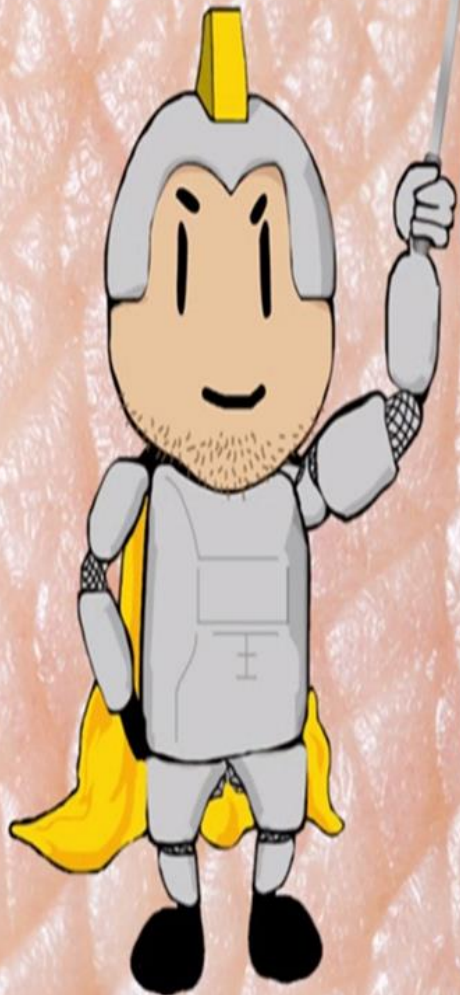




Human Anatomy - 1st year 2020-2021



Study.com

Basrah Medical College Department Of Anatomy

Basic Anatomical Structures

1. Skin And Fascia Lecture (4)

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Learning Objective

- 1. Know Function of skin
- 2. Name the layers of skin and their function?
- 3. What is the clinical importance of cleavage lines
- 4. Enlist Skin appendages
- 5. What is Superficial fascia?
- 6. What is Deep fascia?

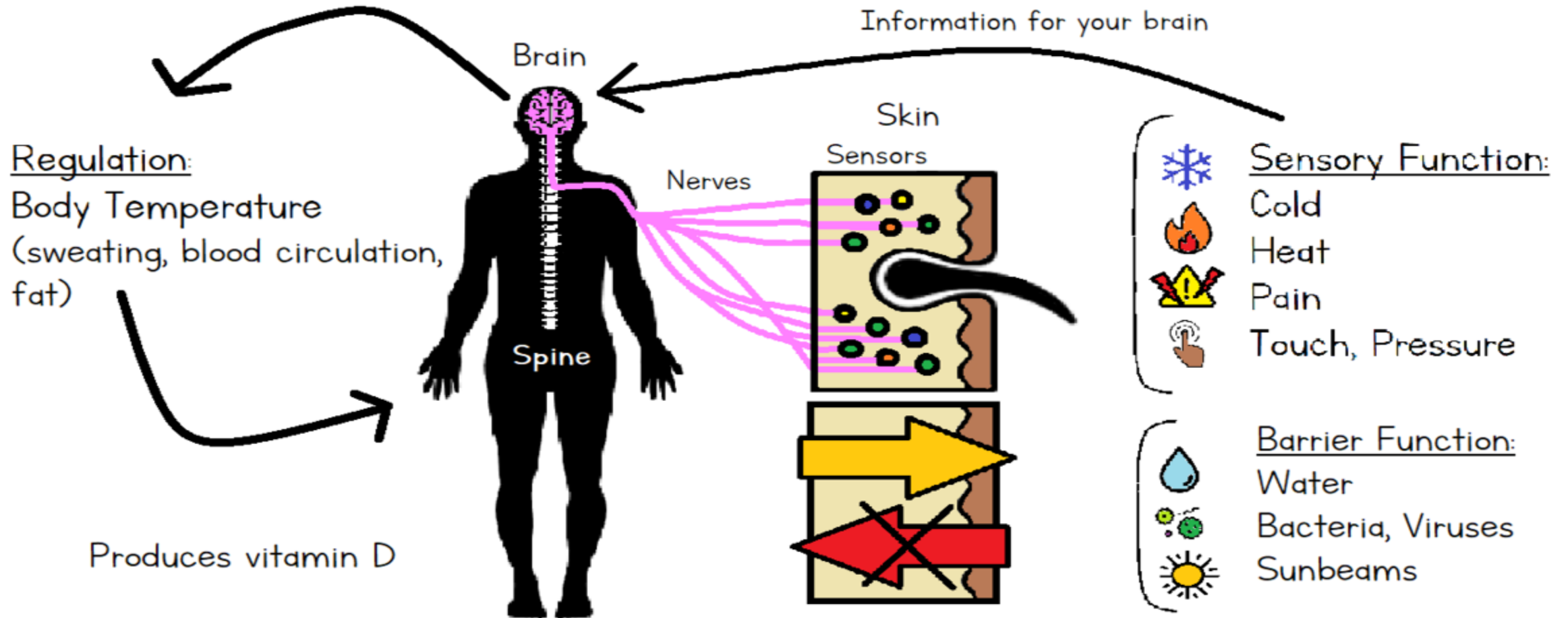
The Skin

The skin forms the • largest organ in the human body. It covers 1.5-2m² and represents 16% of body weight



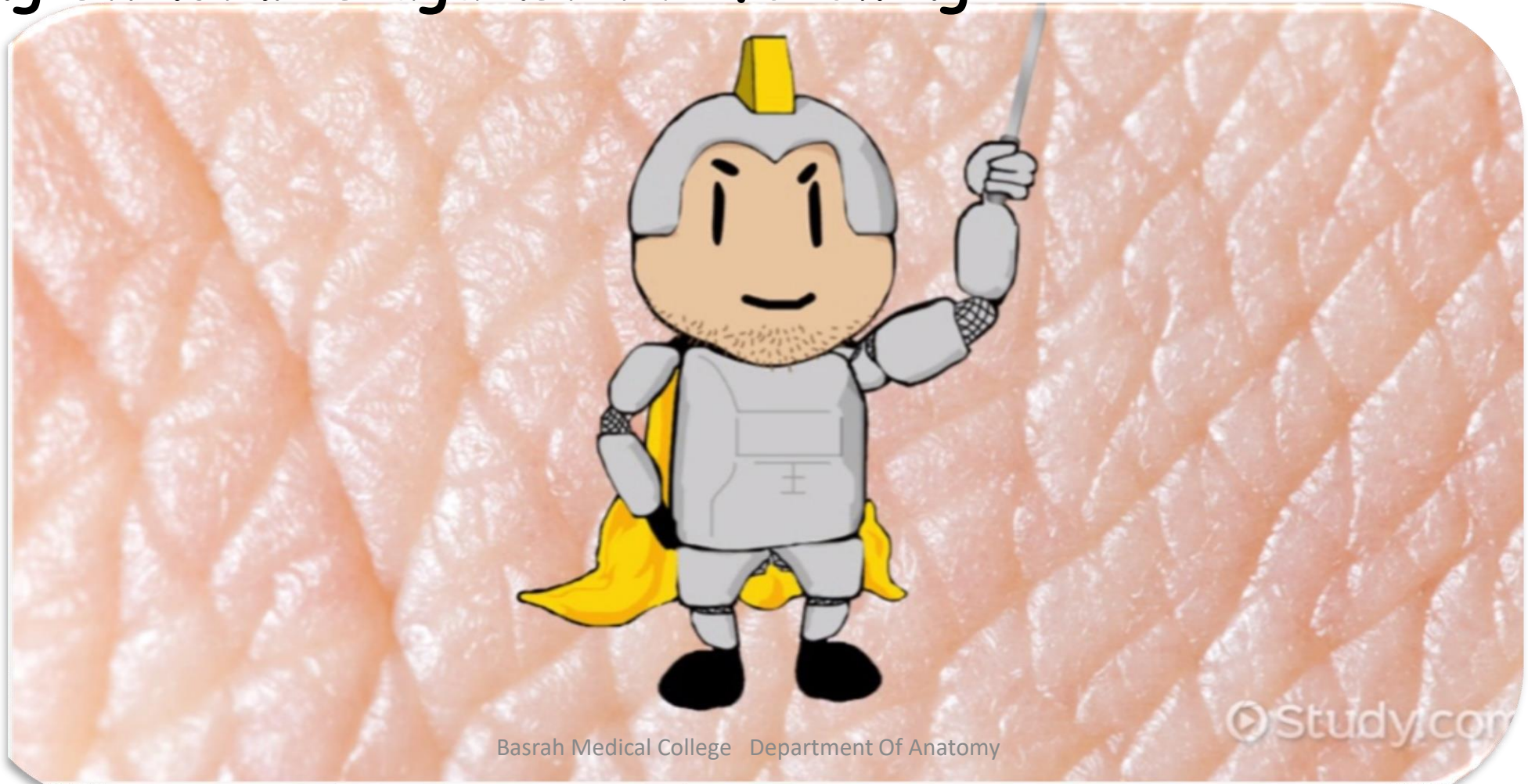
Functions of Skin

Skinfunction: Overview



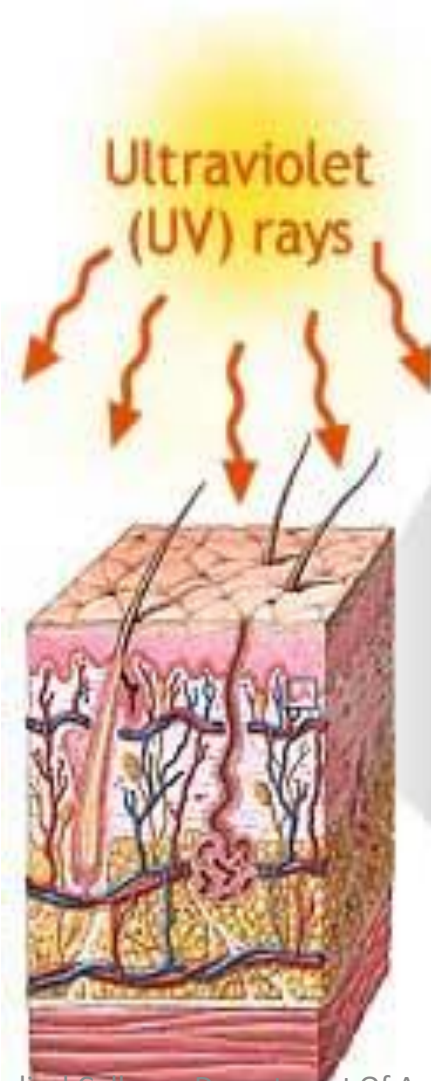
1. Protection

The skin is the first defense mechanism. It protects the underlying structures against the following :

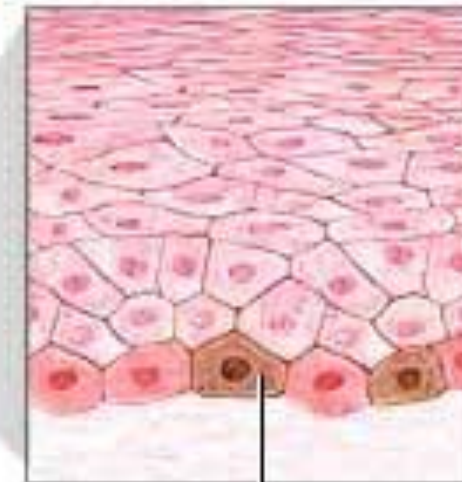


A. Protection against Ultraviolet light

Melanocytes cells in basal layer of epidermis produce melanin pigment to protect skin from Ultraviolet light .



