

INTEGUMENTARY SYSTEM

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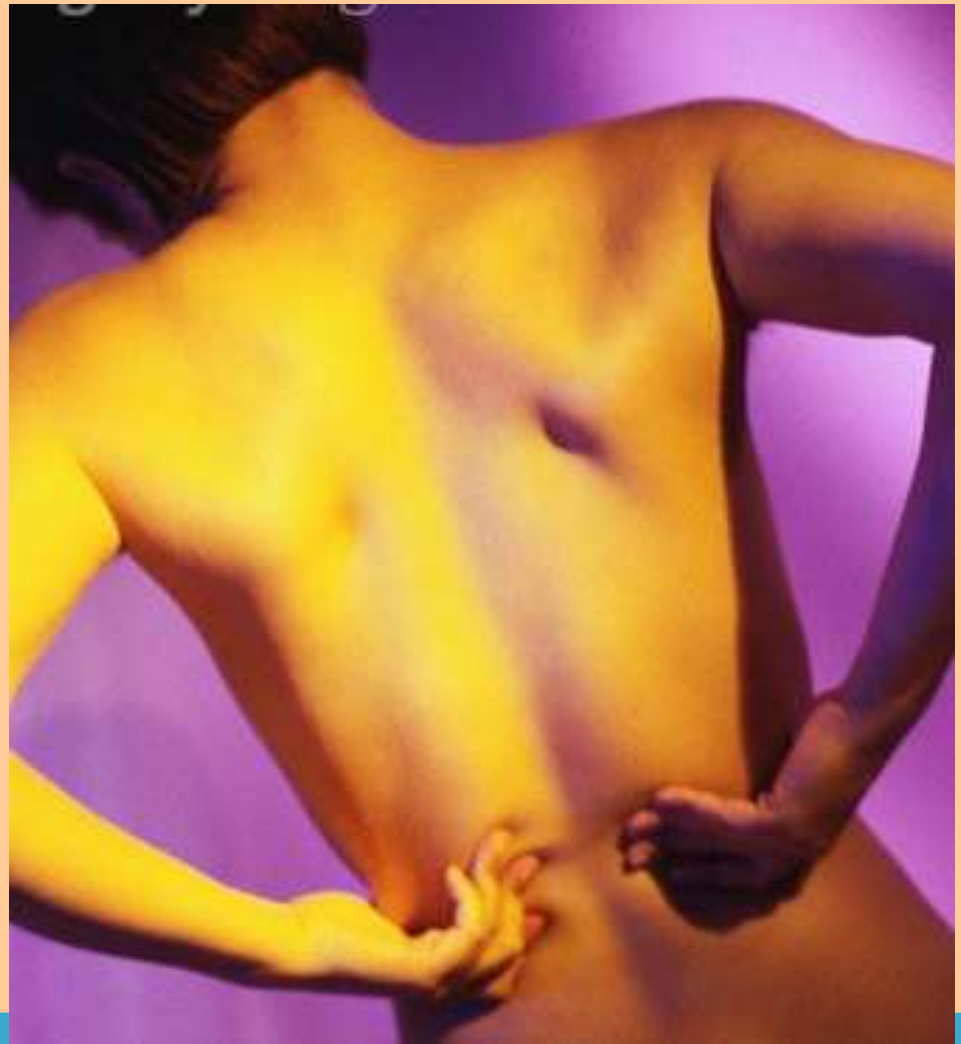
What is the integumentary system?

The integumentary system consists of the skin and its accessory structures, including the hair, nails, sebaceous glands, and sweat glands.



Skin...

The skin is the exterior covering of the body. It weighs more than 6 pounds in the average adult, and covers more than 3,000 square inches. It is the largest organ of the body. It is supplied with blood vessels and nerves.



Functions of skin...



The skin provides protection. It protects against invasion by bacteria and other harmful agents. It protects delicate cells beneath the surface from injury.

It inhibits excessive loss of water and electrolytes. It produces a protective pigmentation to protect the body against excessive exposure from the sun. It helps produce the body's supply of Vitamin D.

Functions of skin...

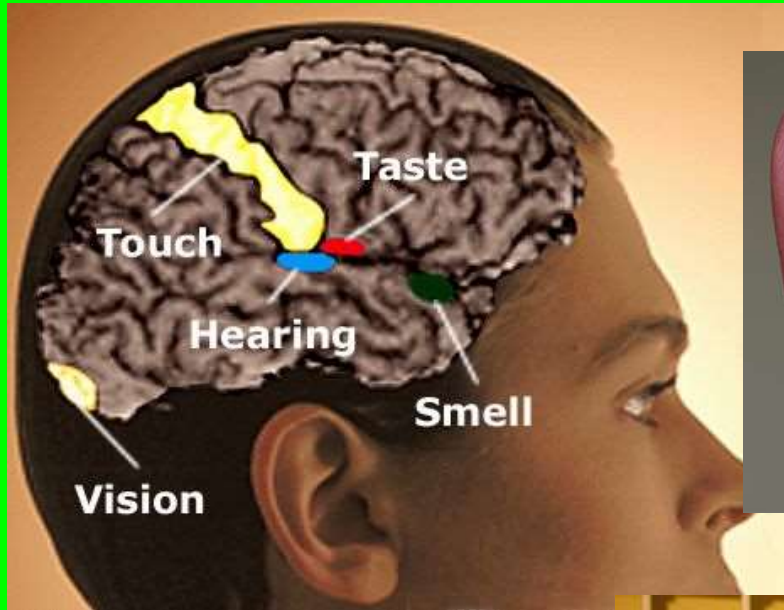


When the body is too hot, the blood vessels in the skin dilate.

That brings more blood to the surface for cooling by radiation. At the same time, sweat glands secrete more sweat that cools the body when it evaporates.

The skin regulates body temperature. When the body is too cold, the skin's blood vessels constrict. This allows more heat-carrying blood to circulate to the muscles and organs.

