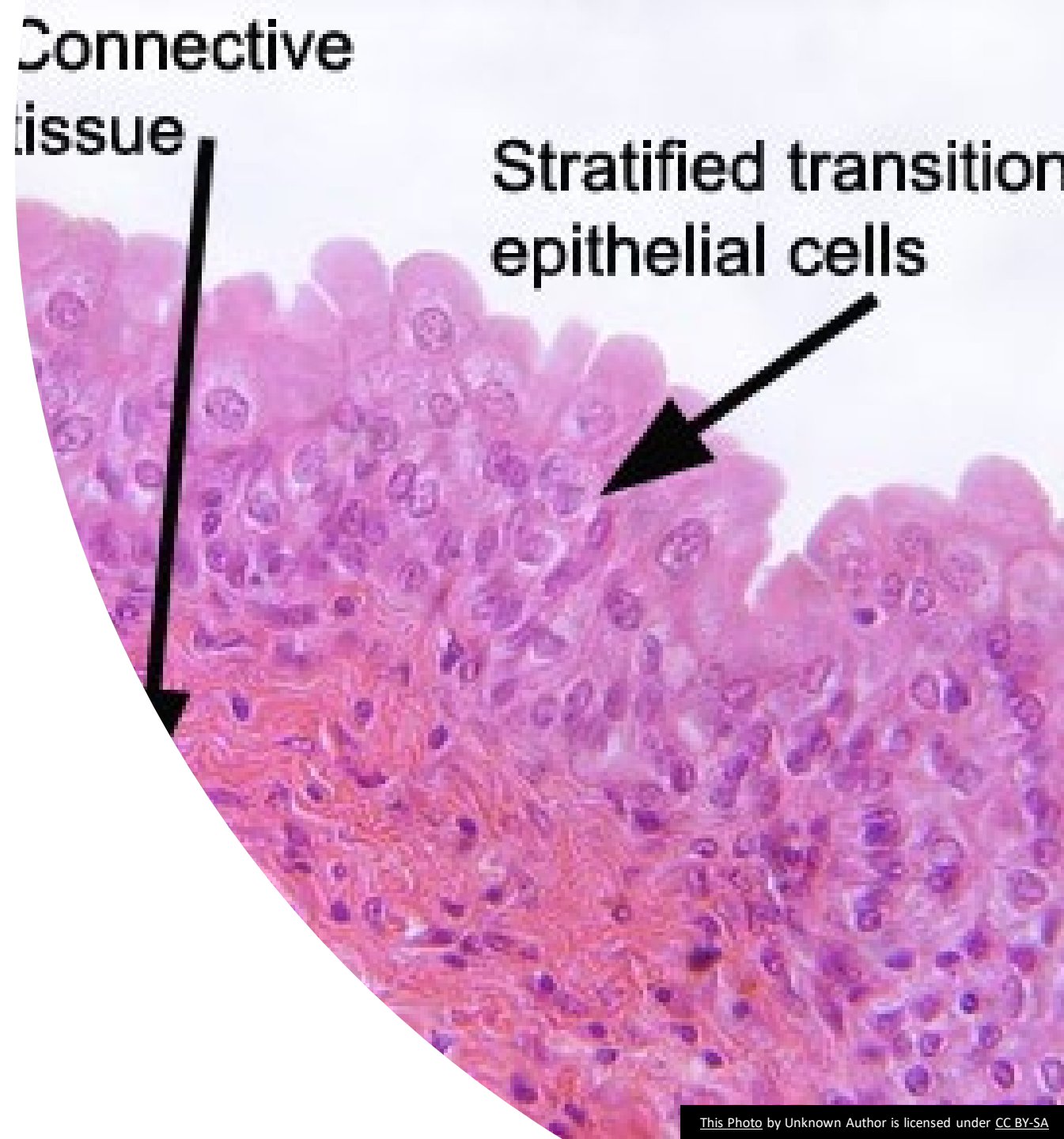
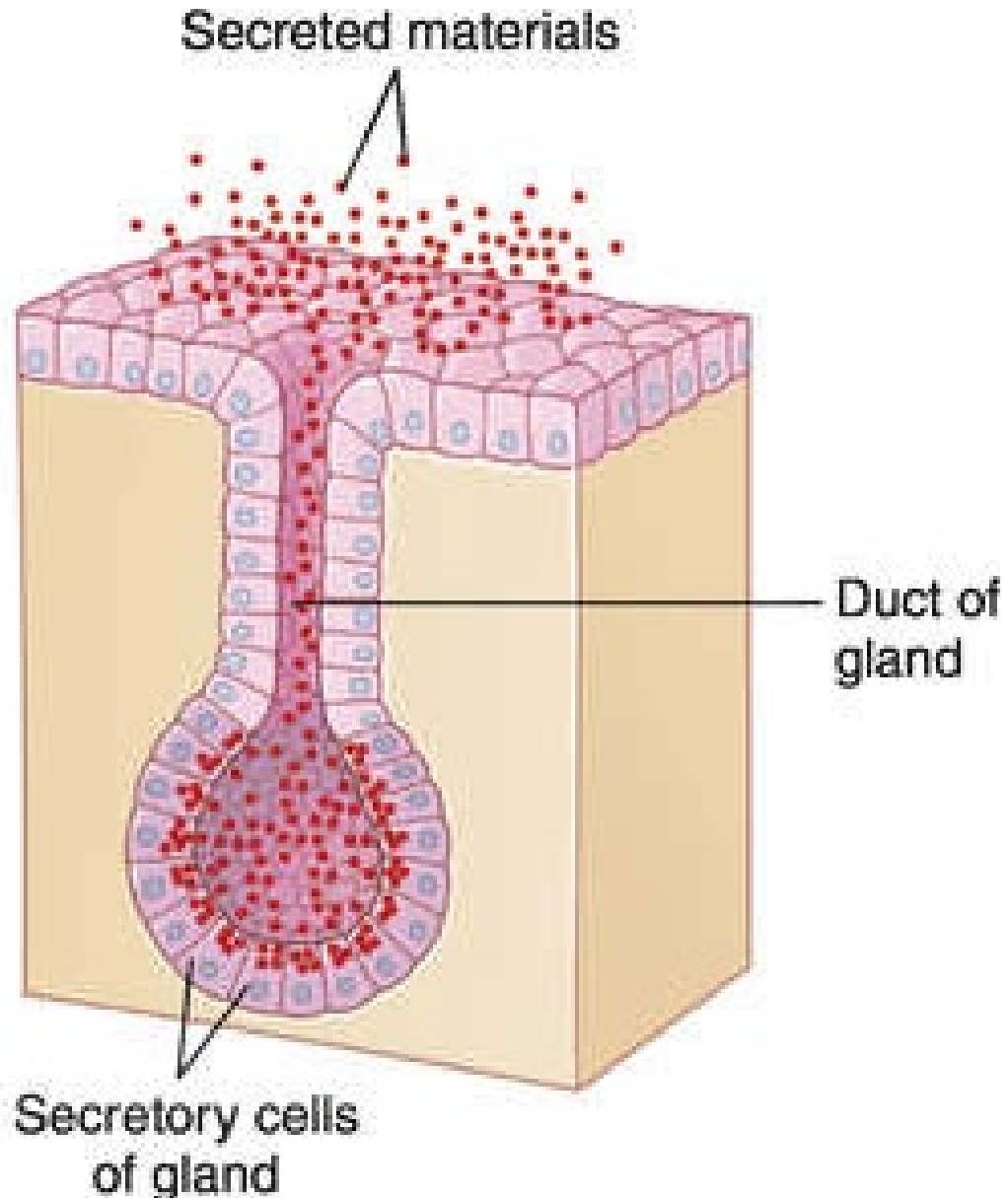


Epithelial tissues

- Epithelium is one of the four basic types tissue, along with connective tissue, muscle tissue and nervous tissue.
- Epithelial tissues
 - Lines the outer surfaces of the organs
 - Lines the surfaces of blood vessels
 - Lines inner surfaces of the body cavities
 - Lines the internal surfaces of many internal organs.
 - Makes up the secretory and absorptive parts of the glands