Melanocytes produce melanin to protect the skin from UV rays



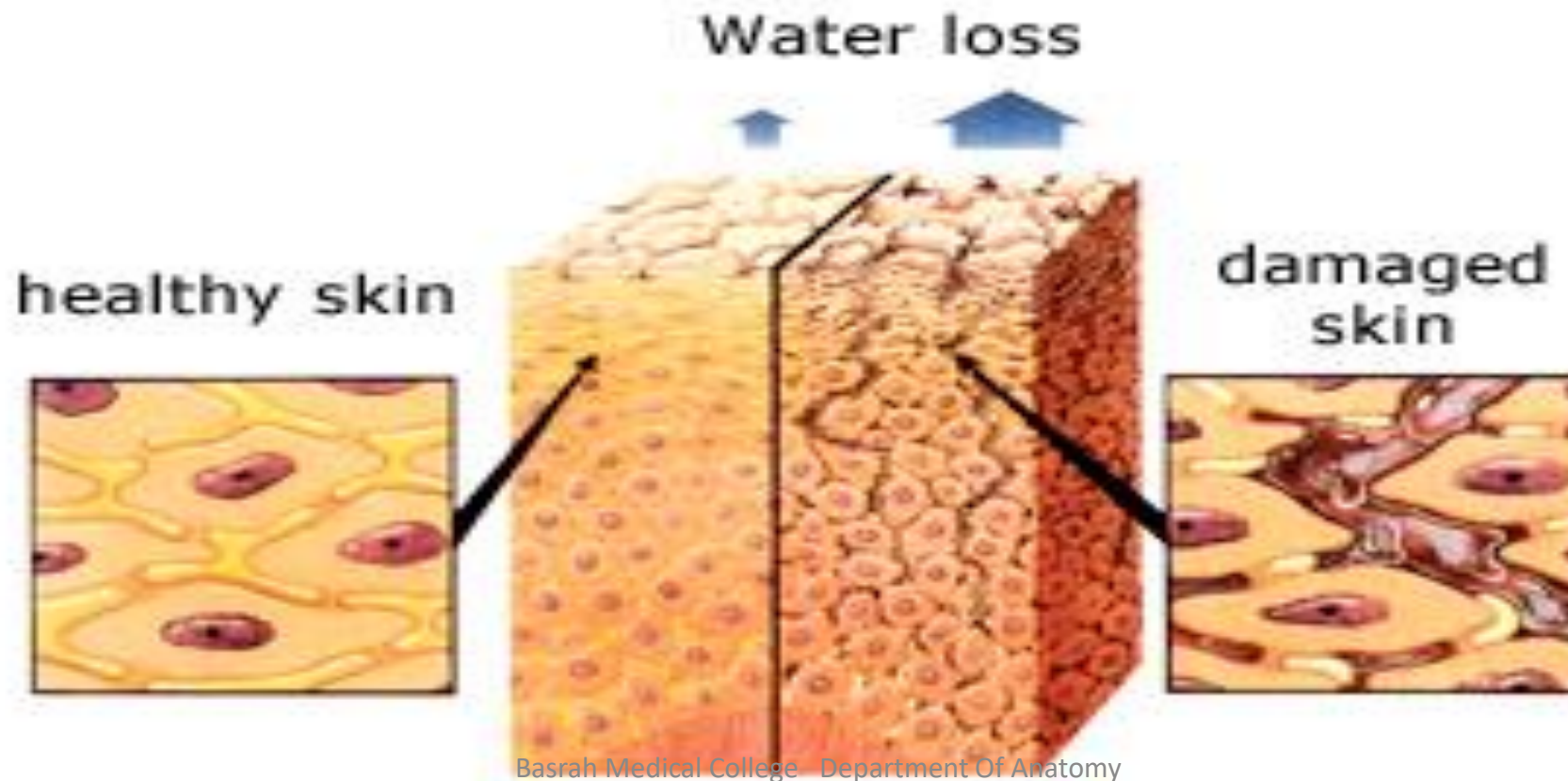
Melanocyte

If UV rays exceed what can be blocked by your level of melanin, sunburn results



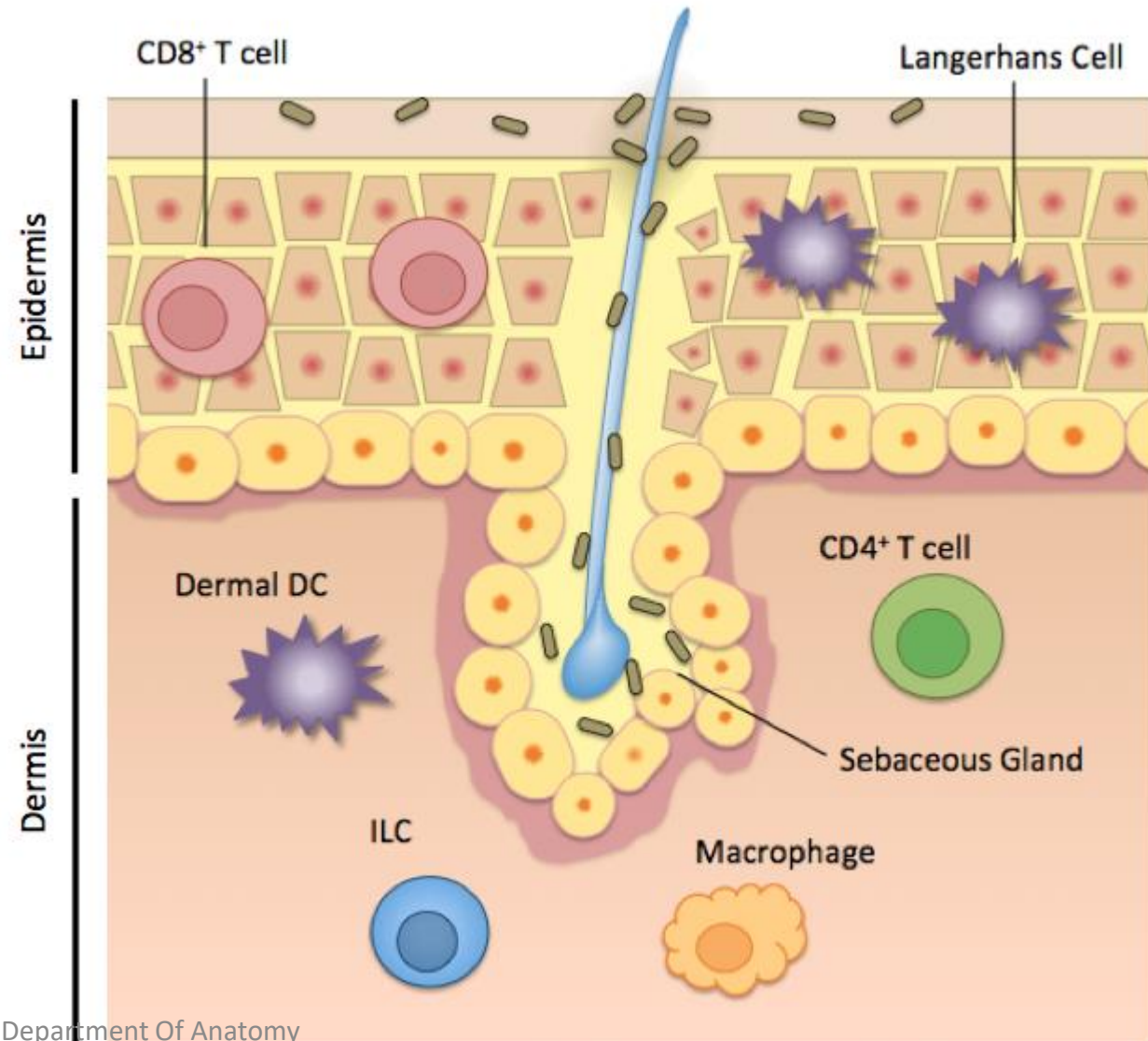
B. Protection against water loss

The skin provides a protective barrier from the external environment and prevents dehydration (water loss.)



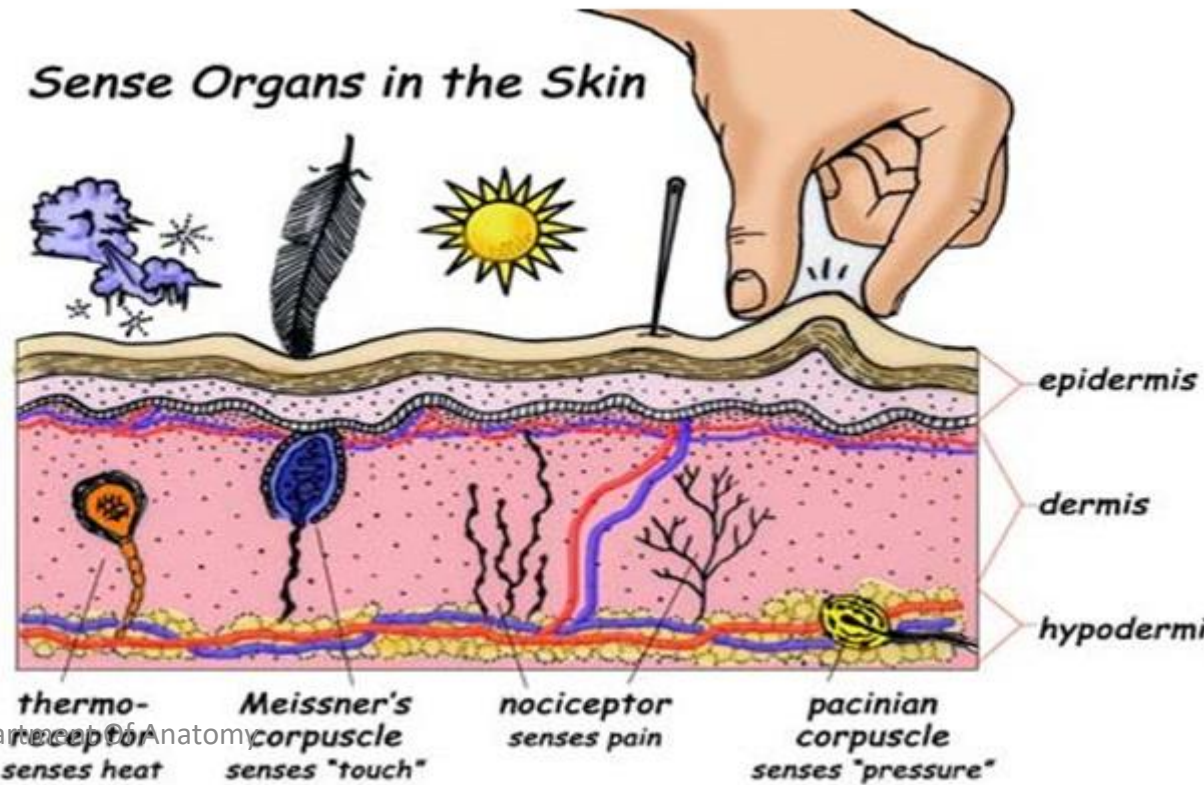
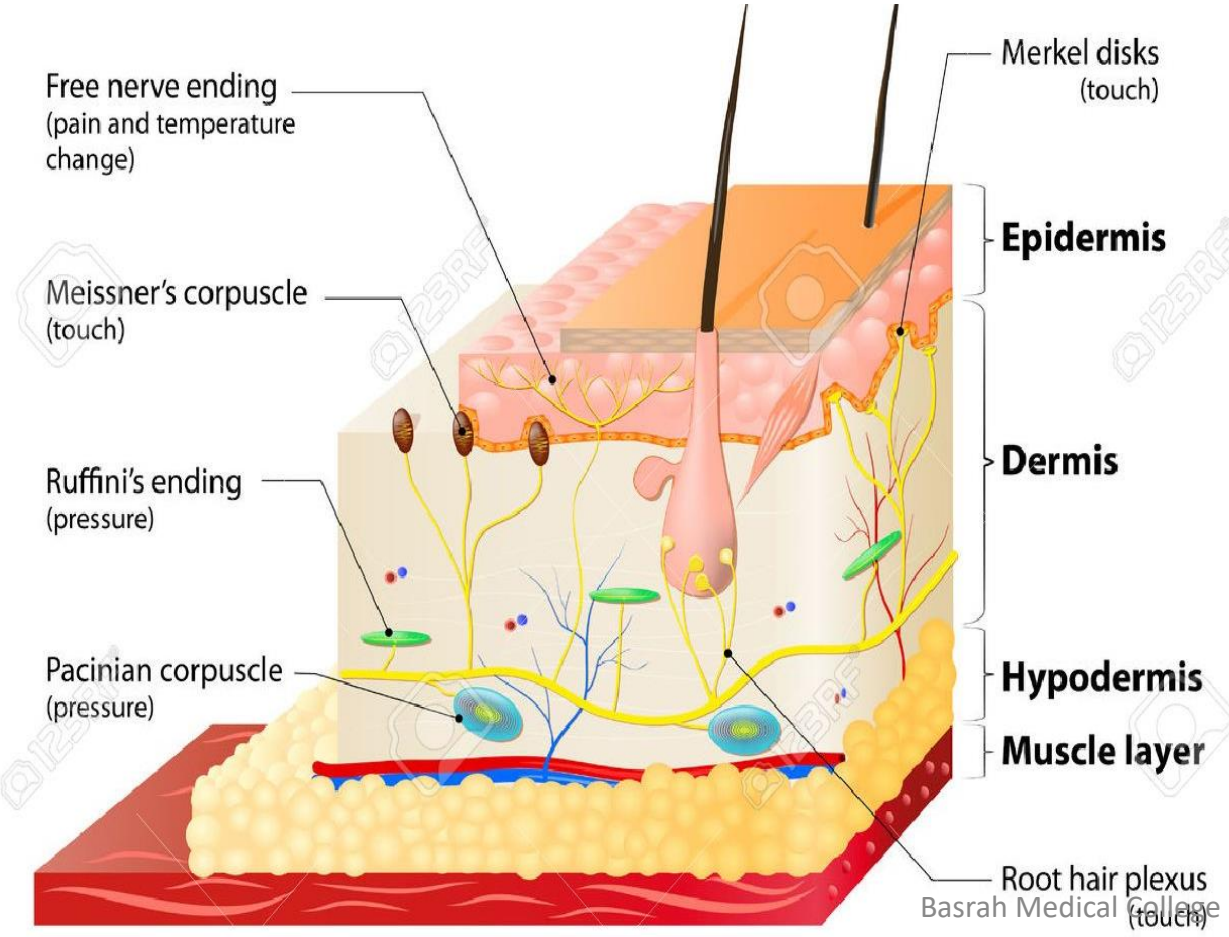
3. Protection against infection

- Skin contains
- 1. Langerhans cells in epidermis .
- 2. Macrophages cells in dermis
- These cells ingest foreign bodies and pathogens .



