

INTEGUMENTARY SYSTEM

1/13/81, rvsd 10/12/95, 3 Oct 07, 16 Oct 08, 12 Oct 09
Fr. S&M p. 93, Martini 7th, pp154-177, 7th: 158-181

in- tegere (to cover) simple organ: includes skin and accessory structures
three main layers: (p 158)

- epidermis** closely packed epithelial cells
- dermis** dense irreg connective tissue. (corium [leather])
- hypodermis** subcutaneous (superficial fascia) often adipose, connects dermis to attaches to underlying fascia of muscles, periosteum (of shin etc.)

EPIDERMIS: four layers, bottom to top: (p 160)

- Stratum Germinativum:** **Stratum Basale:** mitosis: columnar at bsmnt memb
- Stratum Spinosum:** 8-10 layers thick, projections to adjacent cells (some mitosis here)
- Stratum Granulosum:** 3-5 layers thick, granules of **keratohyalin** increase to outer cells, cells thereby dying
- Stratum Lucidum:** Contain eleidin droplets, as cells move converts to **keratin**
- Stratum Corneum:** 15-30 layers thick (cornu: horn) keratinized cells

Keratin protects against invasion restricts water loss, resists digestion
No vessels in epidermis, dermis carries vessels and nerves.
Melanocytes give color, transfer melanin to stratum germinativum (p 162) (ABCDs of melanoma)
Blushing, cyanosis caused by dilation or constriction of dermal capillary system

DERMIS: dense irregular connective tissue, develop from mesoderm.
contains **collagenous** as well as elastic, and reticular fibers. (Lines of cleavage, p 167)

- Two indistinct layers: **Papillary layer:** fits close to epidermis, forms fingerprints
- Reticular layer:** collagenous fiber bundles, continuous with hypodermis: lines of cleavage

HYPODERMIS (superficial fascia): loose aerolar connective tissue, often with fat cells

HAIR (p 170) Consists of column of keratinized cells

- Follicle** inner layer of stratum germinativum, outer layer of connective tissue fr dermis
- Papilla** formed from dermis at base of follicle contains capillaries
- medulla** (loose), **cortex** (tightly compressed), **cuticle** very hard grows fr epidermal cells, at bottom of hair follicle
- arrector pili** smooth muscle causes to stand up, forms goose pimples

NAIL: (p 174) Nail bed formed by germinativum.

- matrix** forms the nail, heavily cornified, mostly buried, nail formed fr two outer layers corneum and lucidum
- eponychium** [upon claw]"cuticle", fold of dead skin protects proximal end of nail
- lunula** [moon little] due to thickened distal matrix obscuring vessels underneath
- hyponychium** "quick" the place you stick splinters...)

GLANDS: two types: sweat and sebaceous. Also ceruminous ciliary (eye lids); mammary (p 172)

Sebaceous Glands: Sebum oil secreted onto hair shaft keeps fr drying.
Also contains antibacterial agent. Production stimulated by sex hormones esp testosterone.
Generally alveolar (= acinar) (sacs) **holocrine** glands

Sweat: **merocrine** gland (secretions do not accumulate) simple tubule, stimulated by sympathetic NS.
secretions contain NaCl, urea, sulfate, phosphates.

apocrine, secrete part of cell with thicker and more complex sweat
they are large sweat glands of axilla, anus, scrotum & labia major

FUNCTIONS of skin:

- Protection: water loss uv, microorganisms slightly acidic
- Temp regulation: Hot?: dilation of capillaries, sweat. Cold?: vice versa
- Excretion: Urea and NaCl. Comp'n varies according to needs of body
- Sensation: temp, touch, pressure, pain.
- Vitamin D formation: 7 dehydrocholesterol

PATHOLOGIES:

- Acne *Corynebacterium acnes*, provoke xs sebum andu?7./,
- Warts viral, can be found in groups, plantar warts on sole of foot
- Dermatitis inflammation of the dermis = degranulation of mast cells (PI, etc)
- Psoriasis red brown elevations, silvery scales cover.
- Impetigo combined infection of staph and strep
- Moles congenital usually benign may incr. in size pigmt, redden, itching
- BURNS:** **RULE OF NINES for burns:** head 9, upper limb 9, trunk frnt 18, genitalia 1, lower limb 18 each.

