

YAKEEN NEET 2.0

2026

STRUCTURAL ORGANISATION IN ANIMALS

ZOOLOGY

Lecture – 03

By- SAMAPTI MAM

23.05.2025'





Topics to be covered

1

EPITHELIAL TISSUES-2

2

3

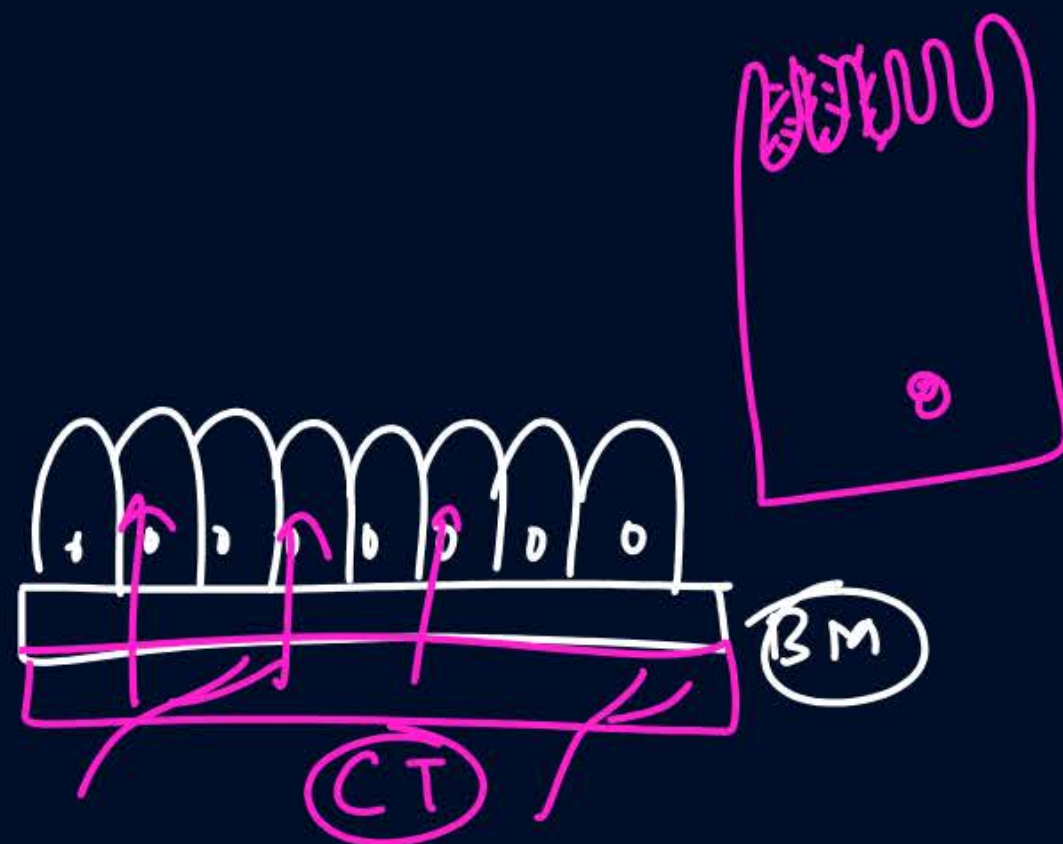
4

MY TELEGRAM

→ Audio podcast



2 amnion express



Question

Q.2

Fill in the Blanks:

Epithelial tissue has ^{'Free'} ___(a)___ surface, which faces either ^{external} ___(b)___ environment or ___(c)___.

Body fluid

Question

Mark 'True' or False:

1. Epithelial cells are compactly packed? **(T)**
 2. Epithelial cells packed with ~~less~~ intracellular matrix? **(F)**
 3. Epithelium provides covering & no lining? **(F)**
- intercellular*

Q-2

A True, False, True

B True, False, False

C False, True, True

D True, True, False

Question

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

Q3

A

One

B

Two

C

Three

D

Four

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

(1) Digestion

(2) Respiration

(3) Reproduction

(4) Neural coordination

Q-4

④

Given below are two statements:

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

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

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.

