Normal skin

Presented by:
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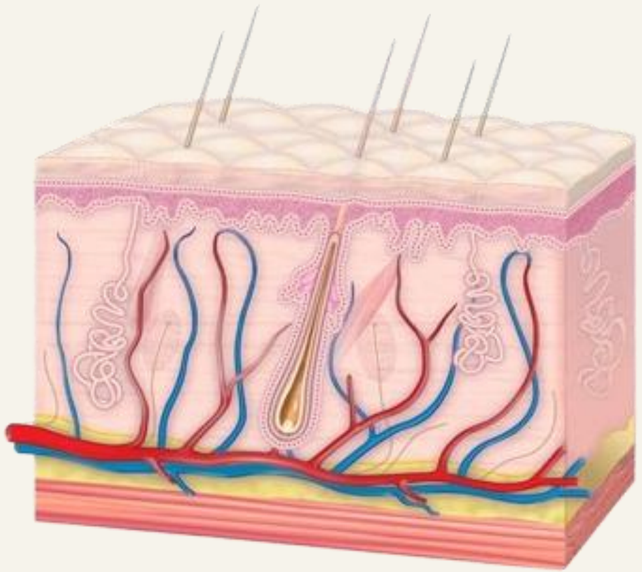
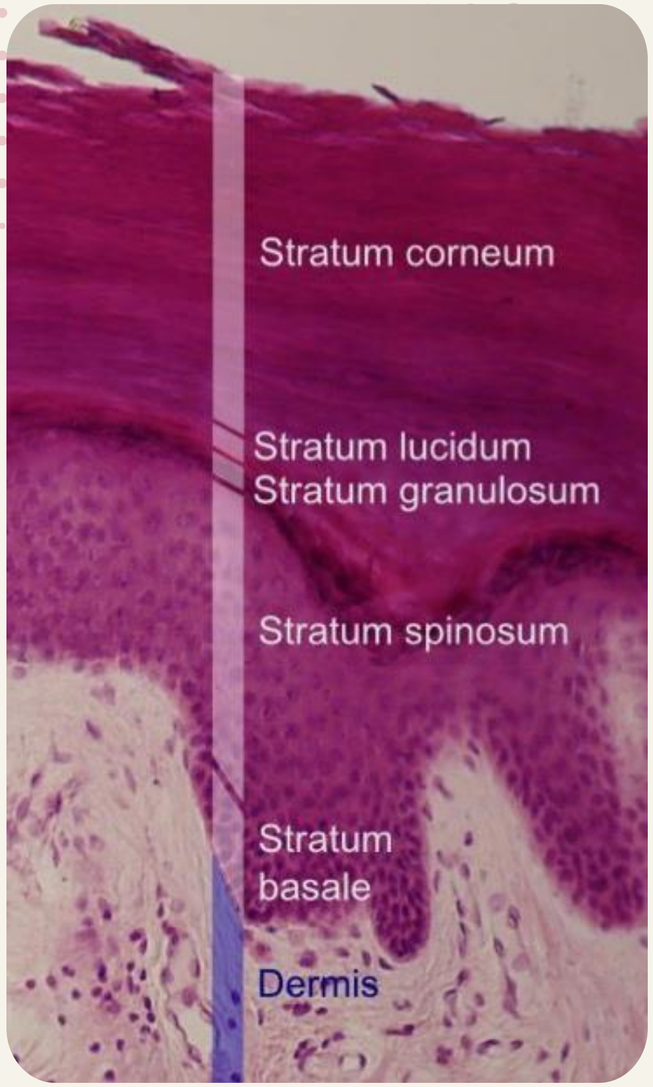
Skin



- Largest organ in the body.
- Barrier against infection.
- Regulates temperature.
- Prevents water loss.
- Three major layers:
  1. **Epidermis**: keratinocytes (squamous epithelial cells).
  2. **Dermis**: connective tissue, vessels, nerves, lymphatics, sweat glands & hair follicles.
  3. **Subcutaneous fat**: also called hypodermis or subcutis.



