

Chapter 6 Skin & Its Appendages

I. Structure of the Skin

- a. Thin, flat organ, classified as a membrane – cutaneous membrane
 - i. Epidermis – outer, thinner layer
 - ii. Dermis – inner, thicker layer

b. Epidermis

- i. Composed of several types of epithelial cells
 - 1. keratinocytes – filled with tough, fibrous protein – keratin; arranged in distinct layers; makes up 90% of epidermal cells
 - 2. melanocytes – contribute to color of skin, decreases amount of UV light that gets to deep layers; composes more than 5% of epidermal cells

c. Epidermal Cell Layers

- i. Stratum corneum (horny layer)
 - 1. most superficial layer
 - 2. thin, squamous cells
 - 3. barrier area – reduces water loss
 - 4. hyperkeratosis – thickened

- ii. stratum luidum (clear layer)
 - 1. closely packed keratinocytes
 - 2. eleidin – soft gel-like substance that fills cell
- iii. Stratum granulosum (granular layer)
 - 1. high levels of lysosomal enzymes in cytoplasm
 - 2. 2-4 layers deep
- iv. Stratum spinosum (spiny layer)
 - 1. 8-10 layers of irregularly shaped cells
 - 2. Desosomes join adjacent cells, giving a spiny appearance
- v. Stratum Basale (base layer)
 - 1. single layer of columnar cells
 - 2. undergo mitosis
 - a. Dermis
 - i. True skin
 - ii. Papillary layer
 - 1. bumps form – dermal papillae, project into epidermis

2. finger prints –
formed by
absorption of
amniotic fluid;
ridges help in
grasping objects
- iii. reticular layer
 1. network of tough
collagenous fibers
 2. point of attachment
for voluntary &
involuntary muscles
 3. hair follicle has
arrector pilli
muscles
 4. contains somatic
sensory receptors

3. Skin Color

- a. Melanin- pigment that gives skin its color

4. Functions of the skin

- a. Crucial maintenance of homeostasis

- b. protection

- i. keratinized stratified squamous epithelial cells form a barrier
- ii. protects underlying tissues
- iii. desquamation – shedding of epithelial elements from the skin

- c. sensation

- i. somatic sensory receptors cover entire body
- ii. make it possible to respond to internal and external changes

- d. movement without injury

- i. flexibility allows movement

- e. excretion
 - i. sweat
- f. Vitamin D production and absorption
- g. Immunity
 - i. Specialized cells destroy pathogenic microorganisms
- h. Homeostasis of Body temperature
 - i. Heat production
 - i. Produced through metabolism of foods
 - j. Heat loss
 - i. Evaporation
 - ii. Radiation – transfer of heat from one surface to another without contact
 - iii. Conduction – transfer of heat through contact
 - iv. Convection – transfer of heat away from a surface by movement of air or fluid particles

k. absorption of vitamins A, E and K,
along with hormones

5. Burns

a. First degree

- i. Sunburn
- ii. Peels in 1-2 days
- iii. No blistering

b. Second degree

- i. Deep epidermal layers
- ii. Damage to glands
- iii. Blisters
- iv. Severe pain
- v. Scarring
- vi. Partial thickness burns

c. Third degree

- i. Destruction of both
dermis & epidermis
- ii. May involve underlying
muscles, fasciae or bone

6. Appendages of Skin

a. hair

b. nails

7. Skin Glands

a. Sweat glands

i. Most numerous of the skin glands

ii. Eccrine sweat glands

1. ducts travel through both dermis & epidermis

2. distributed over total body surface

3. most numerous sweat gland

iii. apocrine sweat glands

1. located in deep subcutaneous layer

2. larger than eccrine glands

3. connect with hair follicle

b. Sebaceous glands

1. secrete oil (sebum)

a. lubricates skin and hair

2. branched glands
found in dermis

c. ceruminous glands

1. modified apocrine
gland

2. open to free surface
of skin