2 classes of epithelial cells / tissues



Glandular Epithelium
- Found in Glands

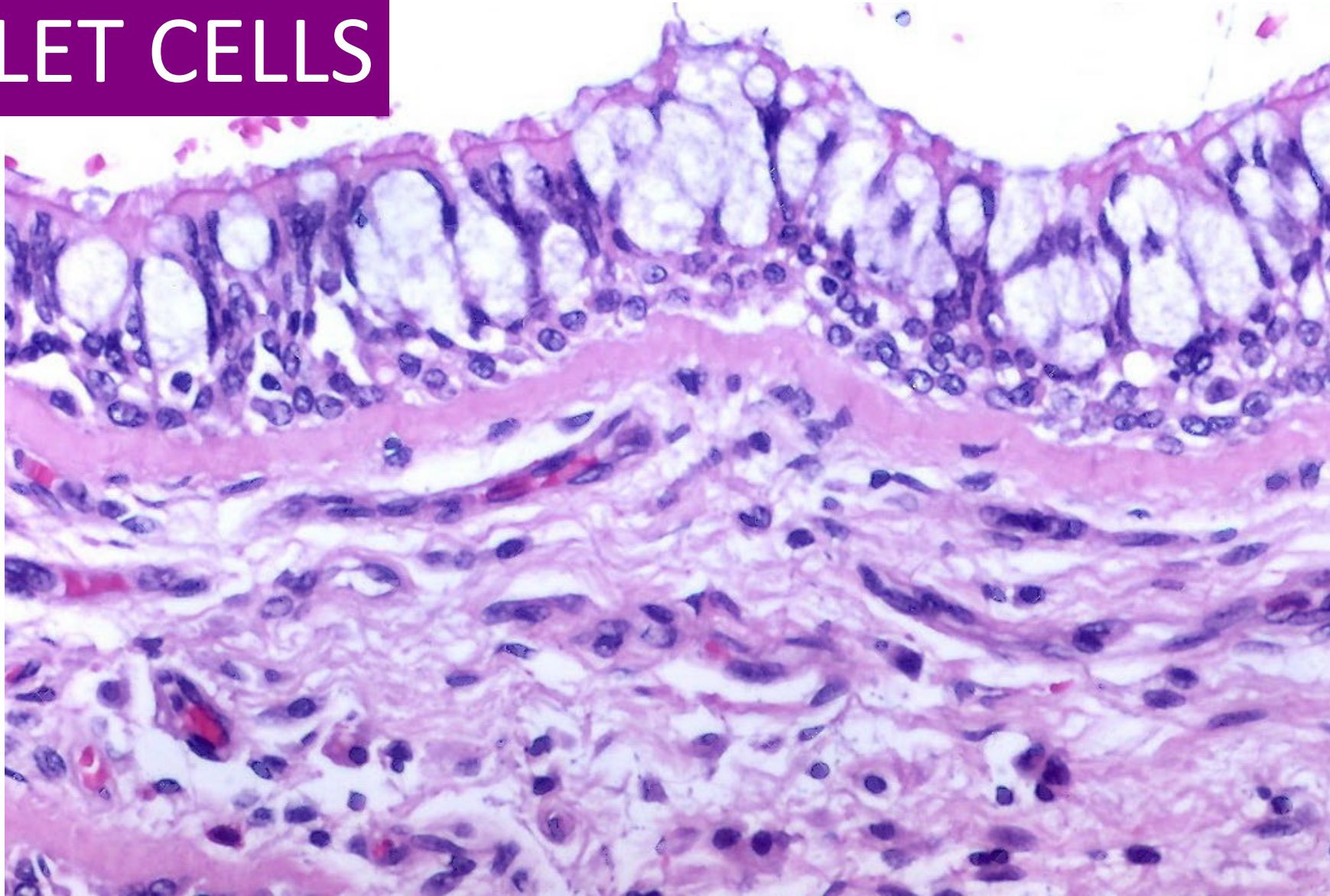
Epithelium Proper -
Lines the body's
surfaces (insides and
out)

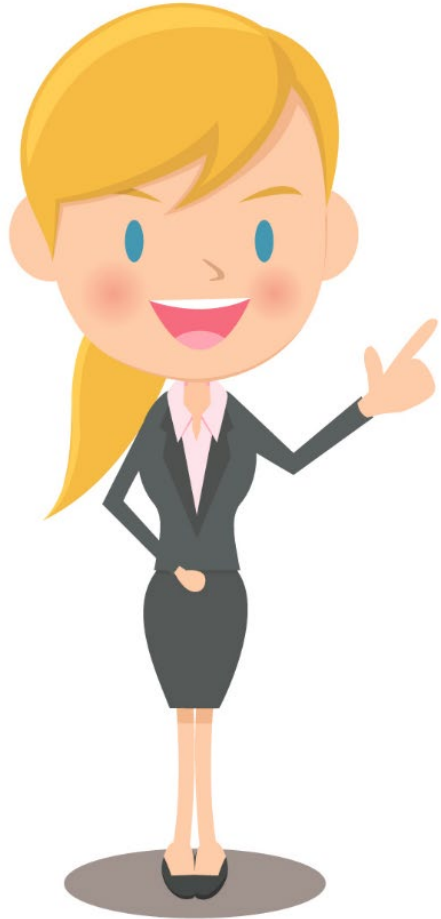
Glandular Epithelium - Found in Glands

- All glands are made up of epithelial cells.
- Functions of epithelial cells include secretion, selective absorption, protection, transcellular transport, and sensing.



GOBLET CELLS





Simple Squamous Epithelium

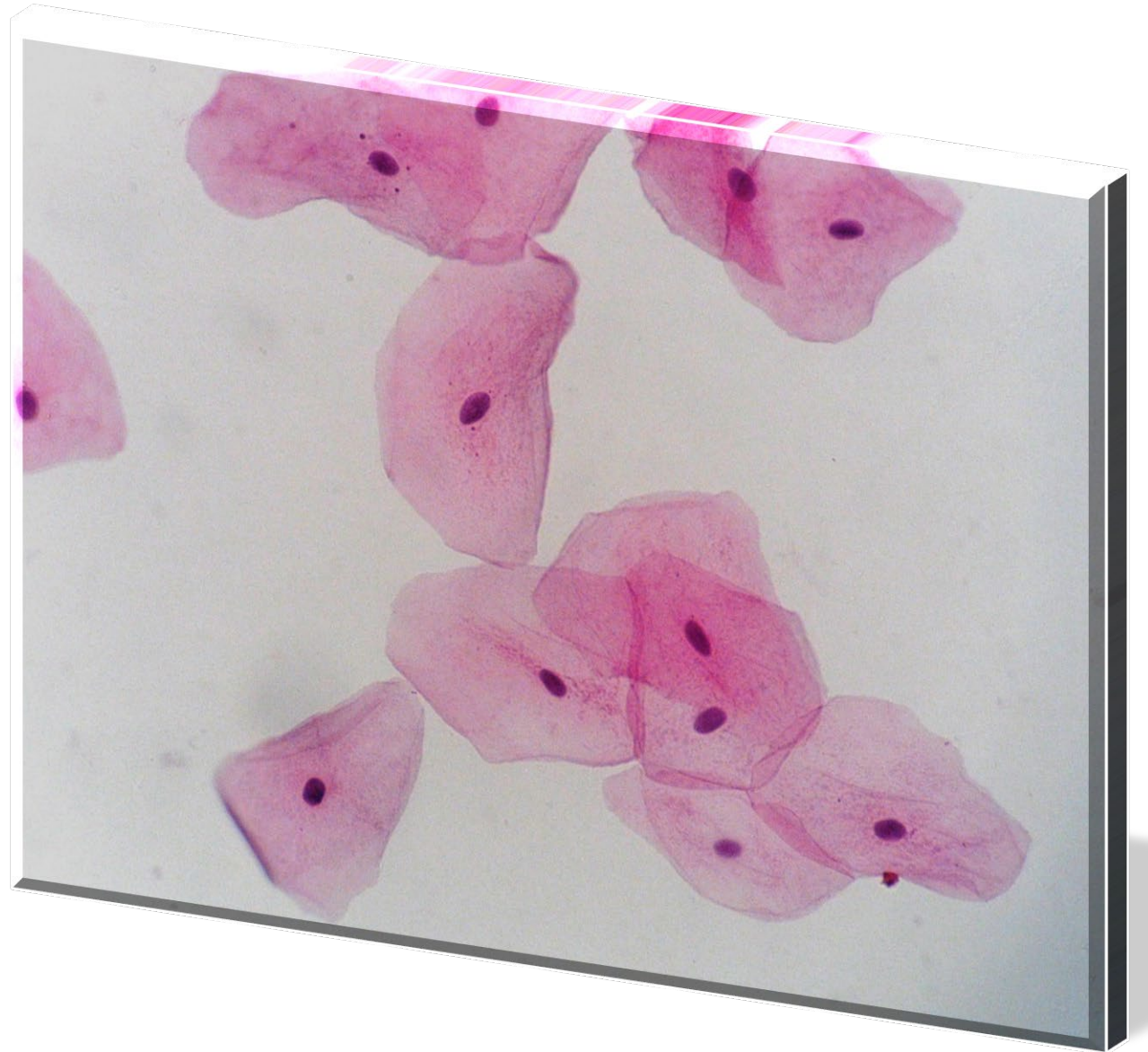


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Squamous means “scales”. Simple, means one layer. This tissue is made up of short squashed cells with oval-shaped (ovoid) nuclei that are also flattened and squashed.

