Skin
Pathological Terms

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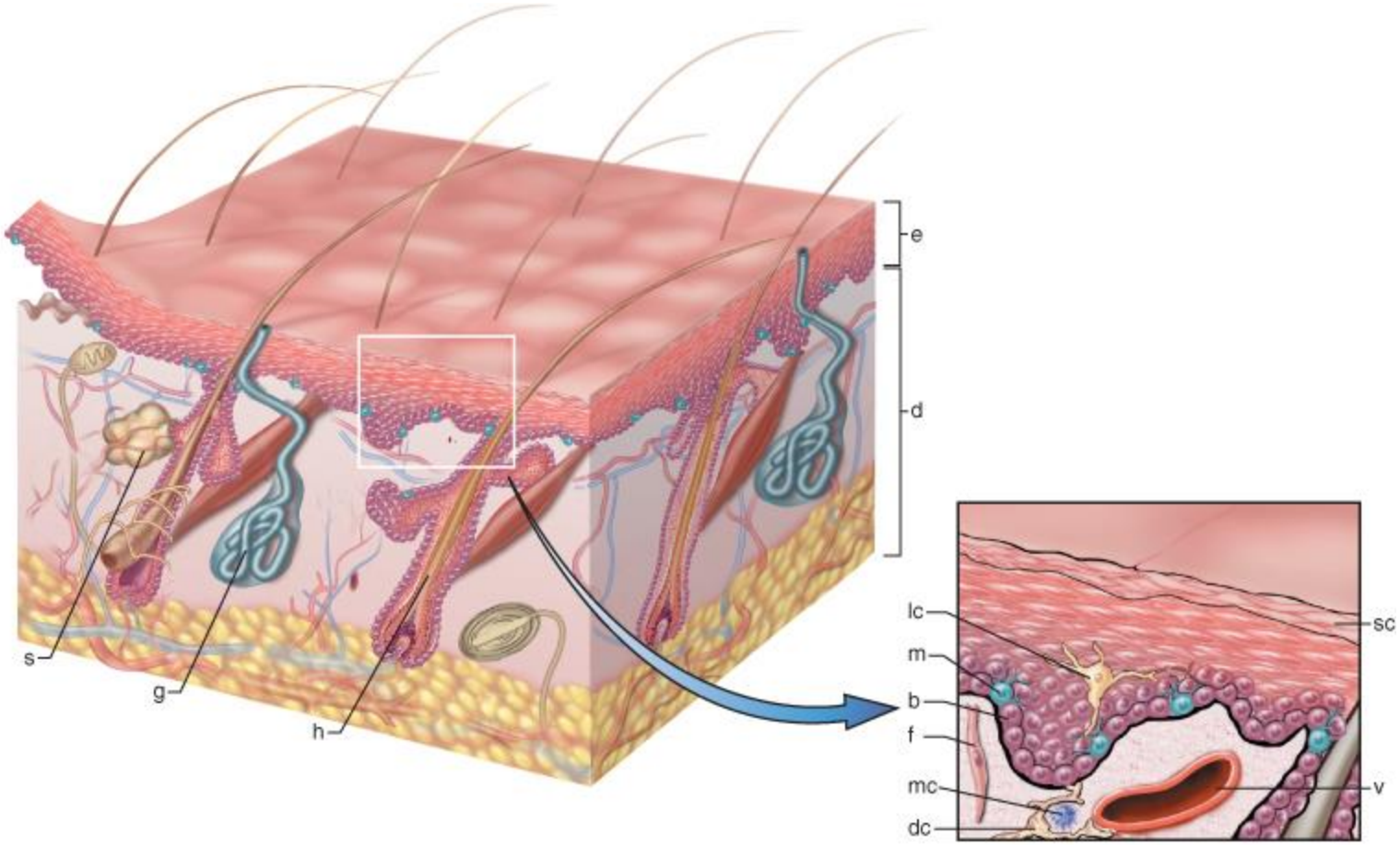