2-Sensation

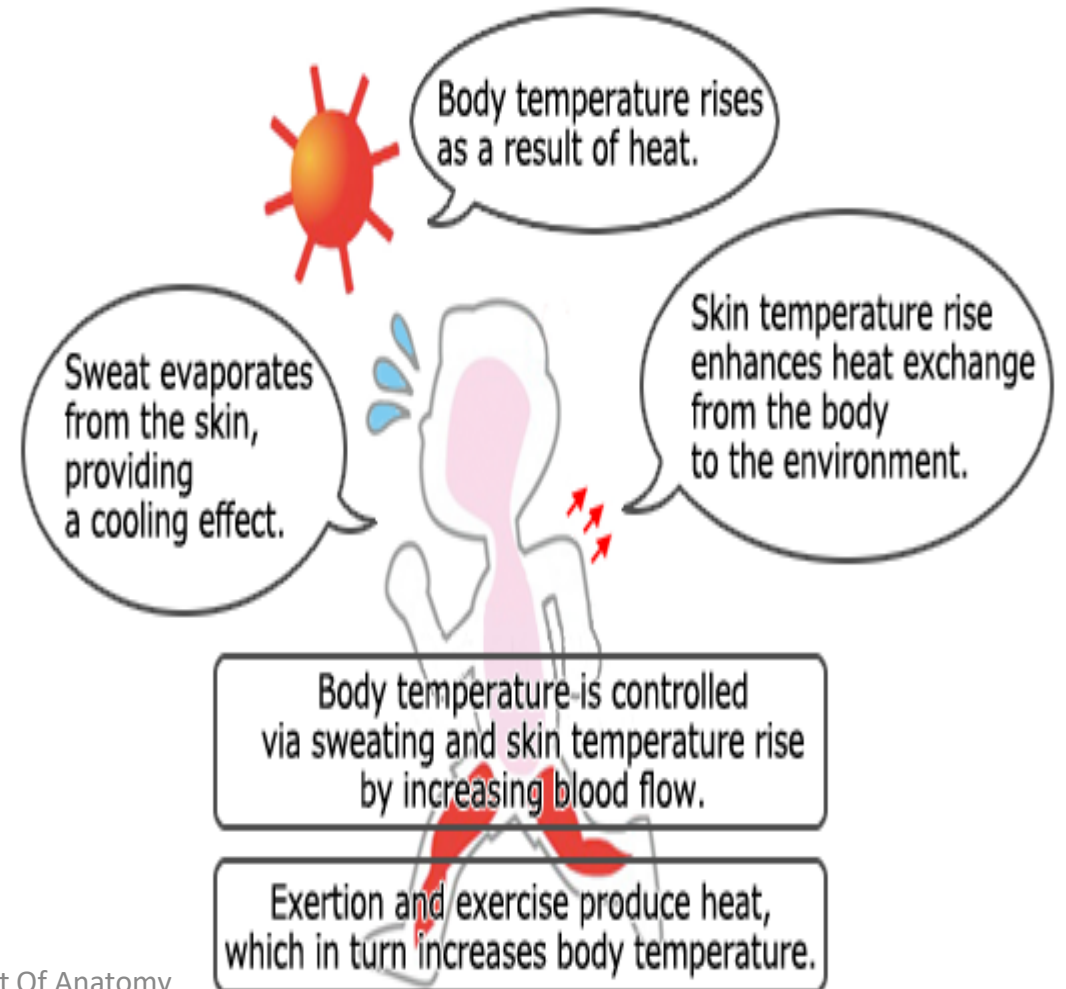
Skin contains receptors(Nerve ending) for heat, cold, touch, pressure, vibration and pain.



3. Thermo Regulation

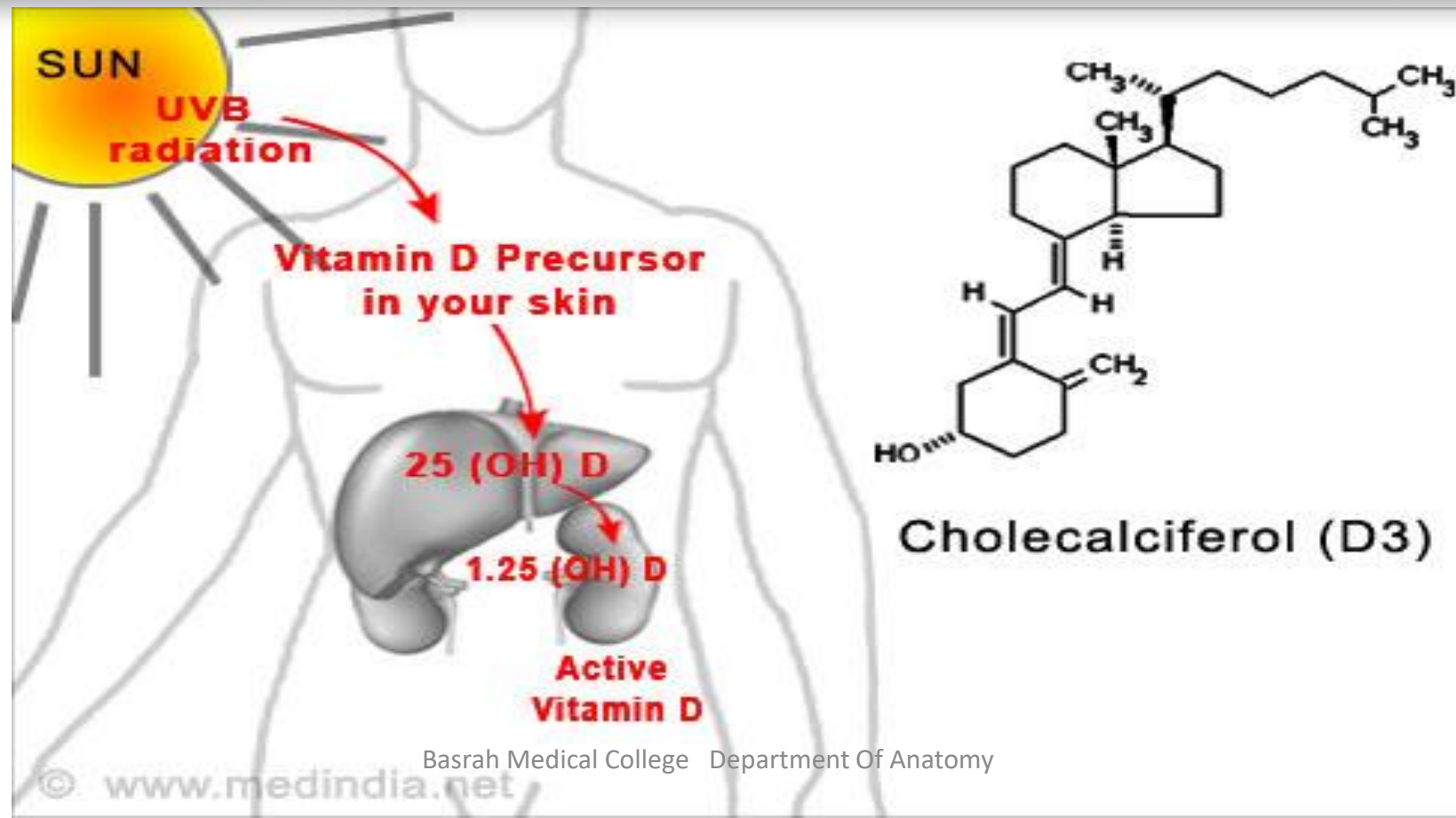
Skin contains thermo receptors and sweat glands. Sweat glands release sweat, which cools your skin as it evaporates. This helps lower your internal temperature.

Body temperature control under normal conditions



4.Synthesis of Vitamin D

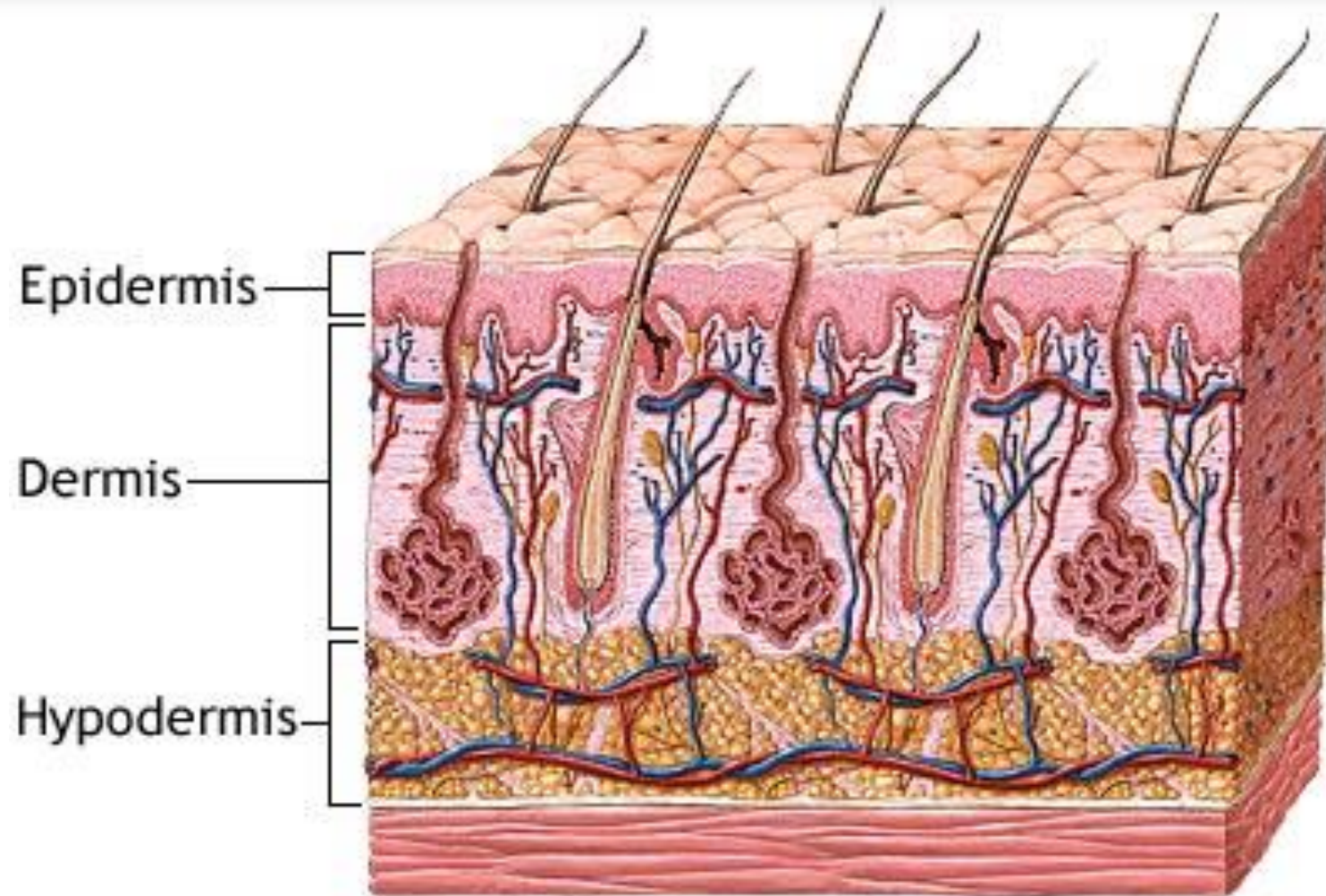
The keratinocytes of the skin are unique in being not only the primary source of vitamin D for the body, but in possessing both the enzymatic machinery to metabolize the vitamin D



What is the skin made of?

