

22.05.2025

YAKEEN NEET 2.0

2026

STRUCTURAL ORGANISATION IN ANIMALS

ZOOLOGY

Lecture – 02

By- SAMAPTI MAM





Topics to be covered

1

EPITHELIAL TISSUES: PART-01

2

3

4

MY TELEGRAM

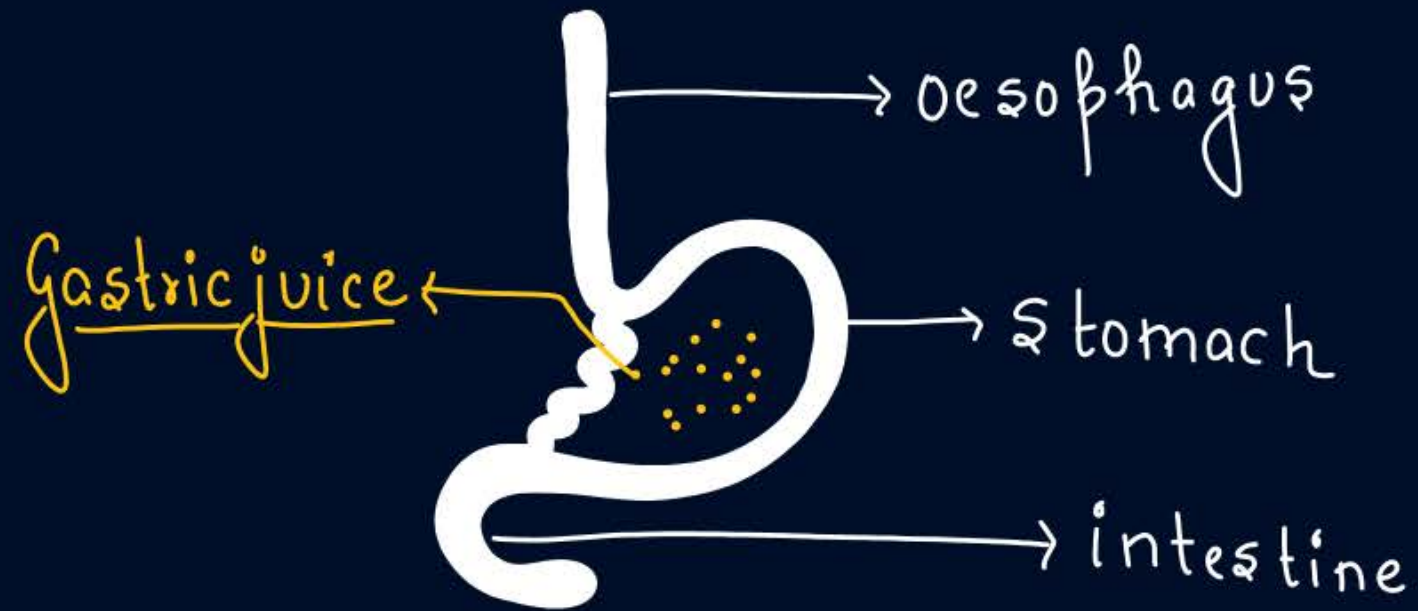
- 'Audio-podcast'
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'3-5' min
REVISION



#2 amaptiexpress



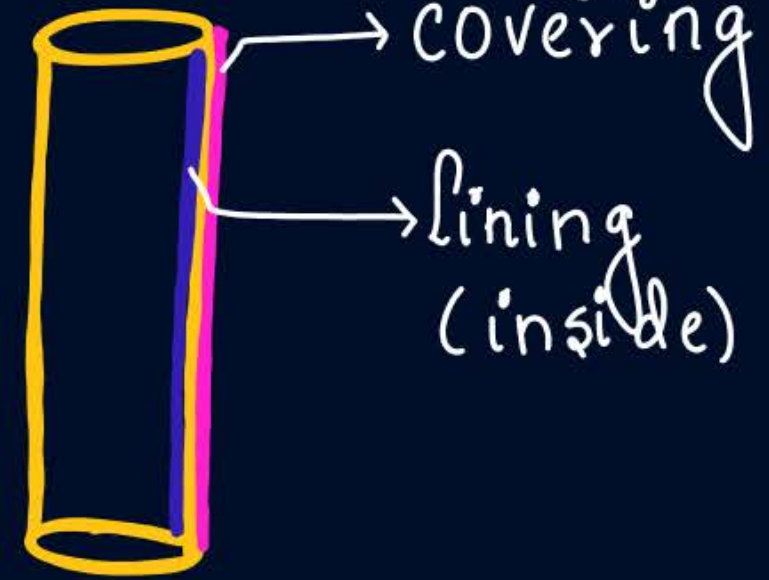
- When 2 or more organs interact 'PHYSICALLY' organs are connected physically & 'CHEMICALLY' means they release Enzymes, Digestive juice etc forms organ system.