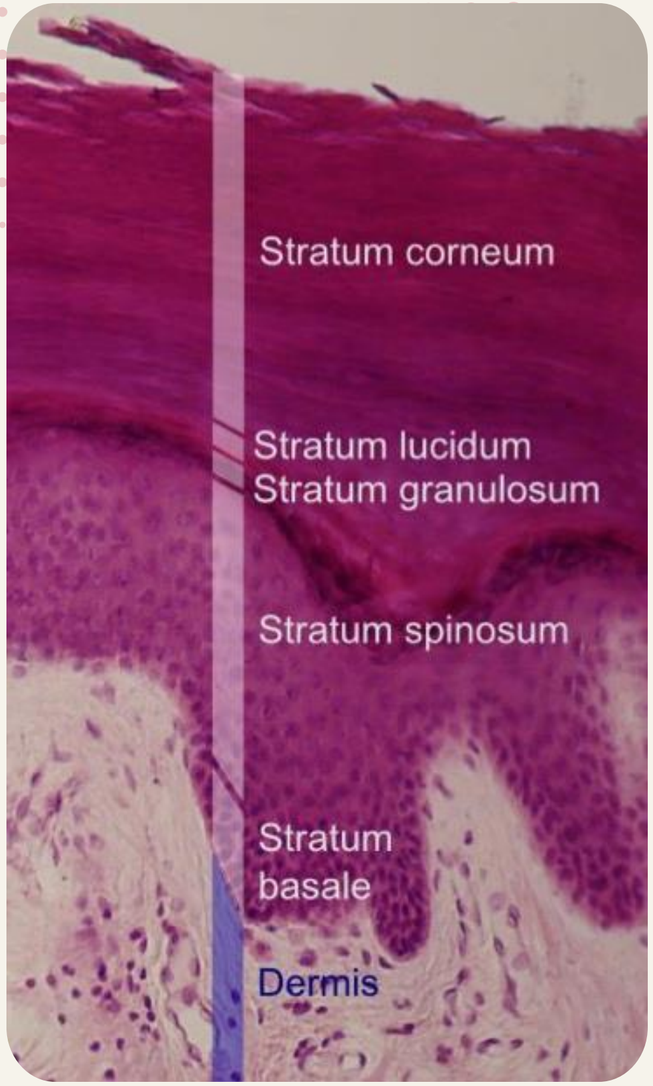
Epidermal layers:

⭐ Stratum basalis

The deepest layer. Single layer of stem cells, these cells have a high rate of mitosis. As they divide, they push the older cells toward the surface where they eventually desquamate. This turnover is vital for constant renewal of skin and wound healing.

⭐ Stratum spinosum

Cells have a spines formed by desmosomes. This layer makes the skin flexible and strong.