The skin is made up of three main layers:

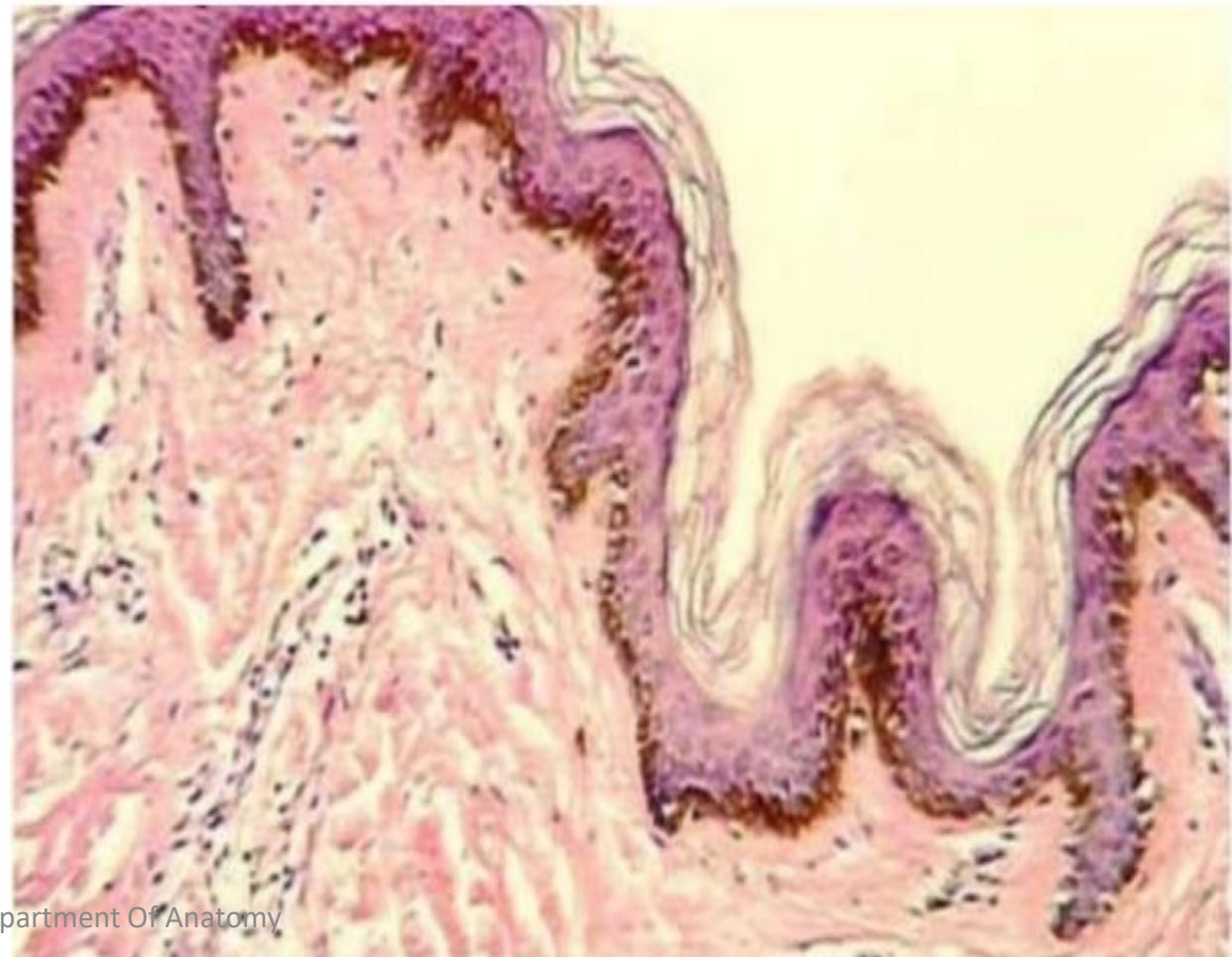
1. Epidermis
2. Dermis
3. Subcutaneous Hypodermis (fascia).



A.Epidermis

- **Keratinized stratified squamous epithelium devoid of blood vessels**
- **Epi = Upon**
- **Dermis = Skin**

Keratinized Stratified Squamous Epithelium



Thickness

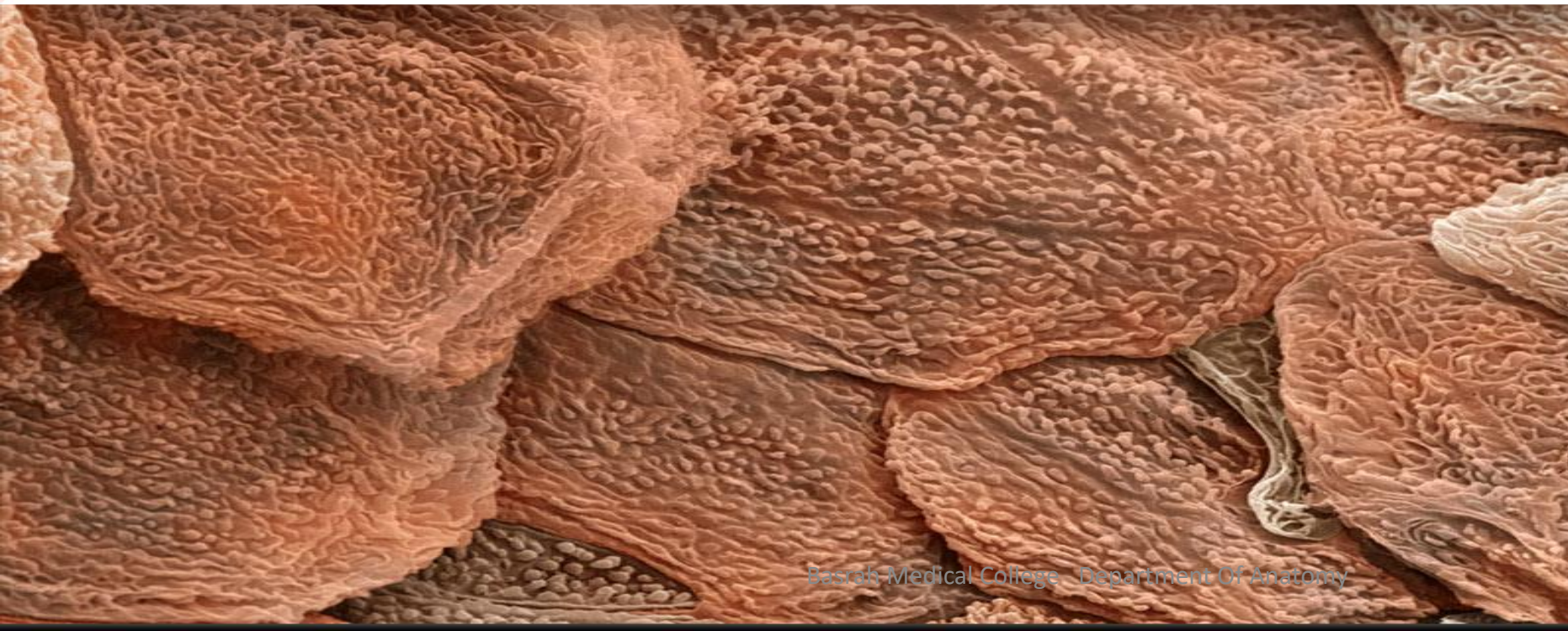
The epidermis is generally thin except in the palm of hand and the sole of the feet it is thick to protect these parts and withstand friction, wear and tear that occurs in these regions.

Epidermis consists of 3 layers:



1-Stratum corneum (horny layer)

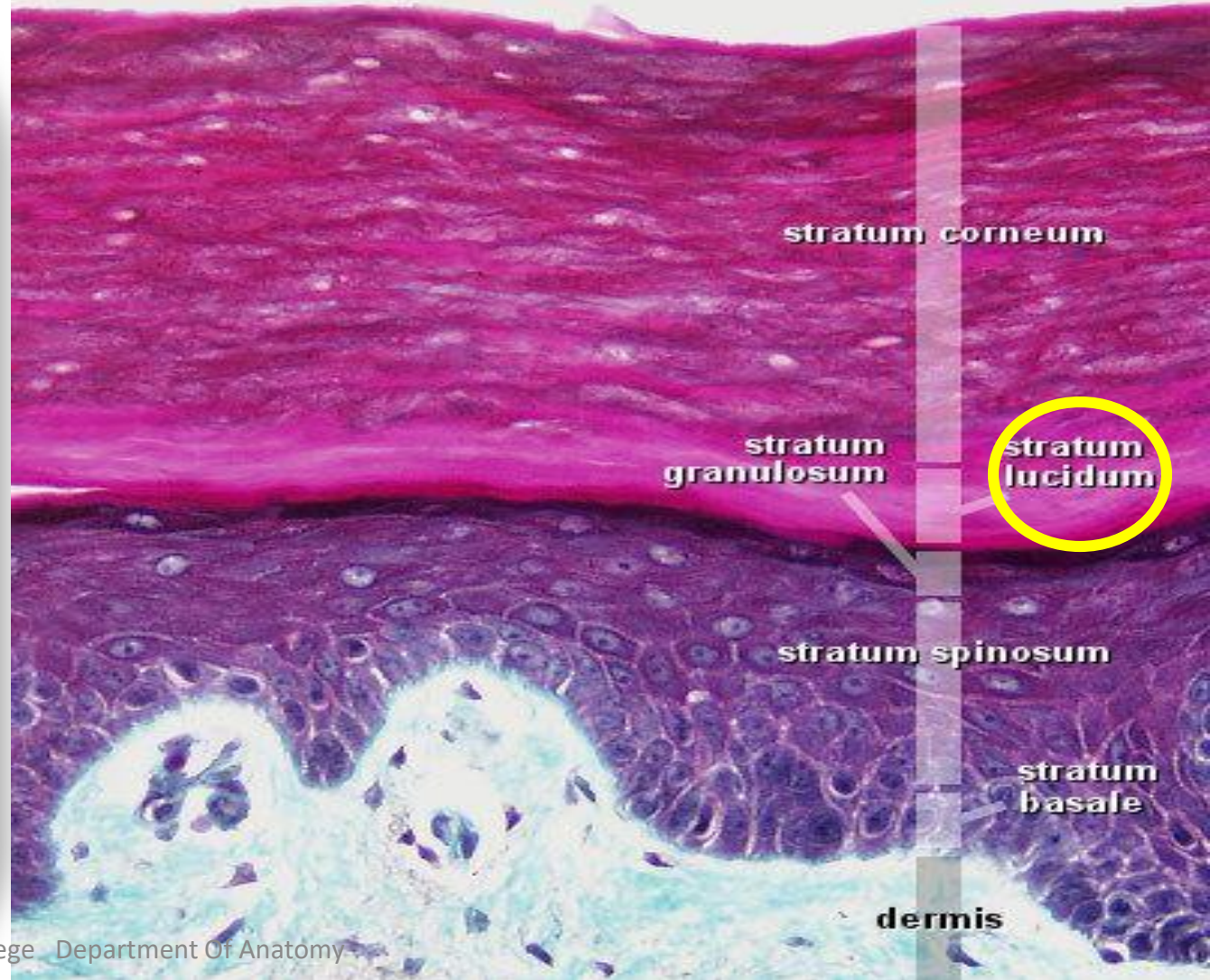
The stratum corneum is the most superficial layer of the epidermis. It contains **dead Keratinocytes that shed periodically** and are replaced by cells pushed up from the stratum granulosum (or stratum lucidum in the case of the palms and soles of feet).



2-Stratum lucidum

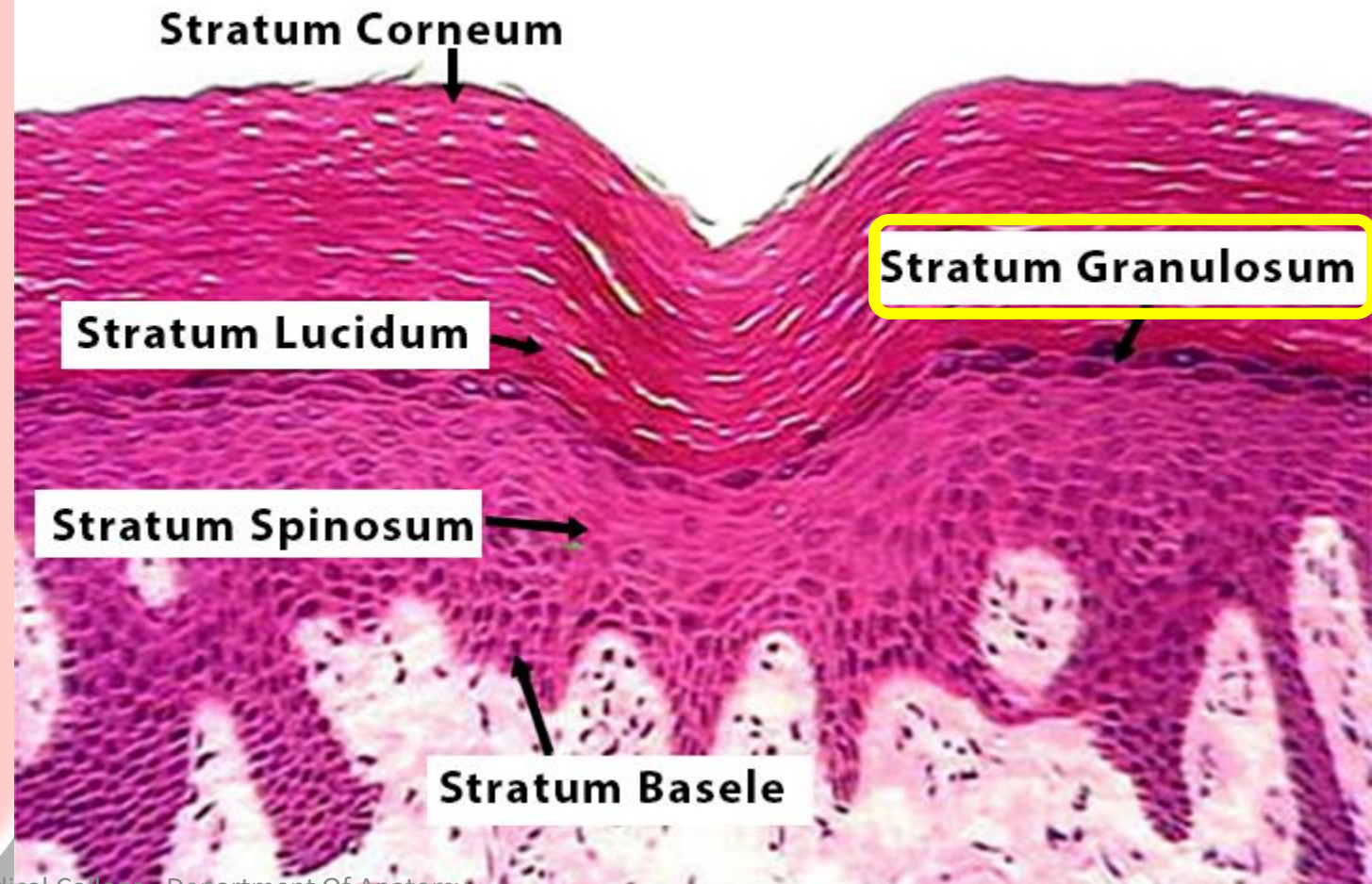
It is a smooth layer of the epidermis located just above the stratum granulosum and below the stratum corneum. It is found only in the thick skin of the palms, soles, and digits. It contains **dead and flat keratinocytes**

