

Subject: Integumentary System



HUMAN SKIN ANATOMY

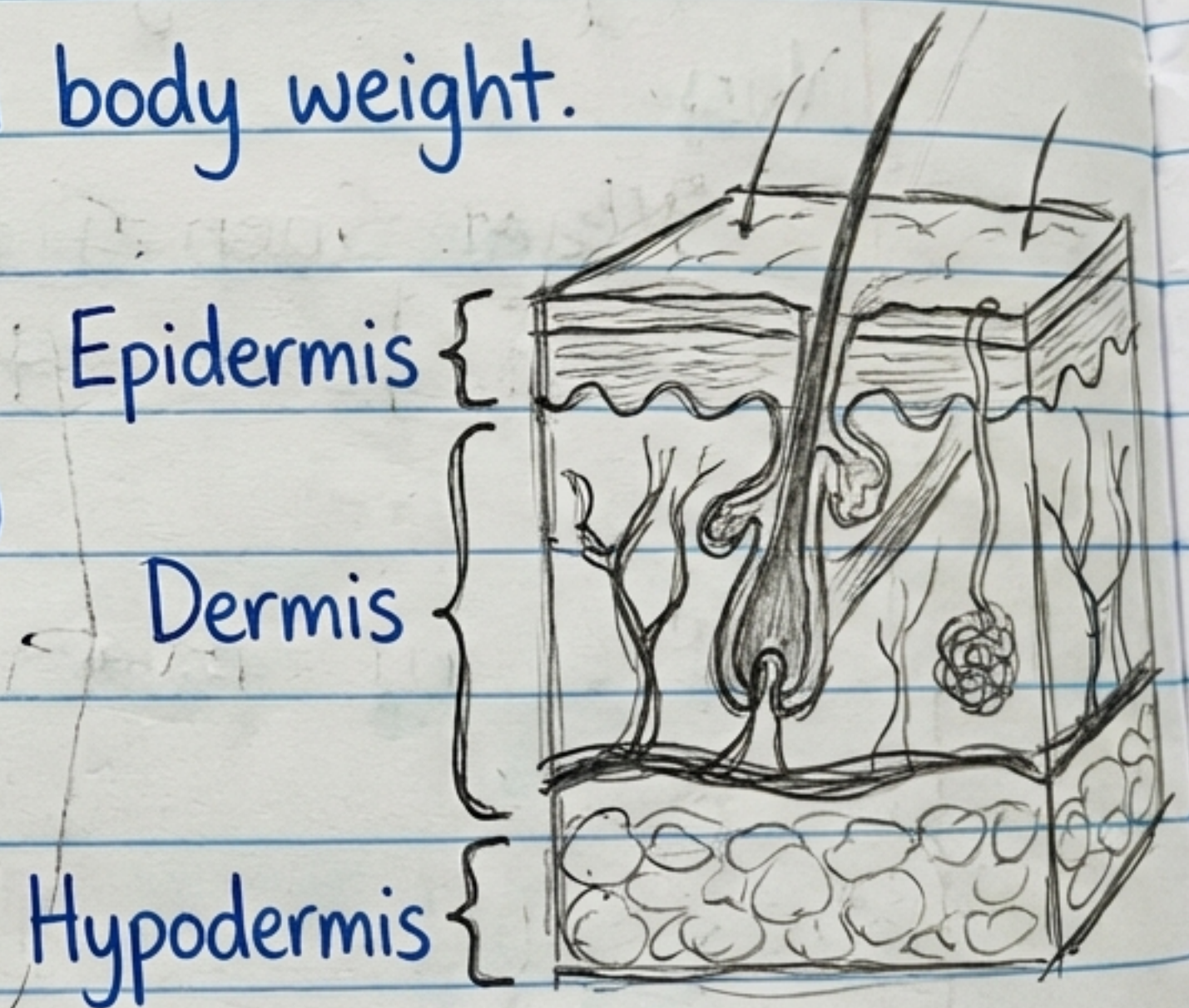
Structure, Function & Clinical Notes

THE SKIN (INTEGUMENTARY SYSTEM)