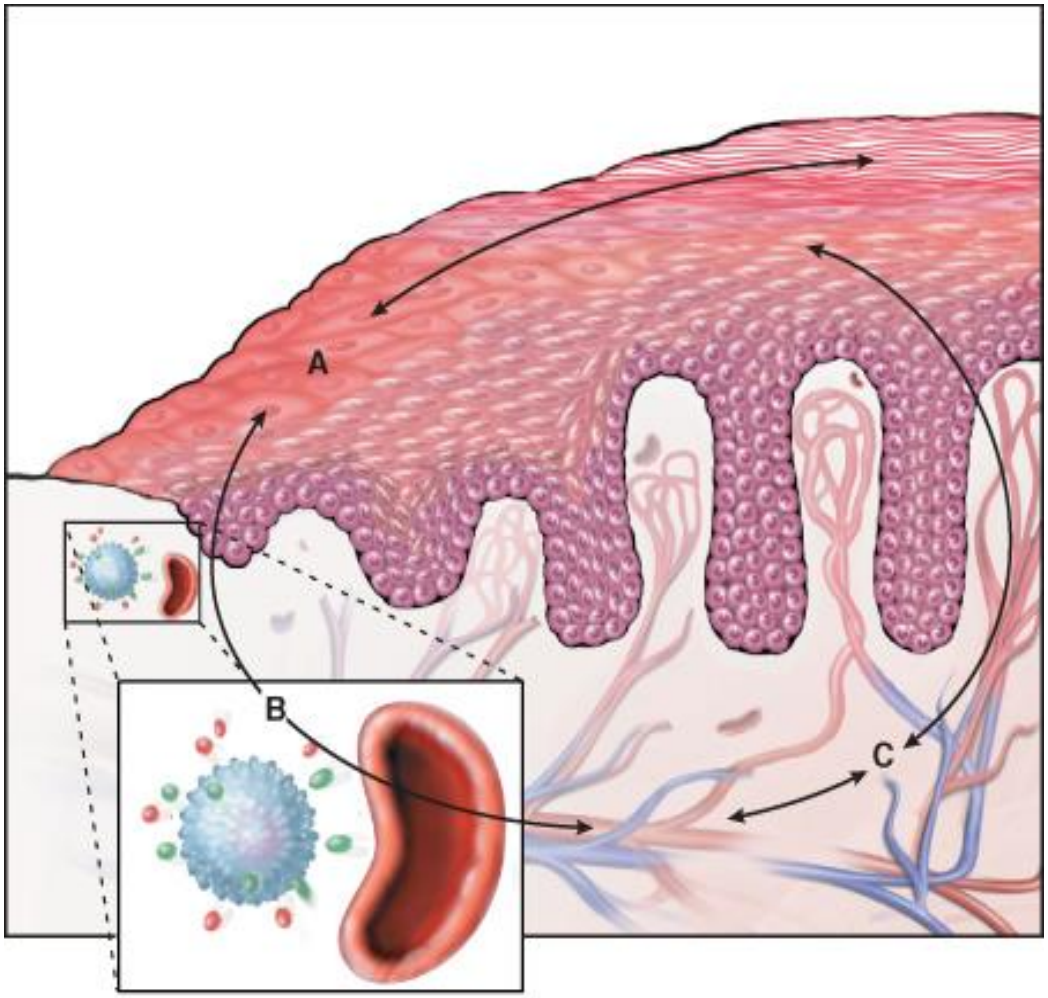
The Skin: More Than a Mechanical Barrier