Simple Squamous Epithelium

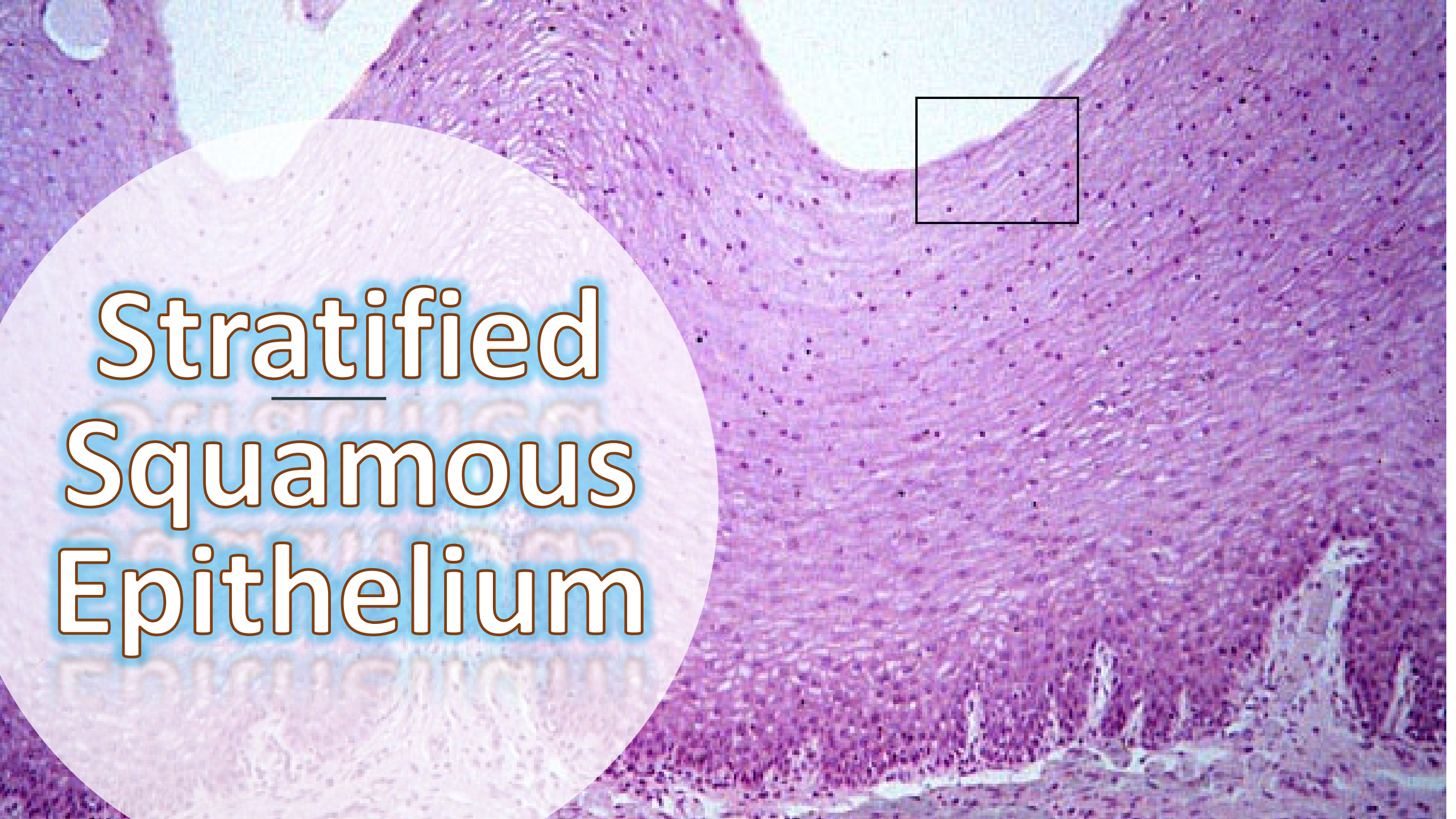
Cells From Cheek Swab





Simple Squamous Epithelium

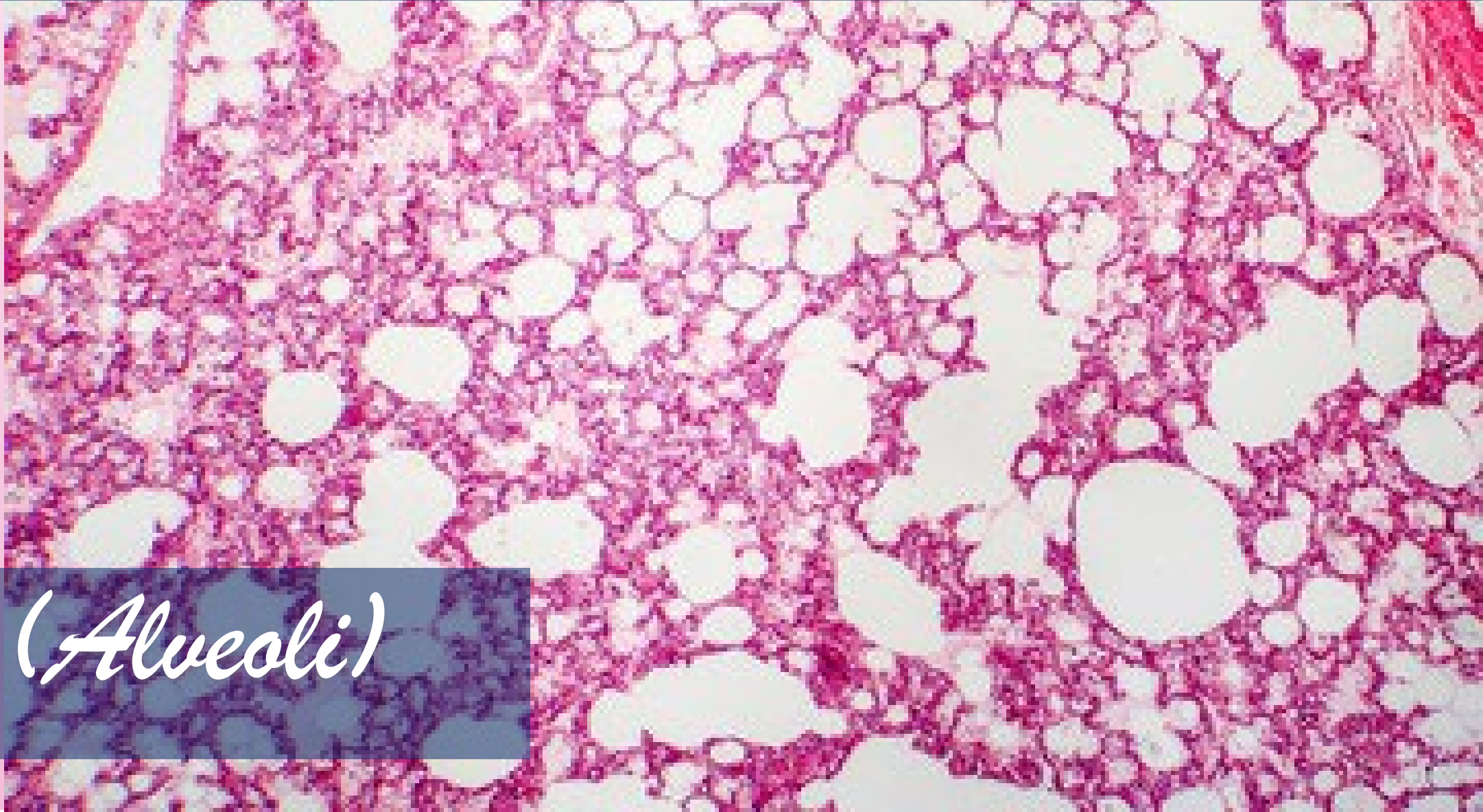
Alveoli - LUNGS

A microscopic image of stratified squamous epithelium, stained with hematoxylin and eosin (H&E). The tissue shows multiple layers of cells, with the superficial layer consisting of flattened, squamous cells. A large, semi-transparent circular area on the left contains the text 'Stratified Squamous Epithelium'. A small black rectangular box is located in the upper right quadrant of the image, highlighting a specific area of the tissue.