Skin, thick trichrome



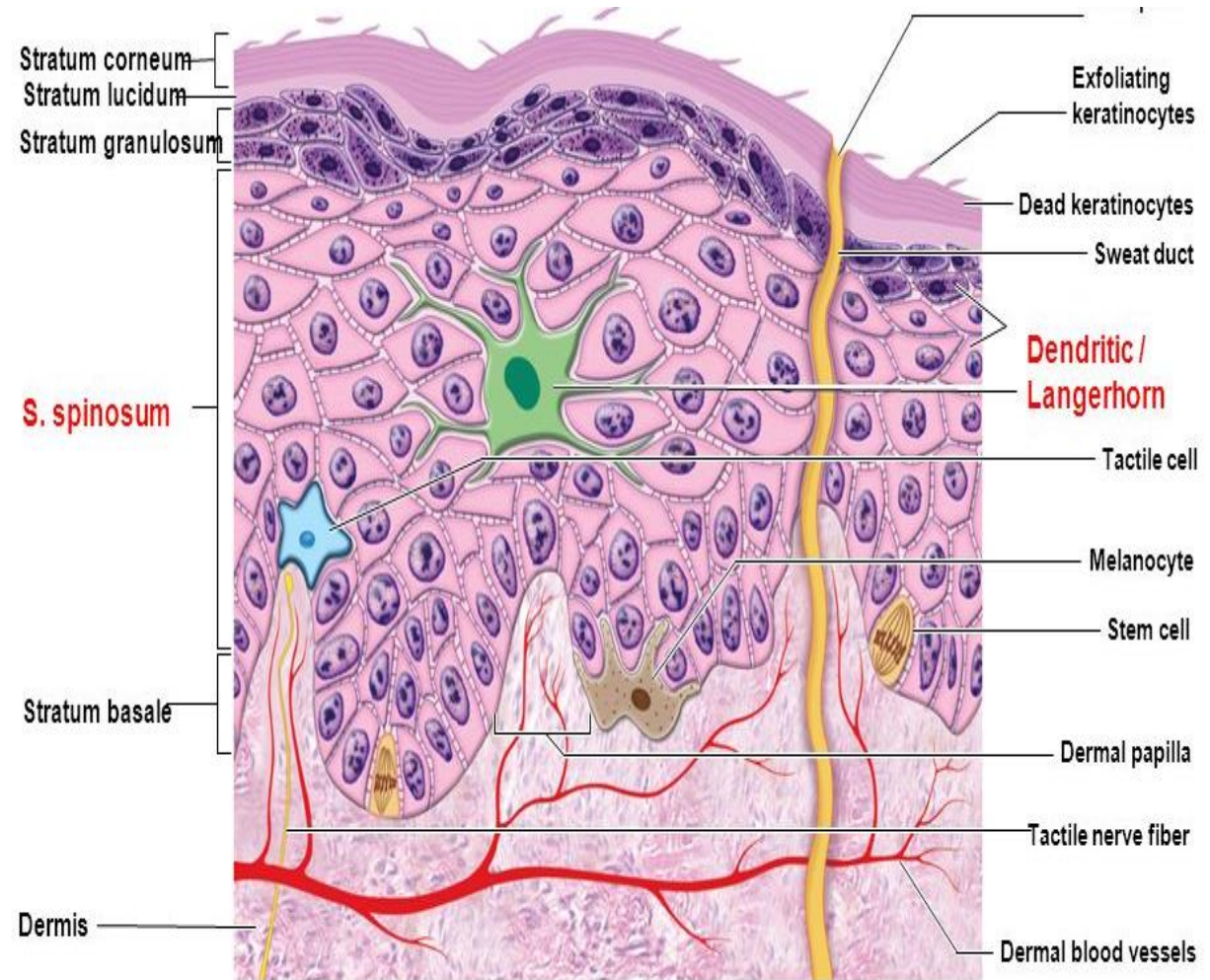
3-Stratum granulosum

Has a grainy appearance. The **keratinocytes cells are living** and flat shaped and they generate large amounts of the proteins **keratin**.



4-Stratum spinosum

It is spiny in appearance contains **living keratinocytes** that is formed as a result of cell division in the stratum basale. As new keratinocytes are produced at the stratum basale, the keratinocytes of the stratum spinosum are pushed into the stratum granulosum. Among the keratinocytes there are **Langerhans cell**, which functions as a macrophage by engulfing bacteria, foreign particles

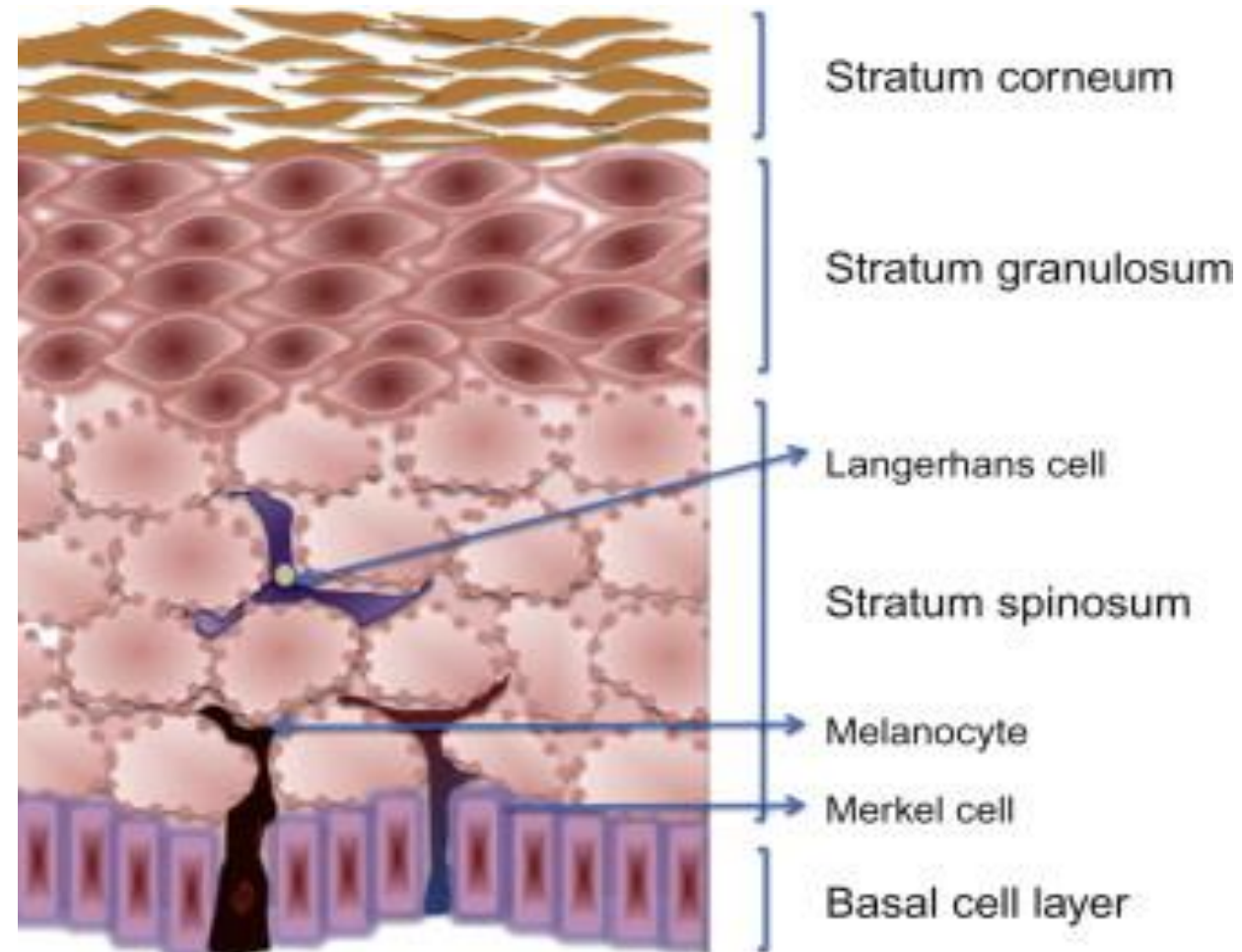


5-Stratum Basalis

The basal layer is the inner layer of the epidermis, containing basal cells. Basal cells continually divide, forming new keratinocytes and replacing the old ones that are shed from the skin's surface.

Two other cell types are
***Merkel cell**, which functions as a sensory receptor.

***Melanocyte**, produces the pigment melanin.

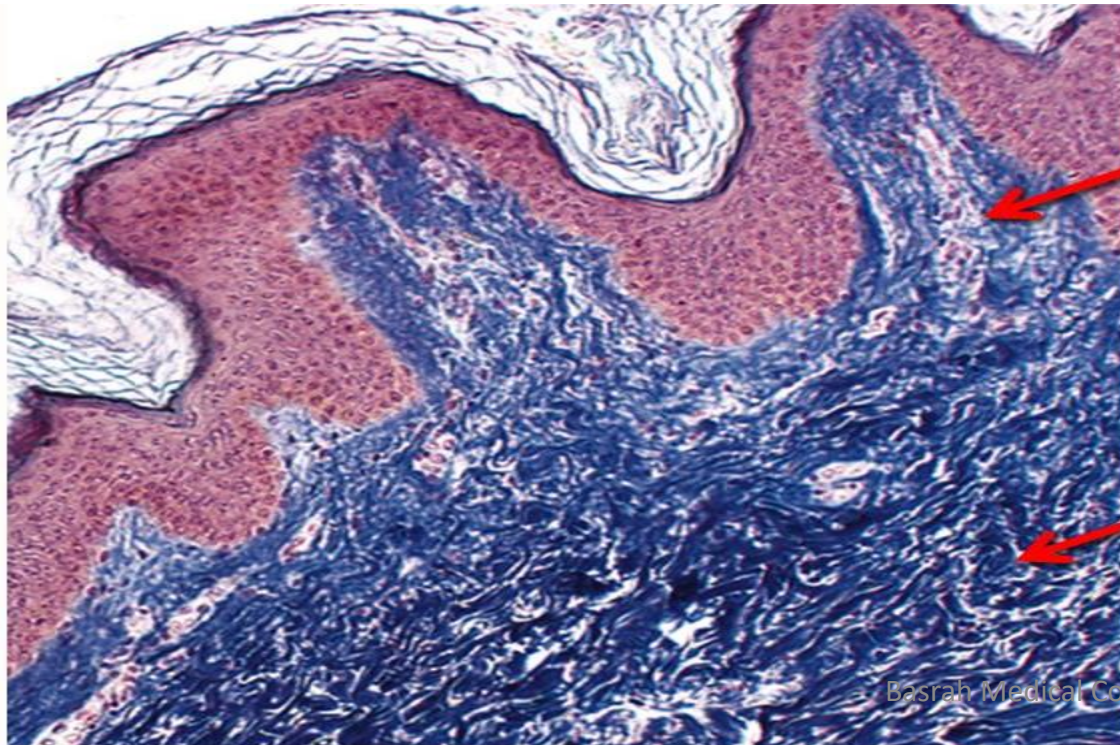


B. Dermis

Is Connective tissue containing (blood vessels, lymph vessels, sensory nerve endings, smooth muscles, hair follicles, sweat and sebaceous glands)