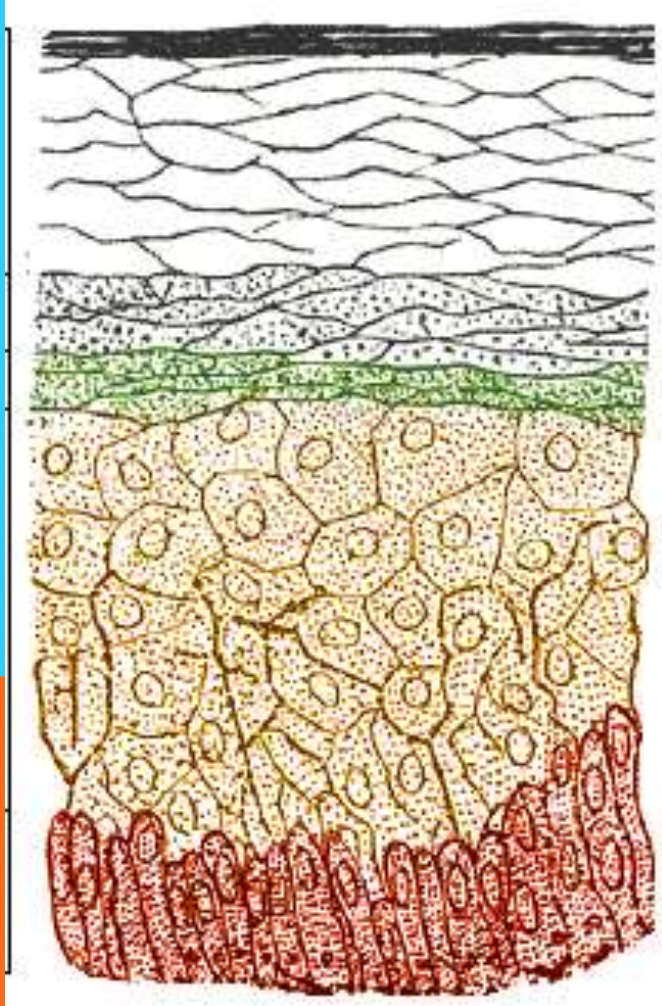
Functions of skin...



The skin provides sensations. It contains millions of nerve endings that act as sensory receptors for pain, heat, cold, and pressure. When stimulation occurs, nerve impulses are sent to the cerebral cortex of the brain... and the brain triggers any necessary response.

Epidermis...

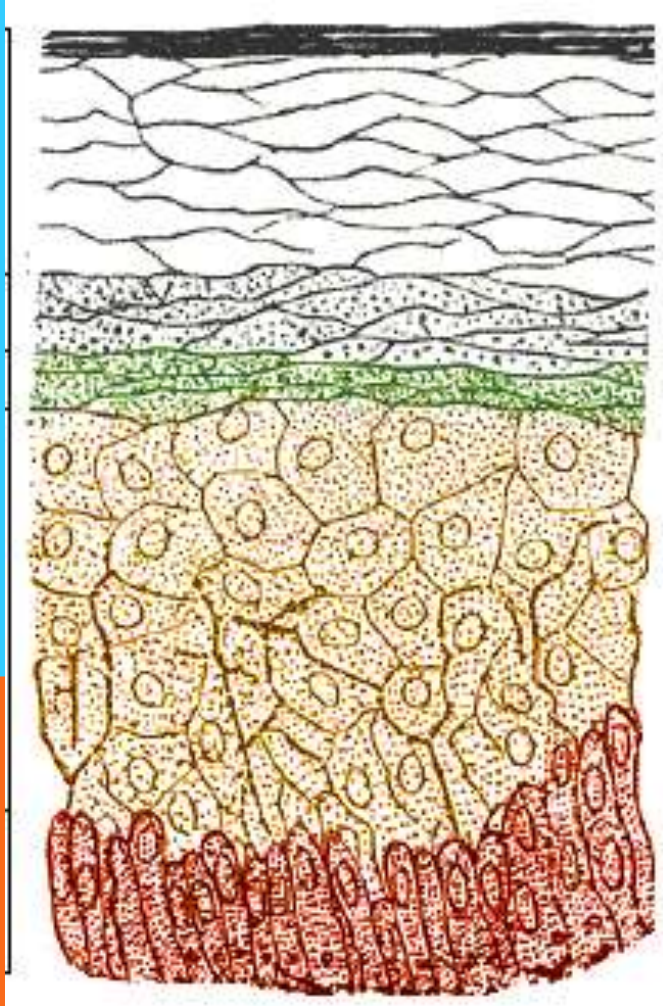
The skin has two layers... the epidermis and the dermis. The epidermis actually has 4 strata...



Stratum corneum

The stratum corneum (STRĀT um KOR nee um) is the outermost strata of the epidermis. It is mostly dead cells, filled with a protein substance called keratin. It is thicker on the soles of the feet than on the eyelids...where there is less pressure.

