

✪ Accessory Organs of the Skin

A. Nails

1. Nails are protective coverings over the ends of fingers and toes.
2. Nails are produced by the division of epidermal cells and then become keratinized.
3. Nails grow about 1mm per week.

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4. Nail Structures

Nail root: region at the base of the nail, where the special epithelial cells begin to keratinize.

Nail body: visible portion of the nail.

Nail bed: area lying underneath the nail body.

Free edge: distal portion that continues past the nail bed

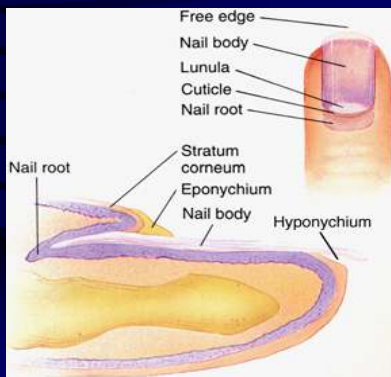
Hyponychium: an area of thickened stratum corneum beneath free edge.

Eponychium (cuticle): a fold of skin that hides the nail root.

Lunula: pale crescent-shaped base with a thicker germinal layer where nail growth occurs

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Nail Structure



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B. HAIR

1. Hair can be found in all regions of the skin, except the palms, soles, lips, nipples, and portions of the external reproductive organs.
2. Hair is produced by the division of epidermal cells and consist of keratinized cells.
3. The life span for an eyelash is usually 3-4 months and 3-4 years for a scalp hair.
4. About 2.5 million hairs, and only about 500,000 hairs are on the head.

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5. Hair Structures

Hair follicle: tubelike depression in the skin in which a hair develops; formed from epidermal cells but located in the dermis.

Hair root: the portion of a hair that anchors the hair into the skin; found within the follicle .

Root hair plexus: bundle of sensory nerves that surround the base of each hair follicle.

Hair shaft: the portion a hair that extends beyond the skin; consists of dead cells.

Arrector pili: a smooth muscle that attaches to the follicle and causes the hair to "stand" and develop "goose bumps" when it contracts.

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6. Hair color is determined by genetics and amount of melanin produced.

7. Hair growth cycle

- Scalp hair grows for 2-5 years about 0.33 mm per day about 10 cm a year...
- At the end of growth cycle, the follicle becomes inactive. Now, it's termed a club hair.
- Over time connection between hair follicle and the club hair breaks down, and the follicle produces a new hair.
- Typically, you lose 50 hairs from your head each day.

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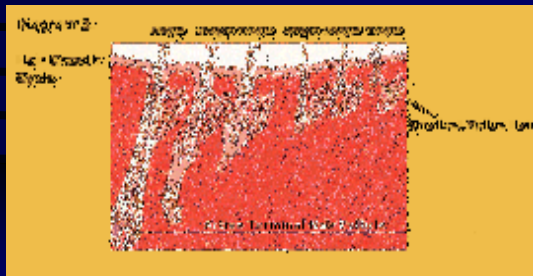
8. Types of hair:

- Lanugo—fine, unpigmented hair that appear during embryonic development; most are shed during birth
- Vellus hair—fine "peach fuzz" hairs without pigment located over much of body surface
- Terminal hair—heavy, deeply colored, sometimes curly hairs such as head, eyebrows, eyelashes; associated with sebaceous glands
- Intermediate hair —characteristics of both vellus and terminal hair (thinner with less pigment than in terminal hair seen during balding process)
- Club hair—hair that has stopped growing

NOTE: Vellus hair are present in armpits, pubic area and limbs until puberty; then they are replaced with terminal hairs, in response to sex hormones.

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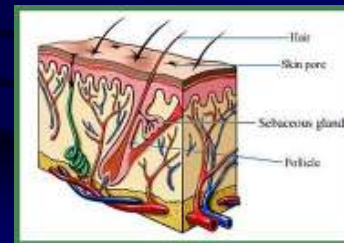
Vellus to Terminal...



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C. Types of glands

1. Sebaceous glands (oil glands) = holocrine glands, associated with hair follicles and secrete oily secretion (sebum)



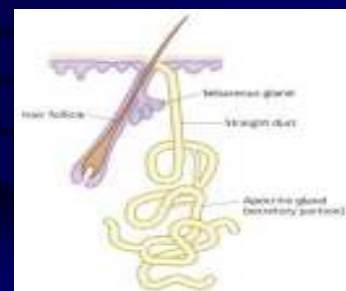
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a. Sebum = lipid secretion that inhibits the growth of bacteria, lubricates and protects the keratin of the hair shaft, and conditions the surrounding skin.

b. To release sebum, the arrector pili muscles contract and erect the hair, squeeze the oil gland and force sebum into the hair follicle and onto the skin.

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2. Sudoriferous glands (sweat glands) are exocrine glands that are widespread in the skin and secrete sweat, which is mostly water.



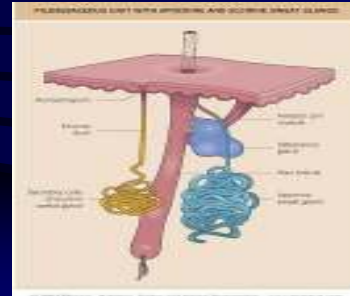
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2 types of sudoriferous glands:

- 1) **eccrine**= most numerous glands; connect to pores and respond to body temperature (common on forehead, neck and back)
- 2) **apocrine**= open into hair follicles and respond to body temperature, stress, and sexual arousal (become active at puberty and found in anal region, groin and armpits).

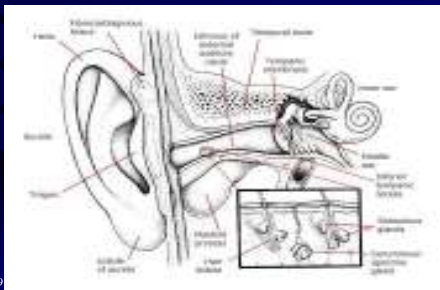
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Apocrine vs. Eccrine Glands



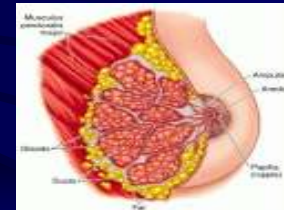
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3. **Ceruminous glands** are modified apocrine sweat glands that secrete earwax (cerumen) in the ear canal.



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4. **Mammary glands**, are modified apocrine sweat glands that secrete milk in response to pituitary and sex hormones.



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