- Rudolph Virchow 100 years ago understood the skin as a protective covering for more delicate and functionally sophisticated internal viscera.
- Considered primarily a passive barrier to fluid loss and mechanical injury.
- During the past three decades, however, enormously productive avenues of scientific inquiry
- The skin to be a complex organ in which precisely regulated cellular and molecular interactions govern many crucial responses to our environment.

A, The skin is composed of an epidermal layer (e) from which specialized adnexa (hair follicles, h; sweat glands, g; and sebaceous glands, s) descend into the underlying dermis (d). *B*, This projection of the epidermal layer (e) and underlying superficial dermis demonstrates the progressive upward maturation of basal cells (b) into cornified squamous epithelial cells of the stratum corneum (sc). Melanin-containing dendritic melanocytes (m) (and rare Merkel cells containing neurosecretory granules) and midepidermal dendritic Langerhans cells (lc) are also present. The underlying dermis contains small vessels (v), fibroblasts (f), perivascular mast cells (mc), and dendrocytes (dc), potentially important in dermal immunity and repair.



Schematic representation of dynamic interaction between the epidermal layer and the dermal layer. Keratinocytes at the edge of an ulcer *(A)* produce cytokines and factors that influence both keratinization and the function of underlying dermal cells *(B).* In turn, dermal cells *(B),* such as mast cells, also release cytokines *(green granules)* and proteases *(red granules),* which may regulate both endothelial cells and overlying keratinocytes. Perturbations in these interactions between epidermal cells and dermal cells may contribute to pathologic processes, such as psoriasis *(C),* in which both compartments become morphologically abnormal.



- Skin is composed of a number of interdependent cell types and structures that work toward a common protective goal

- Squamous epithelial cells (keratinocytes),
- Production of keratin protein,
- Major sites for the biosynthesis of soluble molecules (cytokines) that are
- Important in the regulation of adjacent epidermal cells as well as cells in the dermis,

- *Melanocytes* within the epidermis are cells responsible for the production of a brown pigment (melanin) that represents an important endogenous screen against harmful (UV)

- *Langerhans cells* are epidermal dendritic cells that take up and process antigens and communicate critical information to lymphoid cells

- Among the neural network are *MERKEL cells* that reside within the basal cell layer and,
- Distinguishable from keratinocytes by light microscopy only with the aid of special immunohistochemical stains.
- Although their function in humans remains unclear,
- Mechanoreceptors or may provide neuroendocrine function in skin.

- *Sweat glands* guard against deleterious variations in body temperature, and

- *Hair follicles*, in addition to manufacturing hair shafts, harbor protected repositories of epithelial stem cells capable of regenerating superficial skin layers that have been disrupted by various hostile external and internal agents

Imbalances in factors affecting the delicate homeostasis that exists among skin cells may result in conditions as diverse as

- Wrinkles
- Hair loss,
- Blisters
- Rashes
- Even life-threatening cancers
- Disorders of immune regulation.
- Chronic exposure to sunlight fosters premature cutaneous aging, blunting of immunologic responses to environmental antigens,
- development of a variety of premalignant and malignant cutaneous neoplasms.
- Ingested agents, such as therapeutic drugs, can cause an enormous number of rashes or exanthems.
- Internal disorders, such as diabetes mellitus, amyloidosis, and lupus erythematosus, may also have important manifestations in the skin.

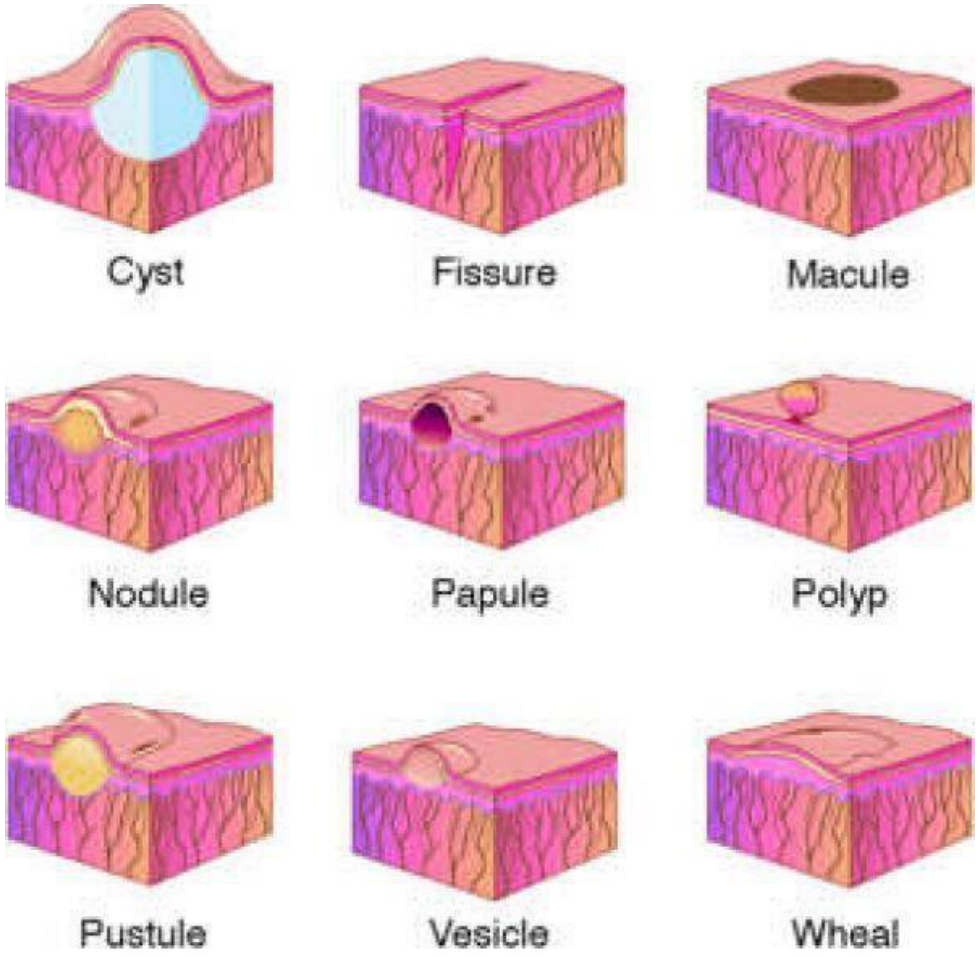
- Accurate description of the clinical appearance of the skin at a macroscopic level is critical, since lesions before biopsy are, in effect, the gross pathology.
- Correlation between the gross and histologic appearances is often essential in formulating diagnoses and in understanding pathogenesis.
- to depict and describe clinical lesions whenever possible and to relate these findings to the microscopic appearance of lesions.