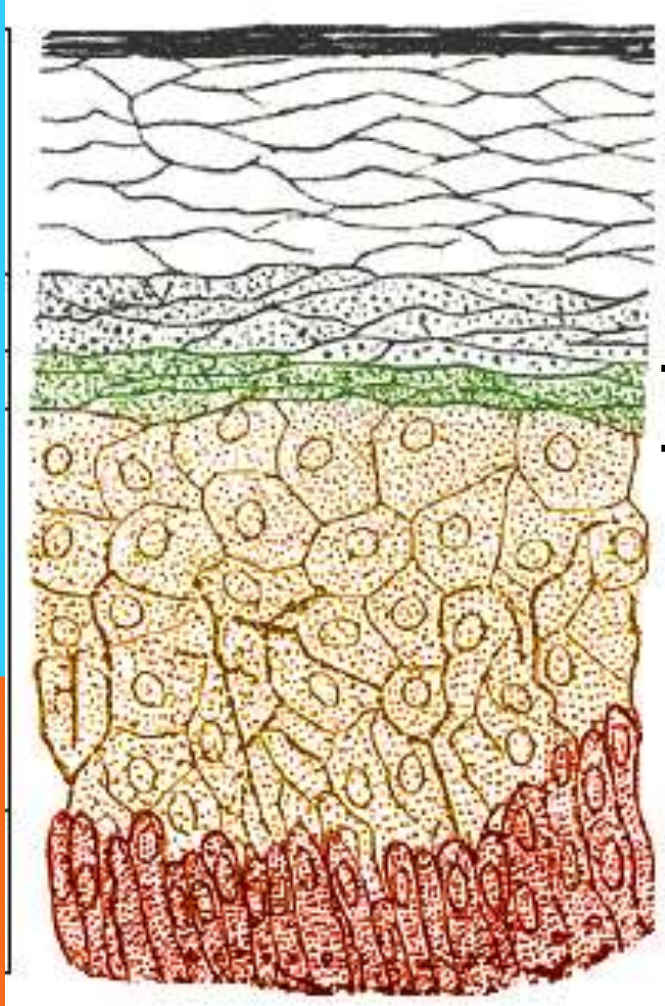
Epidermis...



Stratum lucidum

The stratum lucidum (LOO seh dum) is a translucent layer lying directly beneath the corneum. It may not even exist in thinner skin. Cells in this layer are also dead or are in the process of dying.

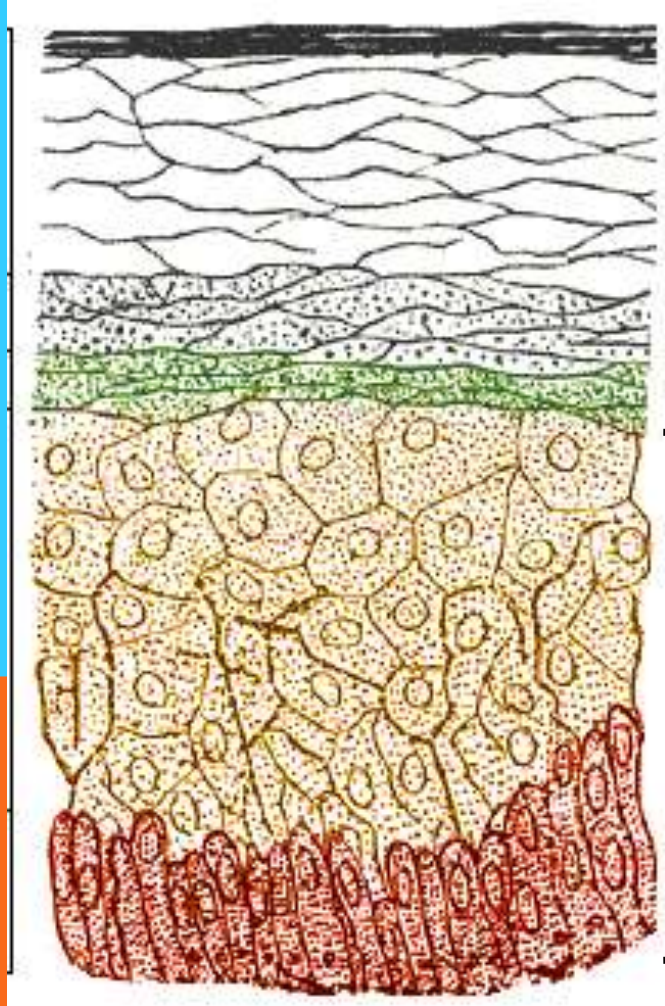
Epidermis...



Stratum granulosum

The stratum granulosum (grǎn yū LŌ sum) is one or more layers of cells starting to die and become hard. They are in the process of keratinization... (kare ah tin ī ZĀ shun) becoming fibrous protein similar to that in hair and nails.

Epidermis...

