HUMAN SKIN
CROSS-SECTION

The layers of human skin

What is skin?

The skin, also known as the dermis or cutis, is the largest human organ, accounting for approximately 16% of our overall bodyweight. Our skin's primary role is to act as an interface between our body and environment, protecting human life from noxious and toxic substances, UV light, heat and micro-organisms. The skin is also the most extensive sensory organ of the body for detection of touch, heat and pain and for the start of vitamin D production.

Our skin is, on average, 1mm thick and consists of three primary layers: the epidermis, the dermis and the hypodermis.

The epidermis is the outermost layer of the human body, consisting of mostly keratinocytes, which produce keratins. The epidermis has five layers:

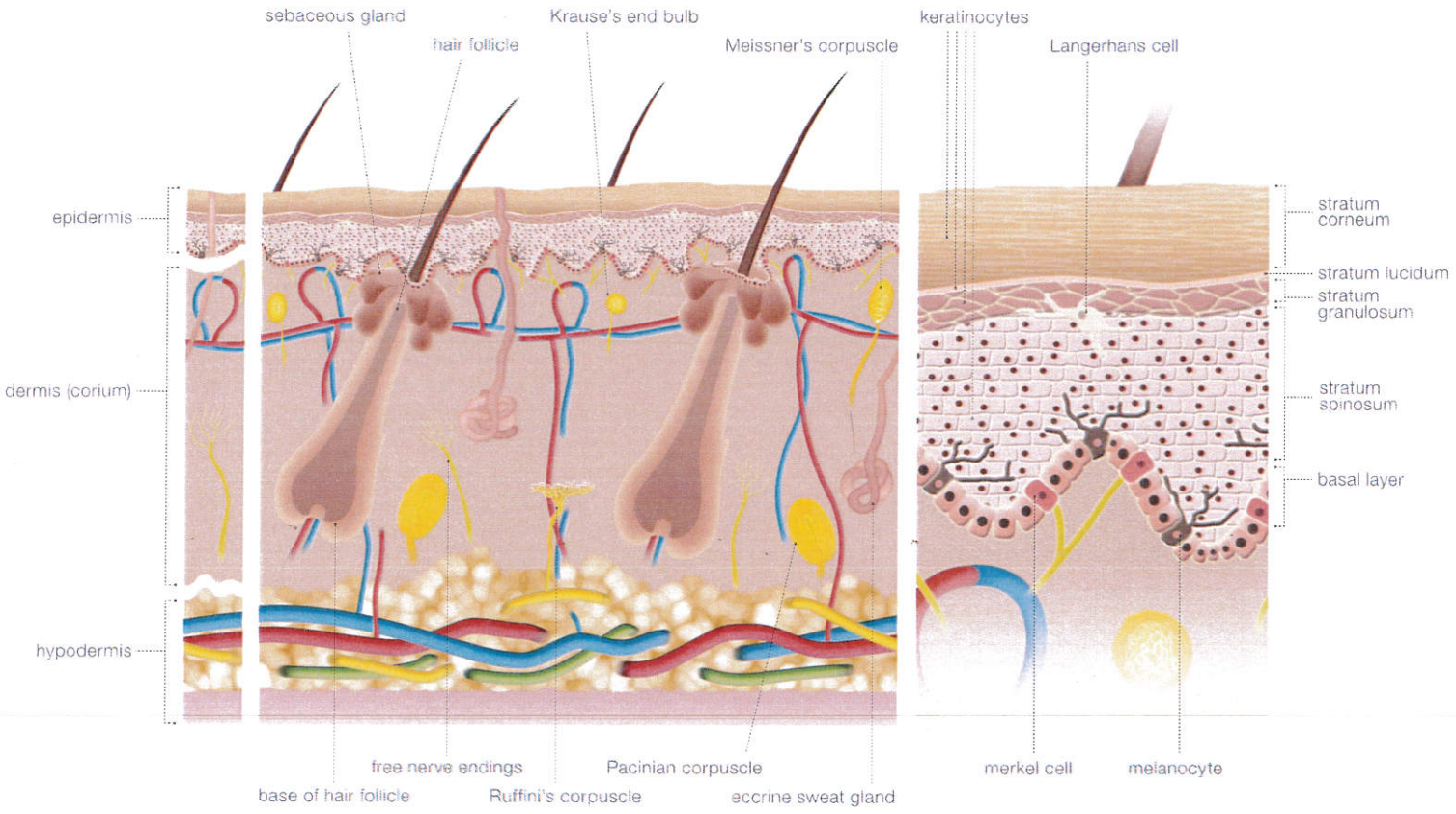
1. The stratum corneum, a layer of dead flat cells.
2. The stratum lucidum, which is only present in thick skin such as the palms of hands and soles of feet, to help reduce friction between the stratum layer and granulosum.
3. The stratum granulosum, cells which have lost their nucleus.
4. The stratum spinosum, the thickest layer of the epidermis.
5. The basal layer, a single cell layer and the deepest of the epidermis which sits just on top of the dermis. Within the basal layer are melanocytes, cells responsible for producing melanin, the pigment that gives skin its tone and photoprotection, Merkel cells, most commonly associated with nerve endings, and Langerhans cells, which play a role in the immune system.

When we shed and change skin, we start this process from the basal layer of the epidermis. Cells migrate from the bottom of the epidermis to the top, becoming progressively flatter before they are shed. This renewal cycle of skin cells takes around 30 days in most people. This is the process of skin regeneration.

The dermis, also called the corium, connects the epidermis to the rest of the body. The dermis consists of two layers, the papillary and elastic, both containing three types of tissue: collagen, elastic tissue and reticular fibers. Collagen is responsible for the strength of the skin and holding skin tissue together like glue. There are also specialised cells and glands within the dermis, including: the bases of hair follicles; sebaceous glands, responsible for producing sebum or oil; eccrine sweat glands, which produce sweat; and specialised nerve cells, Meissner's corpuscle, Pacinian corpuscles, Ruffini corpuscle, Krause's end bulb and free nerve endings. All of these nerves have different roles including sensing touch, pressure, pain and temperature.

Many of these glands and cells are also found in the hypodermis, the largest layer of skin. It mainly consists of loose connective tissue, with a vast quantity of adipose or fat cells.

At the base of the hypodermis and throughout the dermis are series of veins, arteries and lymph channels which collectively regulate blood flow and nerves to receive touch sensations.



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