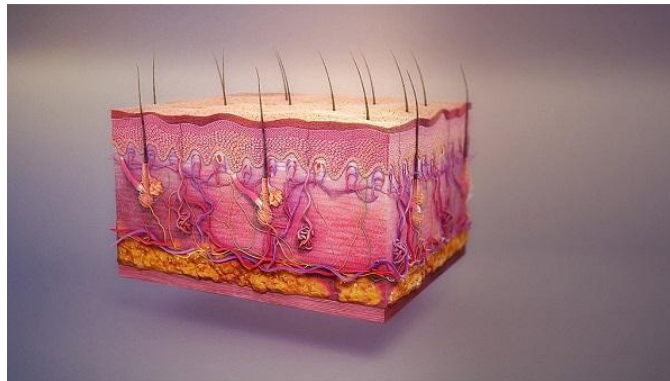


The **integumentary system** consists of the skin, hair, and nails. The skin consists of two layers: the epidermis and the dermis. The outermost layer of cells, the **epidermis**, is a [stratified squamous epithelium](#) with many layers of flat cells. Rapid [cell division](#) occurs at the epidermis, replenishing the skin cells that get constantly abraded from the body surface.

As the layers of skin cells are pushed to the **apical surface**, they fill with the protein **keratin** and release a waterproofing **glycolipid**. This protects the body from dehydration and prevents penetration by microbes. The inner layer of the skin, the **dermis**, is made of fairly dense connective tissue with many elastic fibers and strong collagen fibers, the thinning of the latter leading to wrinkles.

The dermis also contains the hair follicles, oil and sweat glands, muscles, nerves, and blood vessels. The presence of blood vessels functions in temperature regulation. Sensory receptors are present in the skin and provide environmental information to the brain.

Beneath the skin lies the **hypodermis** which is a layer of adipose tissue. Another function of the skin is the synthesis of **vitamin D**, which is used for absorbing calcium. The synthesis of vitamin D is sped up by UV rays which is why we are advised to expose to the sun's rays during early mornings.



In mammals, **hair** is an important component of the integumentary system. It is a flexible shaft of flattened, keratin-filled dead cells, produced from a **hair follicle**. Associated with hair follicles are the **oil glands** which help lubricate the hair, condition the surrounding skin, and inhibit the growth of bacteria.



## Animal Form and Functions

### *Integumentary System*

Hair follicles also serve an important sensory function. You can sense how sensitive it is just by lightly touching your hair on the head.

Hairs also insulate the bodies of animals but in humans, this is limited to the head. Land animals raise their fur when cold to trap air and increase the insulating power of their fur. The **nails** are the final components of the integumentary system. These protective coverings are also composed of keratin. Fingernails are used in manipulation with our limbs and in other mammals, the digits may end in claws or hooves.



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*To God be the glory!*