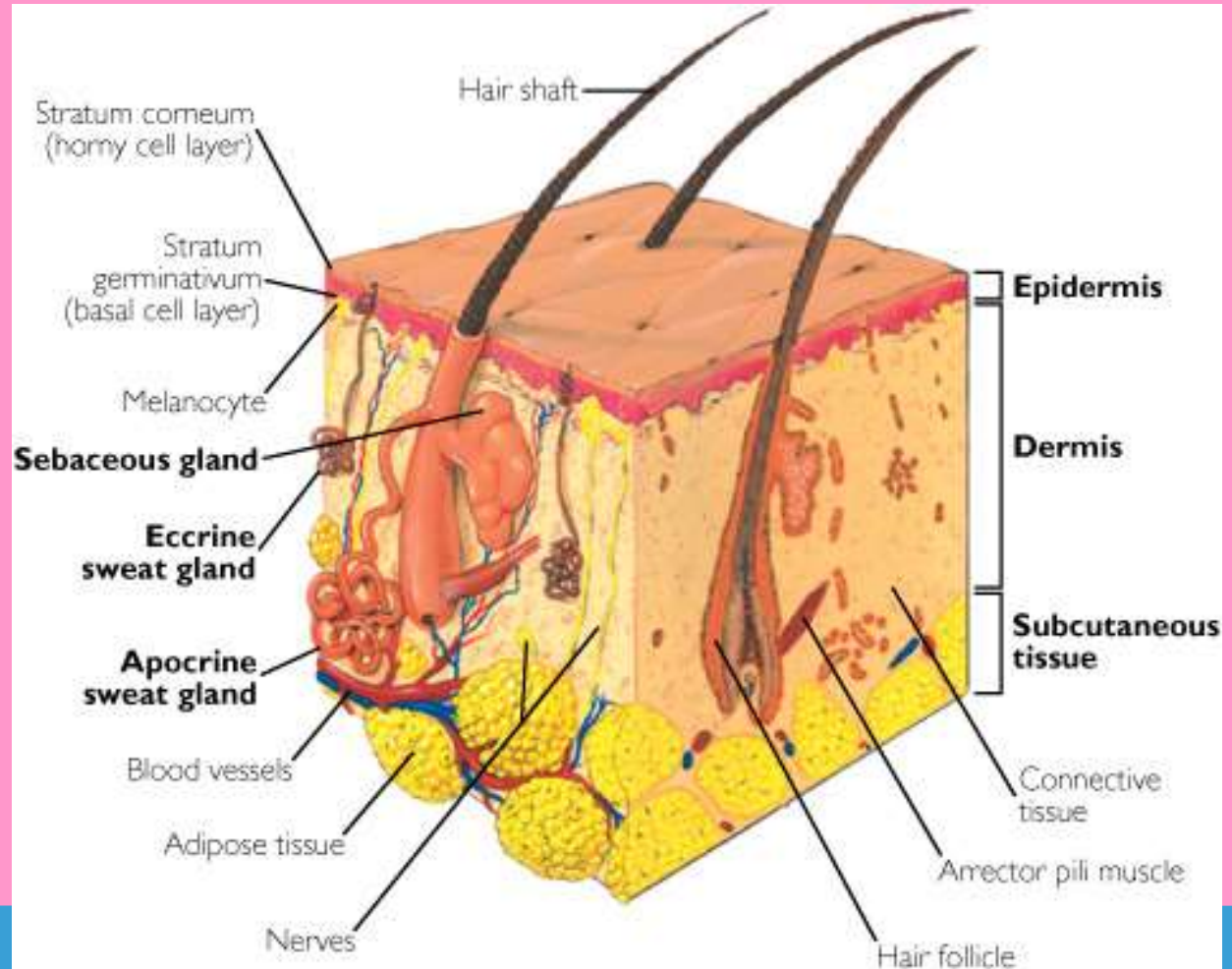


Stratum germinativum

The stratum germinativum (jer mah nah TĪV um) is composed of several layers of living cells capable of cell division. It is the innermost layer of the epidermis, and contains melanin... the pigment that gives color to the skin. The more abundant the melanin... the darker the skin color. Damage to this layer, such as in severe burns, requires skin grafts.

The dermis...

The dermis is beneath the epidermis and is composed of connective tissue.

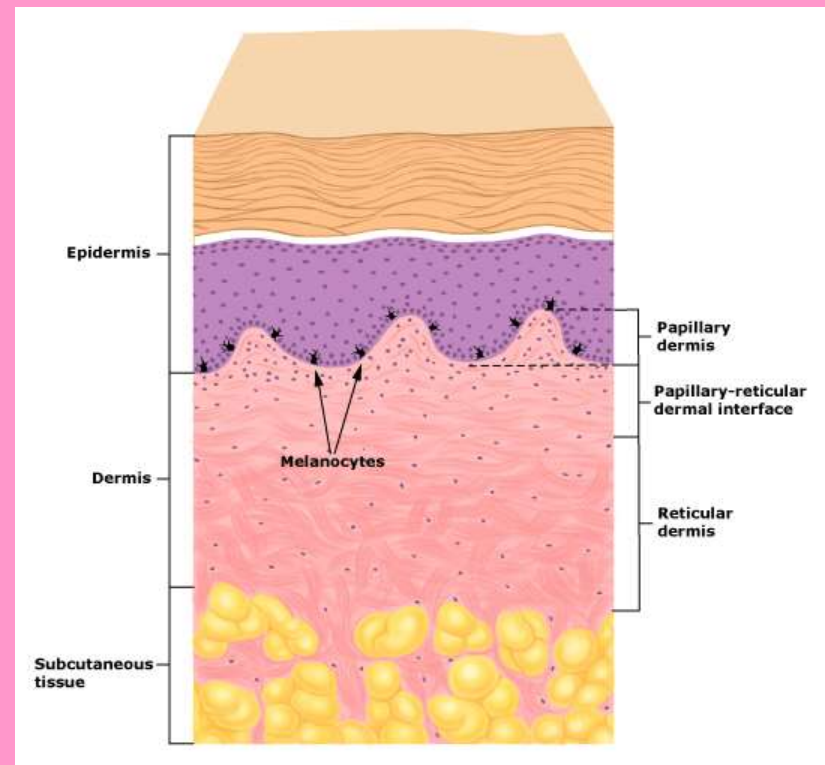
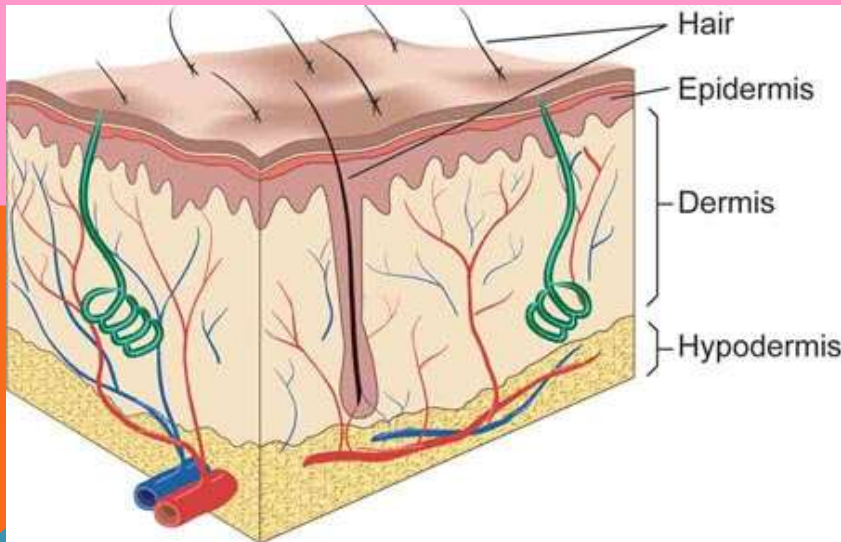


It contains the lymphatics, nerves, nerve endings, blood vessels, sebaceous and sweat glands, elastic fibers, and hair follicles.

The dermis...

The dermis is divided into two layers...

