

TENDER HEART HIGH SCHOOL

CLASS VIII

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SUBJECT BIOLOGY

TEACHER Nidhi Rana

CHAPTER 13 SKIN - JACK OF ALL TRADES

The following lesson is of Class 8 for the subject of Biology Topic - 'Dermis and derivatives of skin', which is covered in chapter no. 13 titled Skin - Jack of all Trades starting on Page no 127 of your text book titled Concise Biology - Selina Publications and is being submitted to you on 22.01.2025

Dear children, last time we have learnt about the outer layer of skin i.e. the epidermis. Today we will learn about the inner thick layer of connective tissue, which is made up of elastic fibres and is called the Dermis.

DERMIS is tough and flexible layer of skin present below the epidermis and is much thicker layer than the epidermis. Further on palms soles etc. the dermis is very thick and very thin in regions like eyelids.

- Blood capillaries, lymph vessels, hair follicles, sweat glands, oil glands and nerve endings are present in this layer.
- Hides of animals which provide leather are actually the dermis region of skin.
- Outer region of the dermis which lies next to epidermis is raised into numerous small processes called papilla which contain blood capillaries and nerve endings.
- Blood capillaries supply the skin with necessary food and oxygen and remove excretory products.

Nerve endings are concerned with sensations of touch pain pressure heat and cold etc. Beneath the dermis adipose tissue (fat cells) or subcutaneous fat is present that serves as food reserve for the body.

Now let us talk about special -

DERIVATIVES OF SKIN which include -

- i Hair
- 2 Nails
- 3 Sebaceous glands
- 4 Sweat glands
- 5 Mammary glands.

Now we will discuss these derivatives of skin in detail Firstly -

HAIR consists of 3 parts -

- i Hair shaft - which projects from the skin and is visible to us, lying obliquely on the skin. Inside the skin hair shaft may extend slightly below the surface of epidermis.
- ii Hair root - is the part of hair which is embedded within the dermis. The lowest part of the hair root is expanded to form hair bulb.
- iii Hair bulb - contains a projection of the dermis called hair papilla. As we have learnt earlier [in the dermis] papilla contains the blood capillaries and nerve endings. Further hairs are formed in hair follicle. Hair follicle is a structure enclosing the hair root. Hair follicle is composed of an epithelial and a connective tissue sheath. Hair bulb and hair follicle together are responsible for growth and elongation of the hair. New cells are continuously added at the base of the hair leading to

growth of the hair. As the new cells are formed at the base, the older cells are pushed upwards and these soon die. Thus because hair cells are dead cells we don't feel pain when we cut hair. However on plucking hair we feel pain because nerve fibres extend upto their bases providing us the sensation of touch.

MELANIN Hair follicle contains pigment cells that produce melanin, a black colour pigment. Varying quantities of melanin give various colours to hair. With age the melanin production decreases, and hair becomes grey or white.

GOOSE FLESH OR PILOERECTION

At times, during winter or during some emotion hair is lifted and the skin surface appears somewhat contracted and wrinkled appearance. This phenomenon is called piloerection/goose flesh. Piloerection is caused due to contraction of erector or arrector muscle which runs obliquely between hair follicle and the outer part of the dermis. The contraction of erector muscle at one end pulls the hair to vertical position [i.e. at 90° to the skin surface] and at other end depresses the epidermis of the skin.

Variation in growth of hair

- Human hair are continuously lost and regrown. Life of scalp hair is 2-5 years and that of eyebrows/eyelashes is 3-5 months.
- Hair from different body parts differ in their structure and texture. For eg. hair growing in head, chest, armpit, nose etc. are all different.

FUNCTIONS OF HAIR

1. Hair over the skin provide warmth to the body
2. Eyelashes prevent the entry of foreign particles into the eye.
3. Hair in nose prevent dust / bacteria from entering the nose / nasal passage.
4. Facial hair in males [i.e. moustaches and beard] help in distinguishing the gender.
5. Hair on the head may add to one's good appearance.

Before going further in the chapter let us recapitulate what we have learnt so far by means of a quick short test. Answer the following questions in your notebooks:-

Q1 Which layer of skin is present below the epidermis?

Q2 Name the part of hair visible to us.

Q3 Name the structure of hair that encloses the hair root and is responsible for hair growth. Children you may pause the lesson for 3 mins to write the answers of the questions. Break is over children. First listen to the correct answers -

A1 Dermis is present below the epidermis

A2 Hair shaft is visible to us.

A3 Hair follicle encloses hair root and is responsible for hair growth.

Now let us continue further with the discussion of another derivative of skin i.e.

NAILS

Nails are hard, plate like structures made up of keratin which grow as dead cells from nail root

Nail root lies below the skin

A nail has 3 parts -

- i Nail Plate - It is the hard outer part of nail visible to us. It is made up of dead cells made up of Keratin
- 2 Nail Bed - It lies below nail plate. Nail bed is the skin beneath nail plate
- 3 Matrix - is the area where your nails start to grow. Matrix creates new skin cells which push out the old dead skin cells to make your nails. Matrix lies just below the skin surface at the base of the nail. It is visible as whitish half moon at the base of nail.

With this I am ending today's discussion. Next time we will discuss about various glands present in the skin. Now I will give you some home assignment questions. All students are required to answer the following home assignment questions in your notebooks -

Home Assignment -

- Q1 Define Piloerection. How is it caused?
- Q2 Describe various parts of -
 - a) Human Hair
 - b) Human Nail