Q5

Given below are two statements:

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

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

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

Q-6

2 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.

covering

Q-7
④

Given below are two statements:

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

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

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

Q-8
3

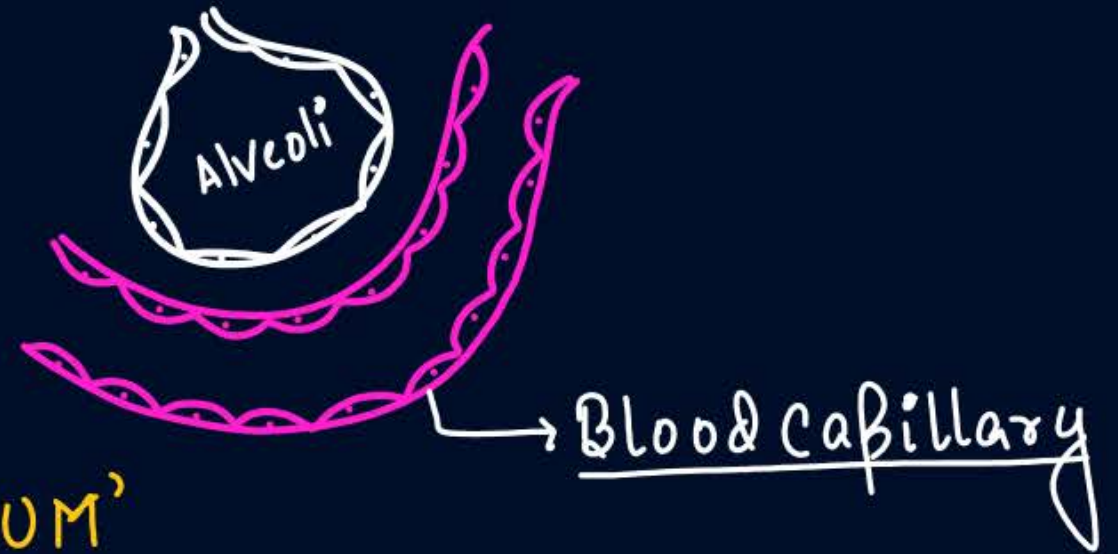
Simple Squamous Epithelium:

function: Filtration & Diffusion → movement of substances from high to low concentration.

eg*: • Air sac of Lung (Alveoli)