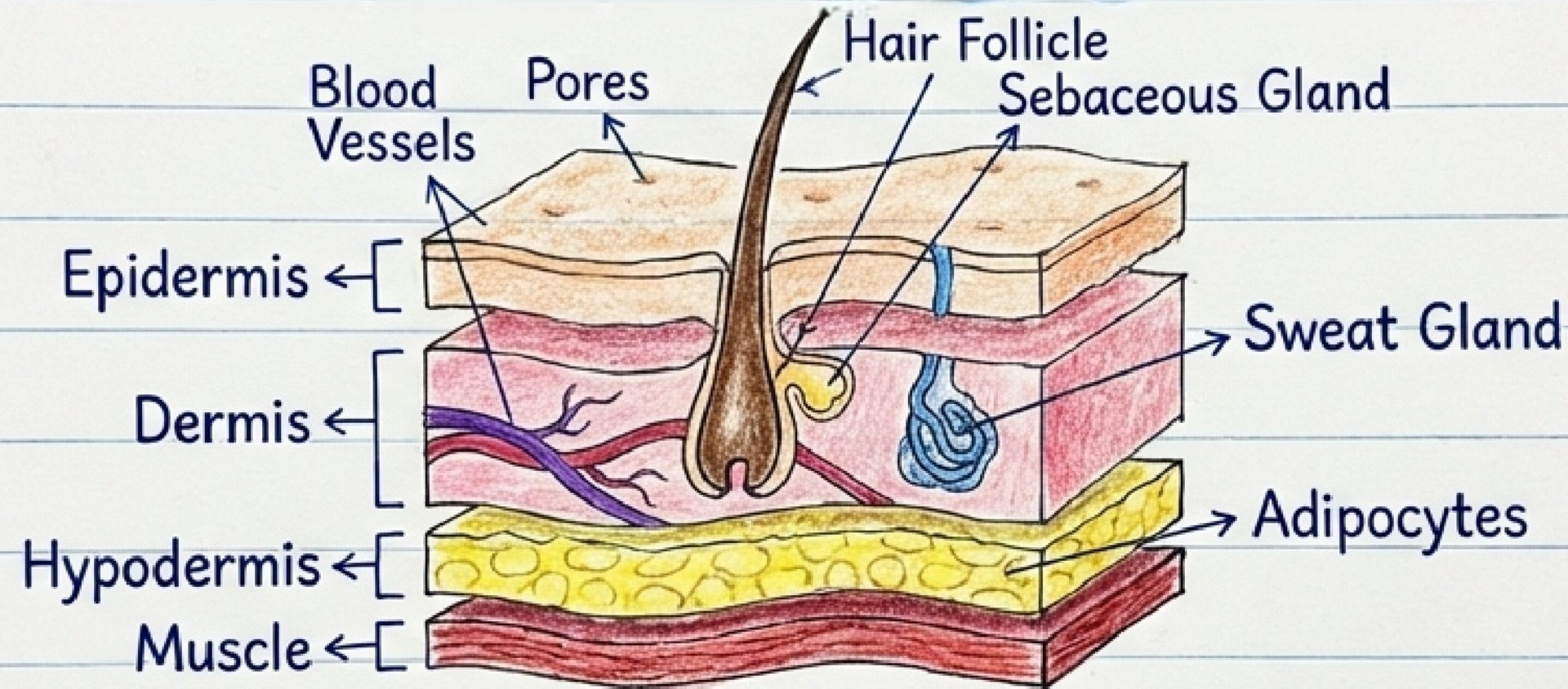
- Largest organ in the body!
- Mass: Approx 10-16% of total body weight.

- Major Functions:

- Protection (Infection, UV, Injury)
- Vit D Synthesis
- Temp Regulation
- Sensation (Touch, Pain)



Integumentary System



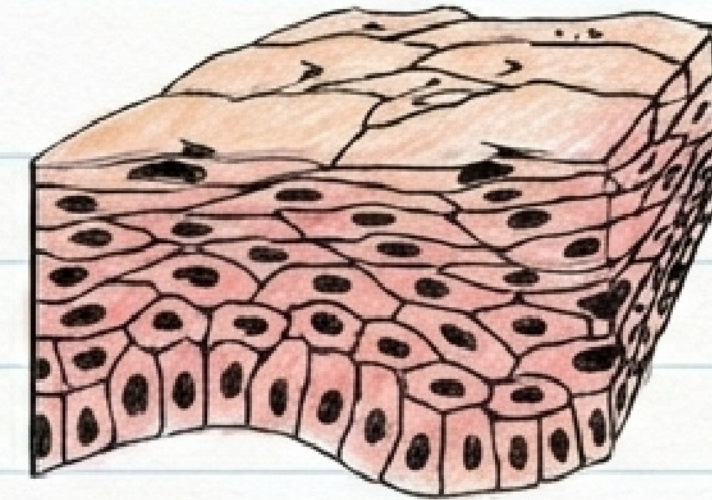
Definition: The body's outer layer. Includes Skin, Hair, Nails, and Glands.
Cutaneous meaning: Epidermis + Dermis only.