Stratified Squamous Epithelium

Simple Squamous Epithelium

Lung (Alveoli)

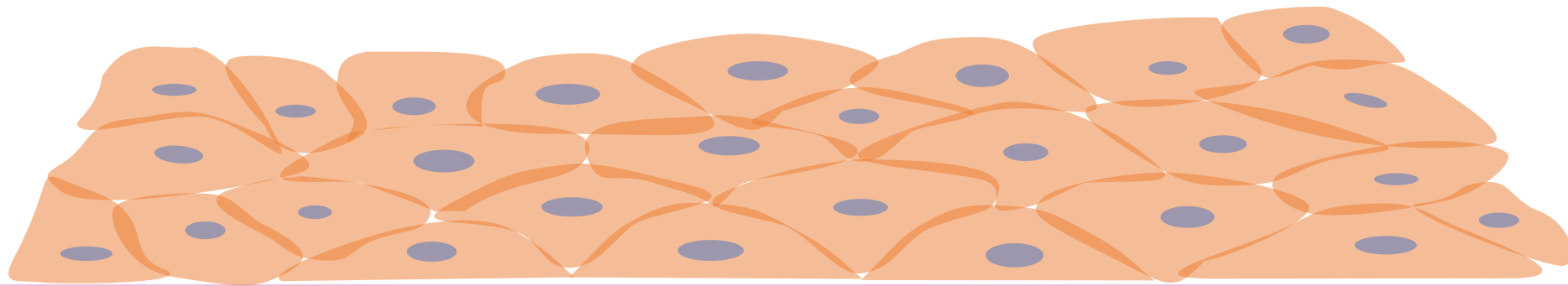


A light micrograph of a kidney section stained with hematoxylin and eosin (H&E). The image shows a cross-section of a nephron. The Bowman's capsule is visible as a double-layered structure surrounding the renal corpuscle. The outer layer is composed of simple squamous epithelium, which is highlighted by a white circular overlay. The inner layer is the parietal layer, and the space between them is the Bowman's space. The renal corpuscle contains the glomerulus, a tuft of capillaries. The surrounding tissue consists of various types of cells, including tubular epithelium and interstitial cells. A black arrow points to the outer layer of the Bowman's capsule.

*Bowman's Capsule -
Kidney*

*Simple Squamous
Epithelium*

Stratified Squamous Epithelium



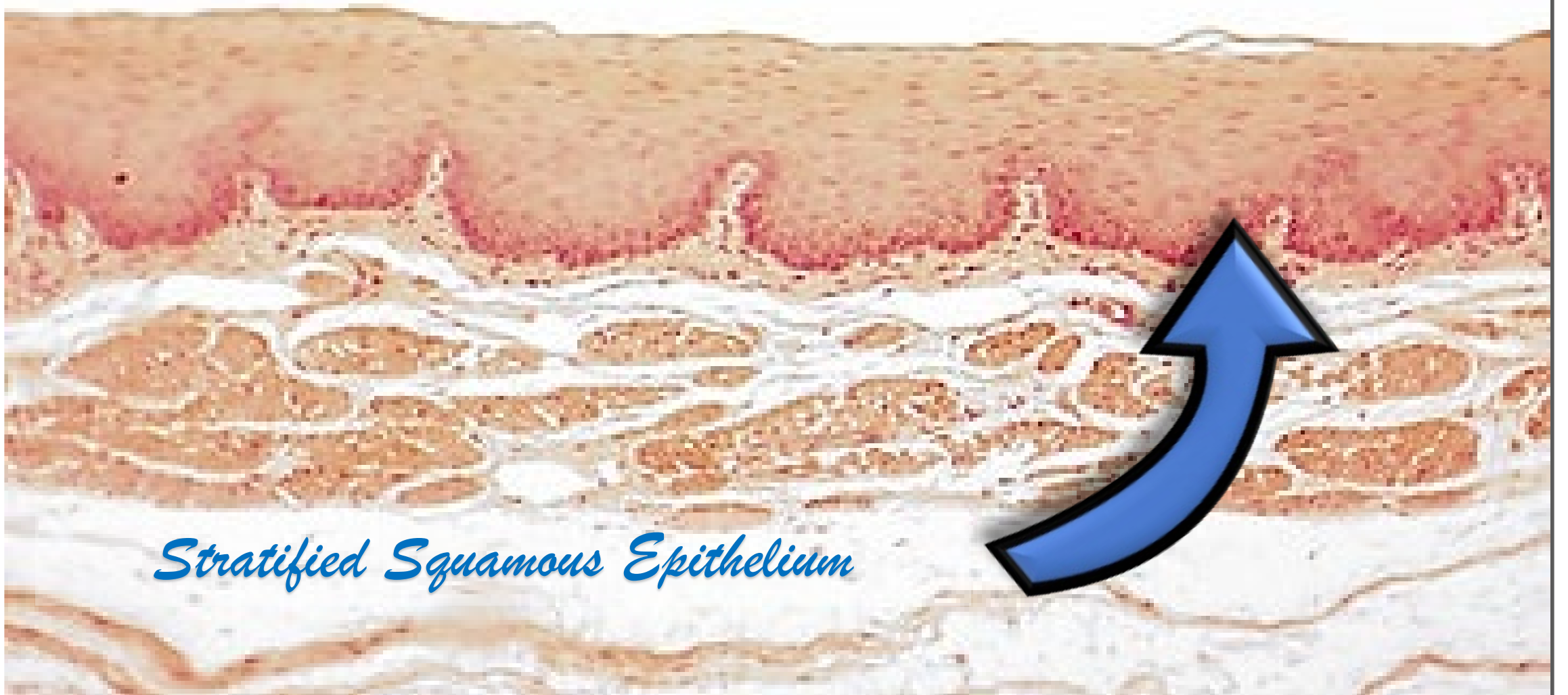
www.ScientistCindy.com

Stratified Squamous Epithelium lines the outer and inner surfaces of the body.

Stratified Squamous Epithelium that the inner surfaces of the body or lie inside the orifices of the body are not keratinized.

Stratified Squamous Epithelium

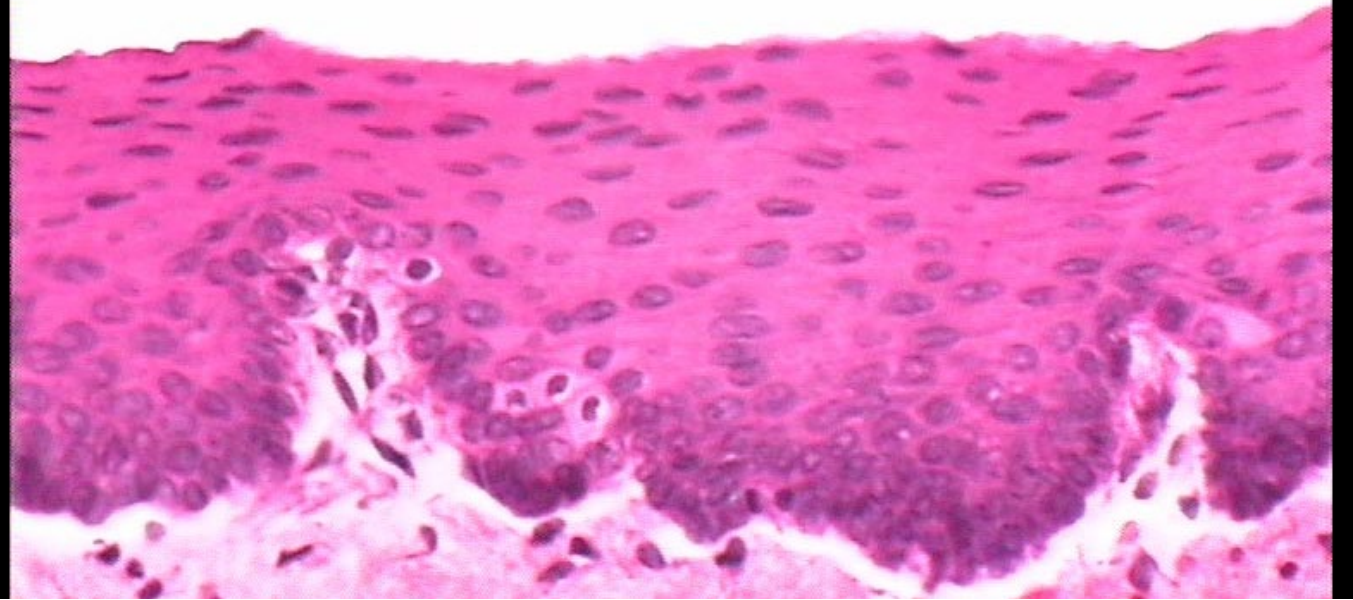




Stratified Squamous Epithelium

*Stratified
Squamous
Epithelium*

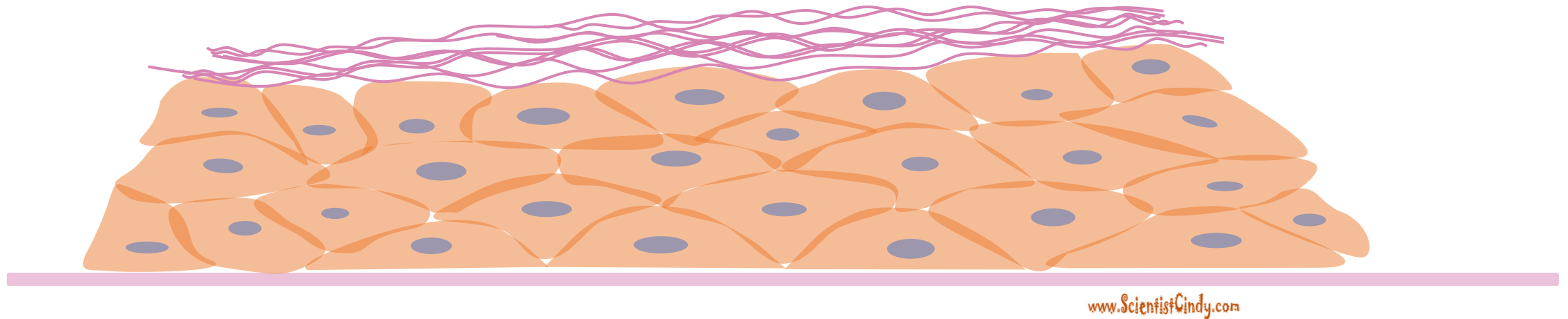
Stratified Squamous Epithelium
Tongue



A histological micrograph showing stratified squamous epithelium. The tissue consists of multiple layers of cells. The surface layer is composed of flattened, squamous cells. The underlying layers are thicker and contain more rounded, polygonal cells. The overall appearance is that of a thick, multi-layered epithelial tissue.

