

TOPIC: SIMPLE EPITHELIAL TISSUES

- ____ tissues are structurally categorized as ____ *epithelial tissues*.

1a. Simple Squamous Epithelium

Characteristics:

- Single layer of ____ cells.

Function:

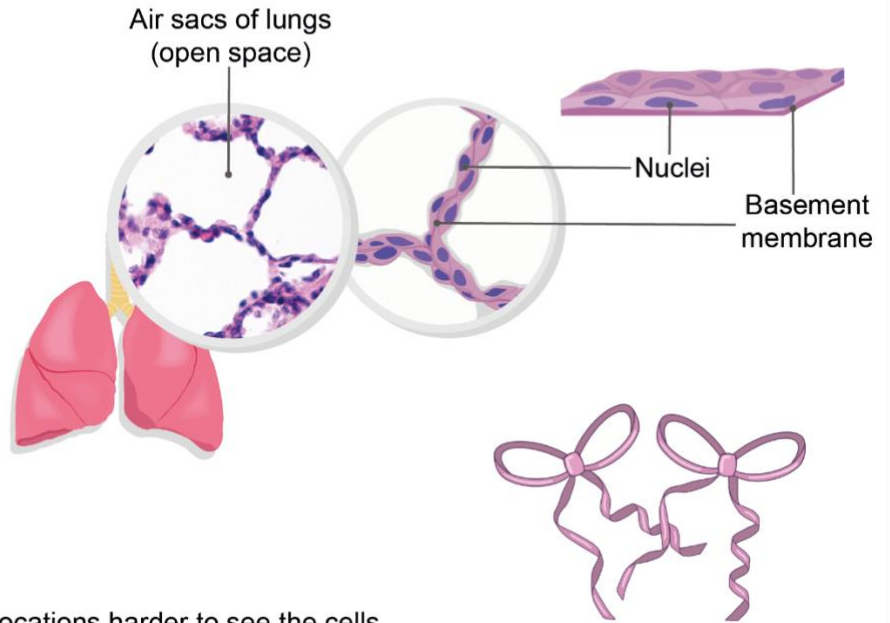
- Rapid ____.
- Covering/lining.

Locations:

- Air sacs of lungs, capillaries, and Bowman's capsule of kidney.
- Lining of body cavities: Produces ____ fluid.
- Lining of larger blood vessels, heart.

ID tip:

- Images are often from the lungs. Other locations harder to see the cells.



1b. Simple Cuboidal Epithelium

Characteristics:

- Single layer of ____ shaped cells.

Function:

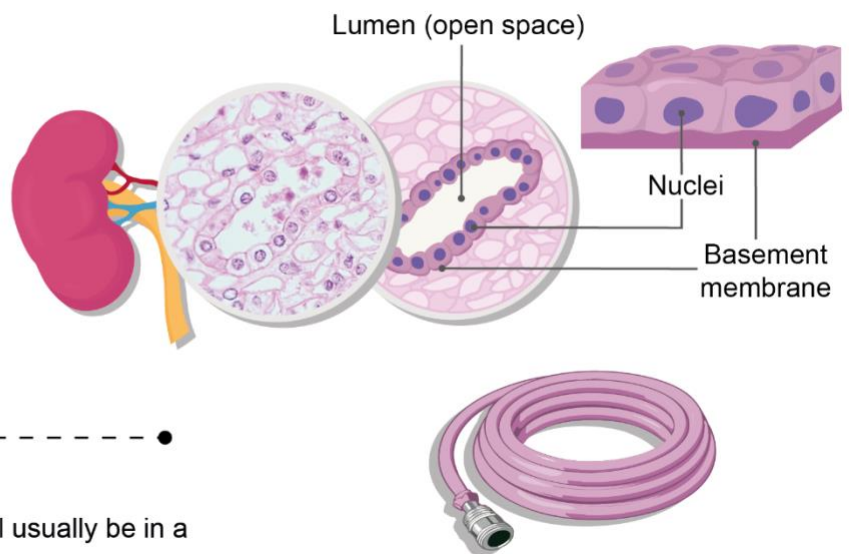
- Absorption.
- Secretion.