⭐ Stratum granulosum

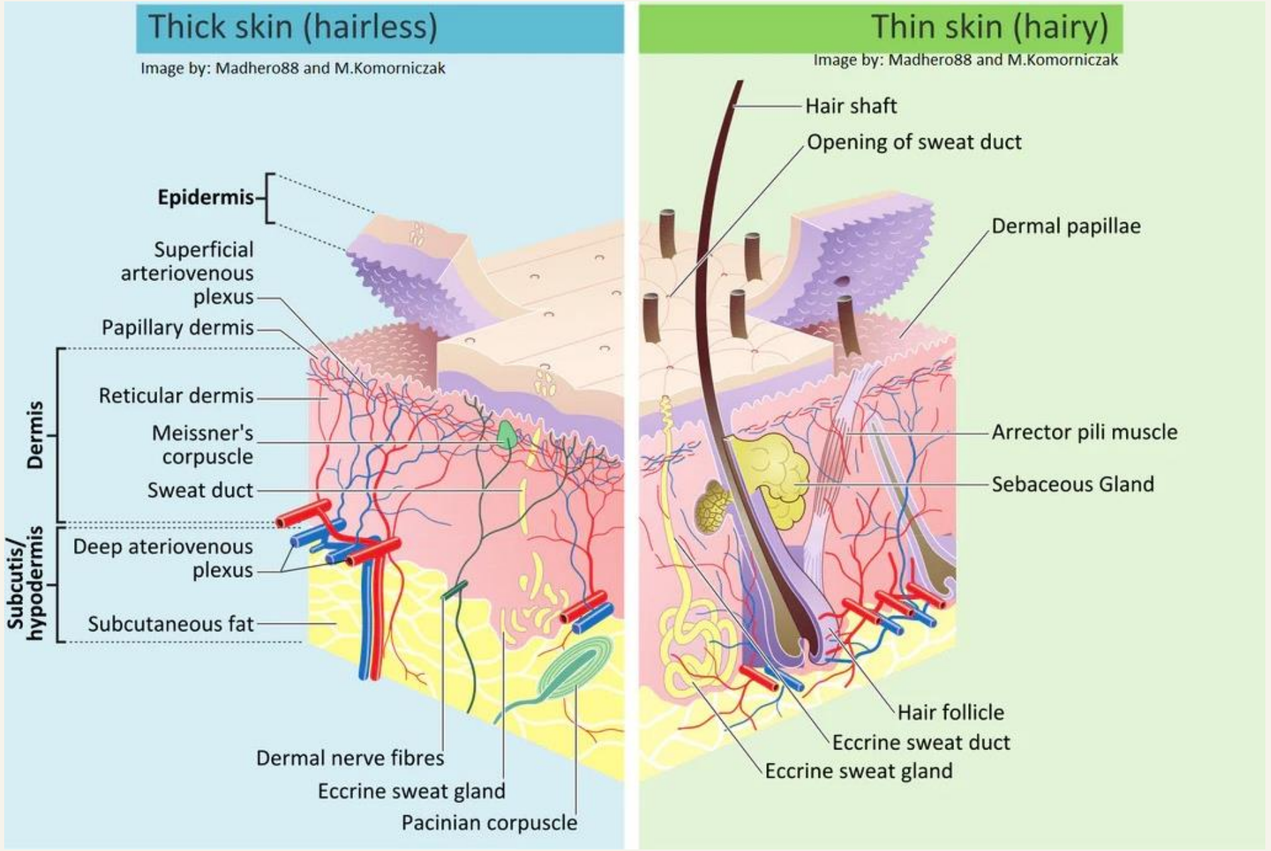
Contains keratohyalin granules which form keratin filaments.

⭐ Stratum lucidum

Thin clear layer of dead skin cells.

⭐ Stratum corneum

The outer layer. Contains anucleated cells filled with keratin filaments.



- Prominent stratum corneum
- Well-developed stratum granulosum
- Palms of hands & soles of feet
- Thinner dermis
- No hair or sebaceous glands

- Less prominent stratum corneum
- Less developed stratum granulosum
- Dominant type
- Thiker dermis
- Hair & sebaceous glands

Skin cells

Keratinocytes

- 90% of epidermal cells
- Produce keratin & lamellar granules that help waterproof skin

Melanocytes

- Located in stratum basale
- Synthesis of melanin which protect the skin from UV radiation.
- Stimulated by sunlight.

Langerhans cells

- 2-8% of epidermal cells.
- Originate from bone marrow (monocytes)
- Mainly in stratum spinosum
- Phagocytic activity

Merkel cells

- Found in stratum basale
- Most abundant in fingertips
-Function as light touch receptors

Dermatopathology

- This term used to describe **microscopic** findings and analysis of skin biopsy:

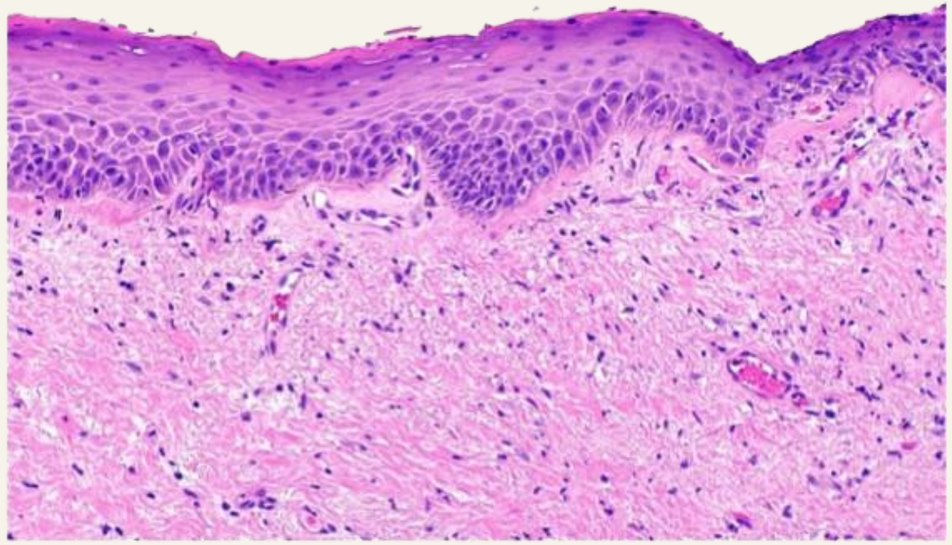
  - Hyperkeratosis
  - Parakeratosis
  - Hypergranulosis
  - Spongiosis
  - Acantholysis
  - Acanthosis

Hyperkeratosis

- Thickening of **stratum corneum.**
- Excess quantity of keratin.
- Seen in psoriasis and callus.

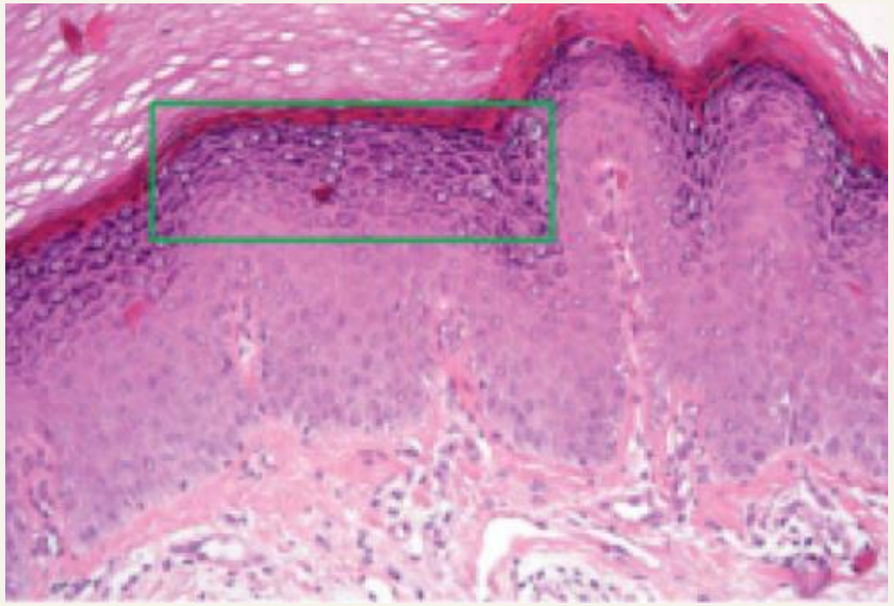
Parakeratosis

- Hyperkeratosis + **retained nuclei** in stratum corneum.
- Indicates hyperproliferation.
- Seen in skin diseases (psoriasis) and malignancies.