4 Basic types of Tissue: 'SPECIFIC FUNCTION'



1) Epithelial Tissue: Covering, Lining, Diffusion, Secretion & Absorption



2) Connective Tissue: Support & Linkage.
Blood, Bones & Cartilage

3) Muscular Tissue: Locomotion & movement

4) Neural tissue: Control & Coordination

Oesophagus

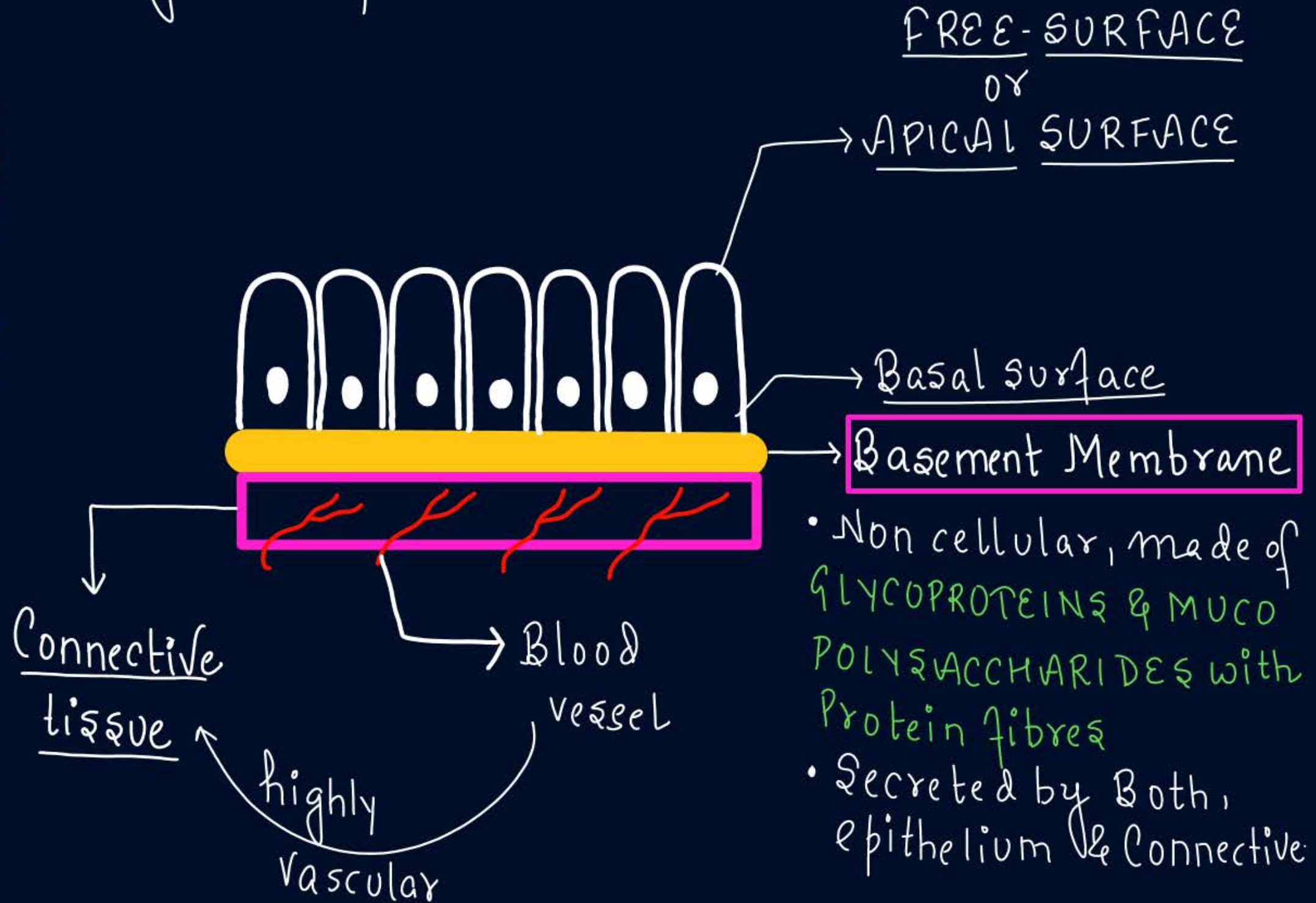
EPITHELIAL TISSUE / EPITHELIUM:

- Epithelium : This tissue always rest upon some other tissue (Connective upon to rest tissue)

- Cells are compactly packed, with LITTLE INTERCELLULAR SPACE hence little intercellular Matrix.

- AVASCULAR
absence Blood vessel

- The O_2 & Nutrients from the Blood in Connective tissue diffuses to Epithelium via Basement.



- Non cellular, made of GLYCOPROTEINS & MUCO POLYSACCHARIDES with Protein fibres
- Secreted by Both, epithelium & Connective.

* The free surfaces either faces the 'External environment' or the 'Body Fluid'

- High Regeneration
- Nerve supply

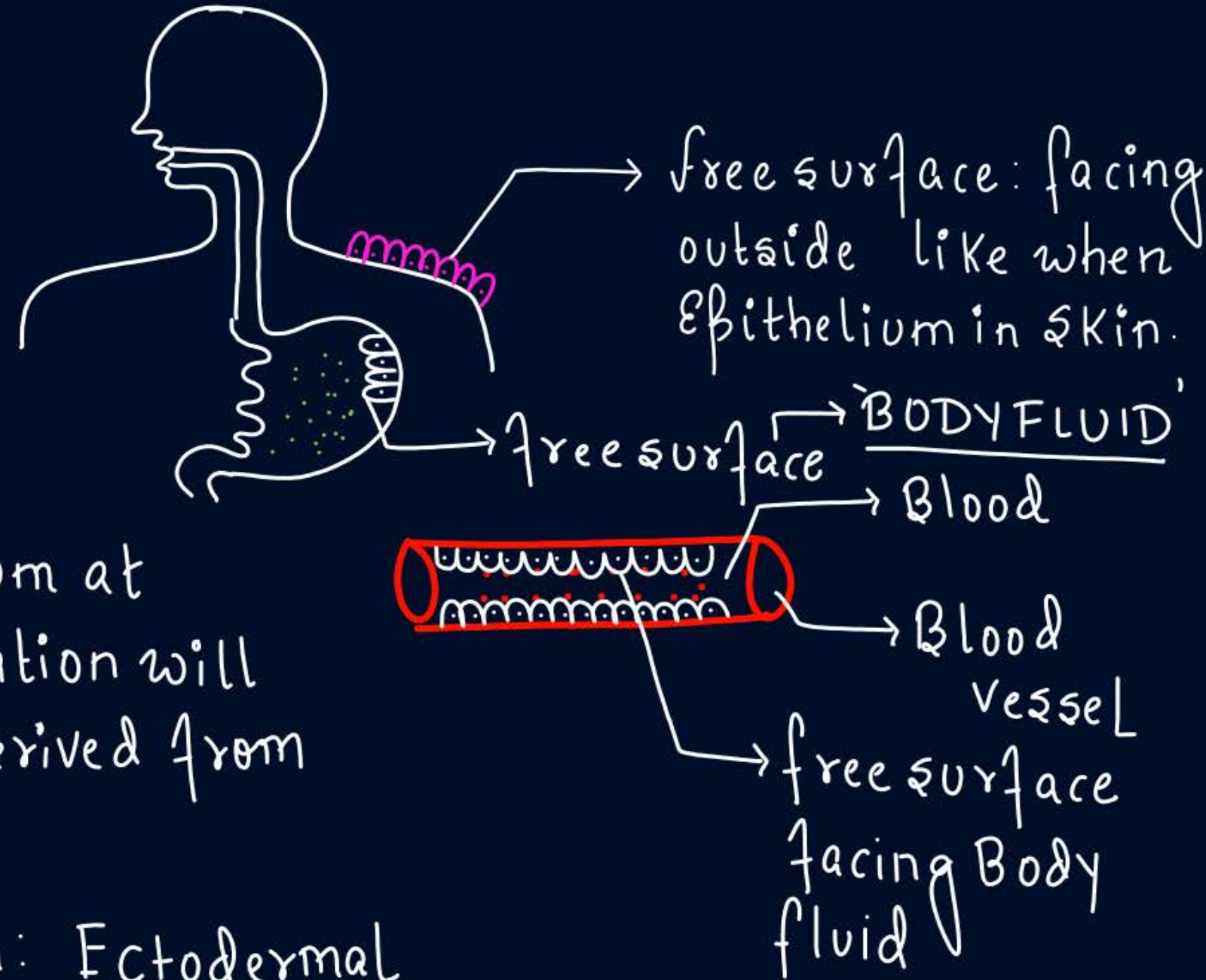
(Note) Epithelium has all 3 Origin:

अतिरिक्त
Gyaan

ECTODERMAL
MESODERMAL
ENDODERMAL

Means Epithelium at a particular location will have all cells derived from Common origin

eg: EPITHELIUM of SKIN: Ectodermal
" " GUT: Endodermal.



7.1 ANIMAL TISSUES

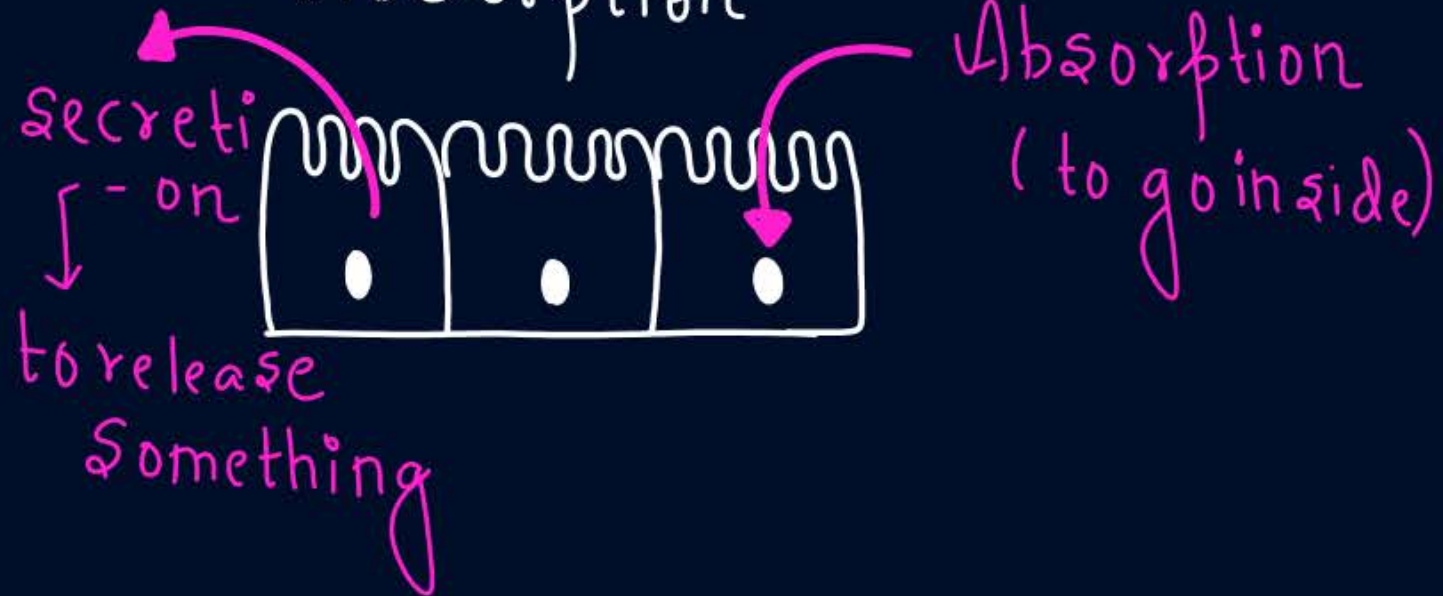
The structure of the cells vary according to their function. Therefore, the tissues are different and are broadly classified into four types : (i) Epithelial, (ii) Connective, (iii) Muscular and (iv) Neural.