1. the papillary layer (PĀP ah lair ee) is arranged into microscopic structures that form ridges. These are the finger- and footprints

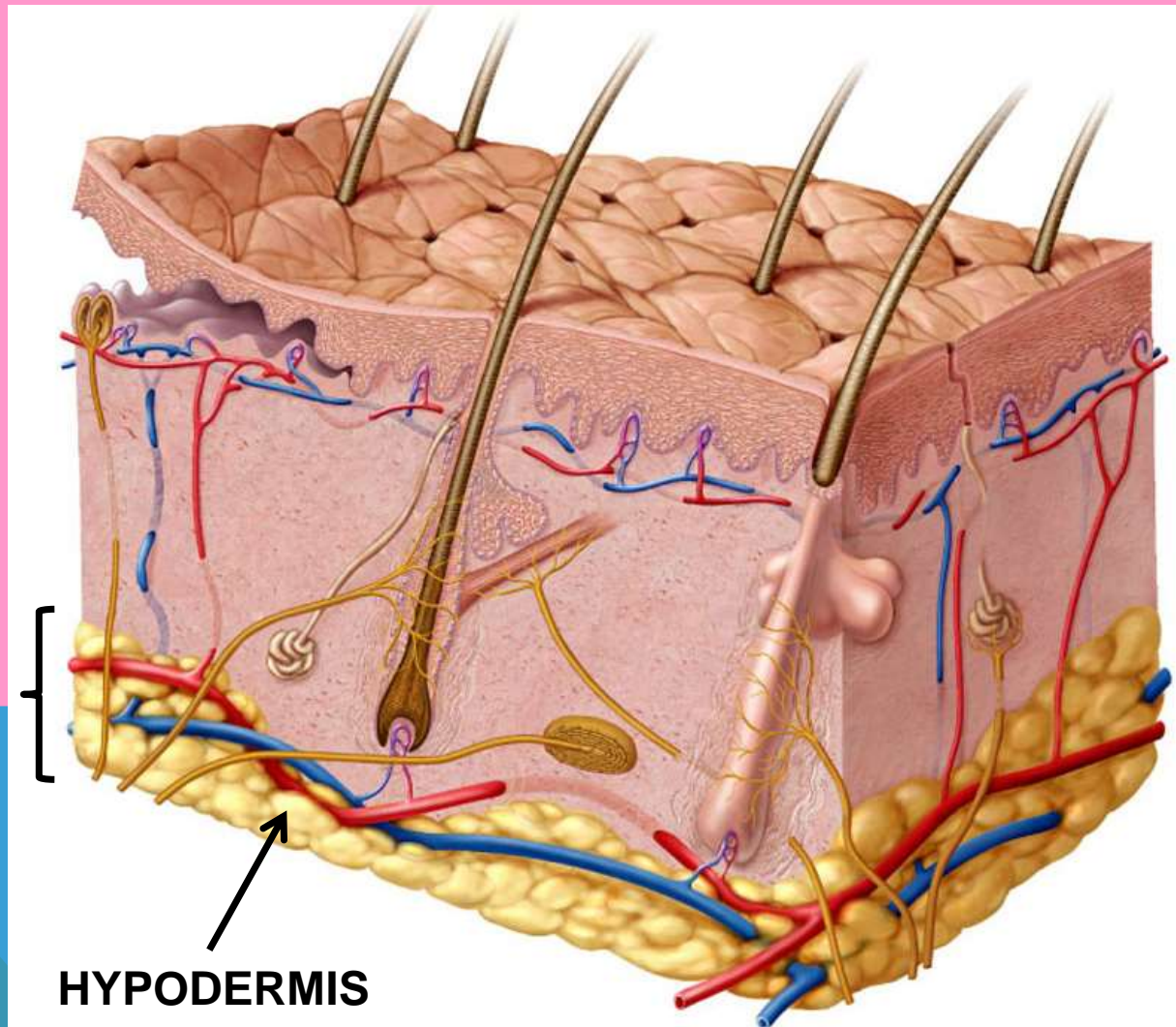


2. The reticular layer (ruh TĪK yoo ler) is beneath the papillary layer; it is a white fibrous tissue that supports the blood vessels

The dermis...

The subcutaneous tissue or hypodermis is composed of adipose and connective tissue. It supports, nourishes, insulates, and cushions the skin.

The dermis is connected to underlying tissue by the subcutaneous tissue.

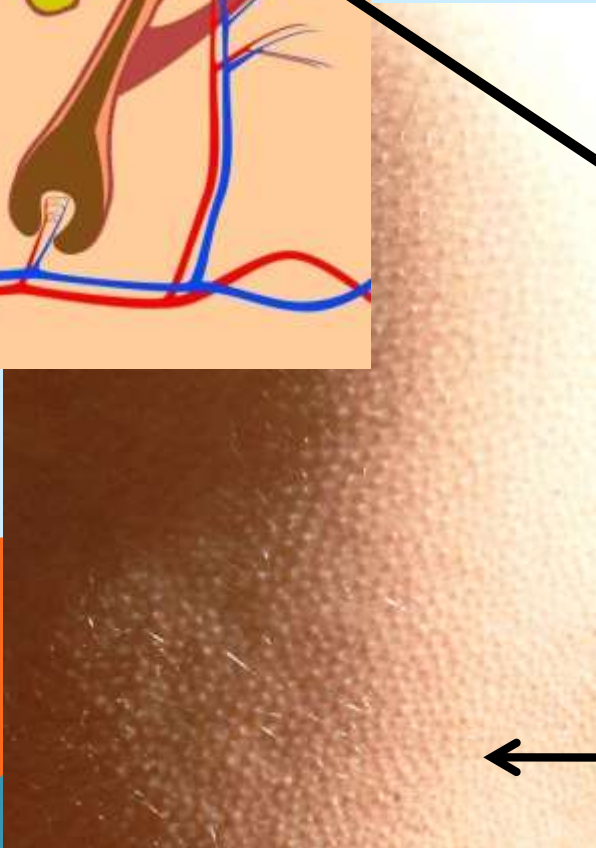
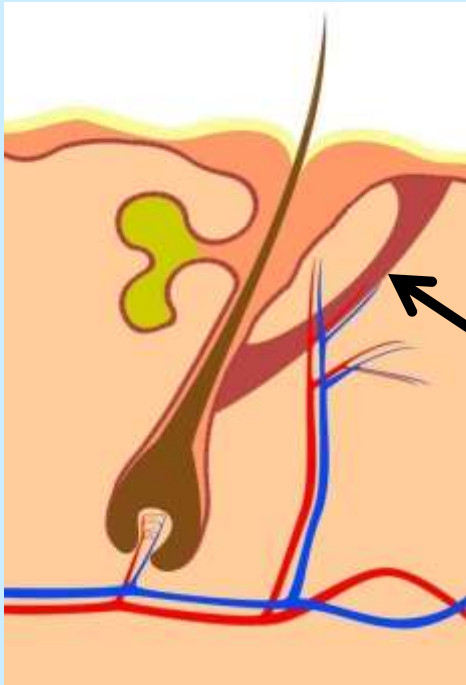


