Departement of Anasthesia Techniques

كلية المستقبل الجامعة
قسم تقنيات التخدير

المرحلة الاولى ٢٠٢٢-٢٠٢٣

Anatomy

Lecture :The Skin

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The Skin

Skin anatomy and functions

Skin anatomy and functions

The skin anatomy (figure 1)

The skin is divided into two parts: a superficial part called the **epidermis** and deep part called the **dermis** .

The epidermis is a stratified squamous epithelium. On the palms of the hands and the soles of the feet, the epidermis is **extremely thick**, on the anterior surface of the arm and forearm, it is thin.

The epidermis is subdivided into five layers or strata:

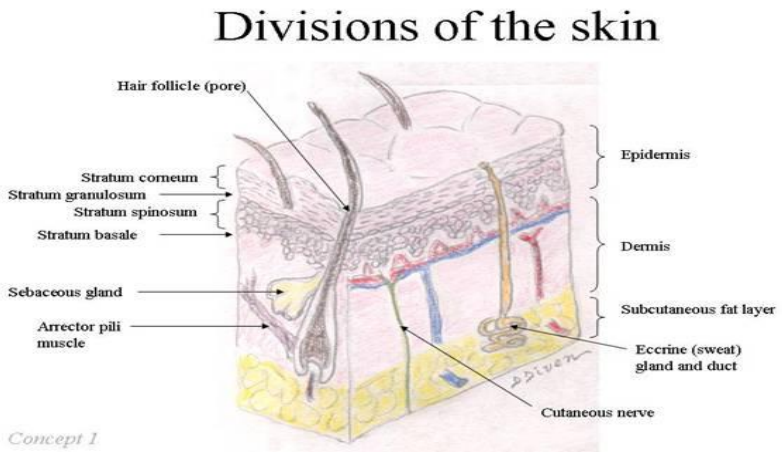
stratum basale.

stratum spinosum.

stratum granulosum.

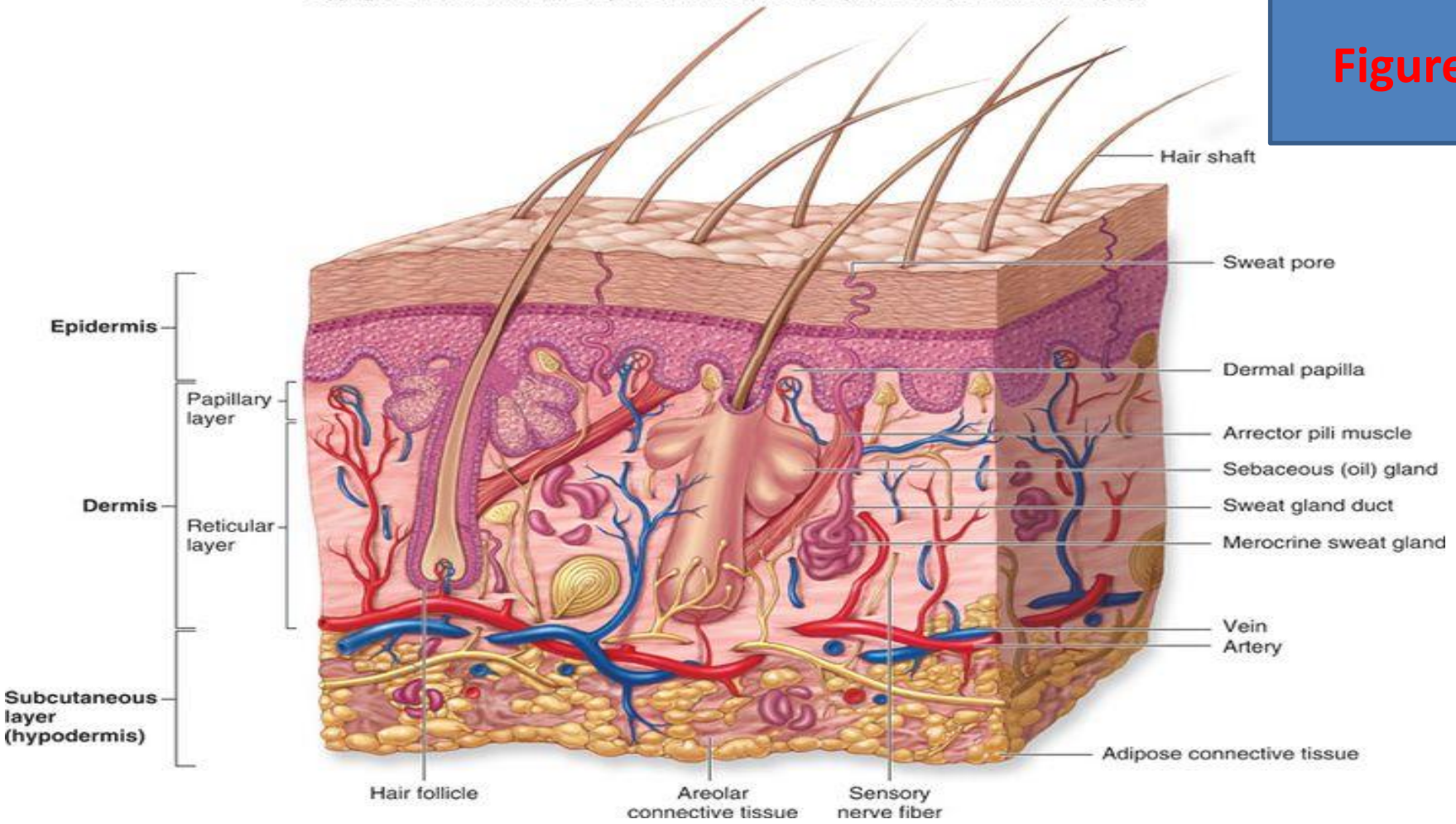
stratum lucidum.