Locations:

- Kidney tubules.
- Ducts of many ____.

ID tip:

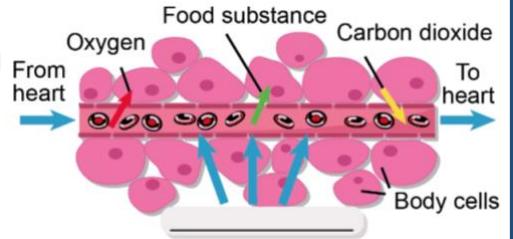
- Usually part of a duct or tubule, so cells will usually be in a ring or have open space between two layers of cuboidal cells.



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EXAMPLE: The drawing shows a gas and nutrient exchange in a capillary.

The missing label indicated the cells of the capillary wall. Fill in the missing label with the correct cell type and explain how you knew the correct label.



PRACTICE: Which features of simple squamous epithelium makes it ideal for rapid diffusion?

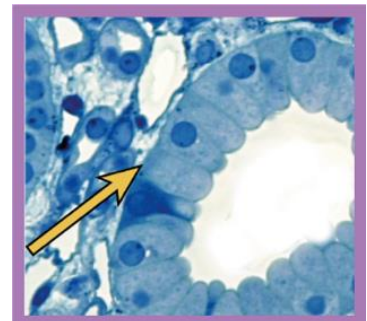
- a) Tight junctions usually hold the cells together.
- b) It lines body cavities.
- c) It is attached to a basement membrane.
- d) It is very thin.

PRACTICE: What type of cell is most often found in the ducts of glands?

- a) Simple squamous epithelium.
- b) Simple cuboidal epithelium.
- c) Stratified columnar epithelium.
- d) Pseudostratified columnar epithelium.

PRACTICE: In the image to the right, what feature is the yellow arrow pointing to?

- a) Basement membrane.
- b) Cilia.
- c) Microvilli.
- d) Apical surface.



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1c. Simple Columnar Epithelium

Characteristics:

- Single layer of _____ & narrow cells.

Function:

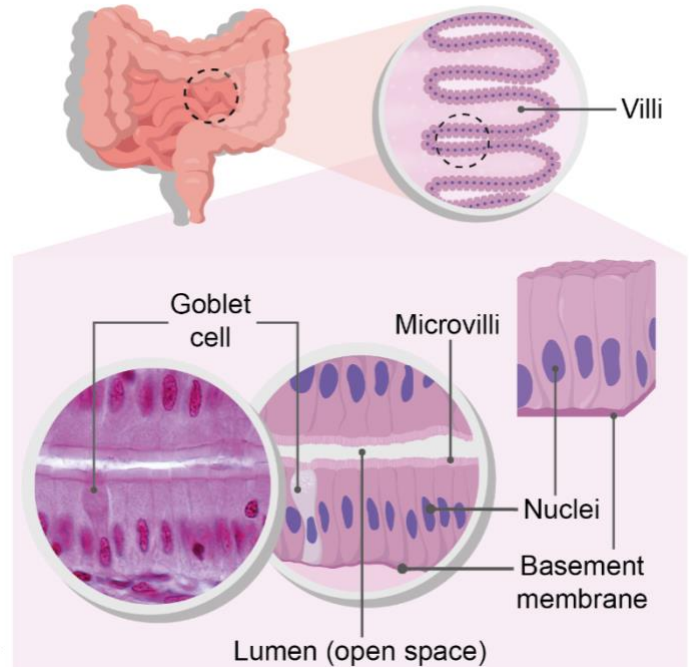
- Absorption: _____ increase surface area.
- Secretion: _____ cells.

Locations:

- Digestive tract: stomach to anus.
- Uterine tubes.
- Gall bladder.

ID tip:

- Nuclei often in neat row along basement membrane.
- Microvilli may appear as border along apical surface.



1d. Pseudostratified Columnar Epithelium

Characteristics:

- Single layer of _____ & narrow cells.
- Pseudostratified: looks like more than one layer of nuclei, but all cells touch the basement membrane.

