



جامعة المستقبل
AL MUSTAQL UNIVERSITY

كلية العلوم قسم الادلة الجنائية

المحاضرة السادسة

Skin and Hair

المادة : **Biology**
المرحلة : الاولى
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Skin and Hair

Introduction

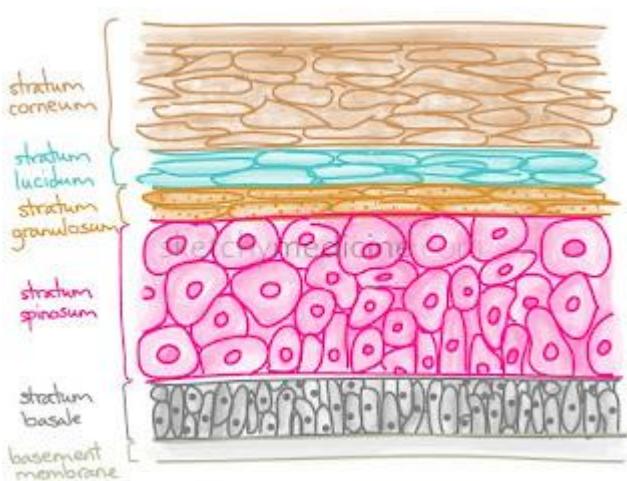
The skin and hair are essential components of the integumentary system. They play vital roles in protection, sensation, thermoregulation, and forensic identification. This lecture provides a comprehensive yet simple academic overview suitable for undergraduate students.

1. Structure of the Skin

The skin is the largest organ of the human body and consists of three main layers:

1.1 Epidermis

- Outermost layer
- Composed mainly of keratinocytes
- Provides a protective barrier
- Layers of epidermis:
 - Stratum basale
 - Stratum spinosum
 - Stratum granulosum
 - Stratum lucidum (in thick skin)
 - Stratum corneum

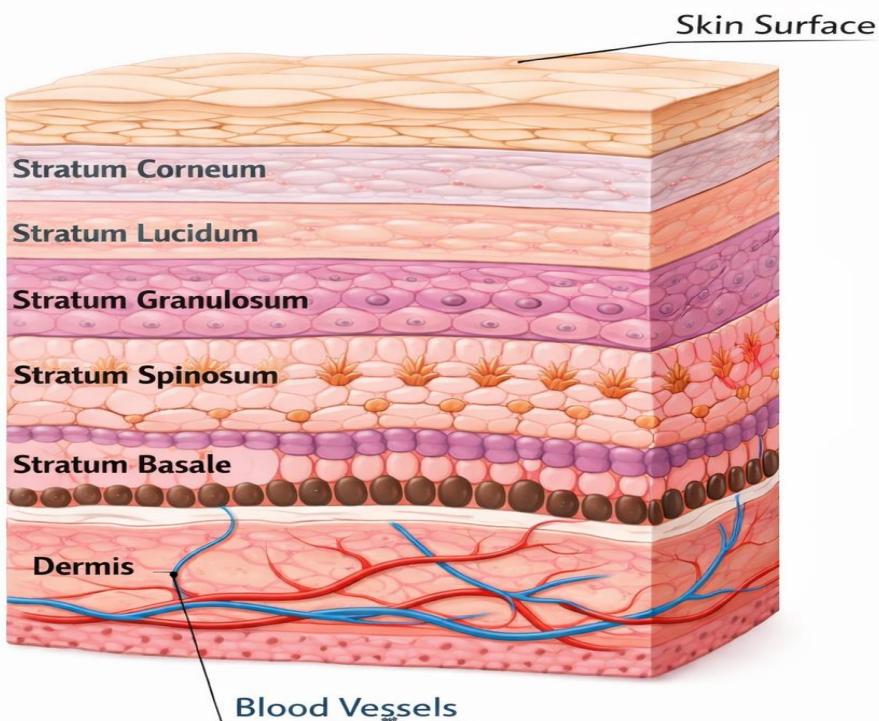




1.2 Dermis

- Middle layer
- Contains blood vessels, nerves, hair follicles, and glands
- Divided into:
 - Papillary layer
 - Reticular layer

Layers of the Epidermis



1.3 Hypodermis (Subcutaneous Layer)

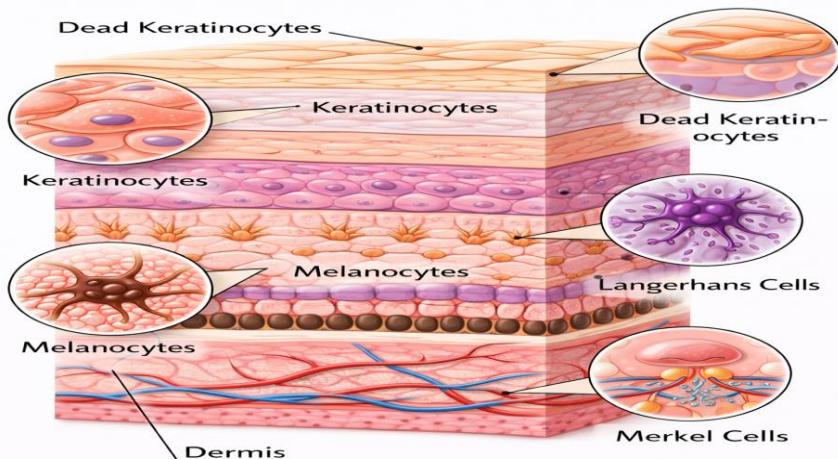
- Deepest layer
- Composed of adipose tissue
- Provides insulation and energy storage



2. Skin Cells

- Keratinocytes
- Melanocytes
- Langerhans cells
- Merkel cells

Types of Cells Found in the Epidermis



3. Functions of the Skin

- Protection
- Sensation
- Thermoregulation
- Vitamin D synthesis
- Immune defense

4. Skin Appendages

- Hair
- Nails
- Sweat glands
- Sebaceous glands



5. Hair Structure

Hair is a keratinized filament derived from the epidermis.

5.1 Parts of Hair

- Hair shaft
- Hair root
- Hair follicle

5.2 Layers of Hair Shaft

- Cuticle
- Cortex
- Medulla

6. Hair Growth Cycle

- Anagen (growth phase)
- Catagen (transitional phase)
- Telogen (resting phase)

7. Types of Hair

- Lanugo
- Vellus
- Terminal hair



8. Pigmentation of Skin and Hair

- Role of melanin
- Types of melanin:
 - Eumelanin
 - Pheomelanin

9. Glands Associated with Skin

9.1 Sebaceous Glands

- Produce sebum

9.2 Sweat Glands

- Eccrine glands
- Apocrine glands

10. Aging of Skin and Hair

- Decrease in collagen
- Hair graying and loss

11. Common Skin Disorders

- Acne
- Dermatitis
- Psoriasis

12. Common Hair Disorders

- Alopecia
- Dandruff

13. Skin and Hair in Forensic Science

- Identification
- DNA analysis from hair roots
- Skin cells in touch DNA

14. Histological Techniques



- Light microscopy
- Electron microscopy



15. Summary

Skin and hair are complex structures with vital biological and forensic importance. Understanding their structure and function is essential in life sciences and forensic studies.