*Stratified
Squamous
Epithelium*

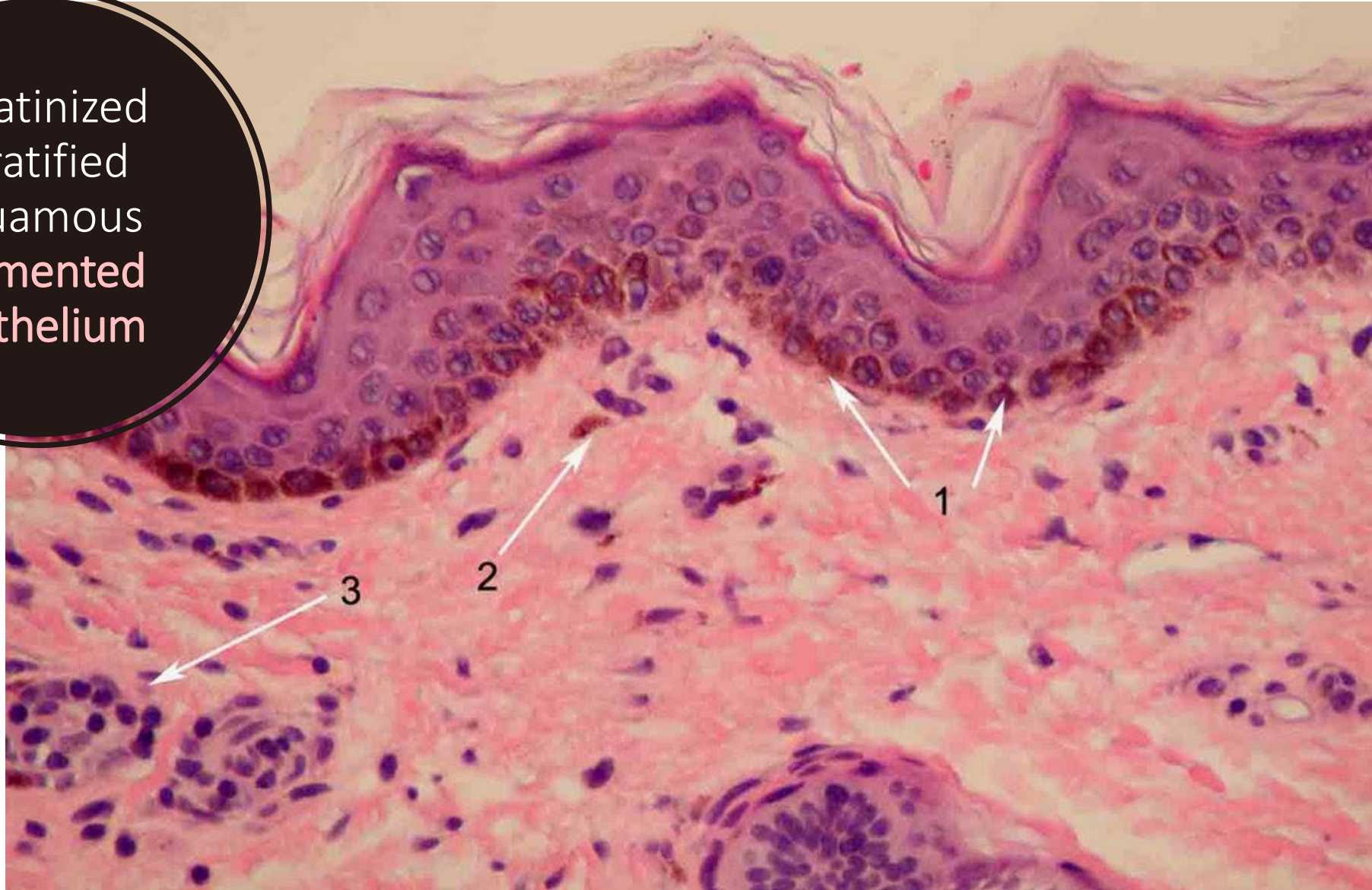
Keratinized Stratified Squamous Epithelium



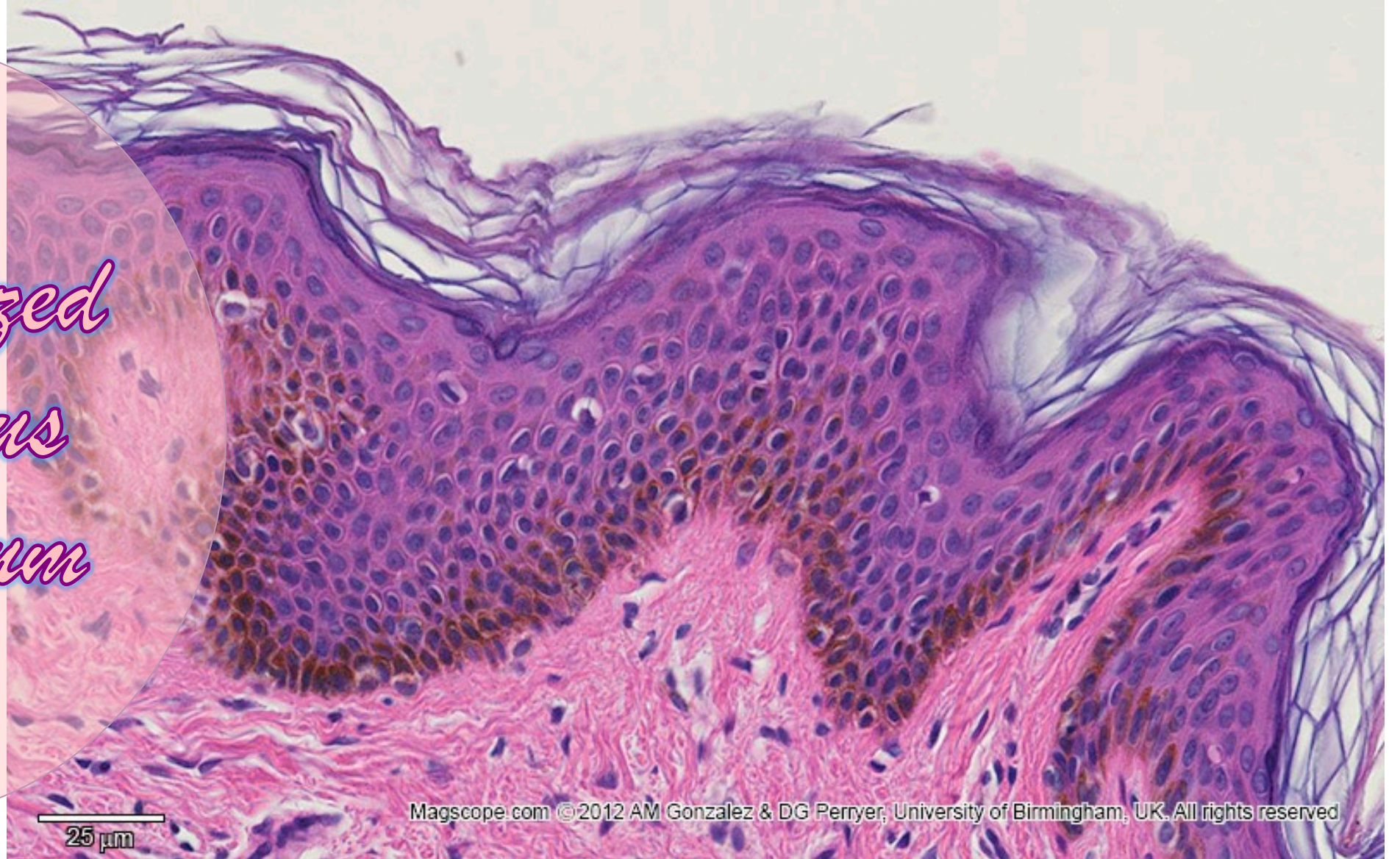
Stratified Squamous Epithelium lines the outer and inner surfaces of the body.