• Blood capillary

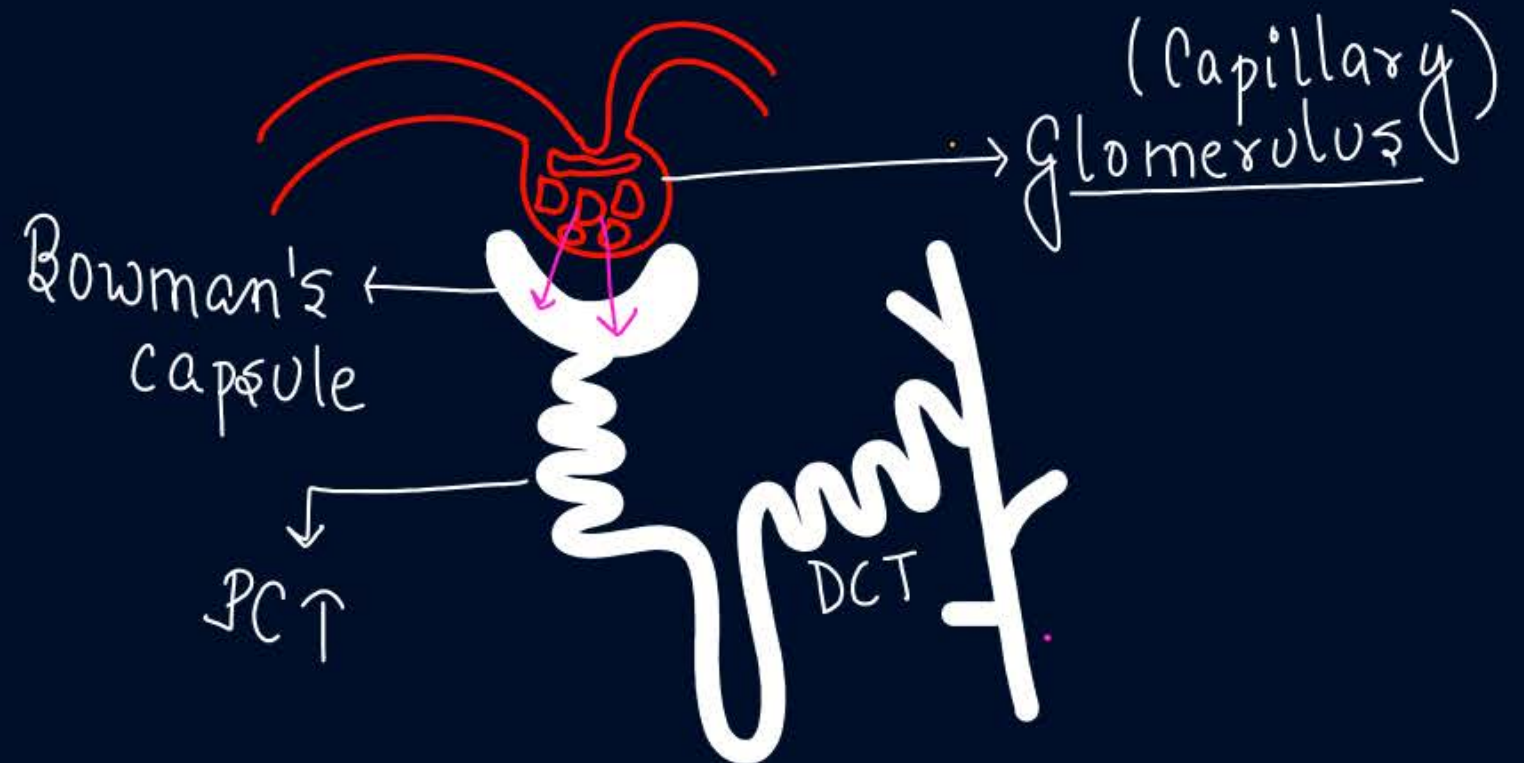
Simple squamous at this place is k/a 'ENDOTHELIUM'