stratum corneum.



Skin anatomy and functions

Figure 2

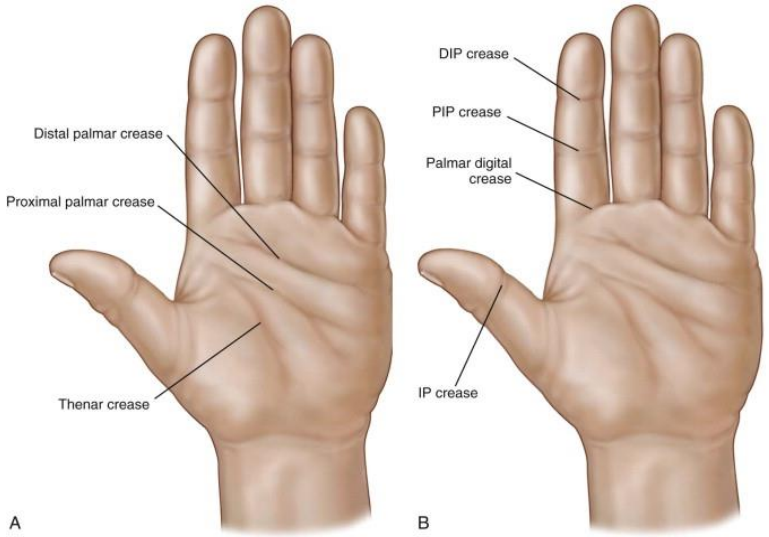


Skin anatomy and functions

The dermis is the inner layer of the skin and composed of dense connective tissue containing many **blood vessels, lymphatic, and nerves.**

the dermis is thinner in women than in men. The dermis is connected to the underlying deep fascia or bones by the **superficial fascia which is also** known as **subcutaneous tissue.**

The skin over joints always folds in the same place forming the **Skin creases.**



Skin anatomy and functions

The appendages of the skin

These are structures attached to the skin and include, **the nails, hair follicles, sebaceous glands, and sweat glands.**

