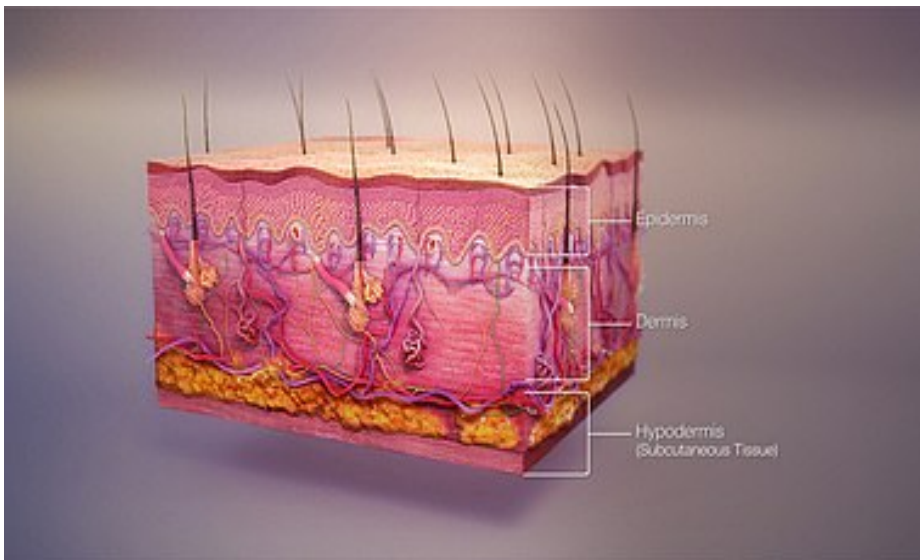


The Skin

The skin has an approximate surface area of 1.6m² and is the largest **organ** in the human body. Our skin weighs in at somewhere in the region of two to four kilograms (4.4 – 8.8 pounds). Our skin is the outer packaging of our entire body and keeps our bones and organs securely inside our body “package”. Our skin is busy with a variety of jobs including skin cell regeneration which occurs every 28 days. We have an automatic subscription to a brand-new skin every month!

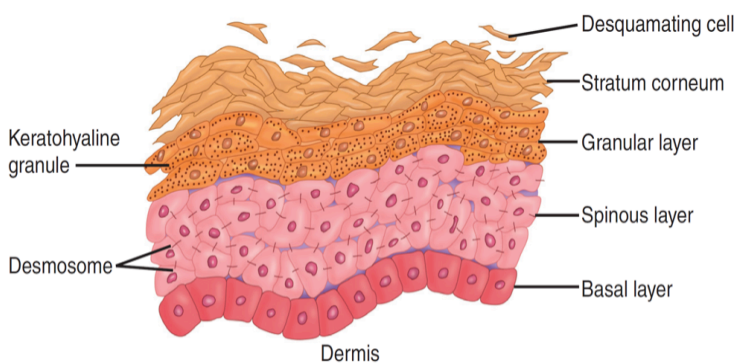
The Structure and Layers of the Skin

The illustrations below show the structure of the skin and the individual layers.



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1 The Skin - showing the Epidermis, Dermis & Hypodermis



The layers of the skin.

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What does the skin consist of?

The skin has many layers and components which we need to be aware of. These are listed below - don't worry, we will get into a bit more detail soon!

- Epidermis
 - Stratum corneum (horny layer)
 - Stratum lucidum (transparent layer)
 - Stratum granulosum (granular layer)
 - Stratum spinosum (prickle cell layer)
 - Stratum germinativum (basal layer)
- Dermis
 - Papillary layer
 - Reticular layer
 - Langers lines
 - Sebaceous gland
 - Arrector pili muscle
 - Dermal papillae
 - Hair shaft
 - Hair follicle
 - Hair follicle walls (outer root sheath)
 - Hair bulb
 - Sweat gland – eccrine and apocrine
 - Sweat pore
 - Sweat duct
 - Langerhans cells
 - Fibroblasts
 - Mast cells
 - Leucocytes
 - Sensory Nerves
 - Motor nerves
 - melanocytes
 - Pacinian Corpuscle
 - Ruffini corpuscle
 - Meissner corpuscle
 - Arteriole

- Venule
- Lymphatic vessel
- Collagen
- Elastin
- Hypodermis - Subcutaneous layer
 - Areolar
 - Adipose
 - Fat cells

Epidermis

The upper most section of the skin is the epidermis. This is made up of 5 layers.

1. Stratum corneum *horny layer* – this is the outermost layer of the skin, the visible skin we can see. This is the layer we focus on in salon treatments and with our beauty products. Cells in this layer are like scales which are continually shed. The cells move up to this layer from the deeper layers in the continual regeneration process. These cells are composed primarily of keratin which is also the main component of hair and nails.
Lipids or fats produced by the skin mix with the cells of the stratum corneum making this layer water-resistant and protective.
2. Stratum lucidum *transparent layer* – this layer is a thin layer of transparent skin cells which allow light to pass through it, hence the name lucidum meaning clear, transparent.
3. Stratum granulosum *granular layer* - this a thin layer containing granular cells. These cells are migrating keratinocytes from the stratum spinosum.
4. Stratum Spinosum *prickle cell layer* – a thin layer made up of keratinocytes, or prickle cells.
5. Stratum Germinativum *basal layer* – This is the germinating layer where all skin cells are produced. As they migrate upwards through the layers, they become flattened as they die. They then become the horny layer.