Stratified Squamous Epithelium that outer surfaces of the body are keratinized. These are dead cells that cover the surface of the skin and provide added protection.

Keratinized
Stratified
Squamous
Pigmented
Epithelium

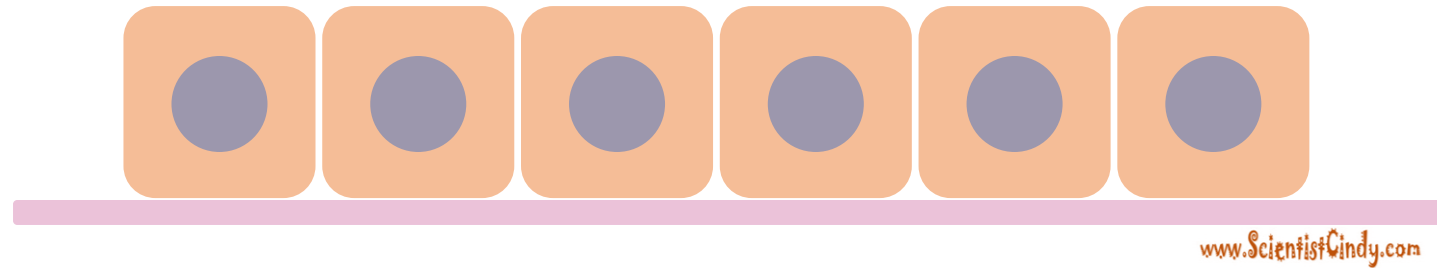


*Keratinized
Squamous
Epithelium*



25 μ m

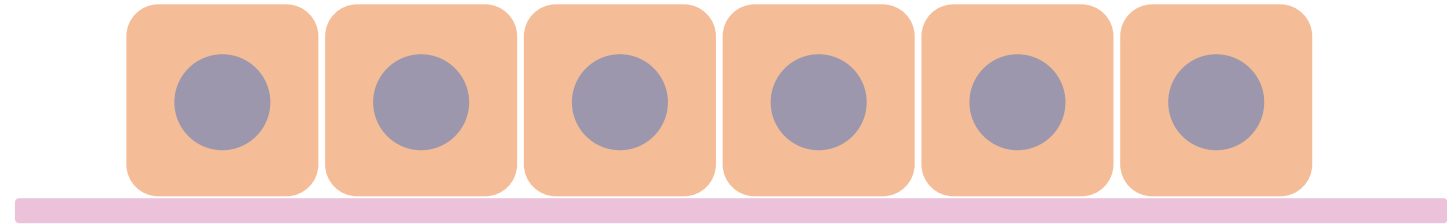
Simple Cuboidal Epithelium



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Simple Cuboidal Epithelium Lines
Some of the Body's Tubules and
Glands

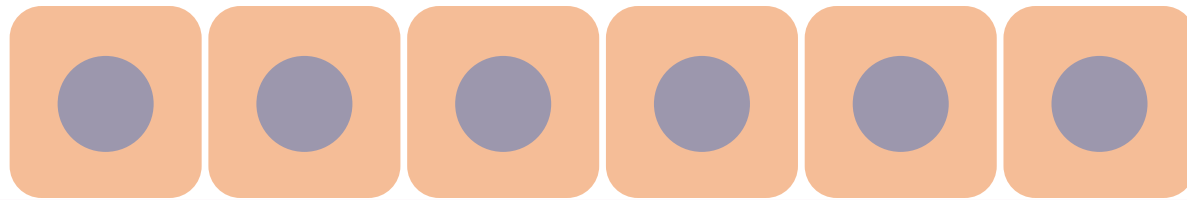
Simple Cuboidal Epithelium



IDENTIFYING FEATURES

- Cell Shape – Square – As High as They Are Wide
- Cell Location – Lines Tubules and Glandular Epithelial Tissue
- Nucleus Shape - Circular
- Nucleus Location – Centered in the Cell

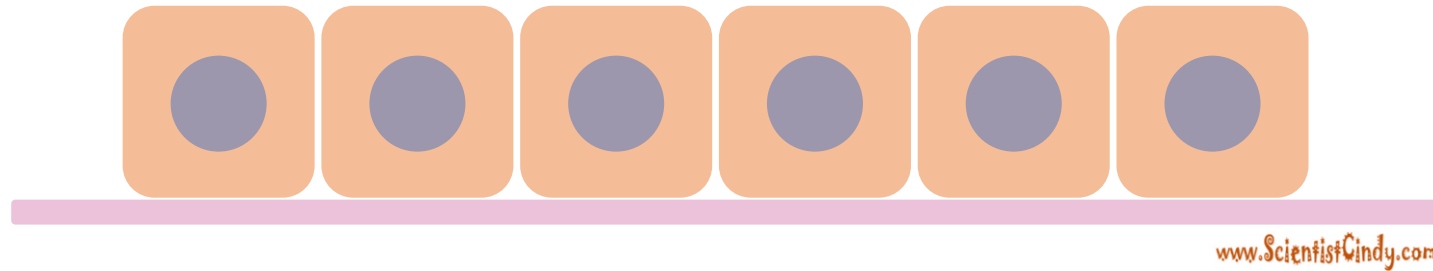
Simple Cuboidal Epithelium



www.ScientistCindy.com

Simple Cuboidal Epithelium is found in glands, the pancreas, the kidney (renal) tubules, and the gonads (covers the ovary and lines the walls of the seminiferous tubules in the testes)

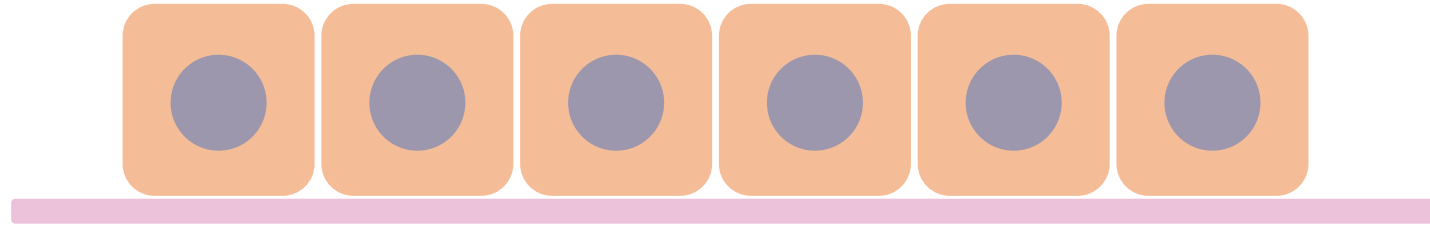
Simple Cuboidal Epithelium



Specialized for Secretion and Absorption

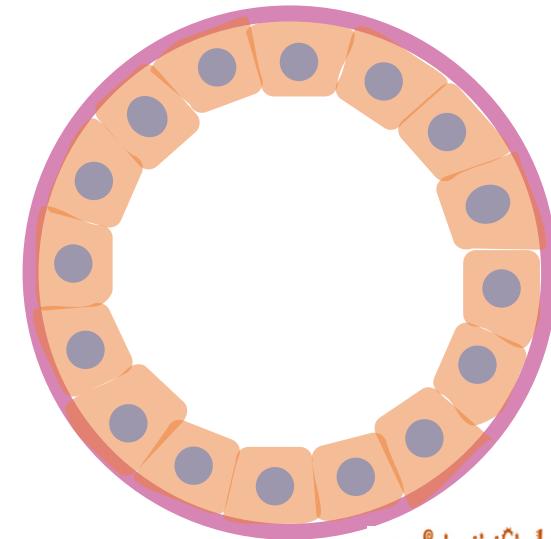
Found in Kidneys, Glands, and Reproductive Tissues

