Skin Histology

-part of the integumentary system-
-largest organ of the body-
Epidermis-->Dermis-->Hypodermis

Major Skin Functions:
Protection
Sensory Perception
Temperature Regulation
Excretion
Formation of Vitamin D

Epidermis

outermost layer- four or five layers-rich in a tough protein called keratin-waterproof barrier between the body and the external environment

Contains four different cell types:
Keratinocytes-Melanocytes-Langerhans-Merkel

Epidermal-Dermal junctions-->more prominent in palms and soles

(1) Stratum basale

deepest layer in the epidermis-mitotic activity- single layer of basophilic columnar to cuboidal cells that rest on a basement membrane- cells are attached to one another by desmosomes, and to the underlying basement membrane by hemidesmosomes.

(2) Stratum spinosum

layer above the stratum basale-8-10 rows of cells
Cells synthesize keratin filaments that become assembled into tonofilaments

(3) Stratum granulosum

above the stratum spinosum- consists of 3-5 cell layers of flattened cells-Cells filled with dense basophilic keratohyalin granules and membrane- bound lamellar granules

(4) Stratum Lucidum

In thick skin only-The tightly packed cells (desmosomes) lack nuclei or organelles and are dead.

(5) Stratum corneum

Most superficial layer of the skin-Consists of dead, flattened cells with no nuclei and cell organelles-the dead cells contain much keratin filaments with plasma membranes surrounded by lipid-rich layer

psoriasis: Is a common skin condition that speeds up the life cycle of skin cells. It causes cells to build up rapidly on the surface of the skin. The extra skin cells form scales and red patches that are itchy and sometimes painful.

Thin skin

- *4 layers
- *less Prominent stratum corneum
- -Less developed stratum granulosum
- - Dominant and lines most of the body surface
- *-Thicker dermis
- *-hair and sebaceous glands

Thick skin

- *5layers
- *More Prominent stratum corneum
- -More developed stratum granulosum
- -Palms and soles
- *-Thiner dermis
- *-No hair and sebaceous glands

(1)-keratinocytes:

Approximately 90% of epidermal cells are keratinocytes.

Produce keratin

Produce lamellar granules that helps waterproof the skin

(2)-Melanocytes:

Melanocytes are our natural SPF

Are derived from the neural crest cells.

Have protrusions that transfer melanin granules to the keratinocytes

Are located in the stratum basale

Synthesize the dark brown pigment melanin

Melanin protects the skin from the damaging effects of ultraviolet radiation

(3)- Langerhans cells:

Originate from bone marrow (monocytes)

Mainly in the stratum spinosum

Langerhans cells recognize, phagocytose, and process foreign antigens

Represent 2-8% of epidermal Cells

(4)- Merkel cells:

› Are found in the stratum basale

Are most abundant in the fingertips

Are closely associated with afferent (sensory) unmyelinated Axons

Function as light touch receptors (mechanoreceptors)

Dermis

The dermis lies immediately beneath the epidermis and is much thicker.

It is responsible for the elasticity and strength of skin

Contains blood vessels and nerve supply

Derived from mesoderm

Papillary layer--› loose connective tissue

Reticular layer--› dense irregular connective tissue

The acid mantle is a very fine, slightly acidic film on the surface of human skin

Hemorrhage from the cutaneous blood vessels is called ecchymosis- (bruise)