'Free Surface' may have modifications

MICROVILLI

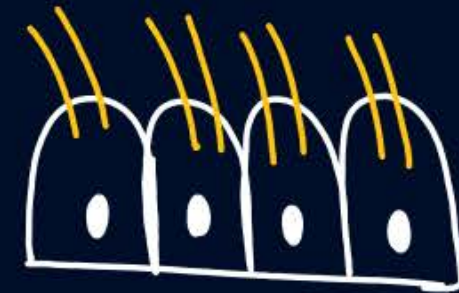
→ also k/a Brush-Bordered
EPITHELIUM

- finger like projection that are the folds of Plasma membrane of Epithelial cells; to ↑ the Surface area for Secretion & Absorption



CILIA

- Hair like projection that helps in movement of Substances along one directional.



EPITHELIUM

1) Simple Epithelium

- Made up of single layer of cells

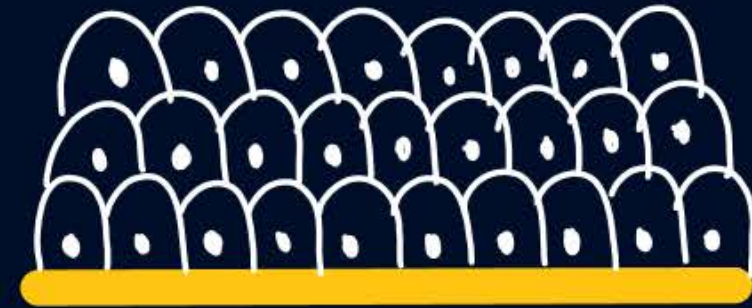


- Major Role: SECRETION, ABSORPTION, FILTRATION, DIFFUSION (since it is thin)

eg: Present as lining the Body Cavity (Like around lungs, Heart), ducts, tubes.

2) Compound Epithelium

- Multilayered Epithelium



Major Role: PROTECTION against Chemical & Mechanical Stress.

eg: SKIN

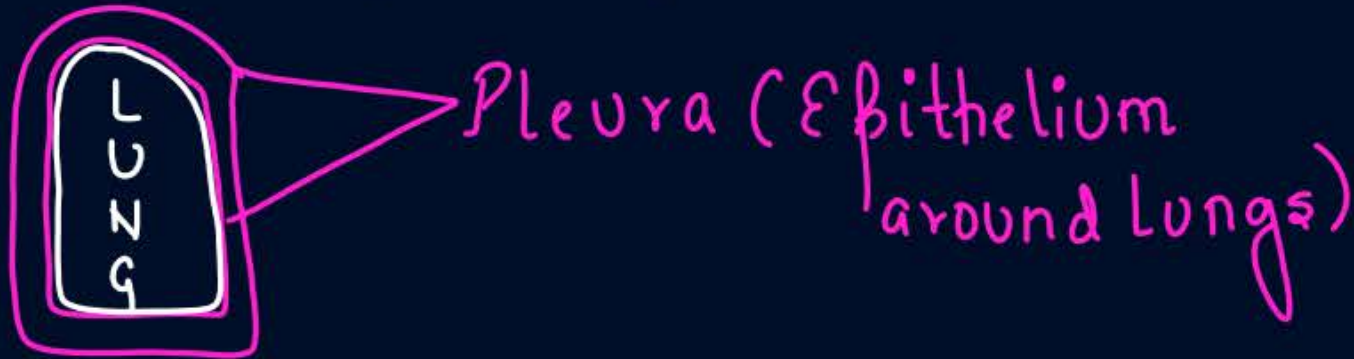
Note

Duct: Present in gland



Tube: Trachea, fallopian tube

Lining of Body cavity:



7.1.1 Epithelial Tissue

We commonly refer to an epithelial tissue as **epithelium** (pl.: epithelia). This tissue has a **free surface**, which **faces** either a **body fluid** or the outside environment and thus provides a **covering** or a **lining** for some part of the **body**. The cells are **compactly packed** with **little intercellular matrix**. There are two types of epithelial tissues namely **simple epithelium** and **compound epithelium**. Simple epithelium is composed of a single layer of cells and functions as a **lining for body cavities**, **ducts**, and **tubes**. The compound epithelium consists of two or more cell layers and has protective function as it does in our skin.