DEFINITIONS OF MACROSCOPIC TERMS

- **Macule** Circumscribed lesion of up to 5 mm* in diameter characterized by flatness and usually distinguished from surrounding skin by its coloration.
- **Patch** Circumscribed lesion of more than 5 mm in diameter characterized by flatness and usually distinguished from surrounding skin by its coloration.
- **Papule** Elevated dome-shaped or flat-topped lesion 5 mm or less across.
- **Nodule** Elevated lesion with spherical contour greater than 5 mm across.
- **Plaque** Elevated flat-topped lesion, usually greater than 5 mm across (may be caused by coalescent papules).

- **Vesicle** Fluid-filled raised lesion 5 mm or less across.
- **Bulla** Fluid-filled raised lesion greater than 5 mm across.
- **Blister** Common term used for vesicle or bulla.

- **Pustule** Discrete, pus-filled, raised lesion.
- **Wheal** Itchy, transient, elevated lesion with variable blanching and erythema formed as the result of dermal edema


Cyst
Fissure
Macule
Nodule
Papule
Polyp
Pustule
Vesicle
Wheal

Bulla
Circumscribed collection of free fluid > 1 cm

Macule
Circular flat discoloration
< 1cm
brown, blue, red or hypopigmented

Nodule
Circular, Elevated, Solid Lesion
>1 cm

Patch
Circumscribed Flat Discoloration
> 1cm

Papule
Superficial solid elevated, ≤ 0.5 cm, color varies

Plaque
Superficial elevated solid flat topped lesion
> 1 cm

Pustule
Vesicle containing puss (inflammatory cells)

Vesicle
Circular collection of free fluid
≤ 1 cm

Wheal
Edematous, transitory, plauqe, may last few hours

Scale
Epidermal thickening; consists of flakes of plates of compacted desquameted layers of stratum corneum

Crust
Dried serum or Eexudate on skin

Fissure
Crack or split

Excoriation
Linear erosion

Erosion
Loss of epidermis superficial; part or all of the epidermis has been lost

Lichenification
Thickening of the epidemis seen with exaggeration of Normal skin lines

Scar
Thickening; permanent fibrotic changes that occur on the skin following damage of the epidermis

- **Scale** Dry, horny, platelike excrescence; usually the result of imperfect cornification.
- **Lichenification** Thickened and rough skin characterized by prominent skin markings; usually the result of repeated rubbing in susceptible persons.
- **Excoriation** Traumatic lesion characterized by breakage of the epidermis, causing a raw linear area (i.e., a deep scratch); often self-induced.
- **Onycholysis** Separation of nail plate from nail bed

DEFINITIONS OF MICROSCOPIC TERMS

Hyperkeratosis Thickening of the stratum corneum, often associated with a qualitative abnormality of the keratin.

Parakeratosis Modes of keratinization characterized by the retention of the nuclei in the stratum corneum. On mucous membranes, parakeratosis is normal.