1. EPIDERMIS (Superficial)

Composition

- Tissue Type: Keratinized Stratified Squamous Epithelium.
- Vascularity: AVASCULAR (No blood vessels!).
- Thickness: Varies. Thicker on Palms & Soles (4-5 layers) vs Eyelids.

1. THE EPIDERMIS (OUTER LAYER)



Stratified
Squamous
Epithelium

Process of Cornification

Step 4: Die & Harden (Cornification)



Step 3: Make Keratin (Protein)



Step 2: Move upward



Step 1: Born in deeper layer

Tip:
Keratin =
Tough
+ Waterproof

LAYERS OF EPIDERMIS (The Strata)

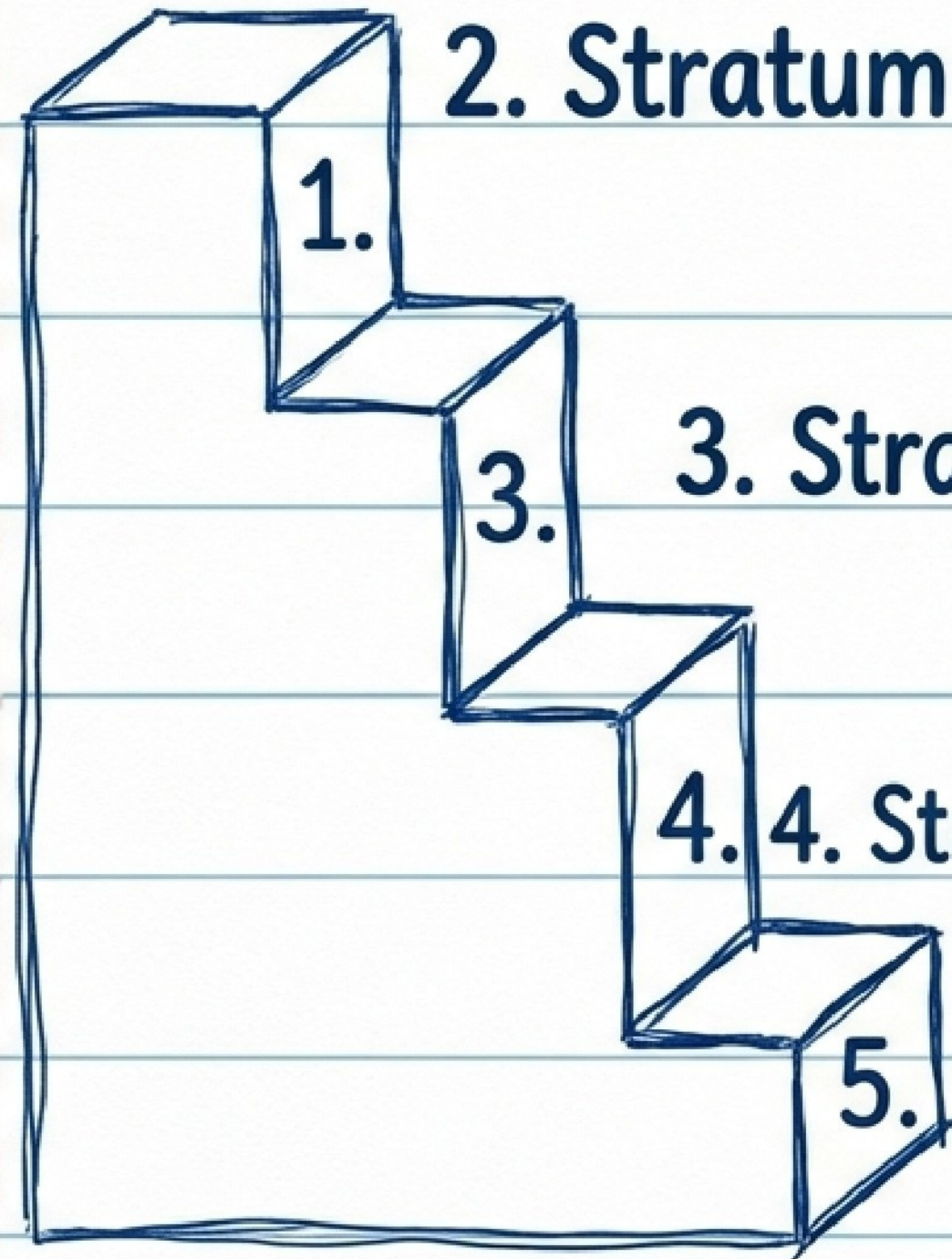
1. Stratum Corneum: Dead, keratin-filled barrier. Sheds off.