The dermis is the section of the skin in which the cells are produced, and this layer is where the most important functions of the skin occur. In the dermis you find the sweat glands and the sebaceous glands, and it is here that the hair is produced. The dermis contains the smallest blood vessels (capillaries) and the nerve endings which give the skin its sensitivity.

The skin on the palms of the hands and the soles of the feet is rather different to the skin on the rest of the body. In the first place, the epidermis is 'shiny'. In the second place, the epidermis on the palms is much thicker. Finally, the skin on these places contains three times as many sweat glands, but no hair follicles at all.

The Function of the Skin

The skin, this beautiful cover of our muscles, bones and organs, has a number of important functions:

- protection against UV light and other external influences;
- regulation of the body temperature: the thermostat function;
- one of the most important senses: feeling;
- the capacity to absorb and to secrete substances.

Protection

The epidermis and dermis together form a water-tight layer that protects the underlying tissue against dirt, minor injuries, bacterial and fungal infections, and against chemical 'attacks'. The first protective layer consists of a mixture of acid oil and fat called the sebum. This acidic layer, or acid mantle, is like a film over the skin. The acid mantle kills bacteria that arrive on the skin, to prevent bacterial infections. The oil protects the skin from becoming dehydrated and aging. Dust, sweat, bacteria, residual make-up and air pollution become trapped by this oil layer.

The second protective layer consists of the dead cells of the stratum corneum. This layer prevents the penetration of infections and fungi. The production of melanin, the substance that is released as a protection response, and has a side effect of making the skin tan. Melanin protects the lower layers of the skin against hazardous UV radiation.

Heat regulation

The skin is essential for maintaining the constant temperature of our bodies, approximately 37 degrees Centigrade. The skin does this in a number of ways:

- by perspiration - when it is warm, moisture is released onto the skin. This sweat evaporates, removing heat and cooling the body.
- by constricting the blood vessels and restricting blood circulation in the skin in lower temperatures, preventing heat loss. This can give us a slight colour change to a bluish tone, and we are said to be 'blue with cold'.

- By forming fat deposits under the skin, this gives the body an additional layer of insulation.

Absorption and secretion of substances

When you perspire, your body discharges waste substances through the skin. The skin is also able to absorb substances, a function used by cosmetic manufacturers to make effective creams. The pharmaceutical industry uses the permeability of the skin for products such as nicotine and morphine patches.

Touch

The dermis is full of minute nerve endings that respond to temperature fluctuations, damage which we perceive as pain, touch and pressure. This is the sensation which allows us to feel things and perform complex tasks with our hands.

Wrinkled fingers

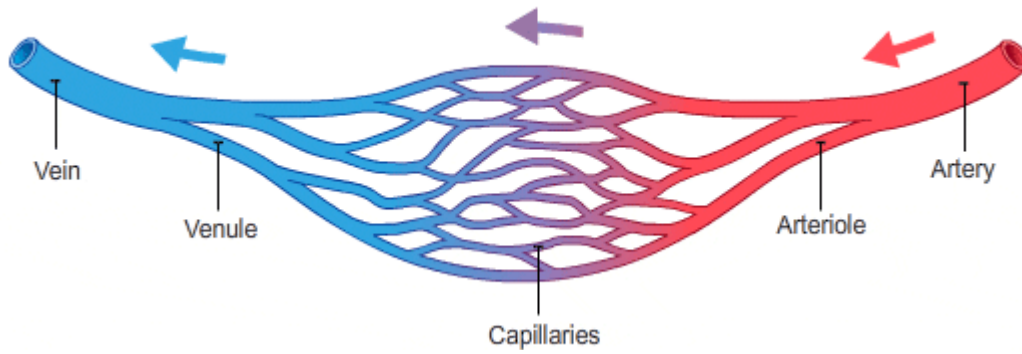
Anyone who has taken a long bath has seen that the skin on the fingers and toes becomes wrinkled. Why only there? The outer layer of the skin, the stratum corneum, consists of dead cells. As these cells are dead, they can no longer actively retain their moisture inside and therefore rapidly dry out. The walls between the cells are no longer intact, therefore they look like a sponge. In a bath, or when you sweat, these dry cells become full of moisture and swell up. You mainly notice this on the thick, calloused stratum corneum on the palms of the hands and the soles of the feet. The living cells, underneath the calloused skin, are anchored to elastic connective tissue. This partially fixes the skin in position, giving it grooves and bumps. On the stomach and legs, for instance, the epidermis is much more elastic, therefore the skin there can swell without wrinkling.

Blood vessels

Blood vessels are very important to our survival. They are responsible for the supply and removal of nutrients and waste products to and from the muscles and skin. The arteries are responsible for the supply of oxygen-rich blood, whilst the veins allow the removal of blood low in oxygen.

The arteries branch off into smaller blood vessels called arterioles and then into capillaries. These are the smallest blood vessels and have a semi-permeable wall which allows the exchange of oxygen and other nutrients with the cells.

At the same time these nutrients are released, the blood absorbs waste materials and carbon dioxide gas from the cells. The waste materials are transferred via the veins to the lungs and liver, which are the organs responsible for purifying the blood.



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