

Dermatology

World of Revision

Marrow

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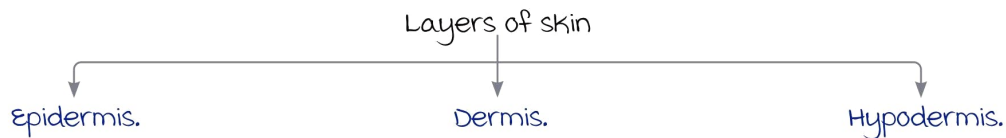
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DERMATOLOGY REVISION - 1

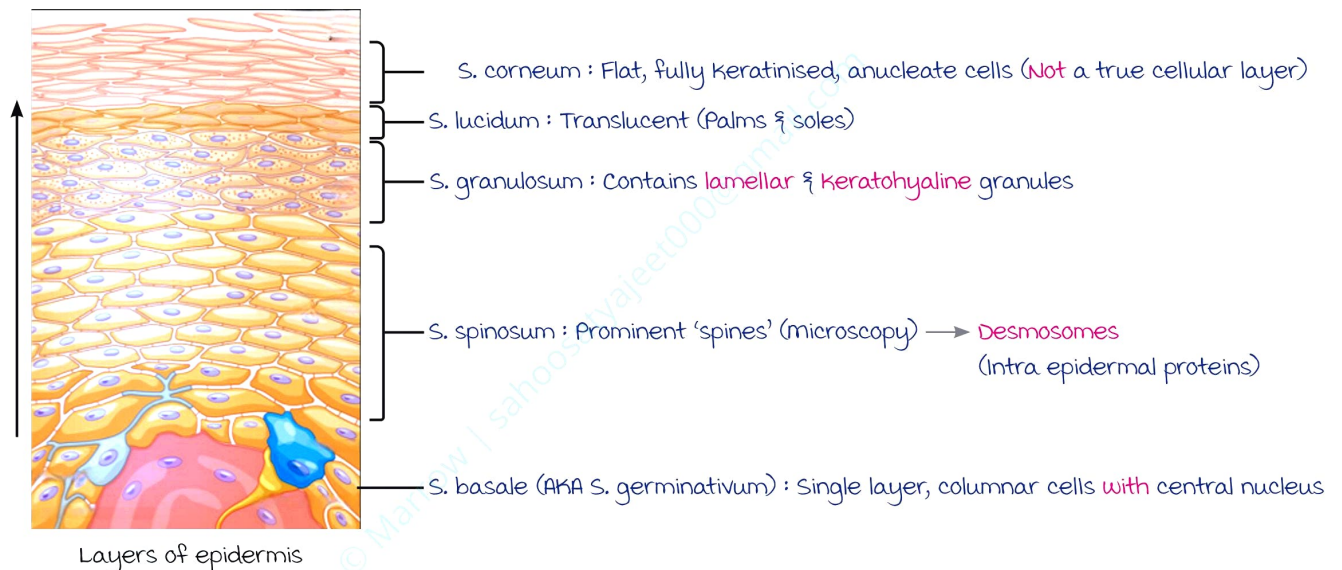
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Structure of Skin

00:00:17



Epidermis 📌:



Granules in S. granulosum :

1. Keratohyaline :

Contains profilaggrin → Filaggrin (Filament aggregating protein) → Involved in Ichthyosis vulgaris & atopic dermatitis.

2. Lamellar : Produces lipid → Involved in → Barrier function.

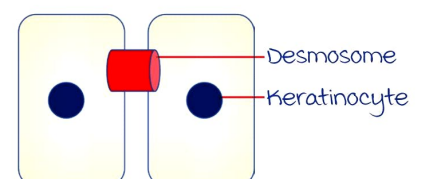
Stratum malpighii : S. spinosum + S. basale.

Epidermal transit time : S. basale $\xrightarrow{\text{Keratinocytes}}$ S. corneum

- Normal : 28 days.
- Psoriasis : 3 - 5 days.

Desmosomes :

- Intraepidermal, intercellular connections b/w keratinocytes.
- Involved in pemphigus group of disorders (Anti-desmosome antibodies).



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Cells of epidermis :

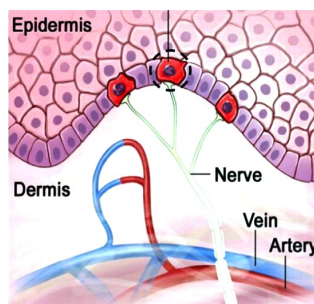
1. Keratinocytes (90%) : Ectodermal cells with **keratin intermediate filaments**
(Structural support to keratinocytes).
2. Non-keratinocytes : Langerhans cells, melanocytes and merkel's cells.

