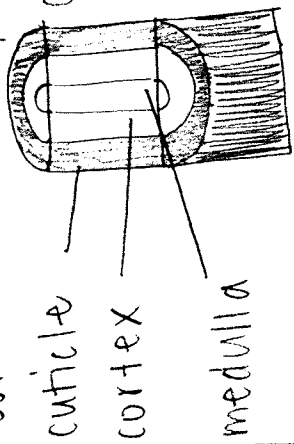
- Papillary layer: dermal papillae, Meissner, blood
- Reticular layer: connective tissue, Pacinian, accessory organs

Subcutaneous NOT SKIN!  
- Fat

NO OXYGEN = dead tissue =

HAIR FUNCTION - (s. basale)

- (1) Formed in matrix of
  - (2) Hair bulb, grows into
  - (3) Hair follicle grows into
  - (4) Hair root, part that we see
  - (5) Hair shaft
- contains melanocytes & Keratin!



- arrector pili muscle attached (goosebumps)
- sebaceous glands (oil/sebum)

Nails

- Extension epidermis → bits of keratin (s. basale!)
- (1) Formed in nail matrix
- (2) Nail body rests on nail bed
- (3) grows into free edge
- no pigment! Pink b/c of blood

Sudoriferous = sweat

- Eccrine: everywhere temp. control
- Apocrine: genital, axillary / puberty!

- Sebaceous = sebum
- Holocrine lubricant active @ puberty

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Tattoo is in