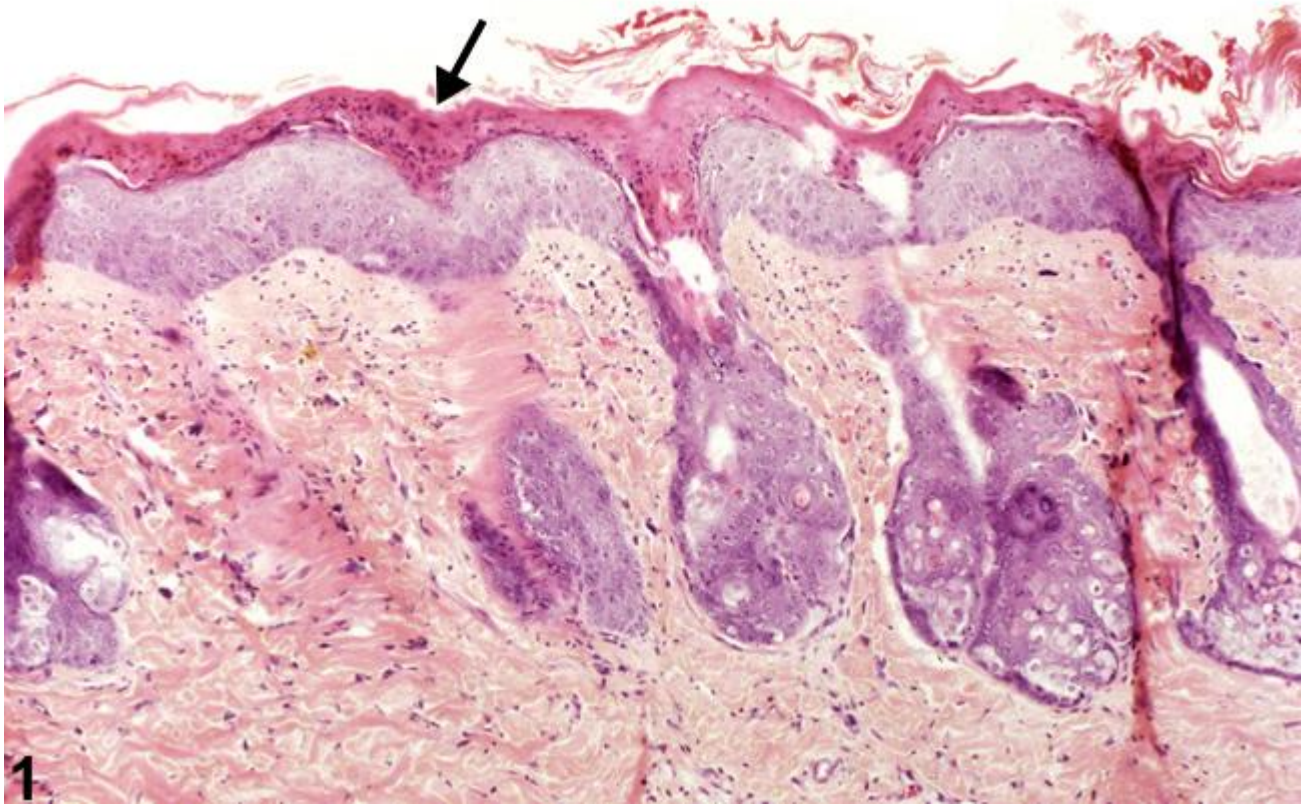
Hypergranulosis Hyperplasia of the stratum granulosum, often due to intense rubbing.

Acanthosis Diffuse epidermal hyperplasia.

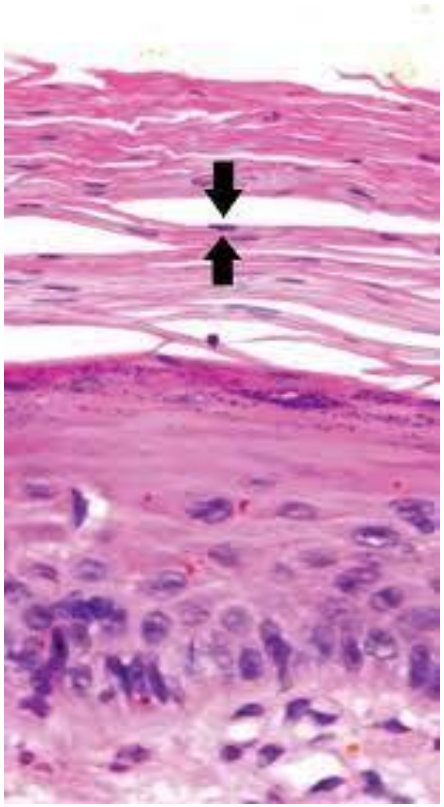
Papillomatosis Surface elevation caused by hyperplasia and enlargement of contiguous dermal papillae.