	Langerhans cells/ dendritic cells 	melanocytes 	merkel's cells
Location	S. spinosum	S. basale	S. basale
Embryology	Bone marrow (mesoderm)	Neural crest	Ectoderm
Content	Birbeck granules	melanosomes	Neurosecretory granules
Function	Antigen presenting cells (APC)	melanin	Slow adapting, low threshold mechanoreceptors (Touch)
markers	In LCH : S100, CD1a & CD207/ langerin (most specific)	In melanoma : S100, HMB-45 & melan-A	In merkel cell Ca : Cytokeratin-20

LCH → Langerhans cell histiocytosis.

Birbeck granules 

Electron microscopy :

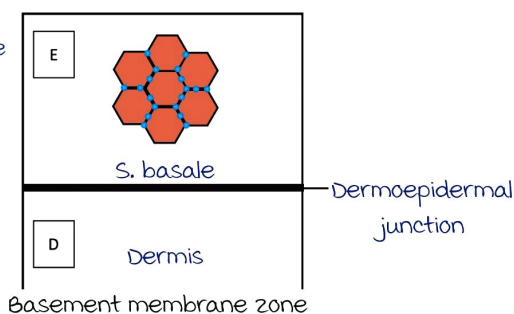
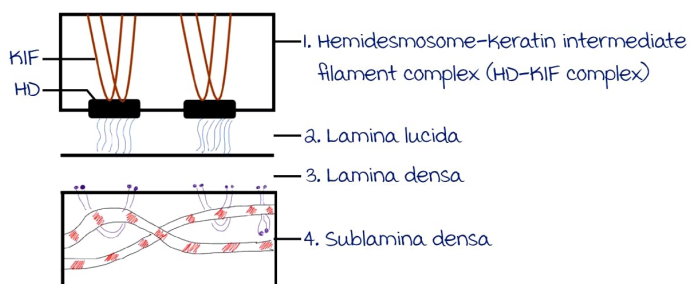
Tennis racquet appearance

merkel cell

Dermoepidermal Junction/Basement Membrane Zone :

Function : Specialised zone that connects S. basale to underlying dermis.

Zones :



Dermis :

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	Papillary dermis.	Reticular dermis.
	Papillary dermis	Reticular dermis
Collagen fibre thickness	Finer	Thicker
Arrangement of collagen	Loose & regular	Dense & irregular

Hypodermis/Subcutaneous Tissue :

Compartments :

1. Septal compartment : Collagen fibres.
2. Lobular compartment : Adipocytes.

Panniculitis : Inflammation of subcutaneous fat.

Stem Cells :

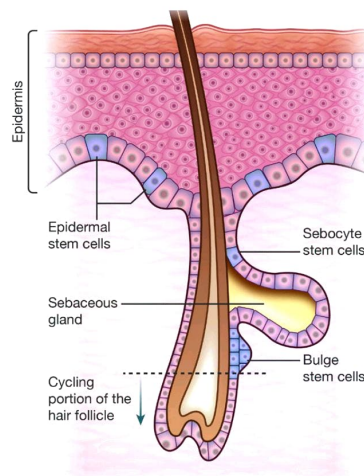
Undifferentiated, self-renewing, multipotent cells residing in specific areas of skin.

Locations :

1. Stratum basale : Interfollicular epidermis.
2. Hair follicle bulge area (Arrector pili muscle attachment).
3. Base of sebaceous gland.

Functions :

1. Maintenance of epidermal homeostasis.
2. Wound repair.
3. Regeneration of hair follicles & sebaceous glands.



Locations of stem cells

Embryology of Skin :

Layer of skin	Derivative of
Epidermis	Ectoderm
Dermis	Mesoderm (Exception : Face & frontal scalp → Neural crest)
Hypodermis	Mesoderm

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Dermato-Pathological Terms

00:09:44

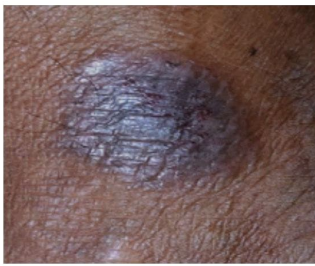
Layer involved	Term	Pathological change
Stratum corneum (SC)	Hyperkeratosis	Thick SC
	Parakeratosis	Nucleated SC
Stratum spinosum	Acanthosis	Thick S. spinosum
	Spongiosis (E.g. : Acute eczema)	Intraepidermal, intercellular edema
	Acantholysis ; Causes : • Autoimmune : Pemphigus group • Infection : Bullous impetigo, Staph. scalded skin syndrome (SSSS), HSV • Genetic : Hailey-Hailey disease, Darier's disease	Loss of attachment b/w keratinocytes Polyhedral keratinocytes $\xrightarrow[\text{targeted}]{\text{Desmosomes}}$ Acantholytic/ Tzanck cells ↓ Circular, prominent nucleus, perinuclear halo

Scales in Dermatology 📌:

Visible exfoliation of the stratum corneum.