The hair...

The hair is a threadlike structure formed by a group of cells that develop within a hair follicle or socket. Each hair has a shaft that is visible and a root that is embedded in the follicle.

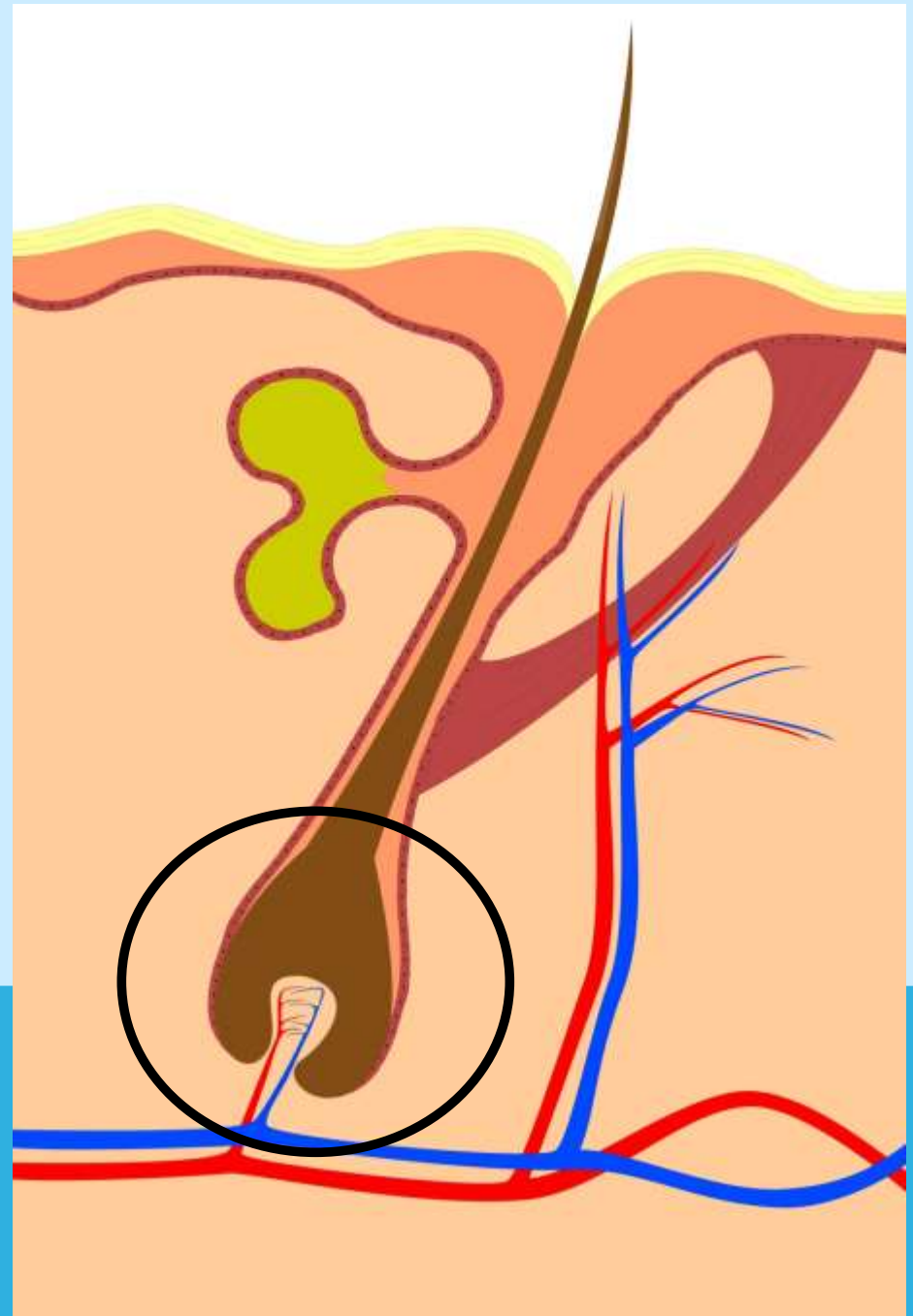
A pilomotor (pī lah MŌ ter) muscle is attached to the side of each follicle. It is stimulated by skin irritants, emotional arousal, or cold temperatures, and reacts by contracting.

This causes goose flesh or goose pimples.



The hair...

At the base of each hair follicle is a bulb enclosing a loop of capillaries. It is called the hair papilla (pah PILL ah), and provides nourishment to the hair. It is one of the few living parts of the hair, and is responsible for hair growth.