In its deep part the collagen bundles are arranged in parallel rows. •

The dermis layer is made up of two sub layers: •



- Papillary layer

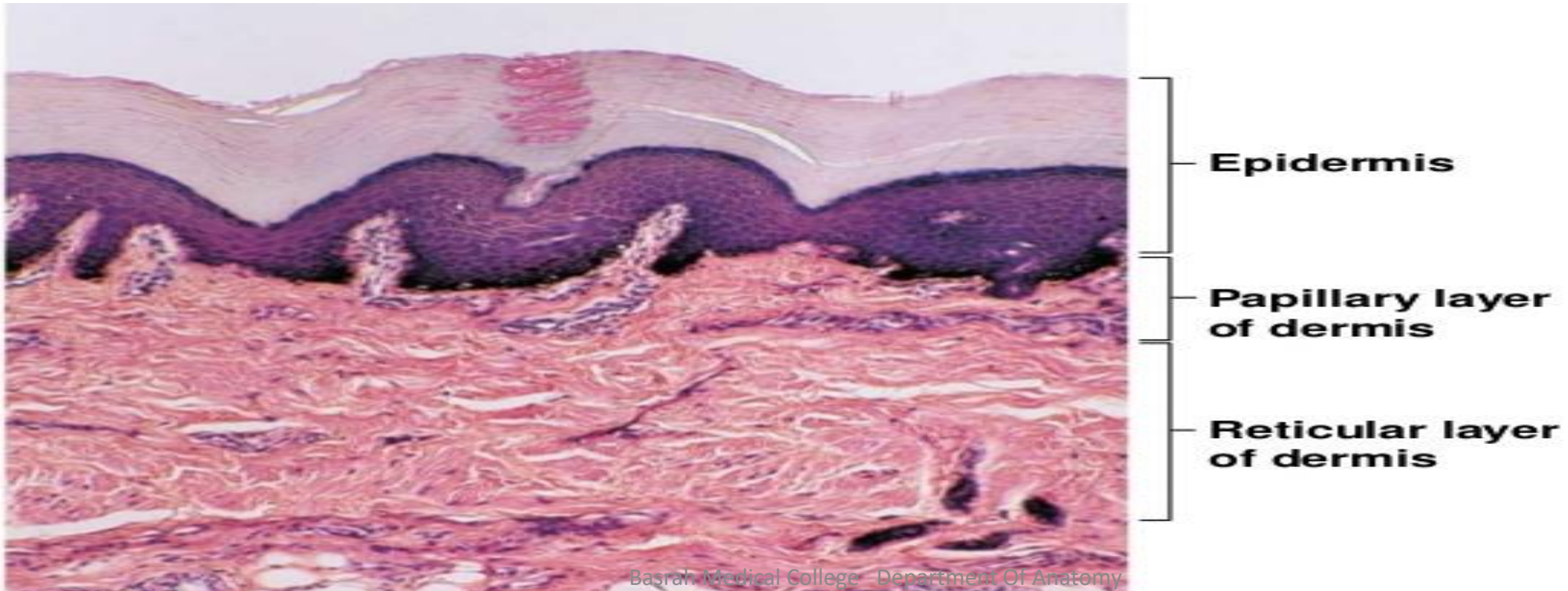
- Reticular layer

1. The papillary layer

This layer Contains a thin arrangement of collagen fibers.

*It supplies nutrients to layers of the epidermis

*It regulates temperature.

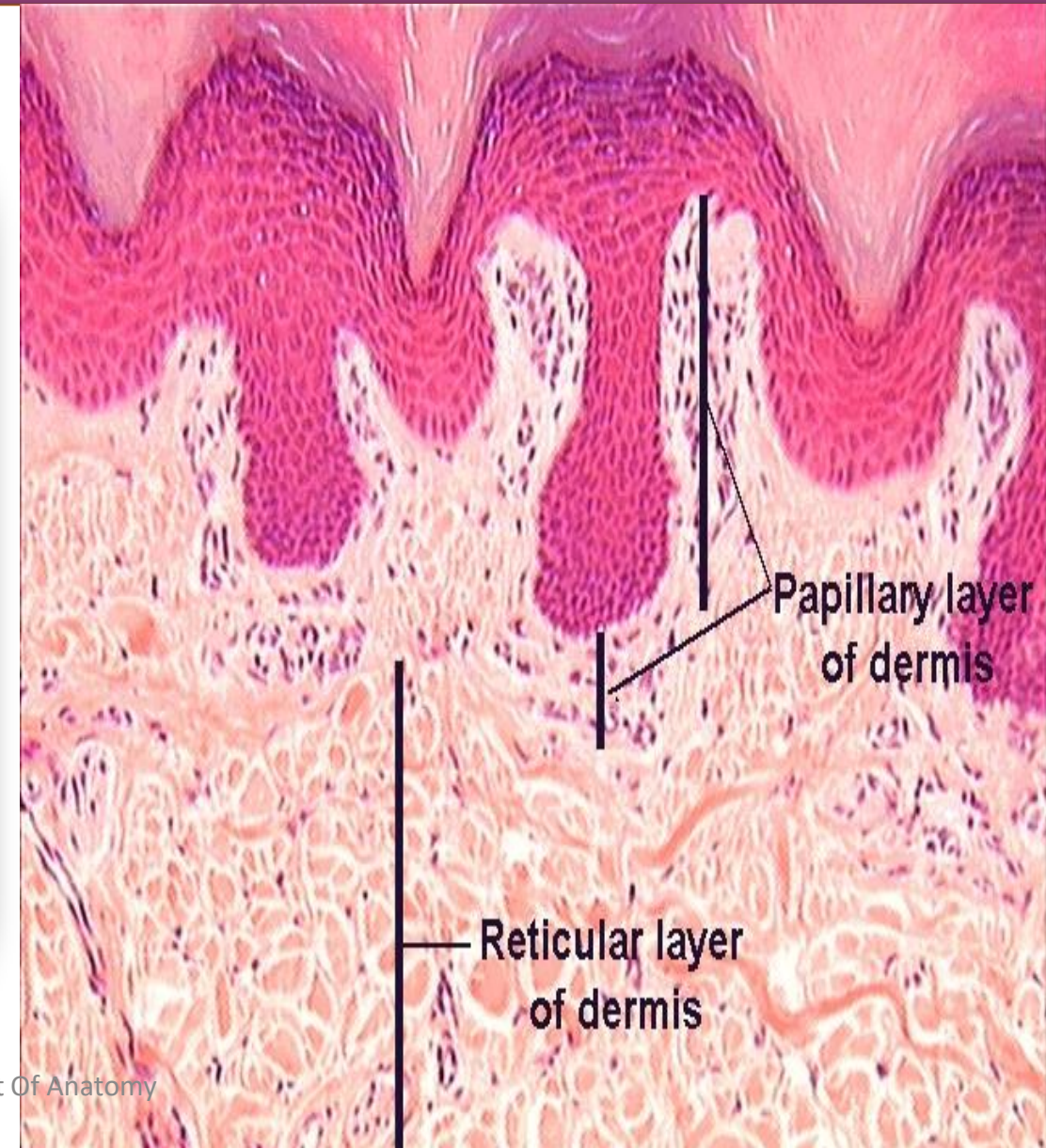


2. Reticular layer

This layer is made of thick collagen fibers that are arranged in parallel to the surface of the skin.

*It strengthens the skin,.

*It Supports other components of the skin, such as hair follicles, sweat glands, and sebaceous glands.



Lines of cleavage

The collagen fibers in the dermis is arranged in parallel rows, called: (Langer's lines):

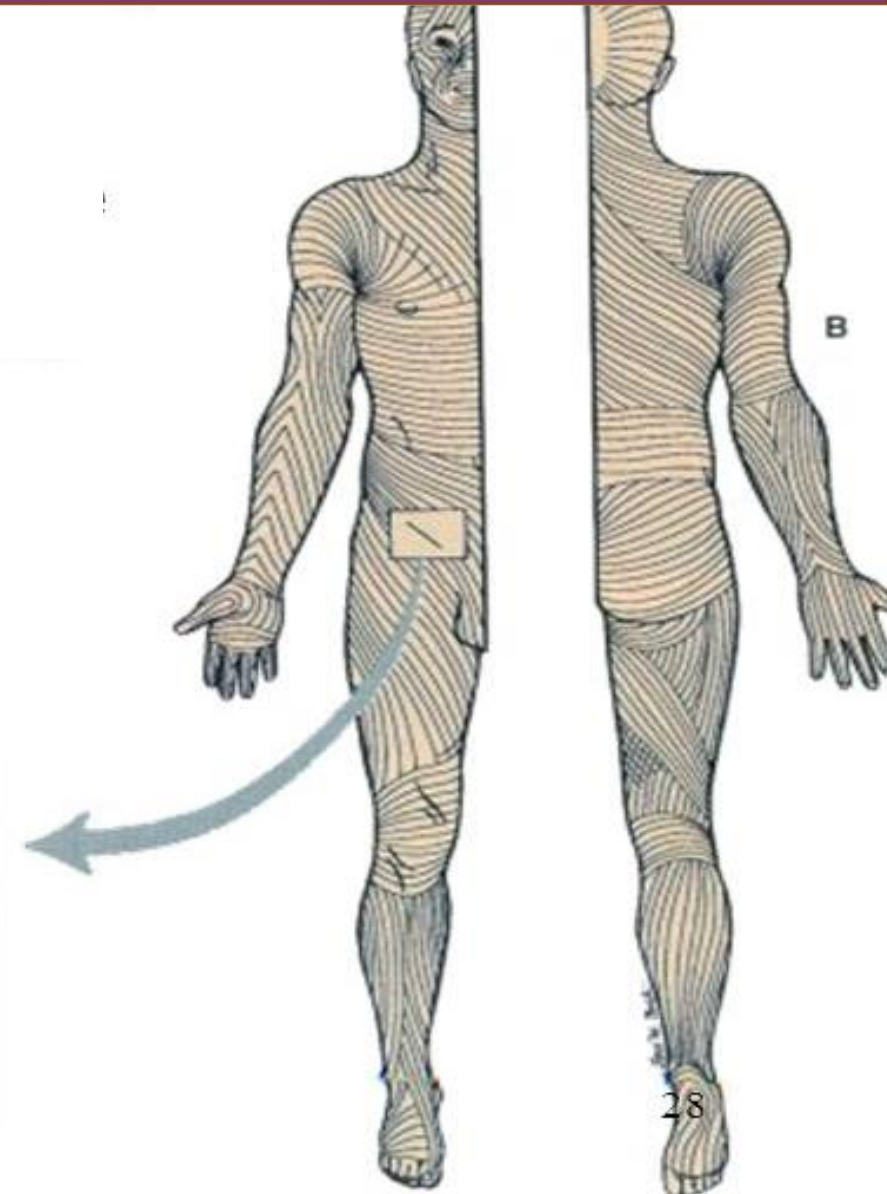
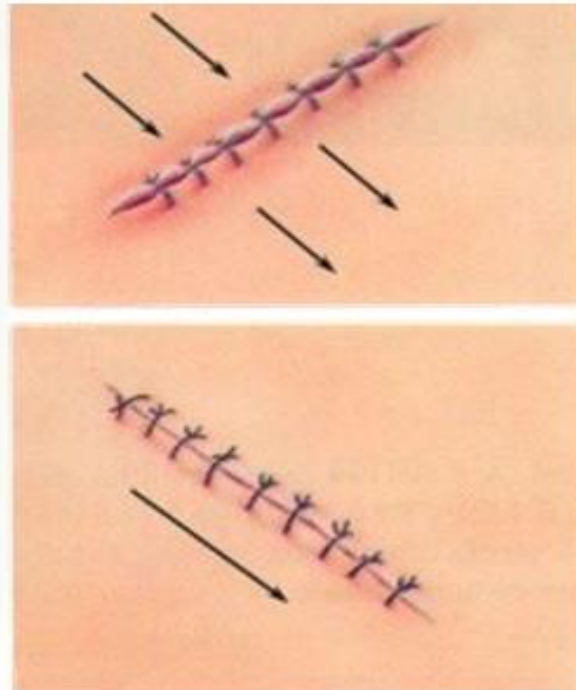
The direction of the rows of collagen fibers in the dermis is :

- **Longitudinally or obliquely in the limbs.**
- **Circumferentially in the neck and the trunk.**



Lines of cleavage

These lines are important to determine the direction for an incision during a surgery to avoid obvious scars.





Clinical Note:

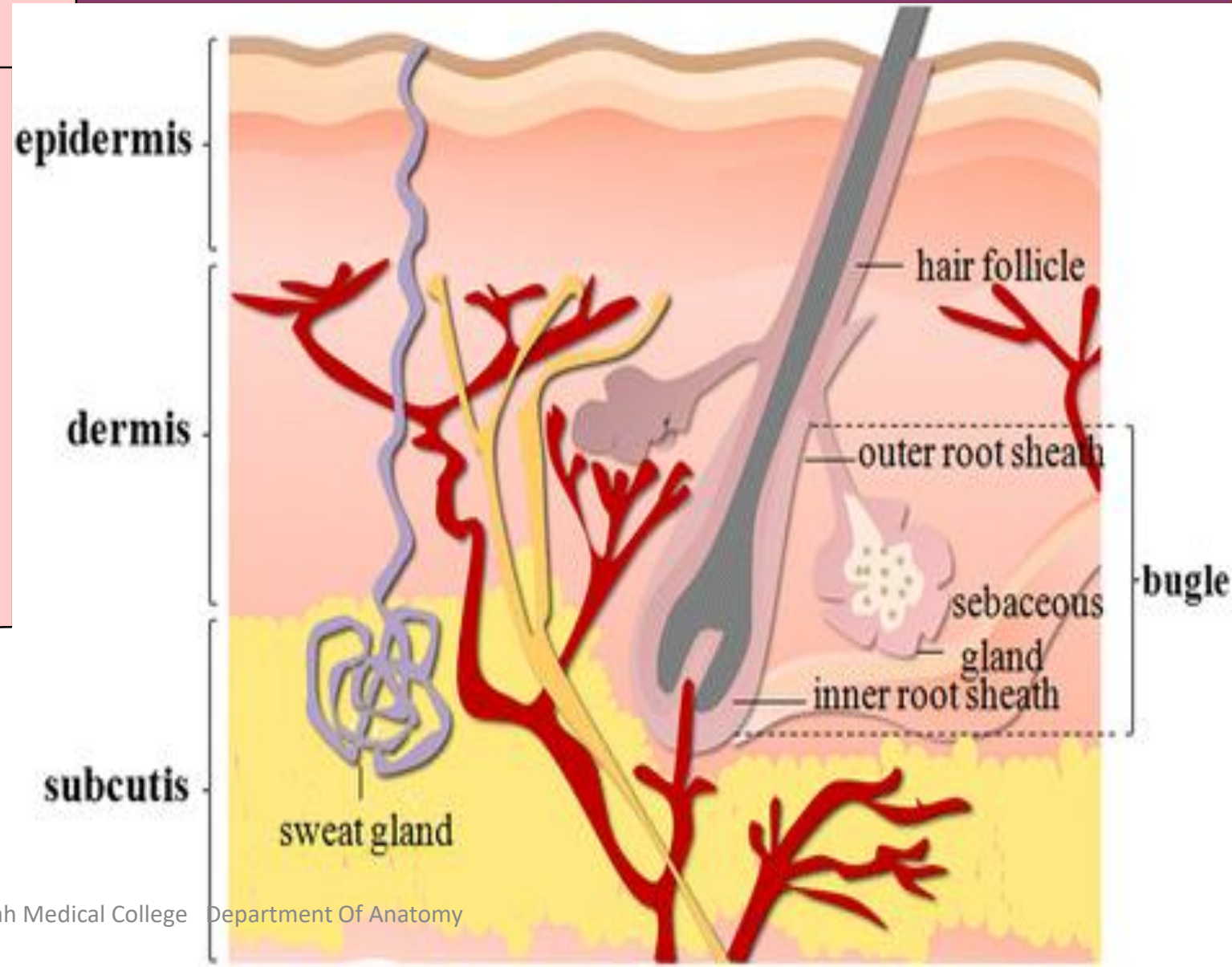
*A surgical incision **along or between** these lines causes the minimum disruption of collagen so that the wound heals with **a small scar**.