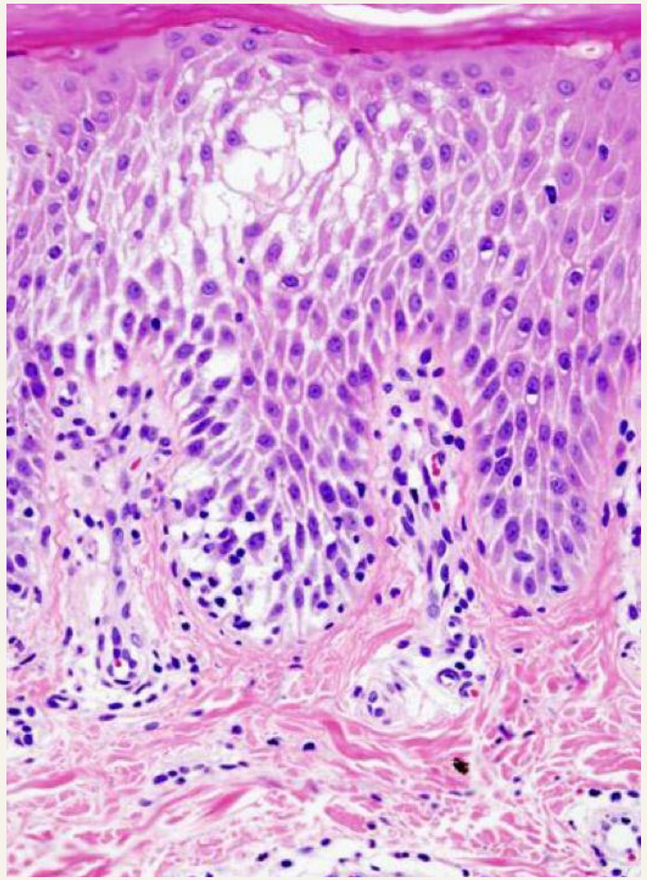
Hypergranulosis

- Increased thickness of stratum granulosum.
- Classic finding in **lichen planus.**



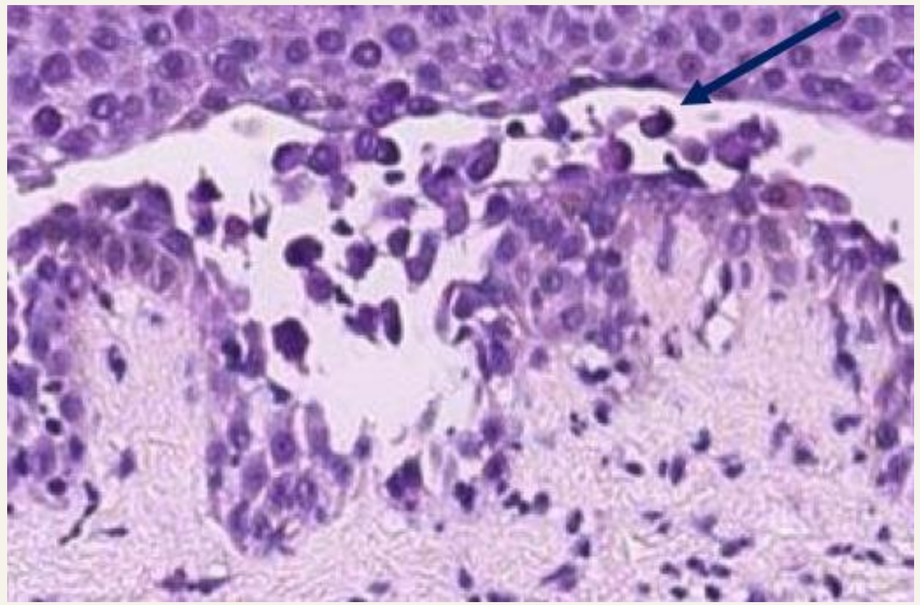
Spongiosis

- Fluid accumulation (edema) of epidermis.
- Seen in eczema, many other skin disorders.