Simple Cuboidal Epithelium



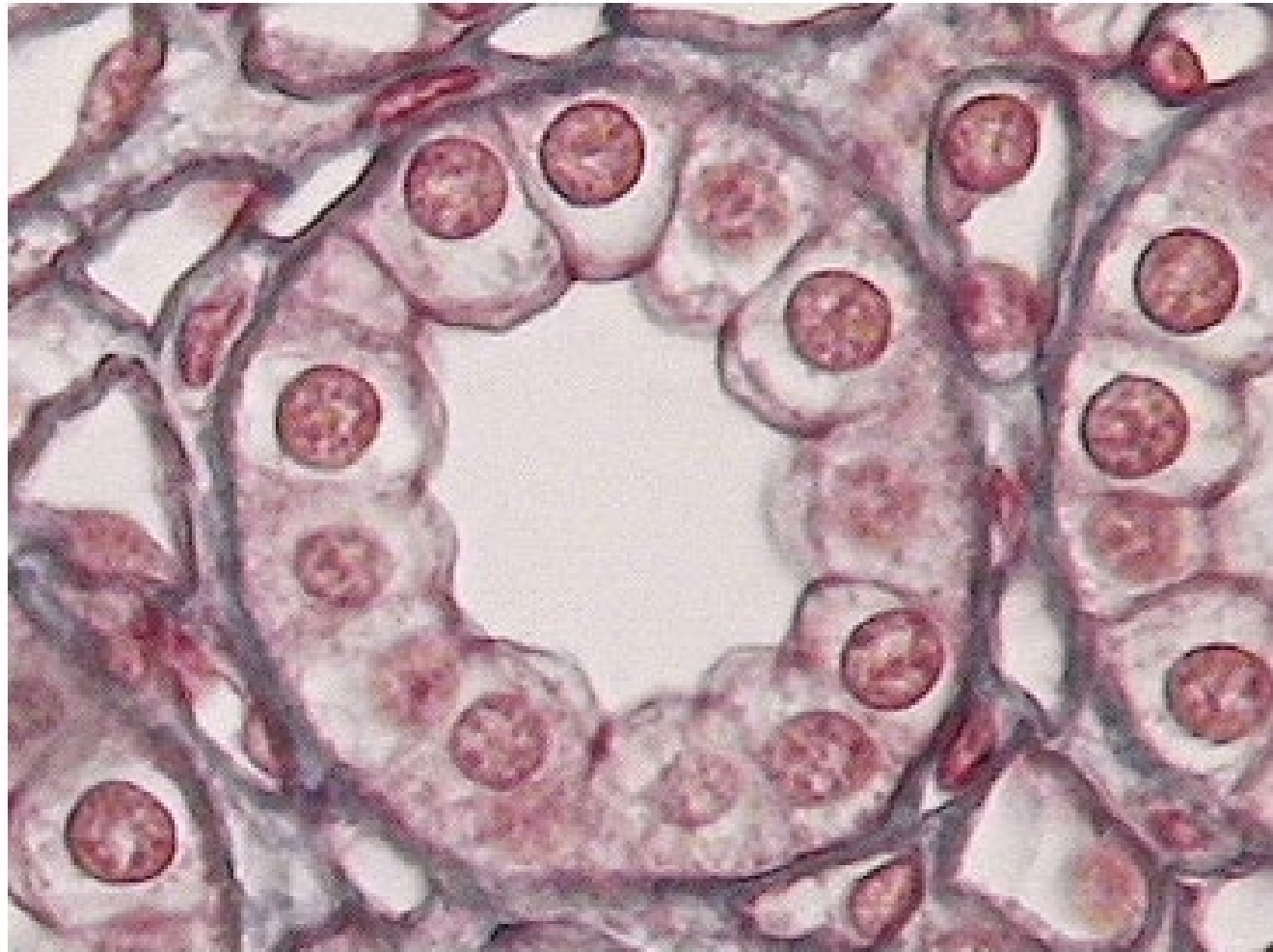
www.ScientistCindy.com

Found in Circular or
Long Ovoid (Oval-
Shaped) Tubules



www.ScientistCindy.com

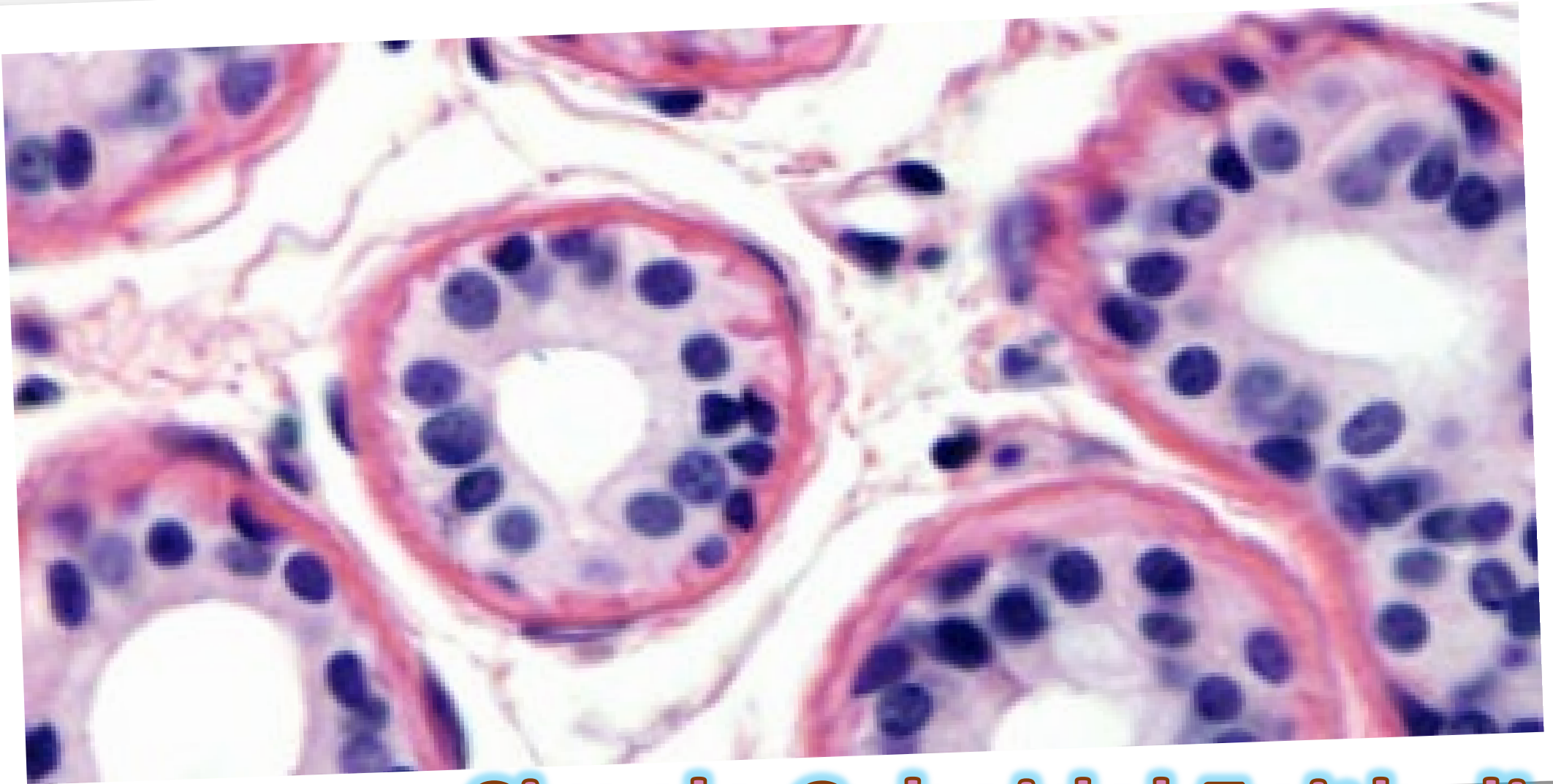
Simple Cuboidal Epithelium



[Image: K. Wynne, Tyler Junior College](#)