• Glomerulus

• Bowman's capsule

'] Nephron

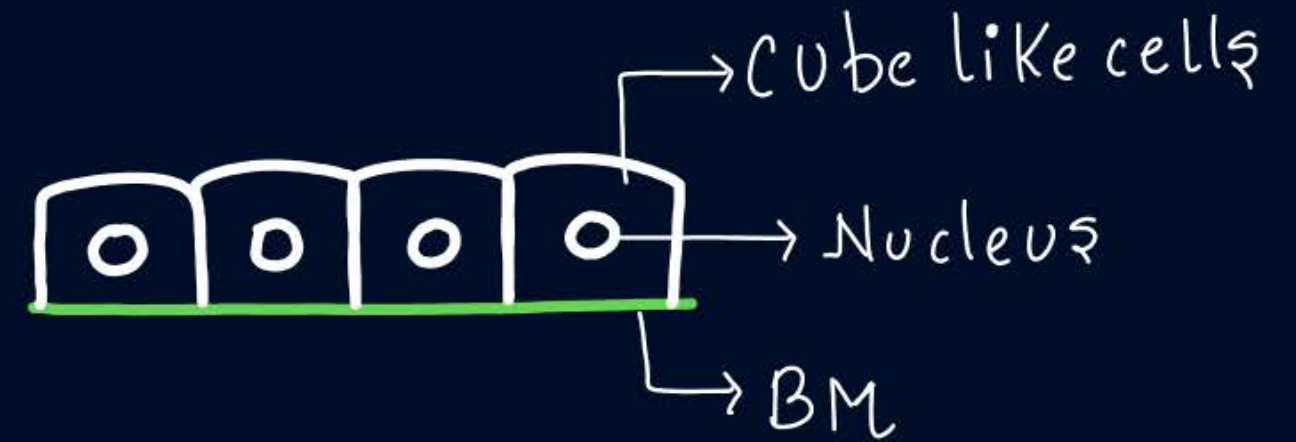


(Note) Simple squamous epithelium, free surface with no modification.



② Simple Cuboidal epithelium:

- Cubical / Cube like cell
- Nucleus is round & in Centre
- Free surface may or may not have modifications, hence it is studied as:



1. Simple Cuboidal Epithelium

- Free surface has no modification

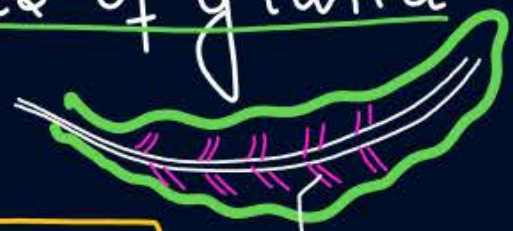


Function: Secretion & Absorption

Examples: DCT (Distal convoluted tubules)

- ★ Smaller ducts of Gland

Thyroid follicles (Thyroid gland)



Small ducts

Germinal epithelium → Ovary
Testis



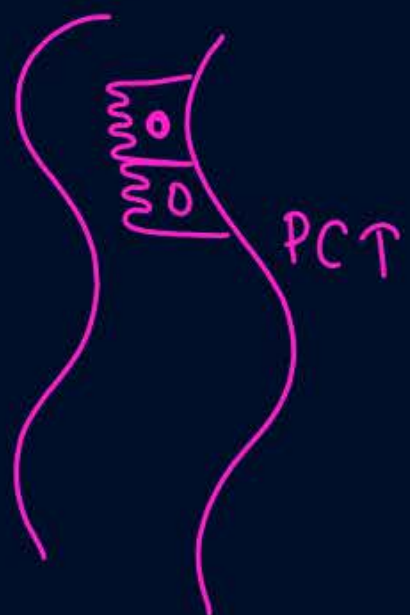
2. Brush Bordered Cuboidal

- Free surface has Microvilli



Function: Secretion & Absorption

Example: ★ PCT (Proximal convoluted Tubule)