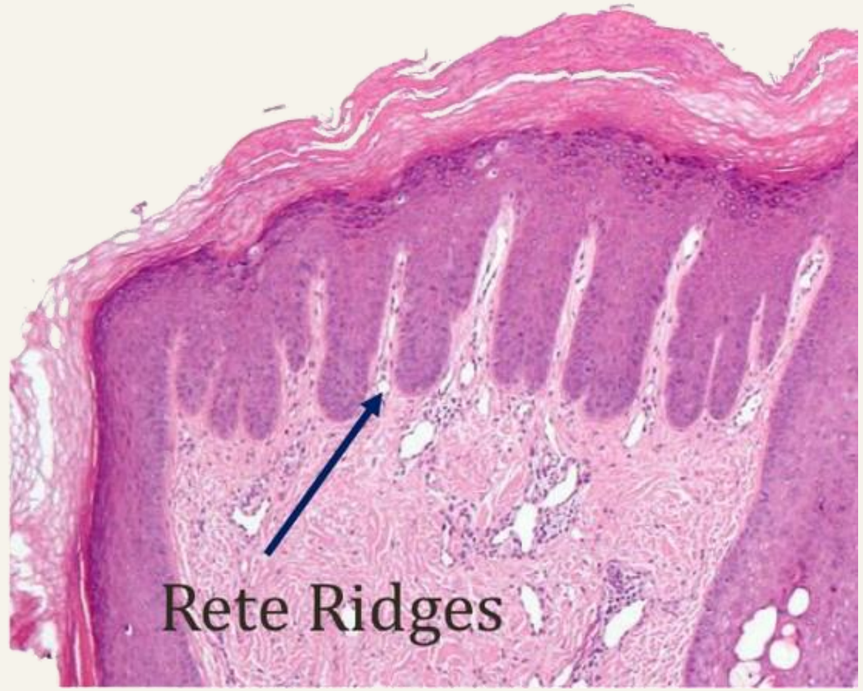
Acantholysis

- Loss of connections between keratinocyte, often due to loss of desmosomes.
- “Rounded” keratinocytes detached, floating freely in epidermis.
- Key feature of **pemphigus vulgaris.**



Acanthosis

- Diffuse epidermal hyperplasia
- Elongated rete ridges
- **Spinous layer** thickening



Acanthosis Nigricans

- Nigricans = darkened.
- Hyperpigmented (dark) plaques on skin.
- **Hyperketaosis & mild acanthosis.**
- Site: Intertriginous sites (folds).
- Classically neck and axillae.
- Associated with insulin resistance.
- Rarely associated with malignancy, most commonly gastric adenocarcinoma

Skin lesions

Primary lesions

- Directly caused by disease process
- Described using standard terminology
- Macules, papules, vesicles, bulla

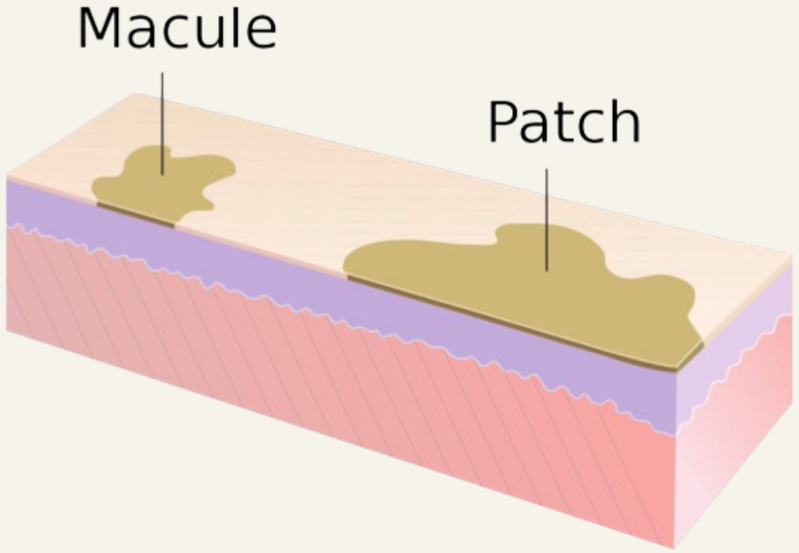
Secondary lesions

- Modification of primary lesion
- Or caused by trauma, external factors
- Scale, crust, erosion, fissure, ulcer