Dyskeratosis Abnormal keratinization occurring prematurely within individual cells or groups of cells below the stratum granulosum

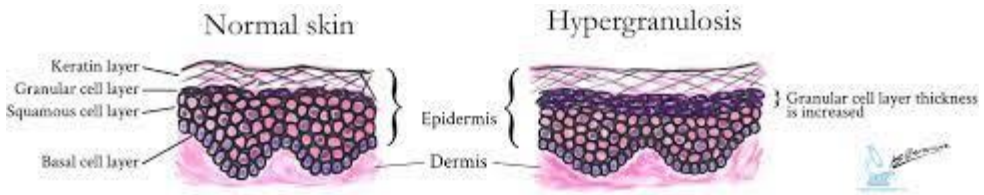
Hyperkeratosis



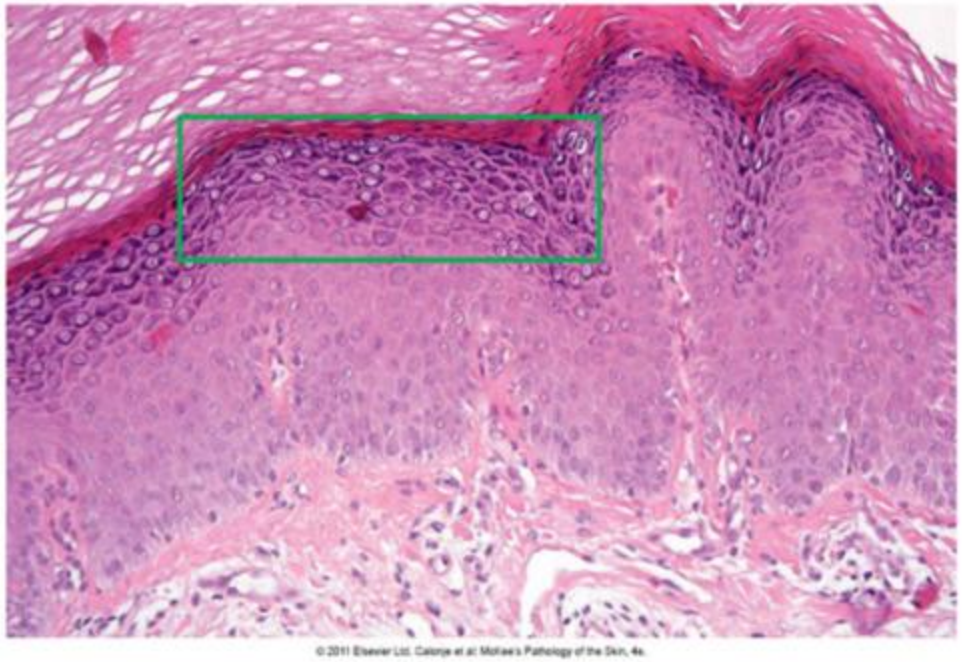
Parakeratosis



Hypergranulosis

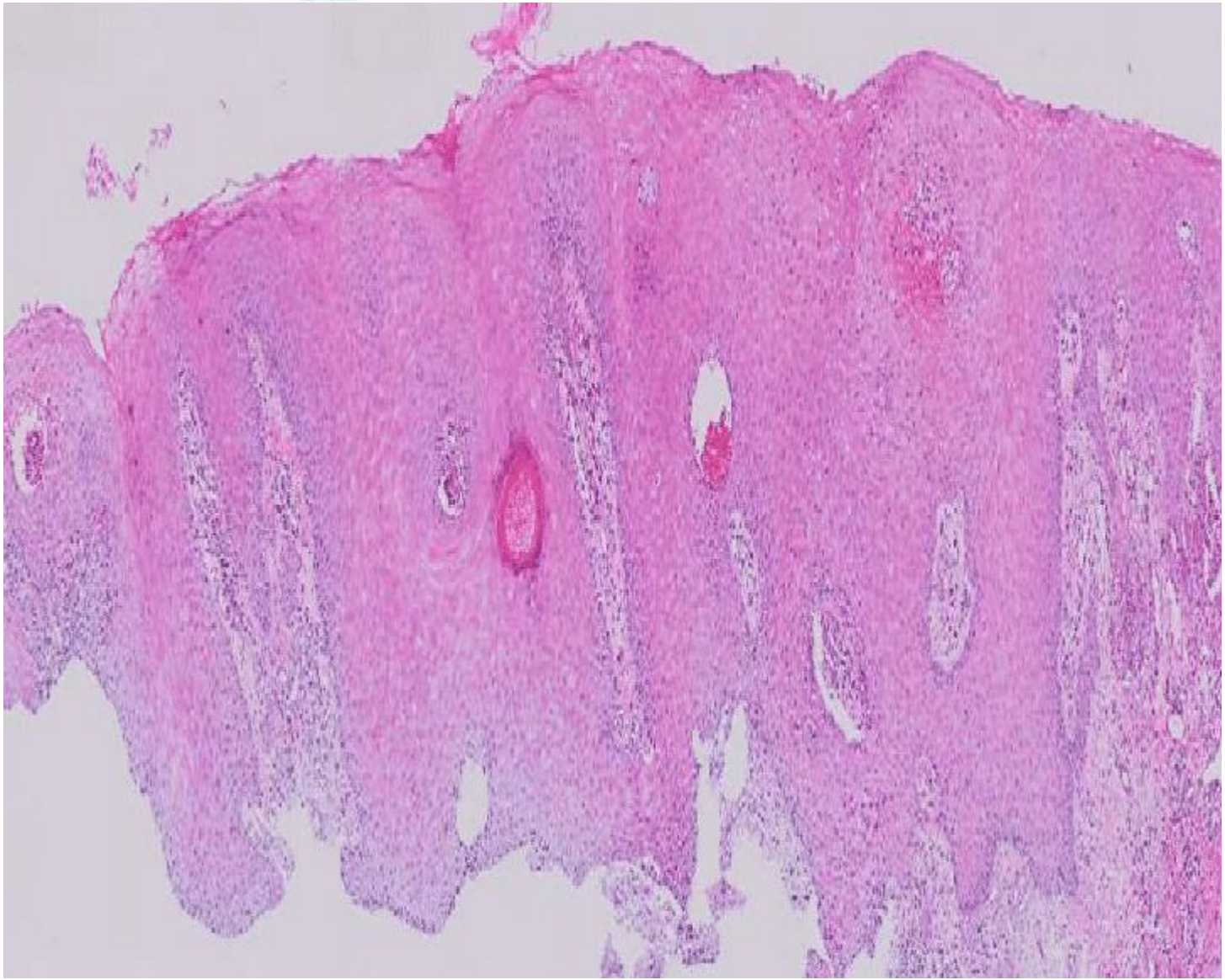


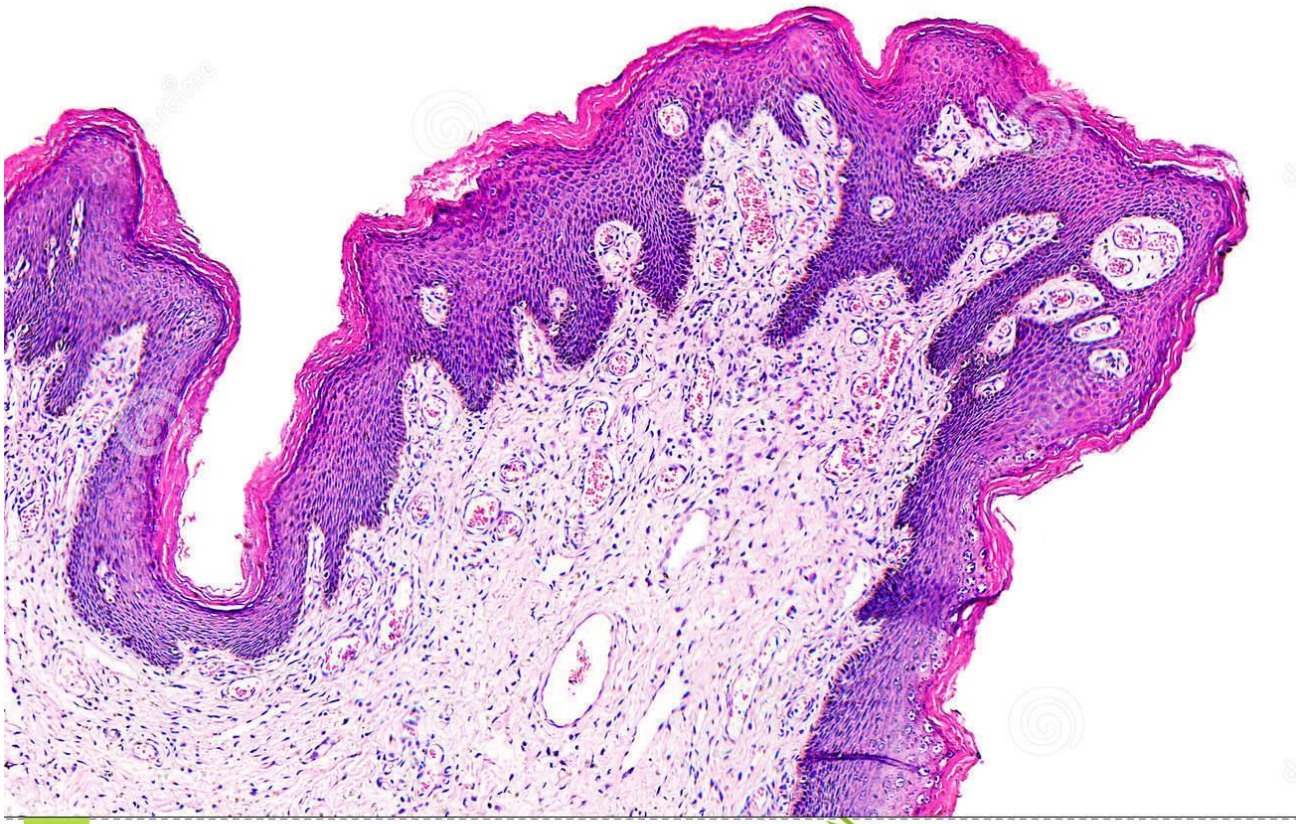
Hypergranulosis



Hyperplasia of stratum granulosum (granular cell layer)

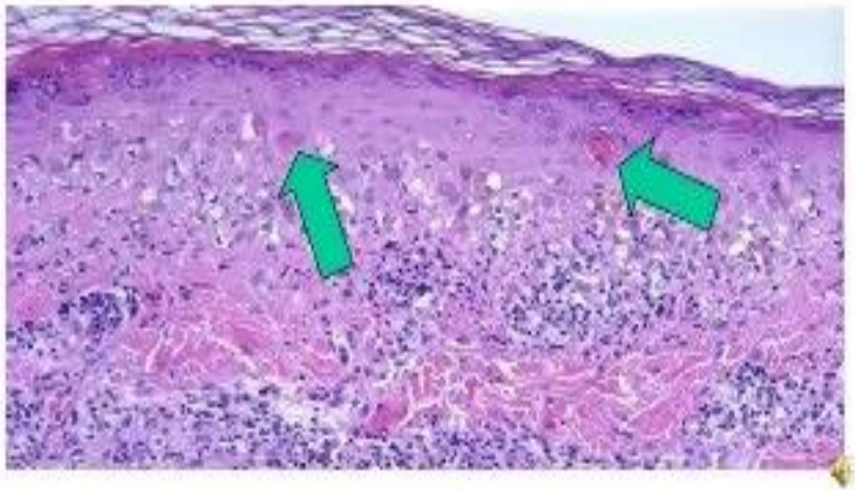

Normal skin
Epidermis
Dermis
Squamous cell layer
Basal cell layer
Acanthosis
Thickening of the epidermis caused by an increased number of squamous cells





Dyskeratosis

- Abnormal keratinization – carcinoma.



- **Acantholysis** Loss of intercellular connections resulting in loss of cohesion between keratinocytes.
- **Spongiosis** Intercellular edema of the epidermis.
- **Hydropic swelling (ballooning)** Intracellular edema of keratinocytes, often seen in viral infections.
- **Exocytosis** Infiltration of the epidermis by inflammatory or circulating blood cells.

- **Erosion** Discontinuity of the skin exhibiting incomplete loss of the epidermis

- **Ulceration** Discontinuity of the skin exhibiting complete loss of the epidermis and often of portions of the dermis and even subcutaneous fat.
- **Vacuolization** Formation of vacuoles within or adjacent to cells; often refers to basal cell-basement membrane zone area.
- **Lentiginous** Referring to a linear pattern of melanocyte proliferation within the epidermal basal cell layer. Lentiginous melanocytic hyperplasia can occur as a reactive change or as part of a neoplasm of melanocytes.

Have a nice day