3. Ciliated Cuboidal

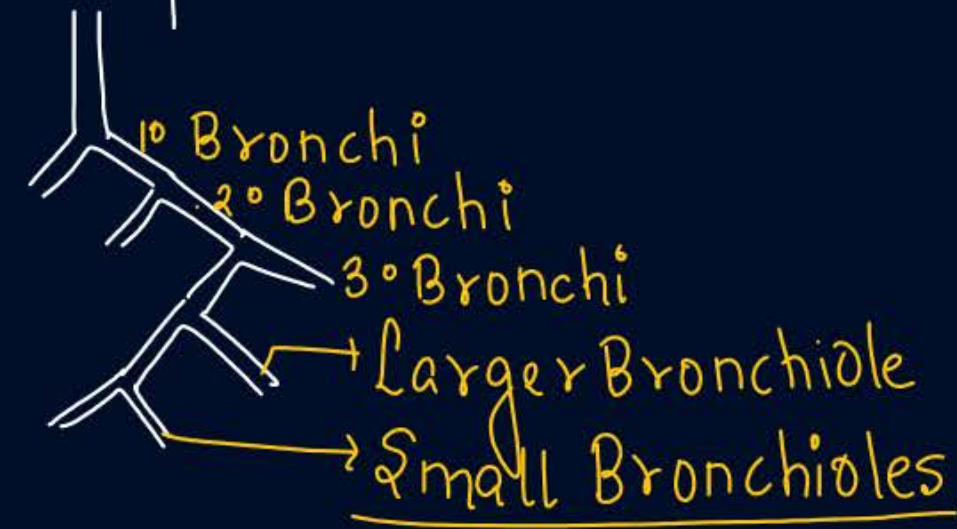
- Free surface has CILIA



Function: movement of specific particles along a specific direction

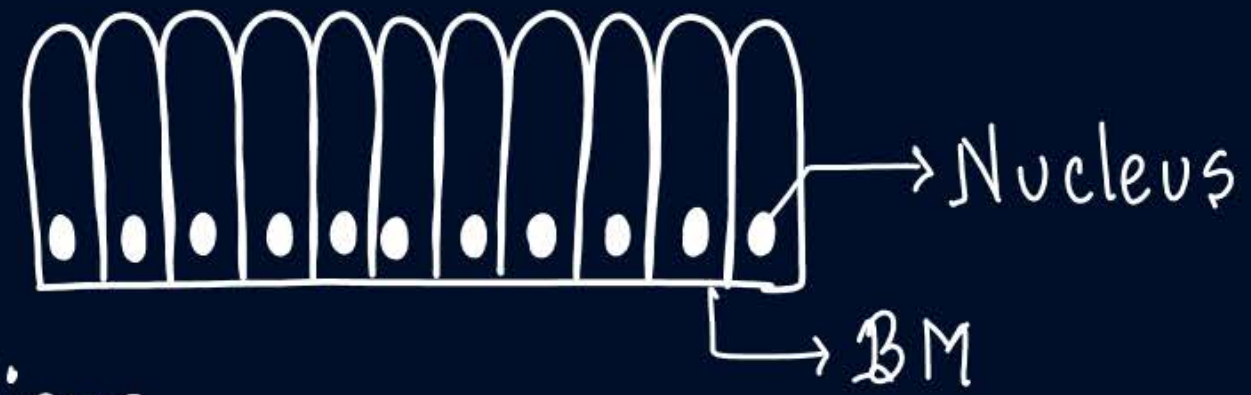
Example: Small bronchioles

movement of mucus trapped dust particles outside.



3. Simple Columnar Epithelium:

- Tall, slender (पतले) cells
- Nucleus: OVAL, BASE
- Free surface may have modifications,
hence is divided into:



1. Simple Columnar

- Free surface; no modification



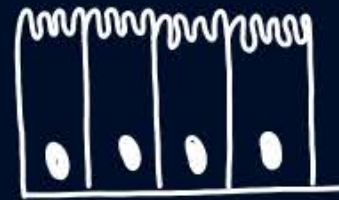
function: SECRETION & ABSORPTION

Example: GI tract

eg: Stomach

2. Brush Bordered Columnar

- Free surface
↓
Microvilli



function: SECRETION & ABSORPTION

Gastro-Intestinal tract

eg: Small intestine,

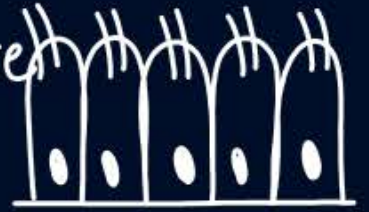
'GOBLET-cell'

secretes
mucus



3. Ciliated Columnar

- Free surface
↓
Cilia



• Movement of Substances

eg: Fallopian tube,
↳ movement of ova.



• Larger Bronchioles
↳ movement of mucus

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).

