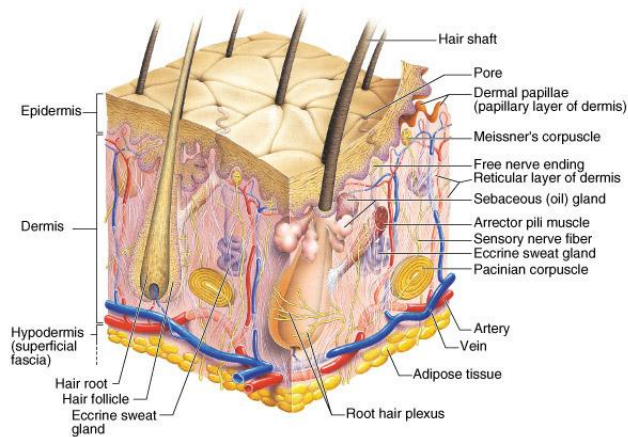


Unit 3: Integumentary System



Dr. Moattar Raza Rizvi

NRS237 Principles of Anatomy

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Integumentary System

- includes skin, hair, nails & glands)
- Largest organ of the body is the skin (15% of body weight)

Skin = Dermis + epidermis

- **Dermis** = layer of dense connective tissue
- **Epidermis** = (upon the dermis) layer of keratinized stratified squamous epithelium
 - a. Hypodermis = foundation of house
 - b. Dermis = house
 - c. Epidermis = roof

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Hypodermis

Hypodermis (*“under + skin”*) or

Subcutaneous (*“below + skin”*)

1. Attaches skin to underlying bone and muscle
2. Supplies skin with blood vessels & nerves
3. Not part of the skin
4. Composed of loose connective & adipose tissue
 - a. Padding & insulation
 - b. Total body fat estimates made from pinching hypodermis
5. Site of subcutaneous injections

Melanocyte

Melanocyte

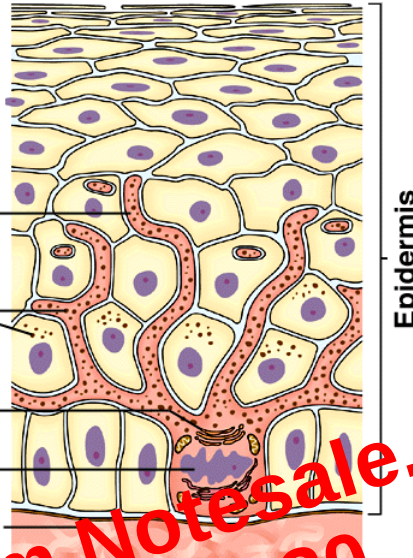
Cellular extension
of melanocyte

Pigment granules

Golgi apparatus

Melanocyte nucleus

Basement membrane



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Abnormal Skin Colors

- **Cyanosis** = blueness from deficiency of oxygen in the circulating blood (cold weather)
- **Erythema** = redness due to dilated cutaneous vessels (anger, sunburn, embarrassment)
- **Jaundice** = yellowing of skin and sclera due to excess of bilirubin in blood (liver disease)



Hair Color and Texture, Blond

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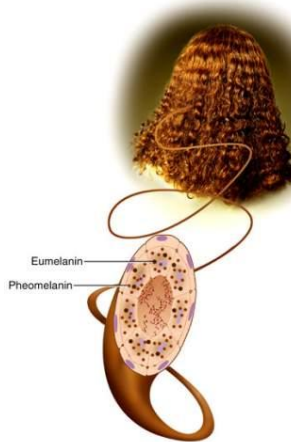
(a) Blond, straight

Blond hair contain pheomelanin pigment, but little eumelanin.

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Hair Color and Texture, Red

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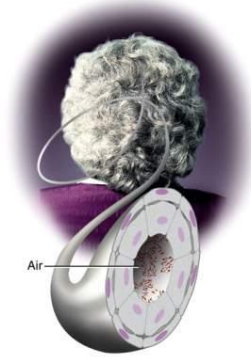
(c) Red, wavy

Red hair contains little eumelanin but lots of pheomelanin.

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Hair Color and Texture, Gray and White

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(d) Gray, wavy

White hair = air in medulla and lack of pigment in cortex. **Gray hair** is a mixture of white and pigmented hairs.

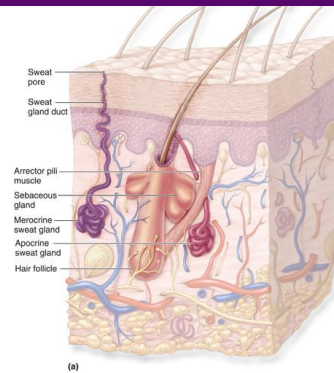
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Arrector Pili: Muscle

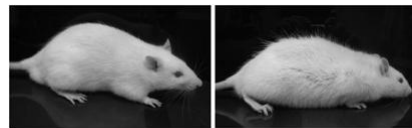
Arrector pili (that which raises, hair) = contraction of these muscles cause hair to “stand on end”...

goosebumps ☺

- Composed of smooth muscle
- Evolutionary advantage in mammals – traps air (heat) for insulation, also look larger - intimidation



(e)



No Piloerection

Piloerection