Scales	Pathology
Branny	Pityriasis versicolor
micaceous	Pityriasis lichenoides chronica (PLC)
Silvery-white	Psoriasis
Collarette	Pityriasis rosea

Annular vs. Nummular Lesions :

	Annular lesion	Nummular lesion
Shape	 Ring	 Disc/coin
Active region	Periphery	Centre + Periphery
Causes	• Pityriasis rosea • Tinea corporis • Mid-borderline Hansen's (BB-HD)	• Discoid eczema • Discoid lupus erythematosus

Lines in Dermatology

00:13:22

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Langer's Lines

- Lines of skin tension.
- Represents orientation of collagen fibres in dermis.

Pattern :

- Transverse : Abdomen, lower back.
- Circular : Orifices.

Applied aspect :

Surgical incisions are made along them (To prevent hypertrophic scars).



Langer's lines

Blaschko's Lines :

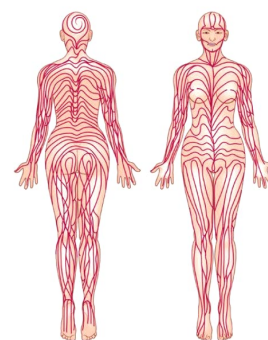
Represent pathway of **epidermal cell migration** during embryological development.

Pattern :

- Upper back : V-shaped.
- Limbs : Longitudinal.
- Abdomen : S-shaped.
- Scalp : Spiral.

Applied aspect :

Incontinentia pigmenti (X-linked dominant) → Lesions along Blaschko's lines.



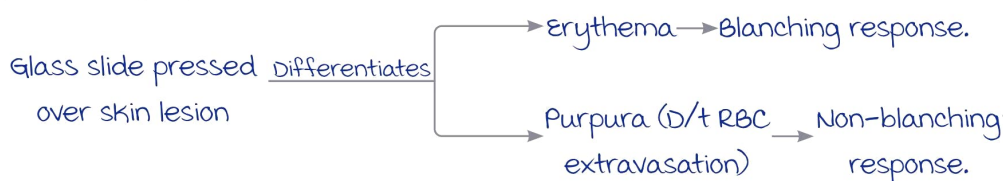
Blaschko's lines

Dermatological Investigations

00:15:10

Diascopy :

Erythema vs. purpura :



Apple jelly nodules :



Pressure



Yellow-brown color

Apple jelly nodules d/t dermal granulomas.

Seen in :

- Lupus vulgaris (Cutaneous TB).
- Sarcoidosis.
- Cutaneous leishmaniasis.

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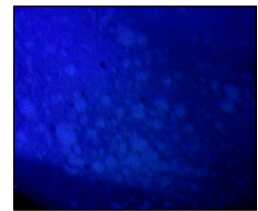
**Wood's Lamp ** :

- Non-invasive, diagnostic tool.
- Skin examination under UV light.
 - Wavelength : 364 nm.
 - Filter : Barium silicate + 9% Nickel oxide.

Disease		Colour on Wood's lamp
Erythrasma		Coral red
Pityriasis versicolor		Yellow
Tinea capitis	Microsporum species	Blue green
	Trichophyton schoenleinii	Dull blue
Vitiligo		milky white



Coral red fluorescence



Yellow fluorescence

Dermatological Therapy

00:17:26

Cryotherapy :

Rapid cooling of target tissue → Cellular destruction.

Agent : Liquid nitrogen.

Temperature : -196°C .

Indication : Warts.



Cryotherapy

Phototherapy :

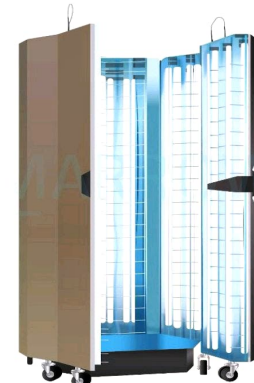
Agent : Ultraviolet radiation.

Types

- Narrow band UVB : $311 \pm 2\text{ nm}$.
- PUVA : Psoralen (Photo sensitiser) $\xrightarrow{\text{F/b}}$ UV-A (320 - 400 nm).

Indications :

- Psoriasis.
- Vitiligo.
- Atopic dermatitis.



Phototherapy