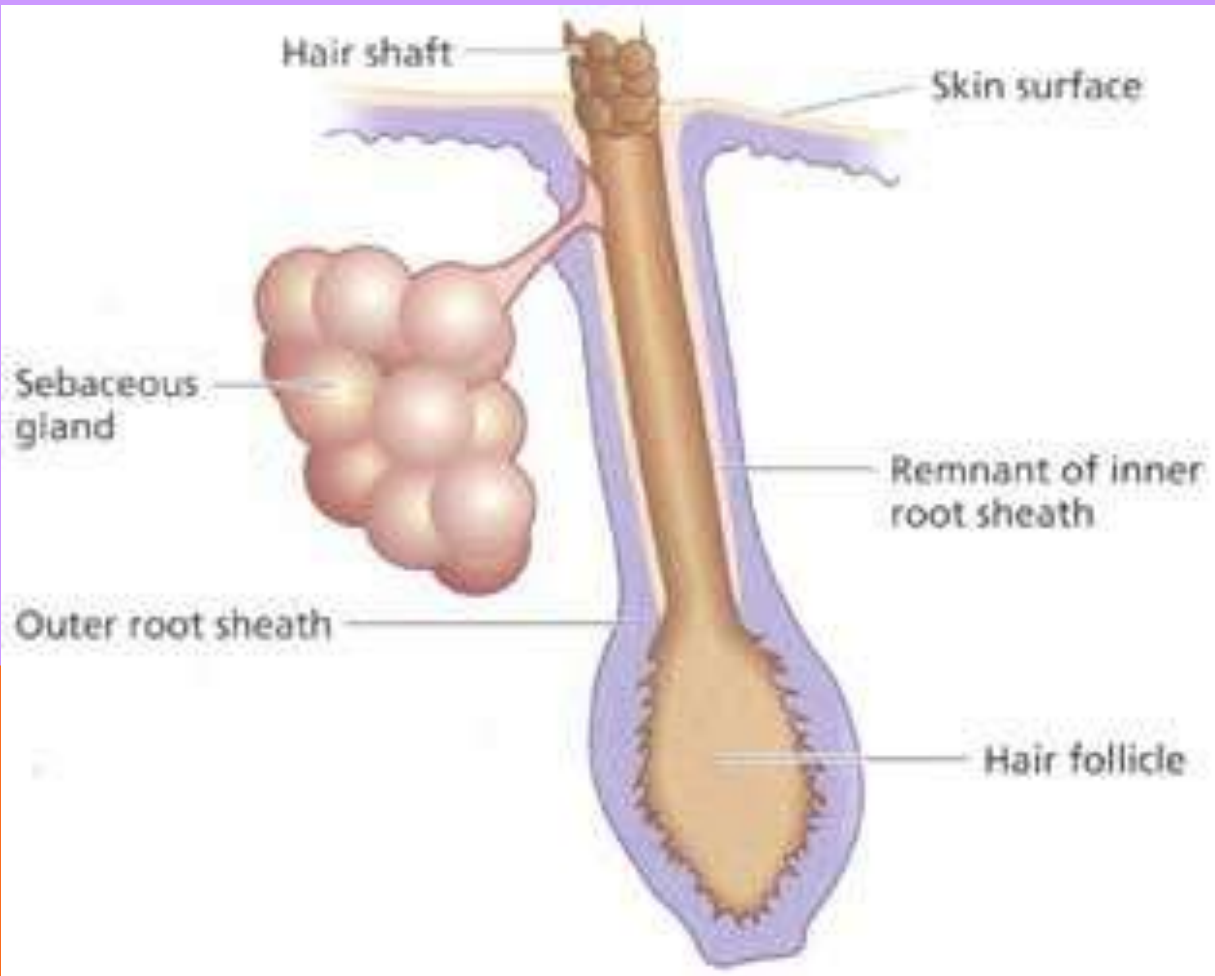
The hair...



The transparent cuticle covers the hair shaft like shingles on a roof, protecting it from the elements and chemicals, and from losing moisture. The cortex provides most of the hair's weight. It contains melanin which provides color to the hair, stores oils, provides flexibility and elasticity, and adds shape to the hair. When the cuticle is damaged and exposes the cortex, hair looks dull and dry. The medulla is a inner hollow core that runs the length of the shaft.

Sebaceous glands...

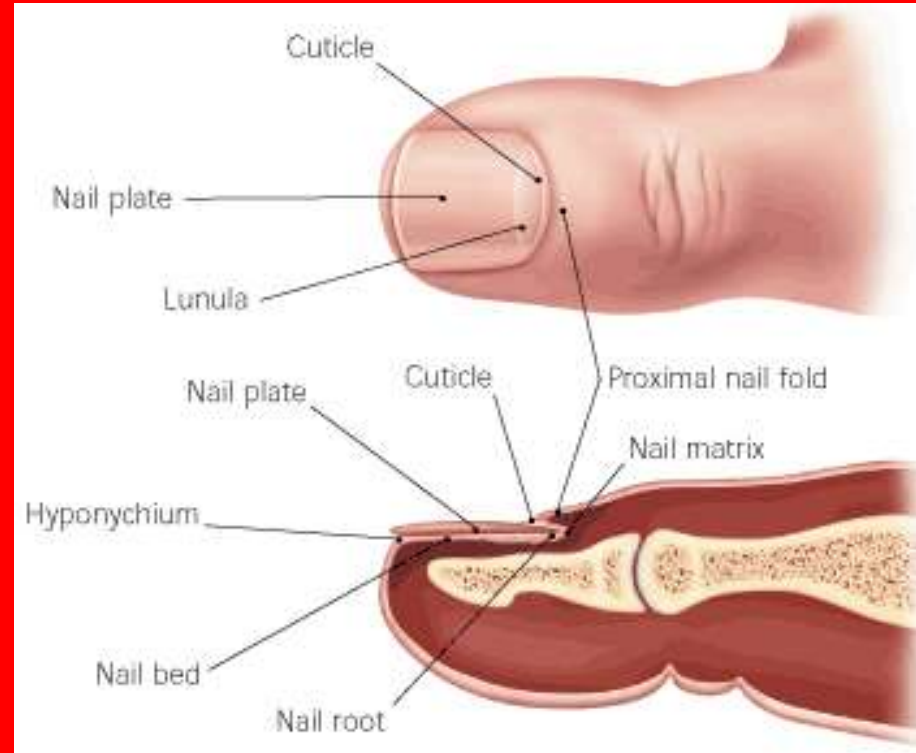
Sebaceous (sĭ BAY shuss) glands are oil glands. They have tiny ducts that open into each hair follicle.



