The Integumentary System

The Skin

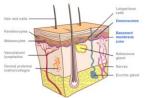
Outline

- Structure and Function
 - Epidermis
 - Dermis
 - Subcutaneous
- Accessory structures
- · Injury and repair
- Diseases and aging



Structure of the Integument

- Cutaneous Membrane
 - Epidermis
 - Dermis
- Subcutaneous Layer
- HypodermisAccessory Structures
 - Hair, nails, exocrine glands



Function

- Protection: from impacts, chemicals, infections, and loss of fluids
- Temp. maintenance: regulates heat gain/loss
- Synthesis/storage of nutrients: makes vitamin D3 and stores lipids
- Sensory reception: detect pain, touch, and temp
- Excretion and secretion: excretes salts, water, and organic wastes; can produce milk in females

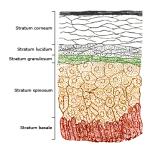
General Structure of the Epidermis

- Stratified squamous epithelium
- Thick skin (palms, soles): 5 layers
- Thin skin (rest of body): 4 layers



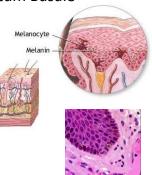
More on the epidermis

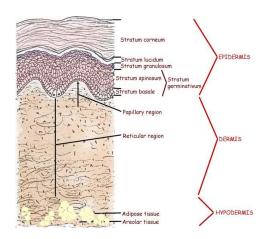
- · Upper layers dead
- · Lower layers living
- Replaced every 35-45 days



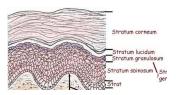
b. Stratum Basale

- Deepest
- 1 cell layer thick
- Nutrition, O₂ via diffusion from tissues below
- · Actively dividing
- Contains melanocytes





Intermediate Strata



c. Stratum spinosum:

- Several layers
- Still alive, less mitosis
- Flattened, irregular, spine-like projections

Note (add this off to the side):

Basale + Spinosum = Stratum germinativum

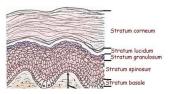
(growing layers)

Stratus corece

Stratus sociale

Stratu

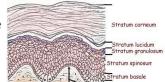
Intermediate Strata



d. Stratum granulosum:

- Thin, 2-3 cell layers thick
- Flatter and thinner
- Keratinization begins here



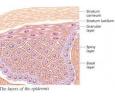


e. Stratum lucidum:

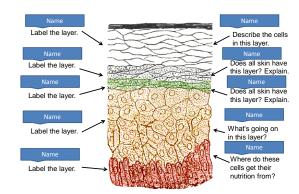
- clear layer
- flattened, dead, densely packed cells
- palms and soles only

f. Stratum corneum

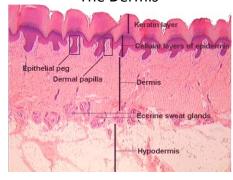
- · Most superficial
- 20-30 cell layers thick
- · Shingle-like, dead cells
- · Full of keratin
- Water resistant; inhibits bacterial growth
 - science.com/ int/ en/topic/topic sousrub.aspx?tc=SKIN_SCIENCE_ROOT
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Almost everything you see when you look at someone is dead!



The Dermis



The Dermis

- · Connective tissue
- · Strong, flexible
- · Gives skin strength, resilience
- Rich in nerves, receptors, blood vessels, lymph vessels
- · Hair follicles and sweat glands extend into it
- 2 layers

Papillary Layer

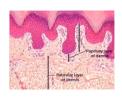
- · Mainly areolar CT
- · Lots of blood vessels
- Uneven upper region: **dermal papillae**
 - finger-like projections
 - "dent" the epidermis
 - Creates fingerprints- enhance grip. Genetic, unique

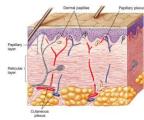




Reticular Layer

- Mainly dense fibrous CT
- Lots of collagen fibers



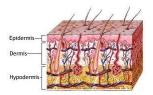


The Subcutaneous/Hypodermis



Subcutaneous Layer/Hypodermis

- Mainly adipose (fatty tissue)
- Main function: Insulation
- Infants/elderly: less of this, so more sensitive to cold



Assignment:

• Review wkst