The nails (figure.3) are keratinized plates on the dorsal surfaces of the tips of the fingers and toes. The proximal edge of the **plate is the root of the nail.**

With the exception of the distal edge of the plate, the nail is surrounded and overlapped by folds of skin known as **nail folds.** The surface of skin covered by the nail is the **nail bed.**

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Skin anatomy and functions

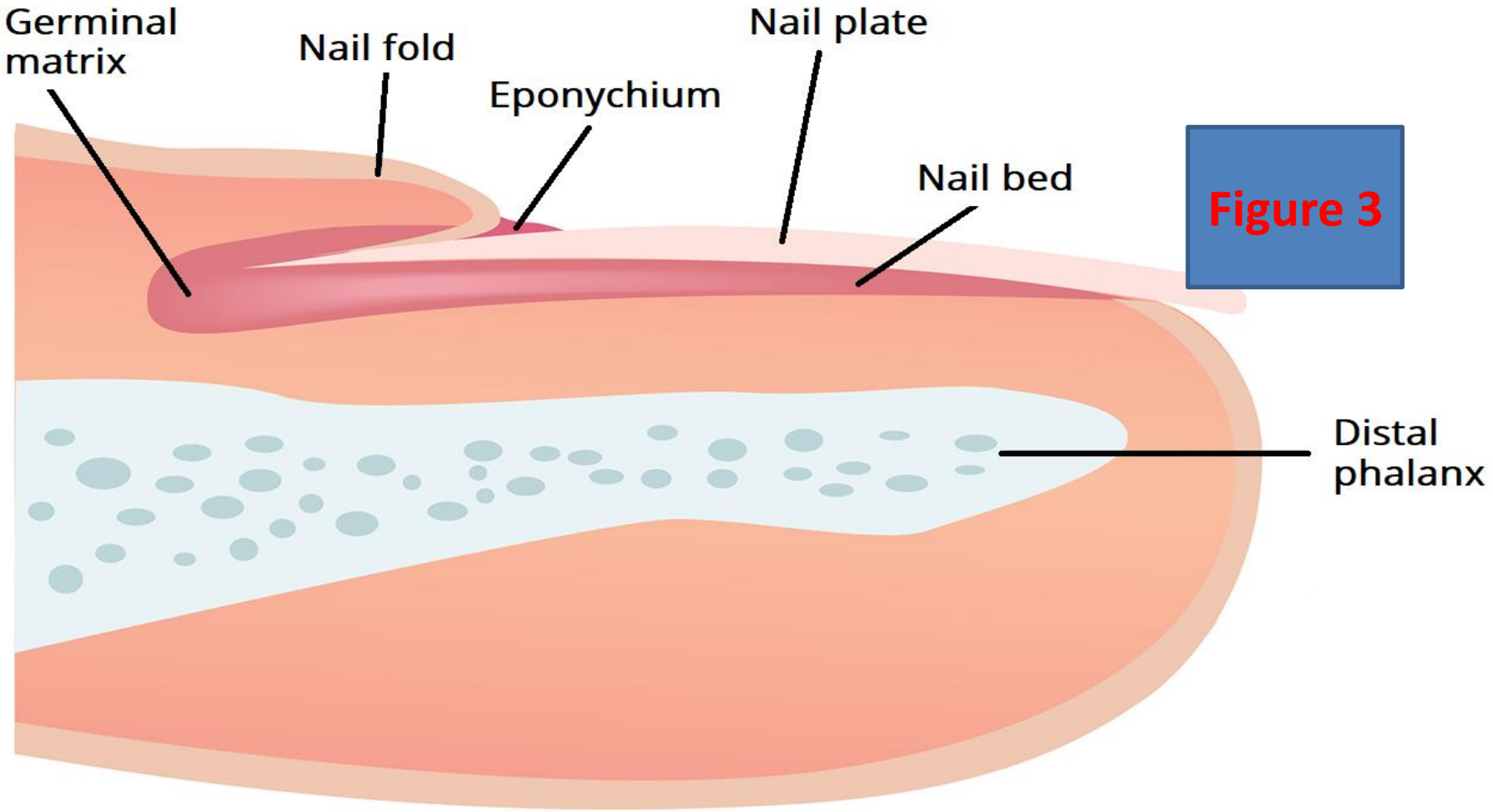

Figure 3

Skin anatomy and functions

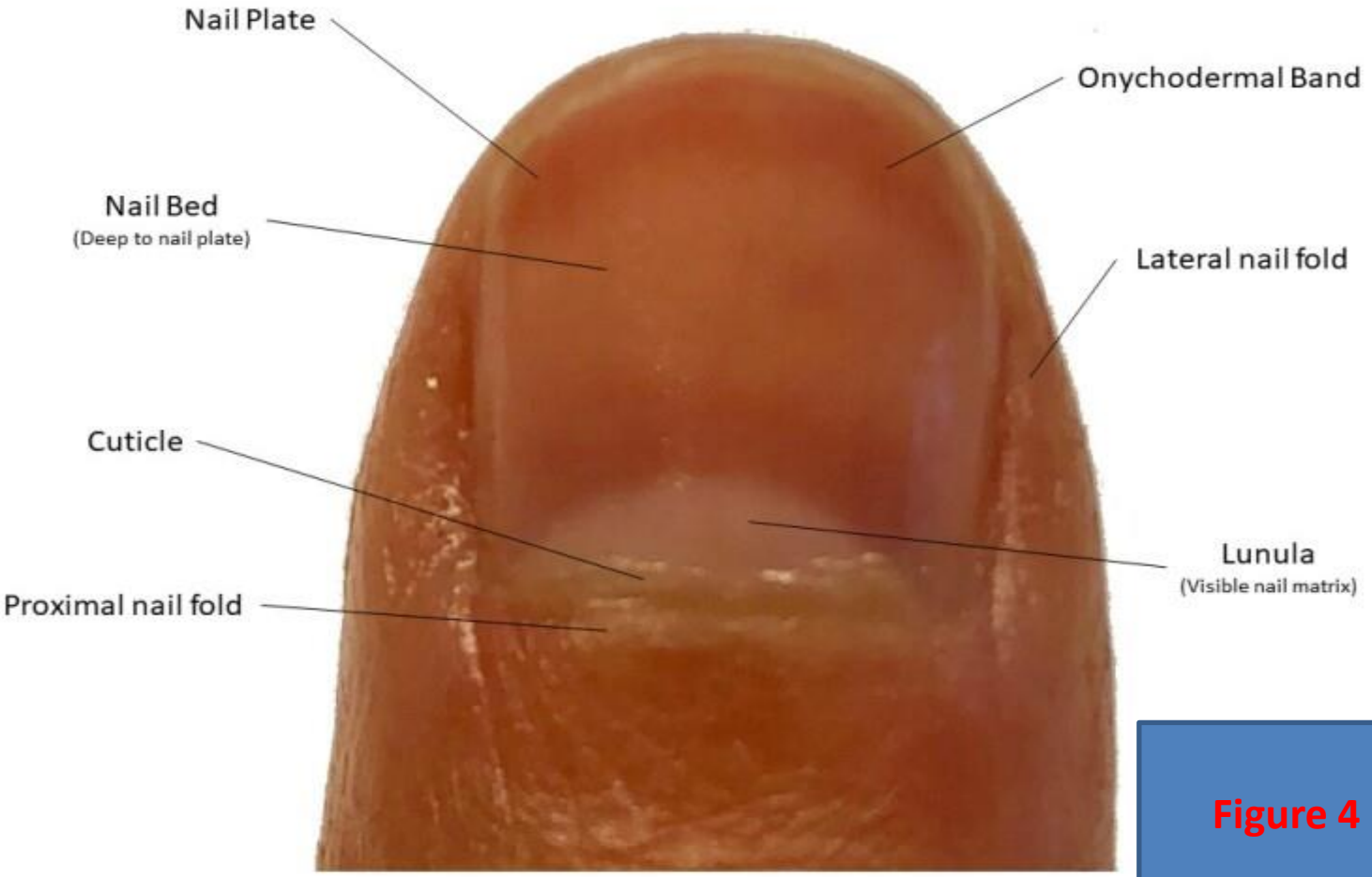

Figure 4

Skin anatomy and functions

The hair (figure 5).