2. Stratum Lucidum: ONLY in Thick Skin (Palms/Soles).
Adds toughness.

3. Stratum Granulosum: Keratin + Lipids
secreted (Waterproof barrier).

4. Stratum Spinosum: Immune defense (Langerhans cells).
Keratin originate here

5. Stratum Basale: Deepest. Stem cells,
Melanocytes & Merkel cells here.



SPECIALIZED CELL TYPES

1. **Keratinocytes:** Most common. Make Keratin (tough protein).

2. **Melanocytes:**

- Make Melanin (Pigment).
- Protects DNA from UV rays.
- Note: Darker skin = More melanin produced (NOT more cells!).



3. **Langerhans Cells:** Immune system. UV 
Fight germs/pathogens.

4. **Merkel Cells:** Touch sensation (Light pressure).

CLINICAL: EPIDERMIS DISORDERS

- **Psoriasis:** Keratinocytes divide too fast.

Skin gets thick/scaly patches.

- **Vitiligo:** Loss of Melanocytes → White patches.

- **Infections:**

- **Impetigo:** Bacterial (highly contagious).

- **Tinea:** Fungal (Ringworm/Dermatophytes).

- **Warts:** Viral (HPV). Benign growths.



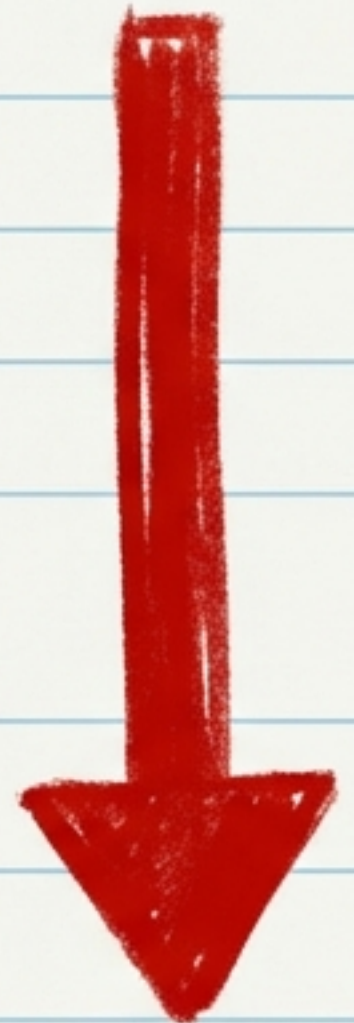
Vitiligo = Loss of cells

TUMORS (SKIN CANCER)

Origins & Aggression

- BCC (Basal Cell Carcinoma):
 - From Stratum Basale.
 - Sun-exposed areas. Invasive.
- SCC (Squamous Cell Carcinoma):
 - From Stratum Spinosum (Keratinocytes).
- Melanoma:
 - From Melanocytes.
 - MOST AGGRESSIVE type.

BCC



Melanoma

2. THE DERMIS (The Core)

Location: Middle layer.

Structure: Connective Tissue.

Key Components:

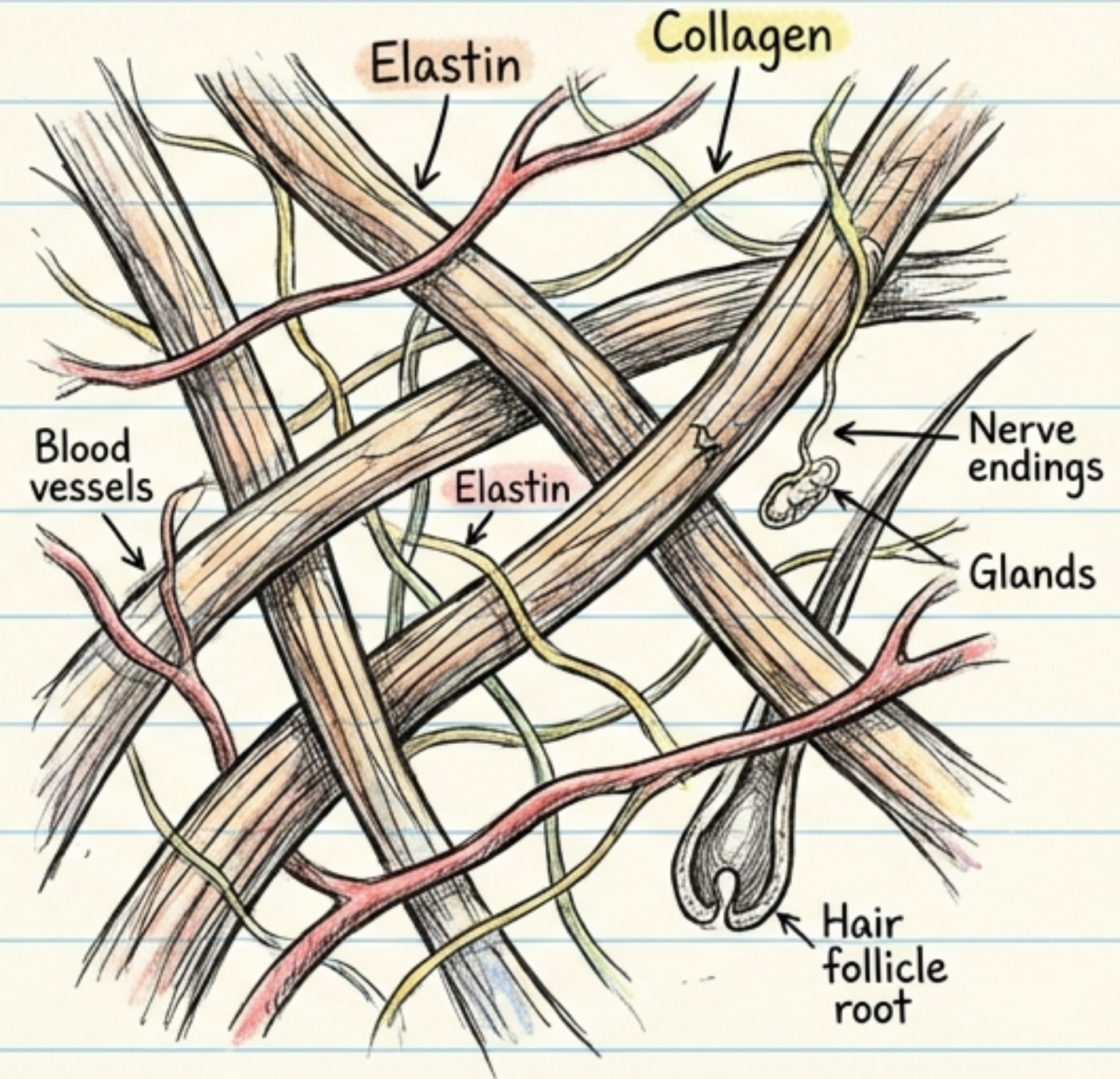
- Collagen: Provides STRENGTH.

Collagen = Strength

- Elastin: Provides ELASTICITY.

Elastin = Flexibility

- Contains: Blood vessels, nerves, glands, hair follicles.



Thickness: 0.6mm (eyelids) to 3mm (back).

QUICK REVISION: Papillary vs. Reticular

Very Imp for
5 marks! ☆

FEATURE	PAPILLARY	RETICULAR
Location	Superficial (Top)	Deep (Bottom)
Thickness	Thin (20%)	Thick (80%)
Main Fibers	Fine elastic fibers	Dense Collagen + Elastic
Sensation	Meissner's (<u>Light Touch</u>)	Pacinian (Pressure/Vib)
Function	Nutrition / Fingerprints	<u>Strength</u> / Support

Hemangioma

Benign
Tumor of
Blood Vessels

Hemangioma

Skin &
Dermis
(m/c)

Infants & Children

3. HYPODERMIS (Subcutaneous)

- Deep to Dermis (connects skin to muscle).
- Composition: Adipose Tissue.
- Note: Varies in size between individuals.
- Functions:
 - Energy Storage.
 - Insulation (Heat retention).
 - Shock Absorber.