Primary lesions

Macules & patches

- Flat lesion (not raised)
- Macules < 1 cm
- Patch > 1 cm



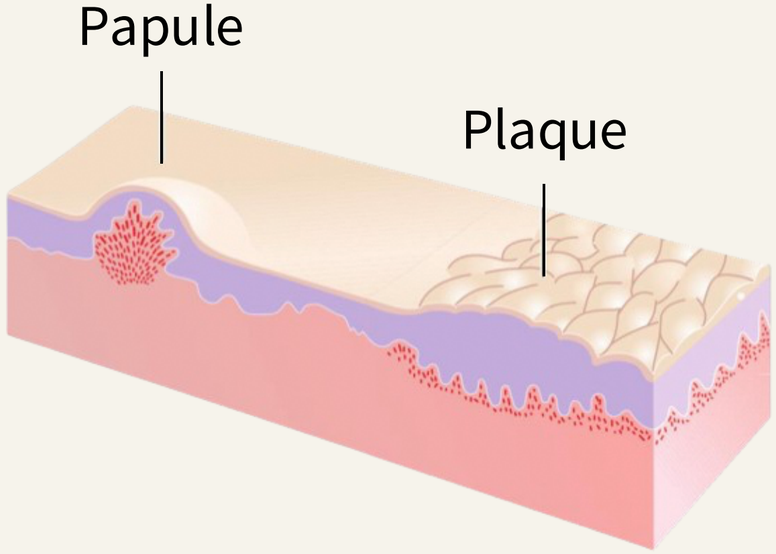
Freckl (macule)

Vitiligo (Patch)

Primary lesions

Papules and Plaques

- Raised lesions.
- Papules < 1 cm
- Plaques > 1 cm



Mole/nevus (papule)

Psoriasis (plaque)

Primary lesions

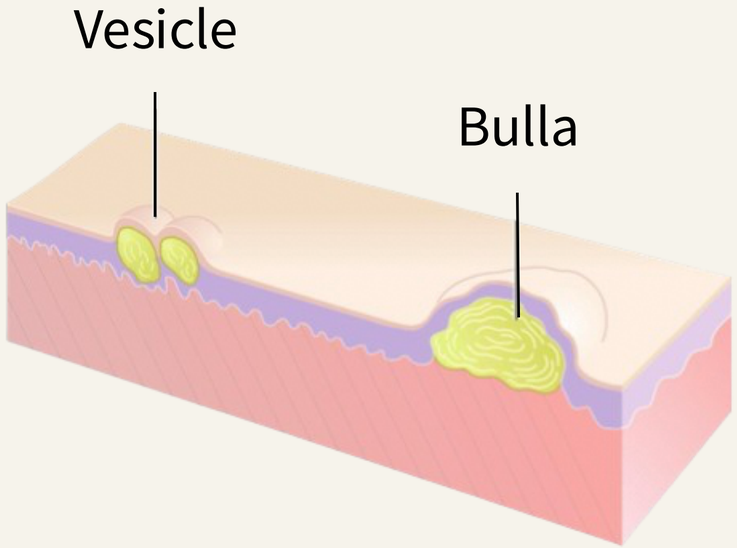
Maculopapular Rash

- Collection of small skin lesions.
- Some flat (macules) & some raised (papules).
- Common in many disorders:
  - Drug rash.
  - Scarlet fever.
  - Syphilis.
  - Rubella.

Primary lesions

Vesicles and Bulla

- Fluid-filled lesions (blisters).
- Vesicle < 1 cm
- Bulls > 1 cm



Chickenpox (vesicles)

Bullous pemphigoid (Bulla)

Primary lesions

Pustule

- Pus-filled vesicle.
- White center.
- Like in acne.

Primary lesions

Wheal

- Smooth, elevated papule or plaque.
- Surrounded by erythema (redness).
- Itchy.
- Caused by **dermal** edema.
- Component of urticaria (allergic reaction).

Secondary lesions

Scale

- Hyperkeratosis.
- Accumulation of stratum corneum due to increased proliferation and/or delayed desquamation.
- Peeling or flaking of stratum corneum.
- Psoriasis, Lichen Planus, Eczema.