Hairs grow out of hair **follicles,** which are invaginations of the epidermis into the dermis . The follicles lie obliquely to the skin surface, and their expanded end is called **hair bulbs, they** penetrate to the deeper part of the dermis. A band of smooth muscle called the **arrector pili** connects the undersurface of the follicle to the superficial part of the dermis.

Skin anatomy and functions

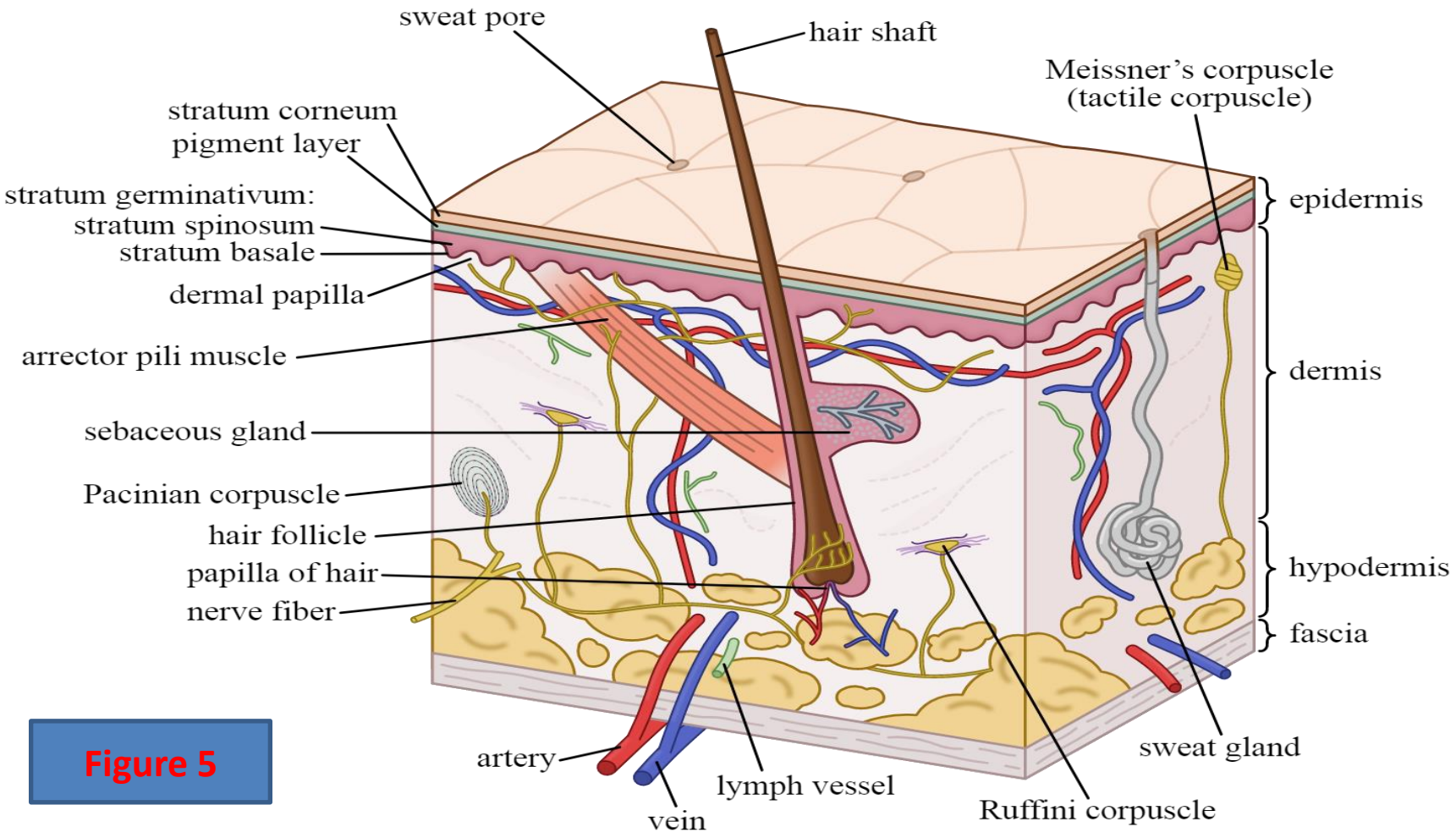

Figure 5

Skin anatomy and functions

Hairs are distributed in various numbers over the whole surface of the body, **except on the lips, the palms of the hands, the sides of the fingers, the glans penis and clitoris, the labia minora and the internal surface of the labia majora, and the soles** and sides of the feet and the sides of the toes.

Skin anatomy and functions

Sebaceous glands (figure .5). They are situated on the sloping undersurface of the follicles and lie within the dermis. They pour their secretion, the sebum, onto the shafts of the hairs as they pass up through the necks of the follicles.

Sebum is an oily material that helps preserve the flexibility of the emerging hair. It also oils the surface epidermisaround the mouth of the follicle.

Skin anatomy and functions

Sweat glands (figure. 6)are long, spiral, tubular glands distributed over the surface of the body, except on the red margins of the lips, the nail beds, and the glans penis and clitoris. These glands extend through the full thickness of

the dermis, and their extremities may lie in the superficial

fascia. The sweat glands are therefore the most deeply penetrating structures of all the epidermal appendages.