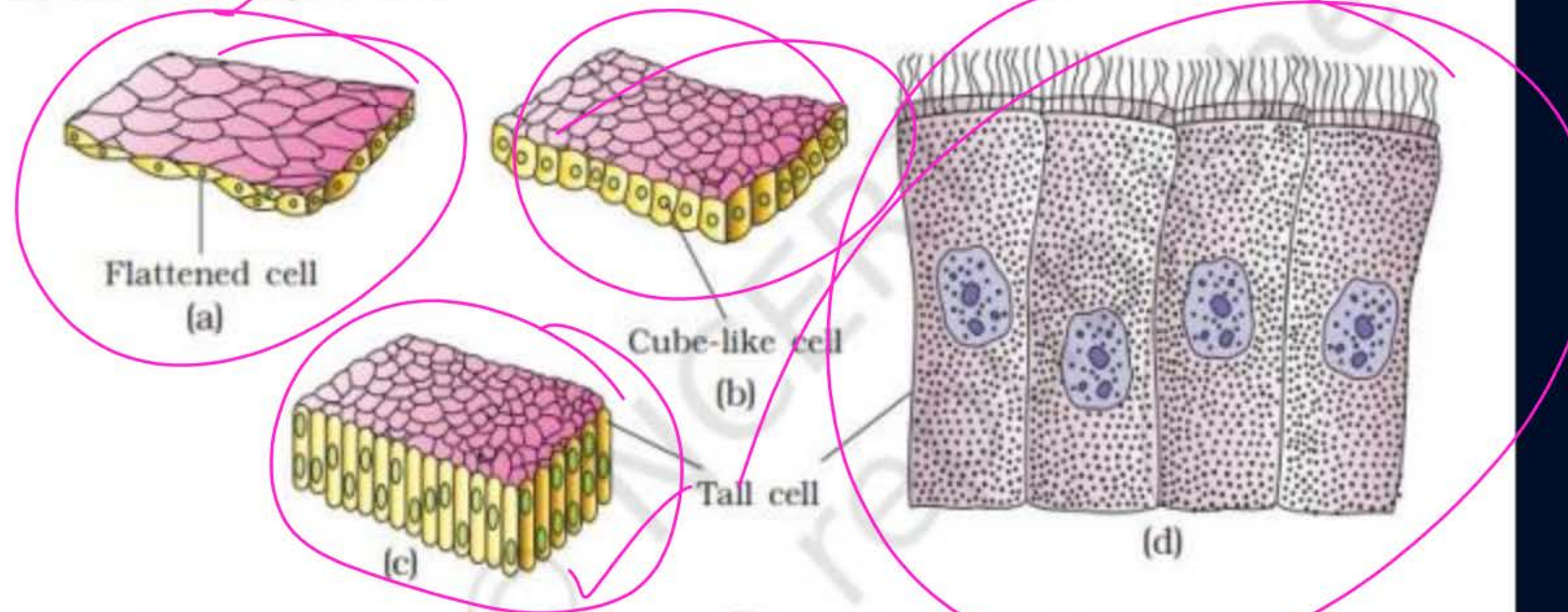


Figure 7.1 Simple epithelium: (a) Squamous (b) Cuboidal (c) Columnar (d) Columnar cells bearing cilia

Note Ciliated epithelium is usually present lining the hollow organs.

1 crs
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.

small duct
DLF

Glandular Epithelium:

- It's a type of Simple Epithelium that has either 'CUBOIDAL' or 'COLUMNAR' cells specialised for SECRETIONS

CLASSIFICATION OF GLANDULAR EP:

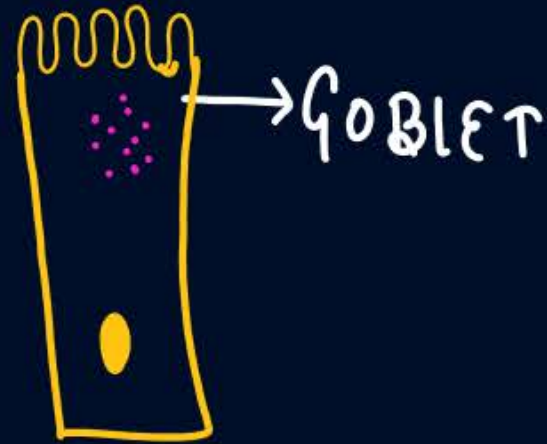
① ON THE BASIS OF NUMBER OF CELLS:

UNICELLULAR GLAND

single cell

- Single, isolated cell can produce secretions.