On the basis of structural modification of the cells, simple epithelium is further divided into three types. These are (i) Squamous, (ii) Cuboidal, (iii) Columnar (Figure 7.1).

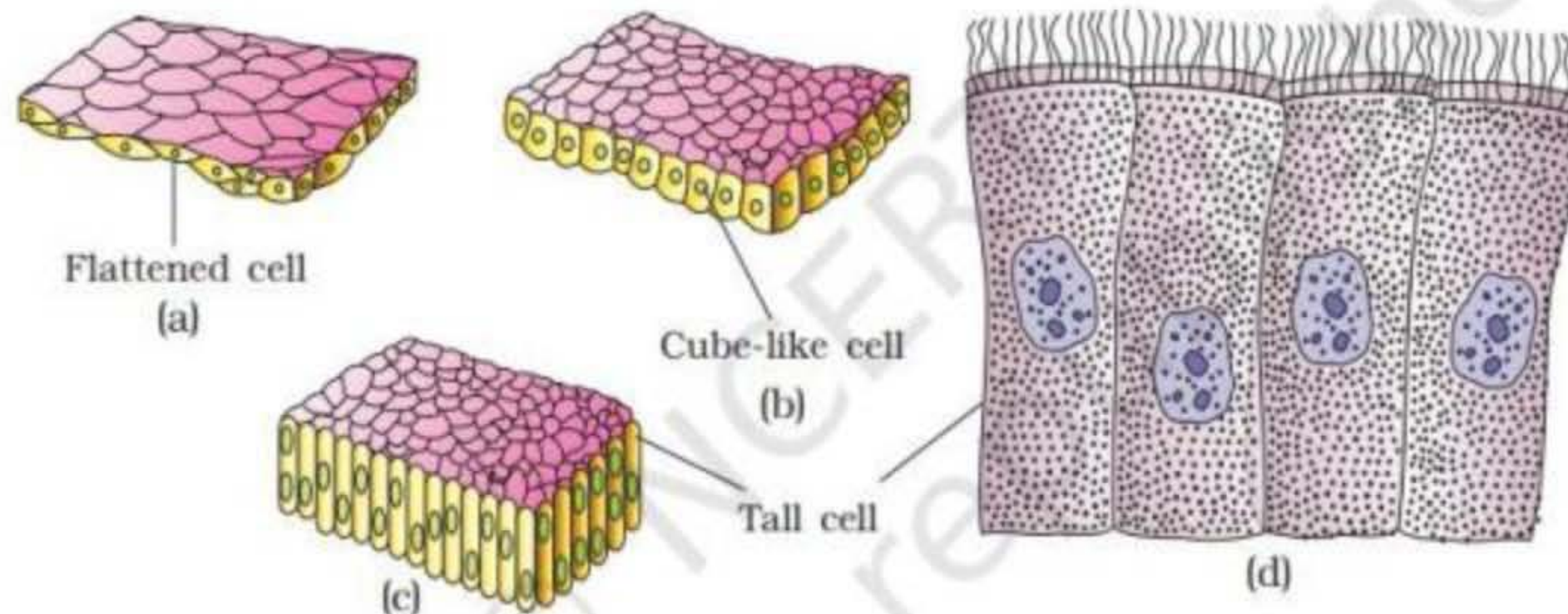


Figure 7.1 Simple epithelium: (a) Squamous (b) Cuboidal (c) Columnar (d) Columnar cells bearing cilia