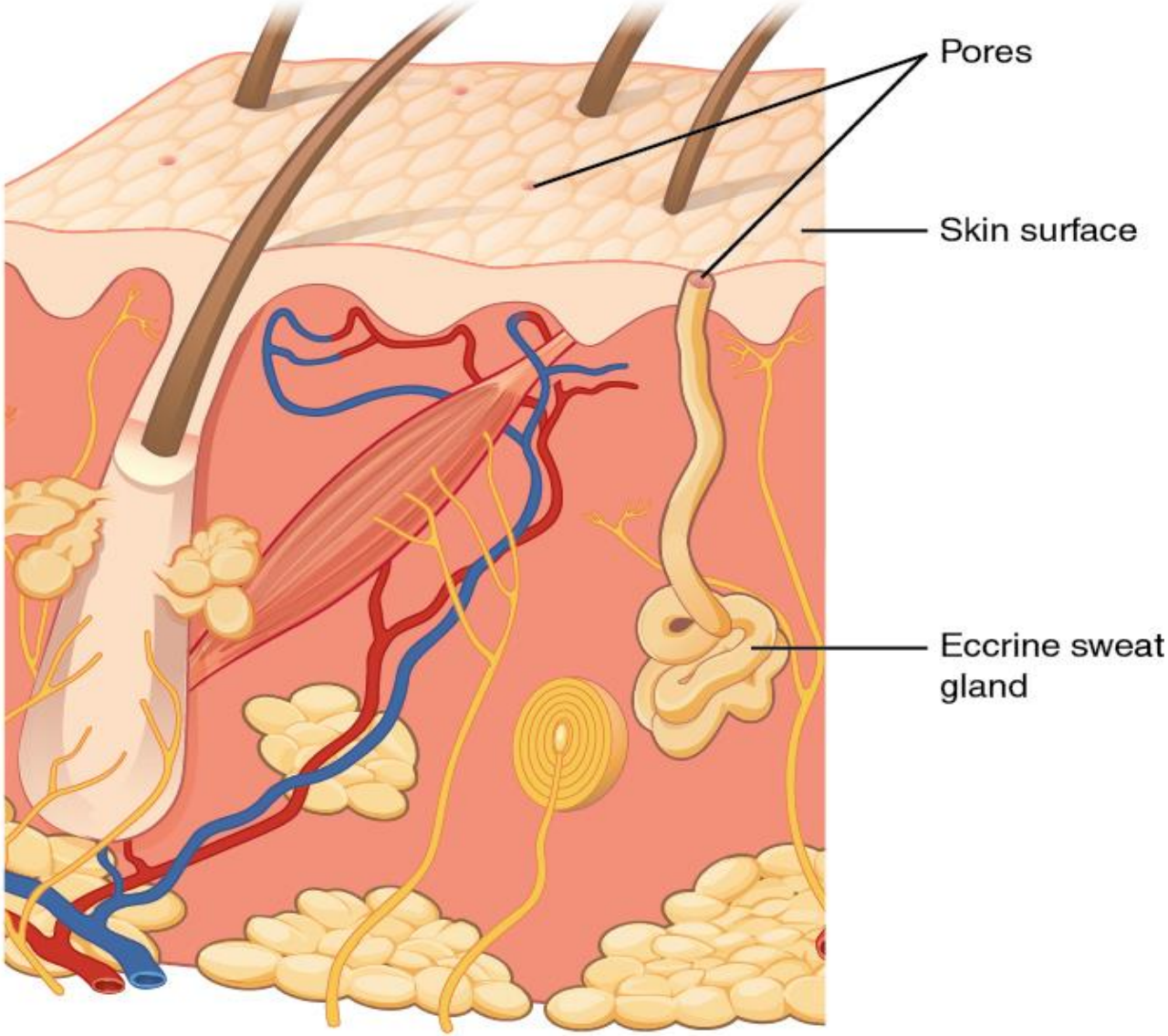

Figure (6)

Skin functions and color

Functions of the skin

1. Provides a protective barrier against mechanical, thermal and physical injury and hazardous substances.
2. Prevents loss of moisture.
3. Reduces harmful effects of UV radiation.
4. Acts as a sensory organ (touch, detects temperature).
5. Helps regulate temperature.
6. An immune organ to detect infections etc.
7. Production of vitamin D.

Skin functions and color

Human skin color

It ranges from the darkest brown to the lightest hues. Differences in skin color among individuals is caused by variation in pigmentation, which is the result of genetics, inherited from parents , exposure to the sun, natural and sexual selection, or all of these factors. The actual skin color of different humans is affected by many substances, although the single most important substance is the pigment melanin. Melanin is produced within the skin in cells called melanocytes (figure.7) and it is the main determinant of the skin color of darker-skin humans.