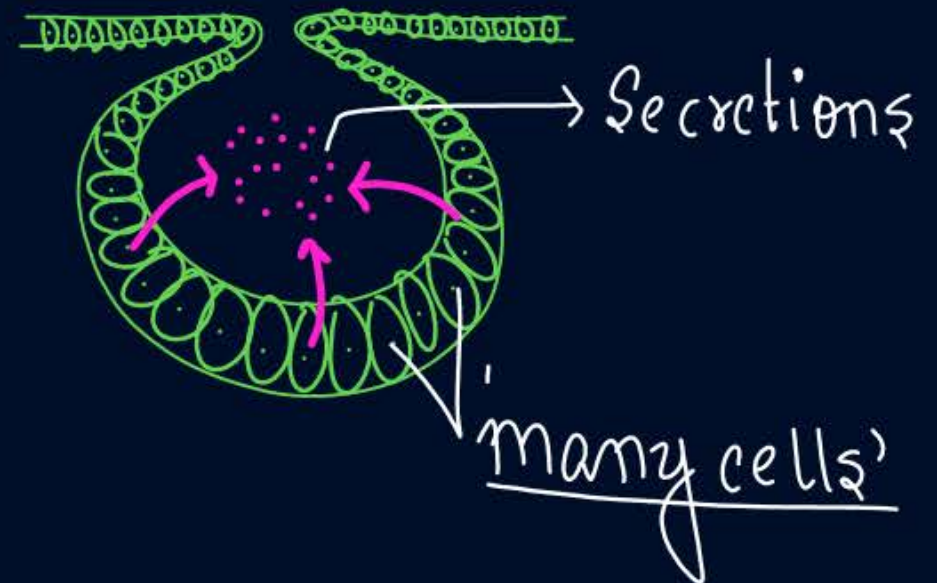
eg: GOBLET CELL
↳ MUCUS



MULTICELLULAR GLAND

many cells

- many cells, together form secretions.
eg: Salivary, sweat, Pituitary gland.

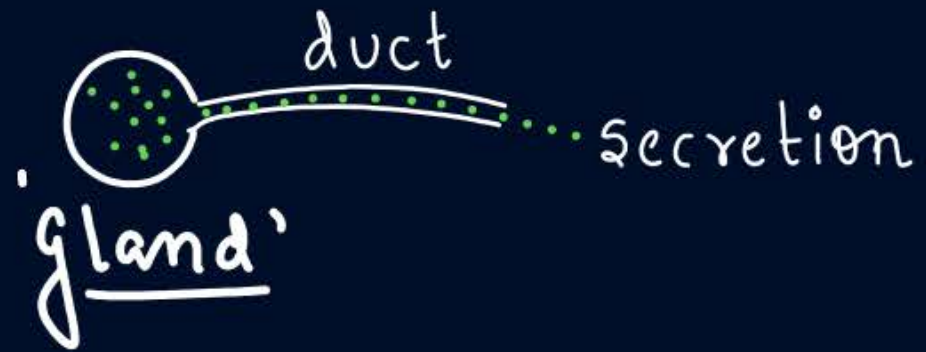


② ON THE BASIS OF MODE OF POURING SECRETIONS:



EXOCRINE GLAND

- Glands that pour (put / release) their secretions via ducts.