If an incision made **across the rows of collagen** makes a **disruption** resulting in the massive production of fresh collagen and the formation of a **broad scar**.

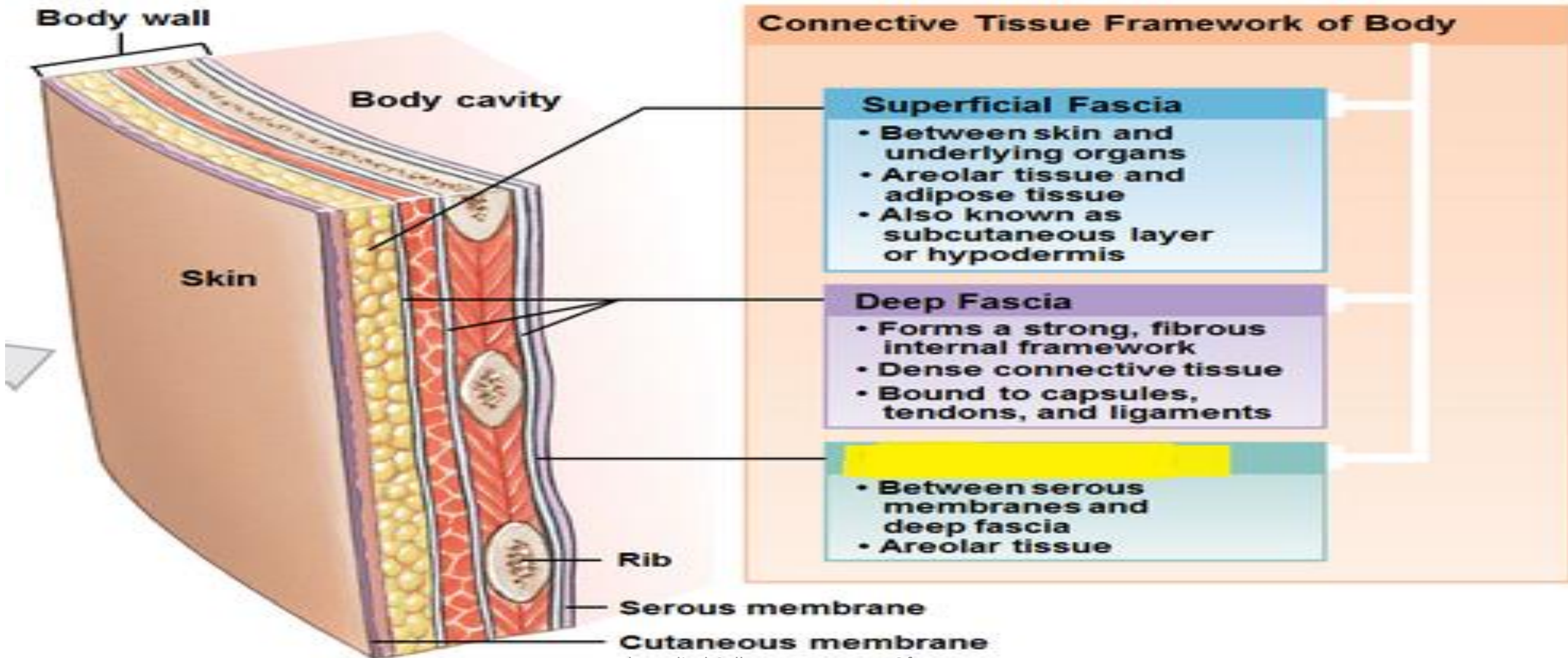
Skin Appendages

The commonly seen skin appendages are:

- Hair follicles.
- Sebaceous glands.
- Sweat glands.
- Nail



C. Fascia

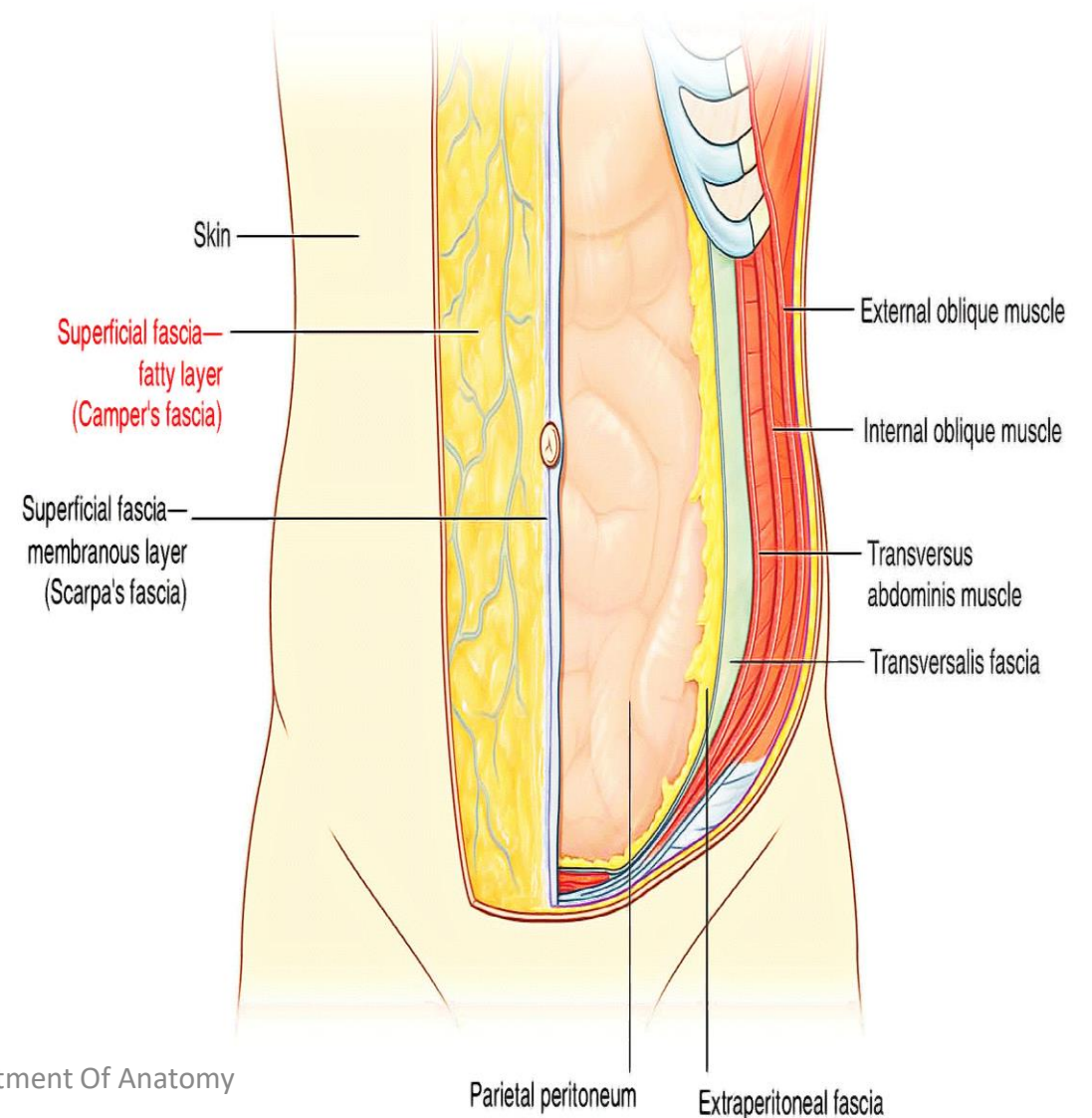


1. Superficial Fascia

- **Loose, mixture of adipose and loose areolar tissues.**
- **It unites the skin to the underlying structures.**

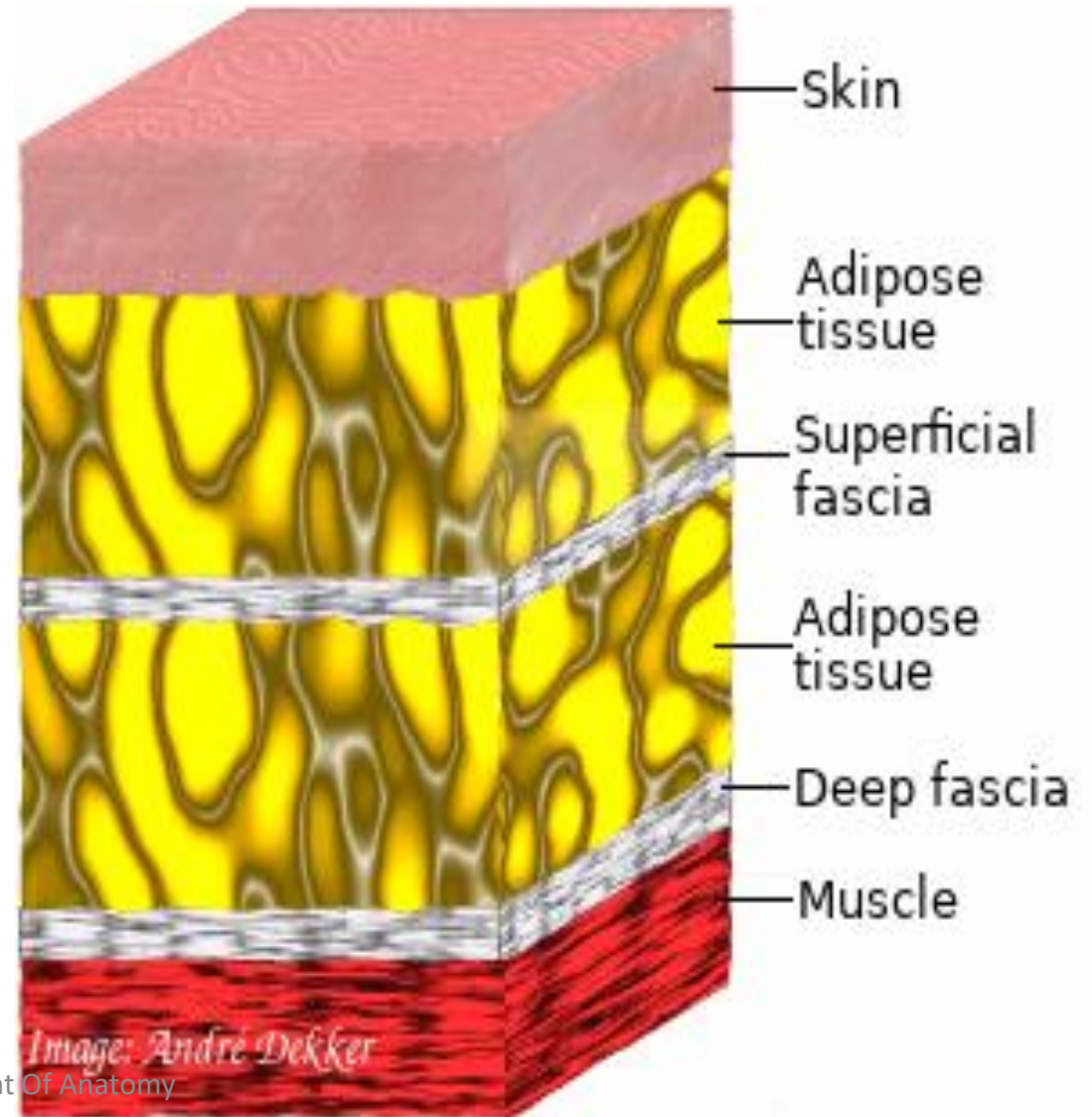
Functions:

- ***Facilitates movement of skin over underlying structures.**
- ***Passage for cutaneous vessels, nerves...**
- ***Protects the body against heat loss by the presence of sweat glands .**



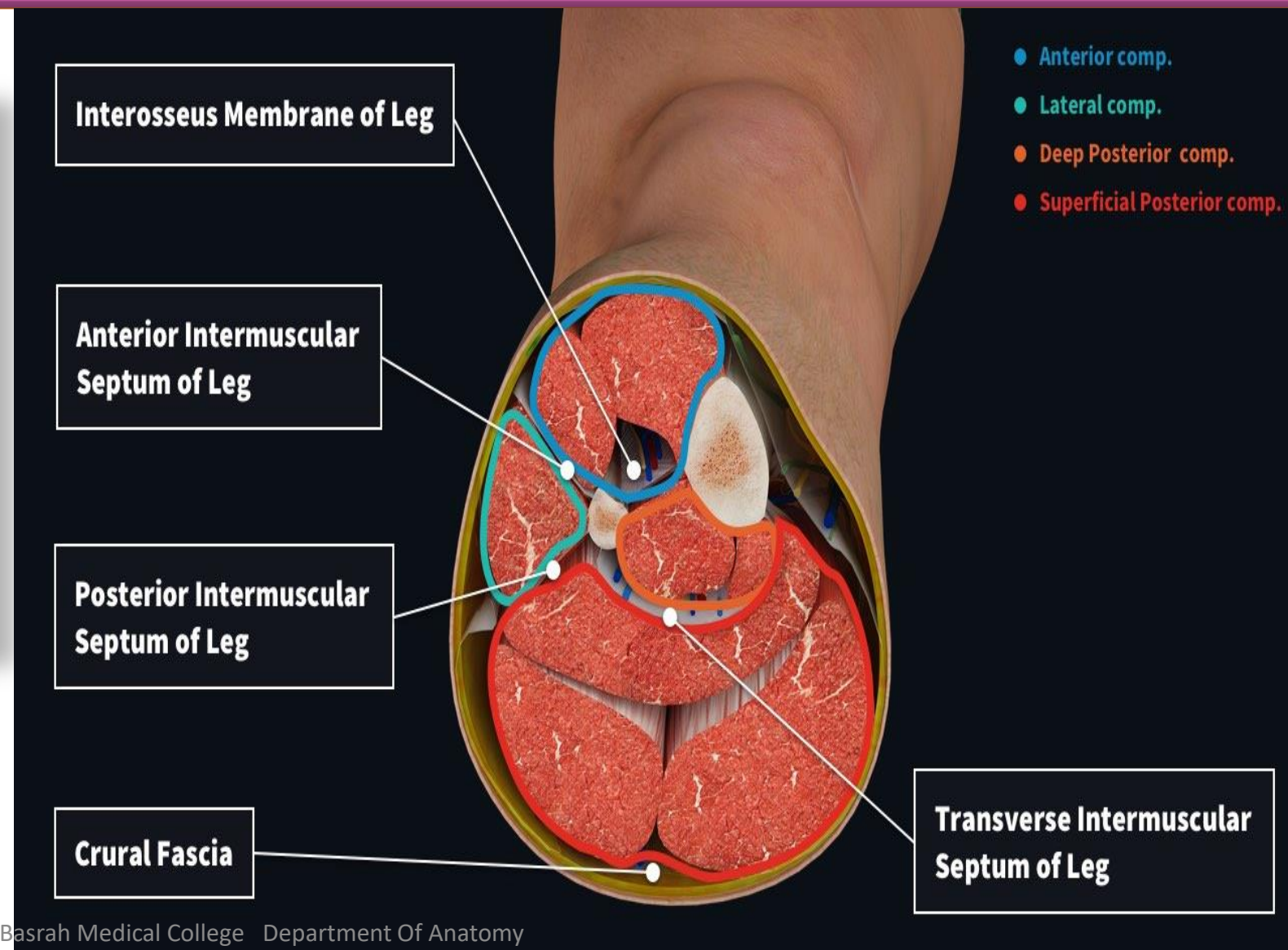
2. Deep Fascia

It is more dense than superficial fascia
Collagenous bundles are more compact and more regularly arranged
It is usually present in the form of membranes.
It is presented in 3 forms :



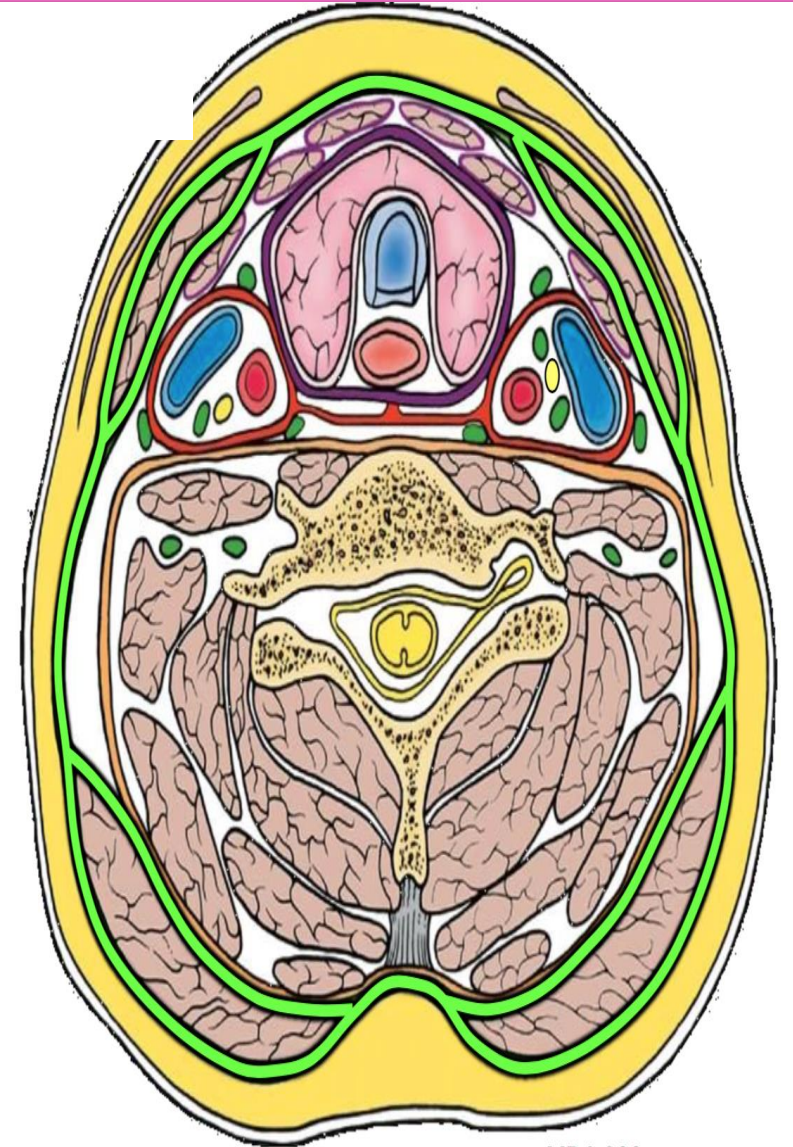
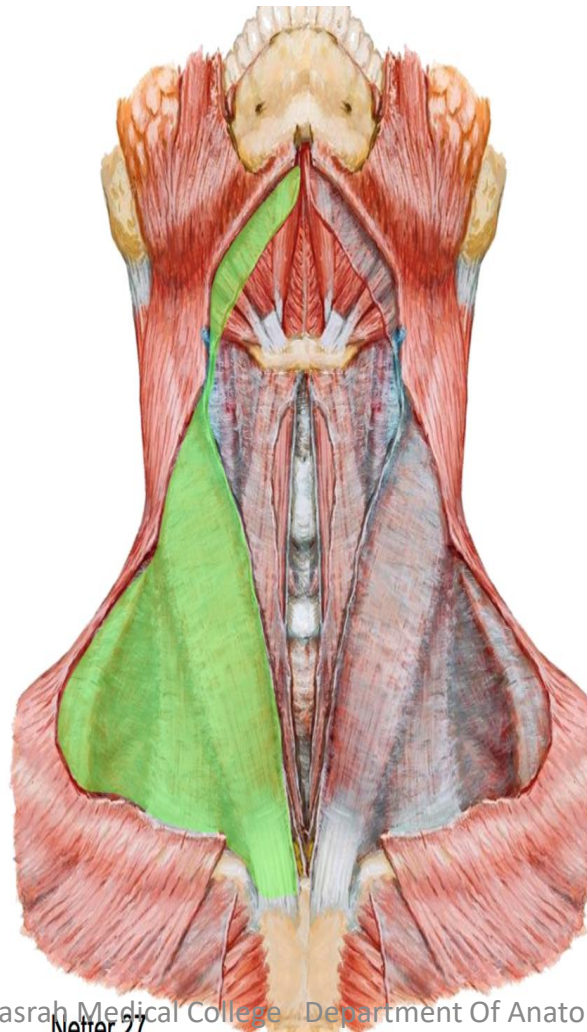
① Intermuscular septum

lies between muscles dividing the limb into compartments



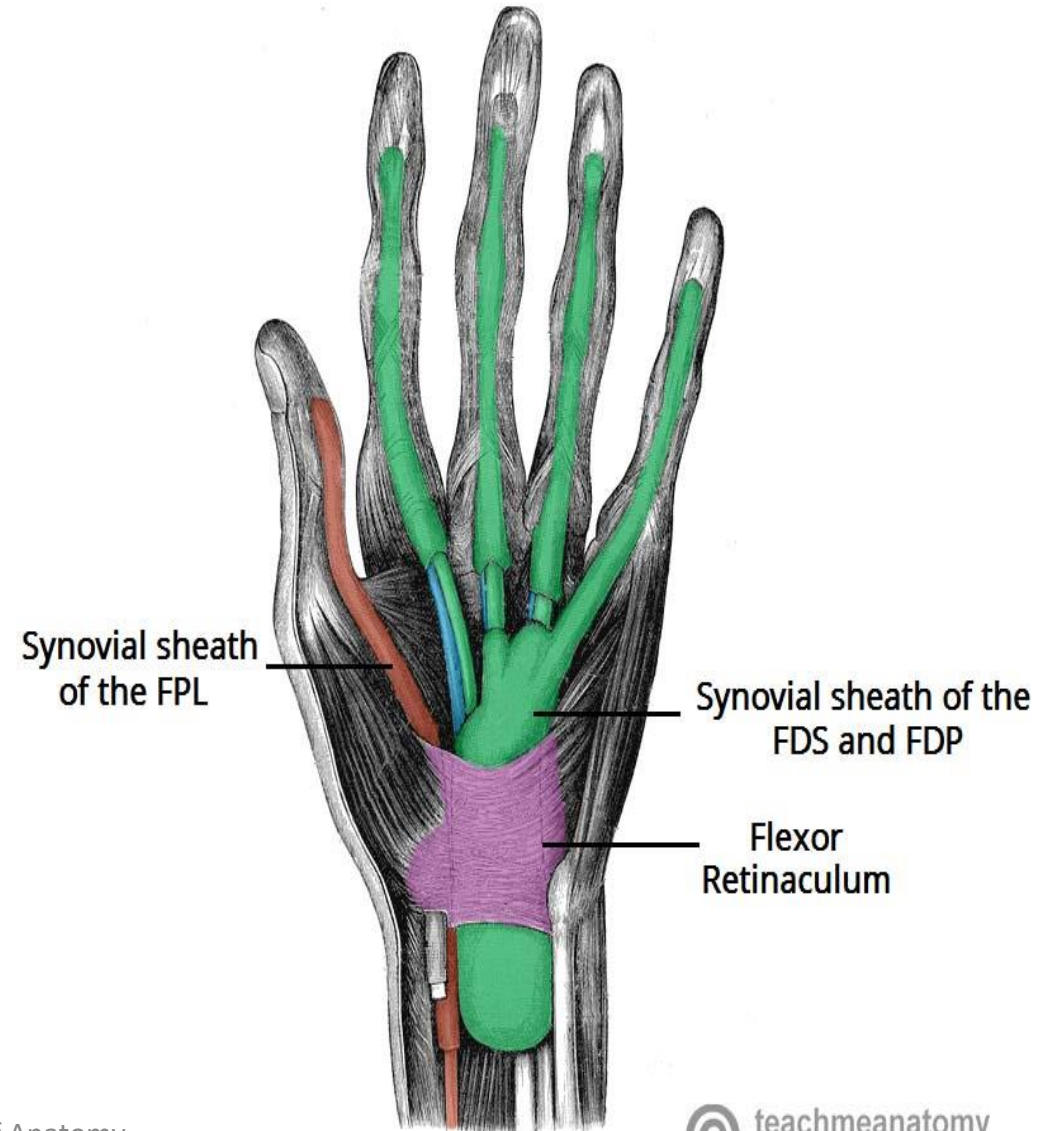
② Investing Fascia

- Covers the surfaces of muscles



③ Retinacula

Localized thickening of deep fascia around joints, holds and protects the tendons in place.



THANK

YOU