On the Basis of structural modification of cell, Simple epithelium is classified



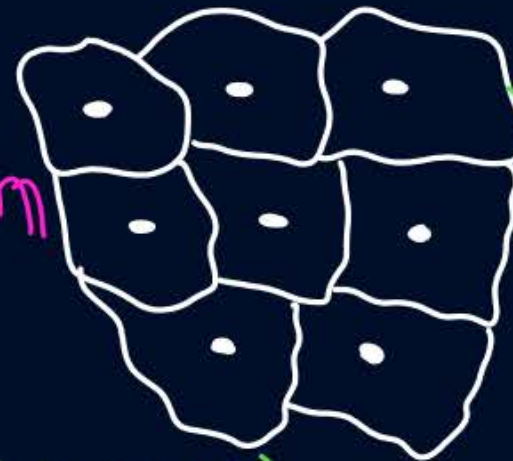
- 1) Simple Squamous Epithelium
- 2) Simple Cuboidal "
- 3) Simple Columnar "

1) SIMPLE SQUAMOUS EPITHELIUM:

- Cells are FLAT
- Nucleus is FLAT & Located in Centre
- Cells with irregular boundaries



fig: Side View



↓
TESSERATED epithelium
(अतिरिक्त)

irregular boundaries

- This appears like TILES of FLOOR (FLAT) hence k/a 'PAVEMENT-EPITHELIUM'

The **squamous epithelium** is made of a single thin layer of flattened cells with irregular boundaries. They are found in the walls of blood vessels and air sacs of lungs and are involved in functions like forming a diffusion boundary. The **cuboidal epithelium** is composed of a single layer of cube-like cells. This is commonly found in ducts of glands and tubular parts of nephrons in kidneys and its main functions are secretion and absorption. The epithelium of proximal convoluted tubule (PCT) of nephron in the kidney has microvilli. The **columnar epithelium** is composed of a single layer of tall and slender cells. Their nuclei are located at the base. Free surface may have microvilli. They are found in the lining of stomach and intestine and help in secretion and absorption. If the columnar or cuboidal cells bear cilia on their free surface they are called **ciliated epithelium** (Figure 7.1d). Their function is to move particles or mucus in a specific direction over the epithelium. They are mainly present in the inner surface of hollow organs like bronchioles and fallopian tubes.

Question

0-1

Fill in the Blanks:

Epithelial tissue has ___(a)___ surface, which faces either ___(b)___ or ___(c)___.

Question

Q-2

Mark 'True' or False:

1. Epithelial cells are compactly packed?
2. Epithelial cells packed with less intracellular matrix?
3. Epithelium provides covering & no lining?

A True, False, True

B True, False, False

C False, True, True

D True, True, False

Question

Q-3

Simple epithelium is composed of single layer of cells & function as:
How many are correct?

Lining for body cavities, Lining of duct, Lining of tube, Protection like in skin

- A** One
- B** Two
- C** Three
- D** Four

Q-4

Which of the following functions is **not** performed by unicellular organisms?

- | | |
|------------------|-------------------------|
| (1) Digestion | (2) Respiration |
| (3) Reproduction | (4) Neural coordination |

Q-5

Given below are two statements:

Statement I: The body of *Hydra* is made of different types of cells.

Statement II: The human body is composed of billions of cells to perform various functions.

In the light of the above statements, choose the *most appropriate* answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect.
- (2) Statement I is incorrect but Statement II is correct.
- (3) Both Statement I and Statement II are correct.
- (4) Both Statement I and Statement II are incorrect.

Q-6

Given below are two statements:

Statement I: The structure of cells vary according to their function.

Statement II: Function of ciliated epithelium is to move particles or mucus in a specific direction over the epithelium.

In the light of the above statements, choose the most appropriate answer from the options given below:

Which of the following statements is **incorrect** for epithelial tissue?

- (1) It is present as inner lining.
- (2) It is present as outer lining.
- (3) It contains very less intercellular matrix.
- (4) The cells are loosely packed in it.

Q 7

Given below are two statements:

Statement I: Tissues are organised in a specific proportion and pattern to form an organ.

Statement II: Two or more organs perform a common function by their physical and chemical interactions and are called organ system.

In the light of the above statements, choose the most appropriate answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect.
- (2) Statement I is incorrect but Statement II is correct.
- (3) Both Statement I and Statement II are correct.
- (4) Both Statement I and Statement II are incorrect.

Q 8

Samapti Sinha Mahapatra

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Homework

MODULE HOMEWORK

PRARAMBH EXERCISE 1- Q 1,2,,6,7
PRABAL EXERCISE 2-Q 1,3,5,12

THANK
YOU