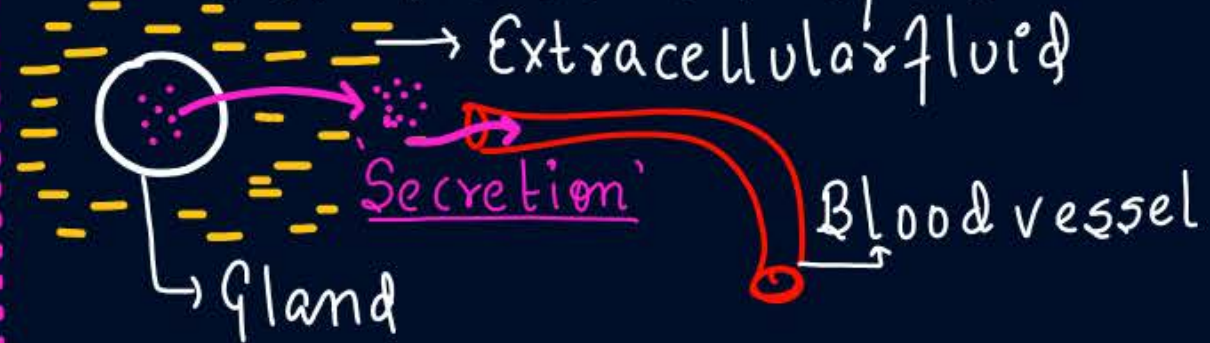


eg: Mucus, Milk, Sebum (Oil), sweat, saliva, digestive enzymes etc are exocrine secretion

Note { Mammary, sweat, salivary, oil / sebaceous glands etc }
↳ exocrine

ENDOCRINE GLANDS

- Glands that pour their secretions w/o duct (Ductless glands)



- Glands that pour their secretions called 'Hormones' directly into the fluid bathing them

eg. Pituitary, Thyroid, Parathyroid etc

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: Columnar or cuboidal cells bear cilia on their free surface and forms compound epithelium.

Reason R: Ciliated epithelium acts by moving particles or mucus in a specific direction over the epithelium.

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

- (1) Both A and R are true and R is the correct explanation of A.
- (2) Both A and R are true but R is NOT the correct explanation of A.
- (3) A is true but R is false.
- (4) A is false but R is true.

Ncert catalyst homework.

The organ that possesses epithelium composed of flattened, plate-like cells with irregular boundaries in its walls is:

- (1) air sacs of lungs.
- (2) nephrons of kidney.
- (3) fallopian tubes.
- (4) salivary glands.

Read the below given statements and choose the **correct** option.

- I. The nuclei are present at the base.
- II. They are composed of a single layer of tall and slender cells.
- III. Free surface may have microvilli.

- (1) Compound epithelium
- (2) Simple squamous epithelium
- (3) Simple columnar epithelium
- (4) Simple cuboidal epithelium

Which of the following options is **correct** w.r.t the location of squamous epithelium?

- (1) Walls of blood vessels
- (2) Intestine
- (3) Bronchioles
- (4) Nephrons

In human beings, ciliated epithelium is mainly present in:

- (1) salivary duct.
- (2) pancreatic duct.
- (3) alveoli.
- (4) bronchioles.

Question

BRUSH BORDERED cuboidal epithelium is found in:

- A** PCT
- B** DCT
- C** AIR SAC
- D** BLOOD VESSEL

Question

Pavement epithelium is

- A** Squamous epithelium
- B** Found in air sac
- C** Has irregular boundaries
- D** All of the above

Question

Ciliated epithelium is found in

- A** PCT
- B** FALLOPIAN TUBE
- C** BRONCHIOLES
- D** BOTH B AND C

Question

WHICH OF THE FOLLOWING STATEMENT IS INCORRECT ABOUT SIMPLE COLUMNAR EPITHELIUM

- A** TALL, SLENDER CELL
- B** NUCLEUS IS OVAL AND FOUND IN CENTRE
- C** FOUND IN THE GI TRACT
- D** MAY HAVE MODIFICATION ON FREE SURFACE LIKE MICROVILLI OR CILIA

Samapti Sinha Mahapatra

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Homework

MODULE HOMEWORK

PRARAMBH EXERCISE 1- Q 3,4,5,6,7,28,30
PRABAL EXERCISE 2-Q 8,12,14,16,19

THANK
YOU