Function:

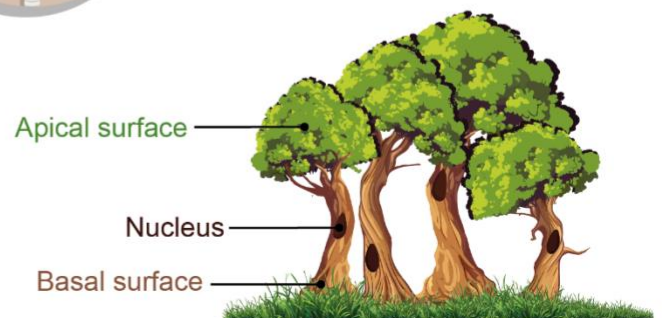
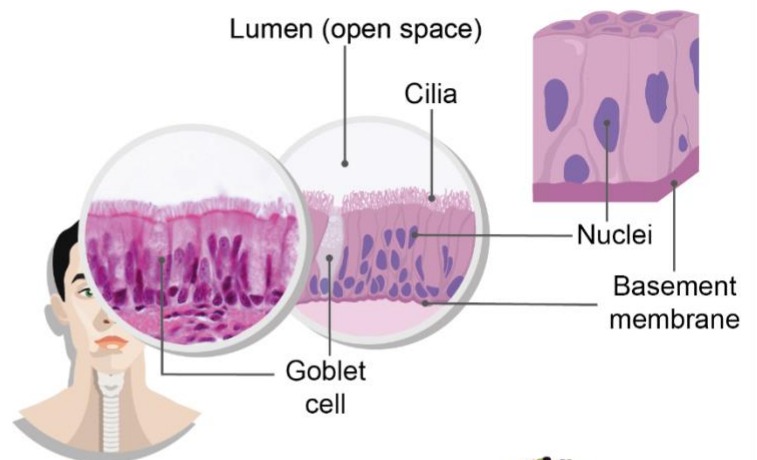
- Protection.
- Secretion: _____ cells.
- Cilia _____ the mucus along the surface
- (often but not always present).

Locations:

- Upper respiratory passages.
- Portions of reproductive tracts.

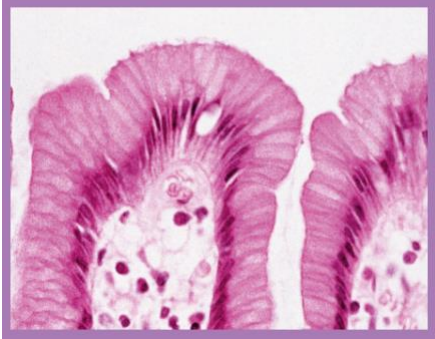
ID tip:

- Often have cilia. Stratified columnar is rare: multiple layers of nuclei is most likely pseudostratified columnar.



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EXAMPLE: This tissue is from the lining of the stomach. What type of tissue is it and what makes it unique?



Type of tissue: _____

No _____ cells in the stomach.

PRACTICE: Which characteristic is true of columnar cells, but not other epithelial tissues?

- a) Columnar epithelial tissue contains the protein keratin.
- b) Columnar epithelial tissue is found in the lungs.
- c) Columnar epithelial tissue may contain goblet cells.
- d) Columnar epithelial tissue functions in secretion.

PRACTICE: Both the small intestine & the trachea are lined with columnar cells. Based on their location, what do you expect would be different about these cells?

- a) Cells in the intestine will have cilia to aid in absorption. Cells in the trachea will have microvilli to move mucus.
- b) Cells in the intestine will have cilia to move mucus. Cells in the trachea have microvilli to aid in absorption.
- c) Cells in the intestine will have microvilli to move mucus. Cells in the trachea have cilia to aid in absorption.
- d) Cells in the intestine will have microvilli to aid in absorption. Cells in the trachea will have cilia to move mucus.

PRACTICE: Imagine that you are a histologist looking at a sample of cells from the lining of the human intestine.

What tissue type do you expect to see?

- a) Pseudostratified columnar epithelium.
- b) Simple columnar epithelium.
- c) Simple cuboidal epithelium.
- d) Stratified cuboidal epithelium.