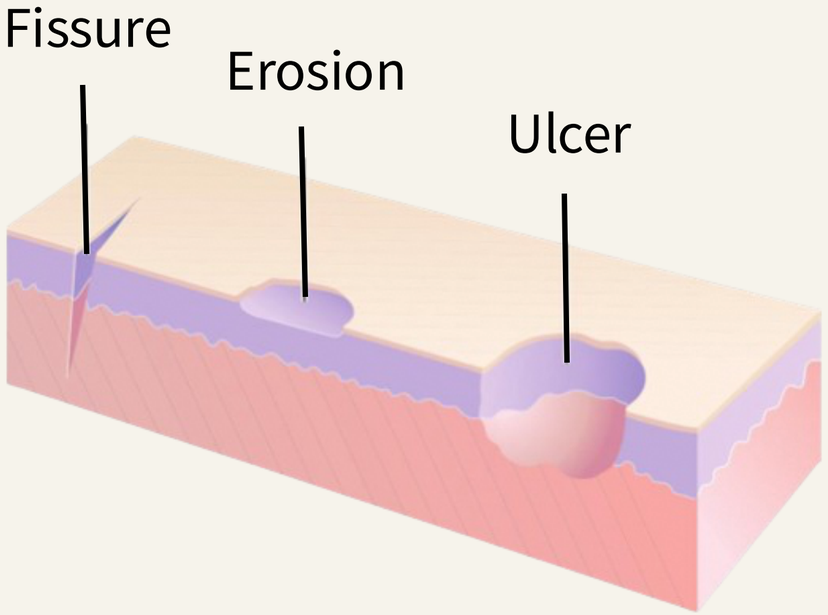
Secondary lesions

Crust

- Dried exudate of skin lesion.
- E.g. Impetigo

Secondary lesions

Fissure, erosion & ulcer



- Fissure:
  - Narrow tear with walls
  - Epidermis or dermis
- Erosion:
  - Superficial loss of epidermis
  - Usually heals without scarring
- Ulcer:
  - Loss of the whole thickness of the epidermis and upper dermis
  - Heals with scar formation

Secondary lesions

Excoriations

- Partial or complete loss of epidermis as a result of scratching.
- E.g: Neurotic excoriations, Acne excorié.

Diagnosis of dermatologic disease

- History taking
- Physical examination
- Special tools
- Skin biopsy

History taking

- Where: site of initial lesion and subsequent distribution.
- Continuous or intermittent.
- Become better or worse?
- Any previous episode
- Who else? Family member, work colleagues, friends,...
- Symptoms: itching, burning, scaling, blisters, ...
- Drug history
- Medical history
- Allergies & pets

Physical examination

- **Distribution**; the distribution of skin lesions can provide valuable clues to the identification of the disorder: generalized (systemic diseases); sun-exposed (e.g. SLE, photoallergic); dermatomal (herpes zoster); extensor surfaces (elbows and knees in psoriasis).

- **Morphology**; describe the shape, color, size, demarcation of skin lesions (macule, patch, plaque, …)

Special tools

- **Wood's Lamp:**

Used to examine the skin, scalp and hair. The lamp emits ultraviolet (UV) light, or blacklight, which makes certain types of cells glow or turn colors. This quick, painless test is often used to help diagnose fungal, bacterial and parasitic infections.

Special tools

- **Dermoscope:**

Used to closely examine the skin, particularly for diagnosing skin lesions and abnormalities. It combines light and magnification to enhance the visualization of skin structures and patterns that are not visible to the naked eye.

Skin biopsy

Types of skin biopsy:

1. Superficial shave biopsy: Pathology is chiefly epidermal in nature (e.g. an actinic keratosis, squamous cell carcinoma in situ, seborrheic keratosis).
2. Deep shave/saucerization biopsy: A deeper variant of the superficial shave, where greater angling of the blade removes more of the upper to mid-dermis.
3. Punch biopsy: Epidermis dermis / +- subcutaneous.
4. Incisional/excisional biopsy: Removal of either a portion of alesion (incisional) or the entire visible lesion (excisional).

Thank You