Each sebaceous gland secretes sebum, which lubricates the hair and skin. The amount of secretion varies with age, puberty, and pregnancy.

Nails...

Fingernails and toenails are hard keratin structures that protect the ends of the fingers and toes. The nail root, also called the germinal matrix or nailbed, begins several millimeters into the finger and extends to the edge of the white, crescent-shaped lunula. This is where the growth occurs... approximately 1 mm. per week.

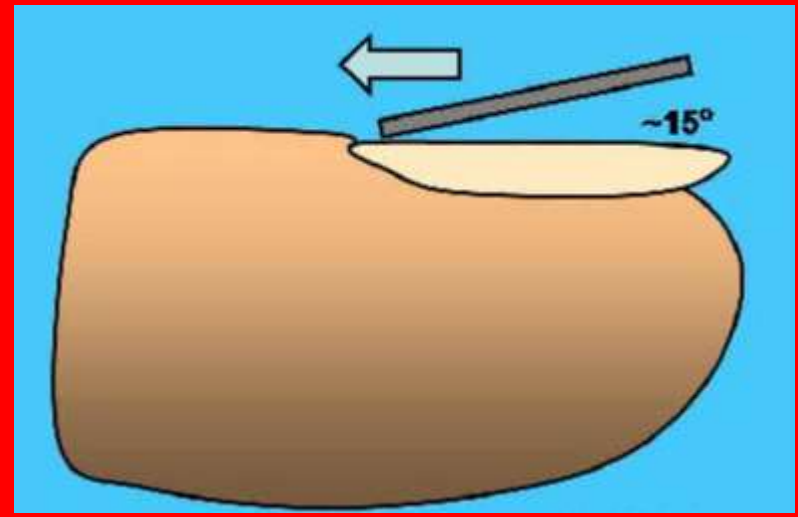


The under-surface of the nail plate or body of the nail has grooves that help anchor it.

Nails...

The cuticle is also called the eponychium (ep ĭ NĪK ee um). It fuses the nail plate and the skin of the finger together to form a waterproof barrier.

The hyponychium (hī poh NĪK ee um) is under the free edge of the nail. It also creates a waterproof barrier, fusing the skin of the finger to the underside of the nail plate.



A lost finger- or toenail will regenerate.

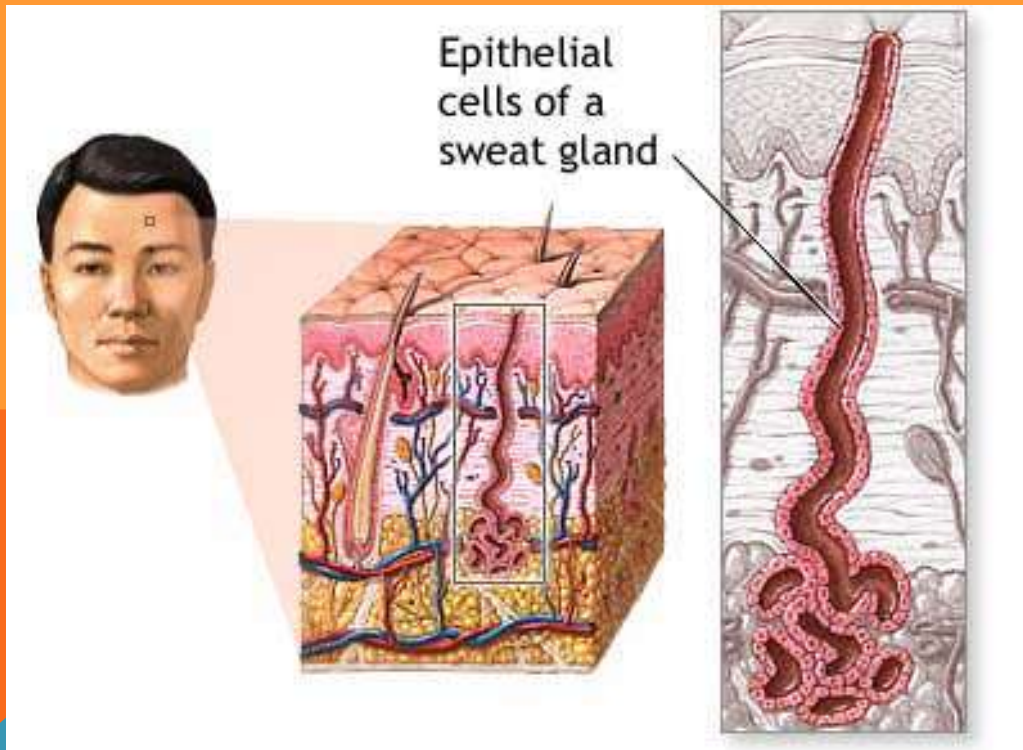
Ingrown nail...



Ingrown nails are simply those that have curled down or around and are growing into the skin. They may become swollen and inflamed. Trim toenails straight across to avoid this growth pattern.

Sudoriferous Glands...

Sudoriferous (soo door RIF or us) glands are sweat glands. About 2 million are distributed over the surface of the body, more numerous on the palms of the hands, soles of the feet, forehead, and axillae (AG zil ah) or underarms.



Sudoriferous Glands...

Sweat glands produce sweat or perspiration. As sweat collects on the skin surface, it evaporates and creates a cooling effect. Sweat also rids the body of waste through the pores of the skin.



As it accumulates, sweat may become odorous by the action of bacteria.

The average person loses approximately $\frac{1}{2}$ liter of fluid through sweating each day.