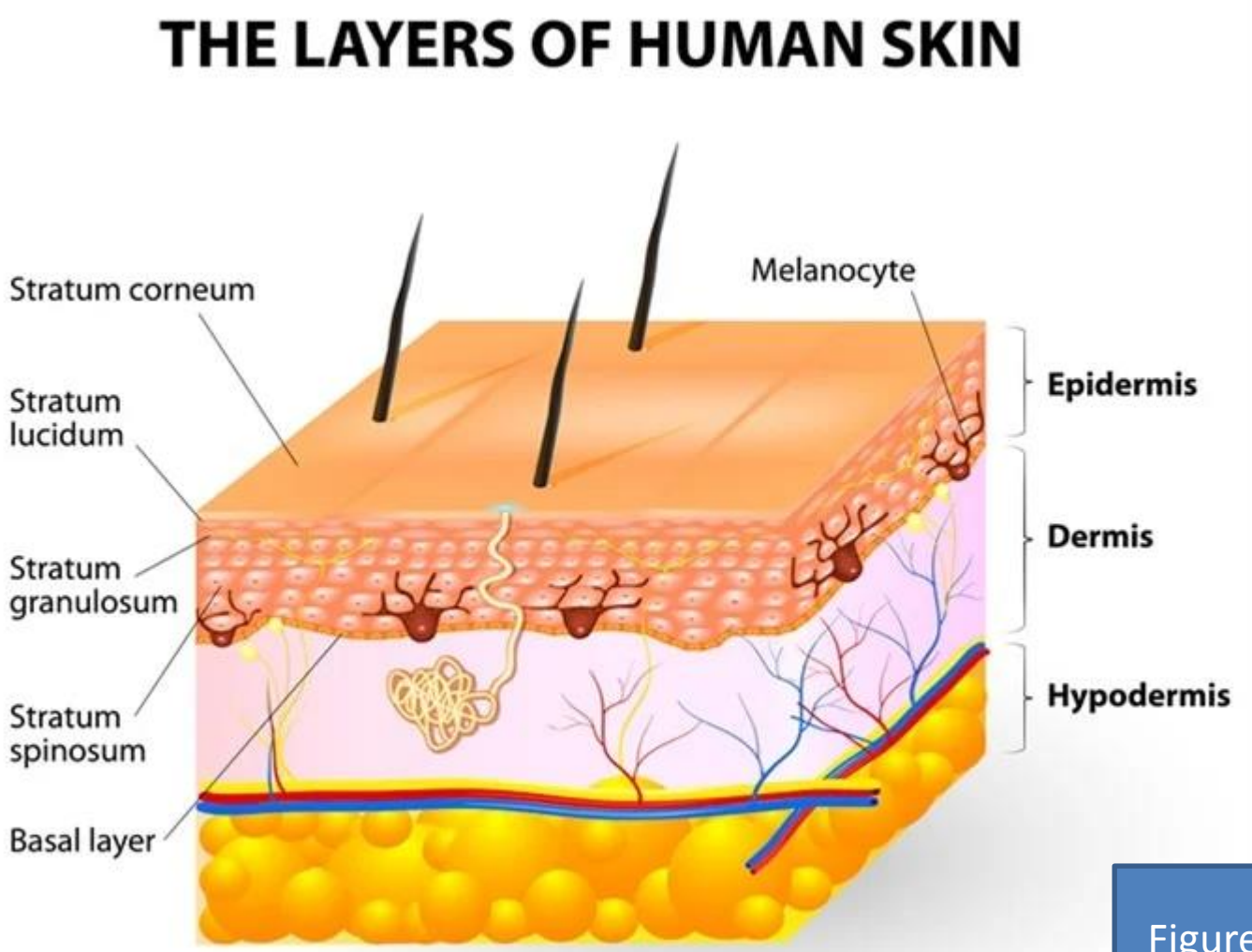
THE LAYERS OF HUMAN SKIN
Stratum corneum
Stratum lucidum
Stratum granulosum
Stratum spinosum
Basal layer
Melanocyte
Epidermis
Dermis
Hypodermis

Figure.7

Skin functions and color

Melanin is produced by cells called melanocytes in a process called melanogenesis. Melanin is made within small granules in the cytoplasm called melanosomes. As they become full of melanin, they move into the slender arms of melanocytes, from where they are transferred to the keratinocytes. Under normal conditions, melanosomes cover the upper part of the keratinocytes and protect them from damage. One melanocyte supplies melanin to thirty-six keratinocytes according to signals from the keratinocytes. They also regulate melanin production and replication of melanocytes. People have different skin colors mainly because their melanocytes produce different amount and kinds of melanin.

Skin functions and color

Melanocytes are melanin-producing neural derived cells located in the bottom layer (the stratum basale) of the skin's epidermis. Melanin is a dark pigment primarily responsible for skin color. Once synthesized, melanin is contained in special organelles called melanosomes (**figure.8**) which can be transported to nearby keratinocytes to induce pigmentation. Thus darker skin tones have more melanosomes present than lighter skin tones. Functionally, melanin serves as protection against UV radiation. Melanocytes also have a role in the immune system.

Figure.8 -melanocyte