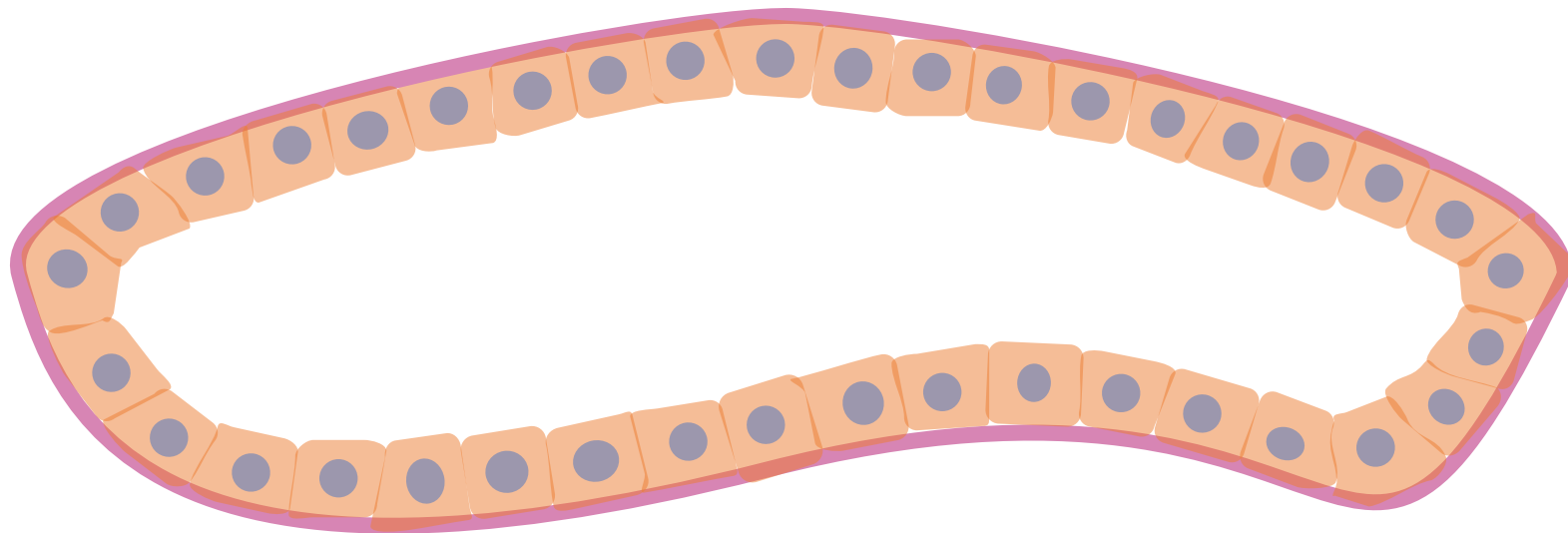
Simple Cuboidal Epithelium

Renal Tubule
in the Kidney



Simple Cuboidal Epithelium

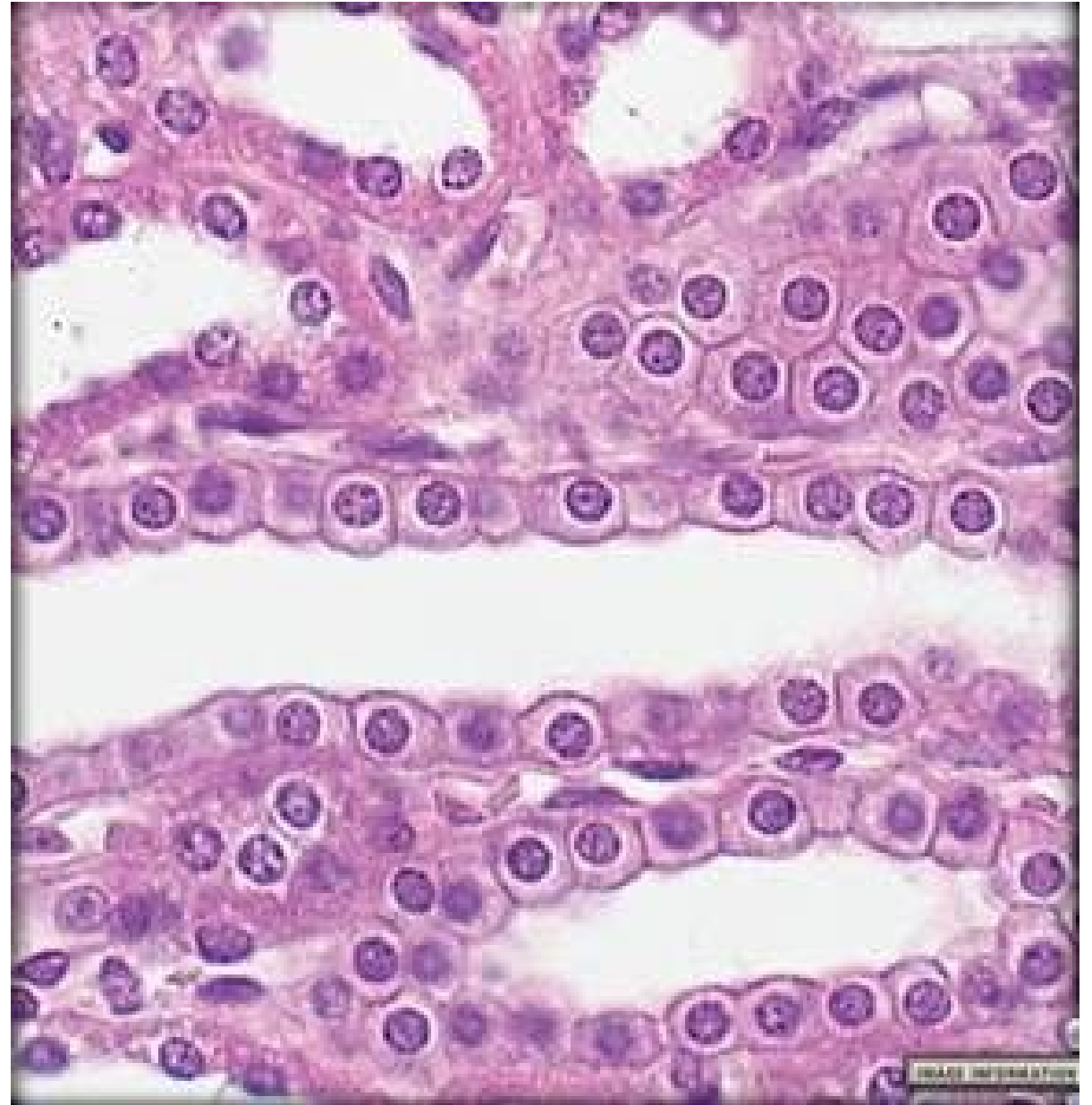
Simple Cuboidal Epithelium



Found in
Circular or
Long Ovoid
(Oval-
Shaped)
Tubules

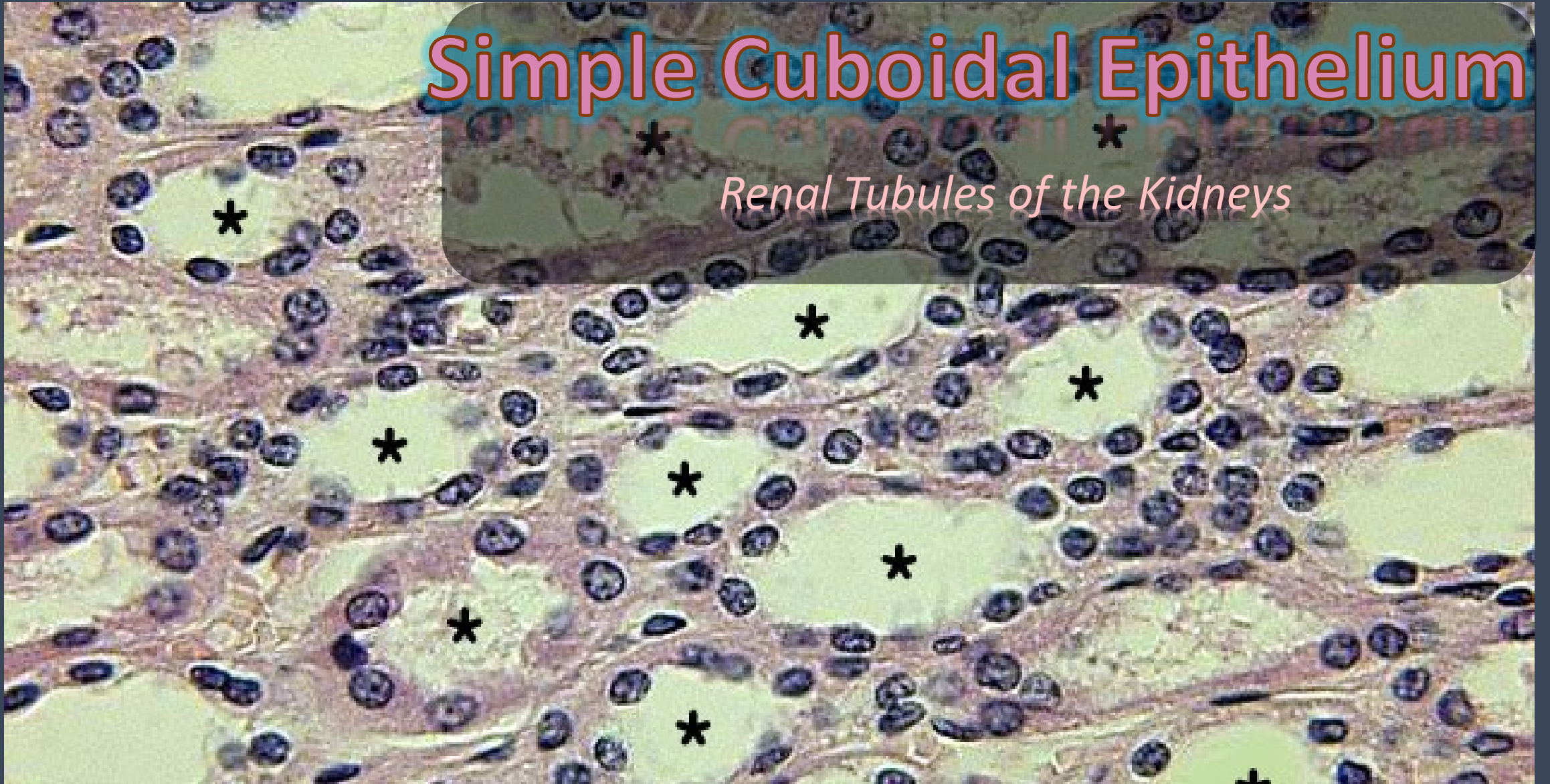
Simple Cuboidal Epithelium
www.ScientistCindy.com

Simple Cuboidal Epithelium



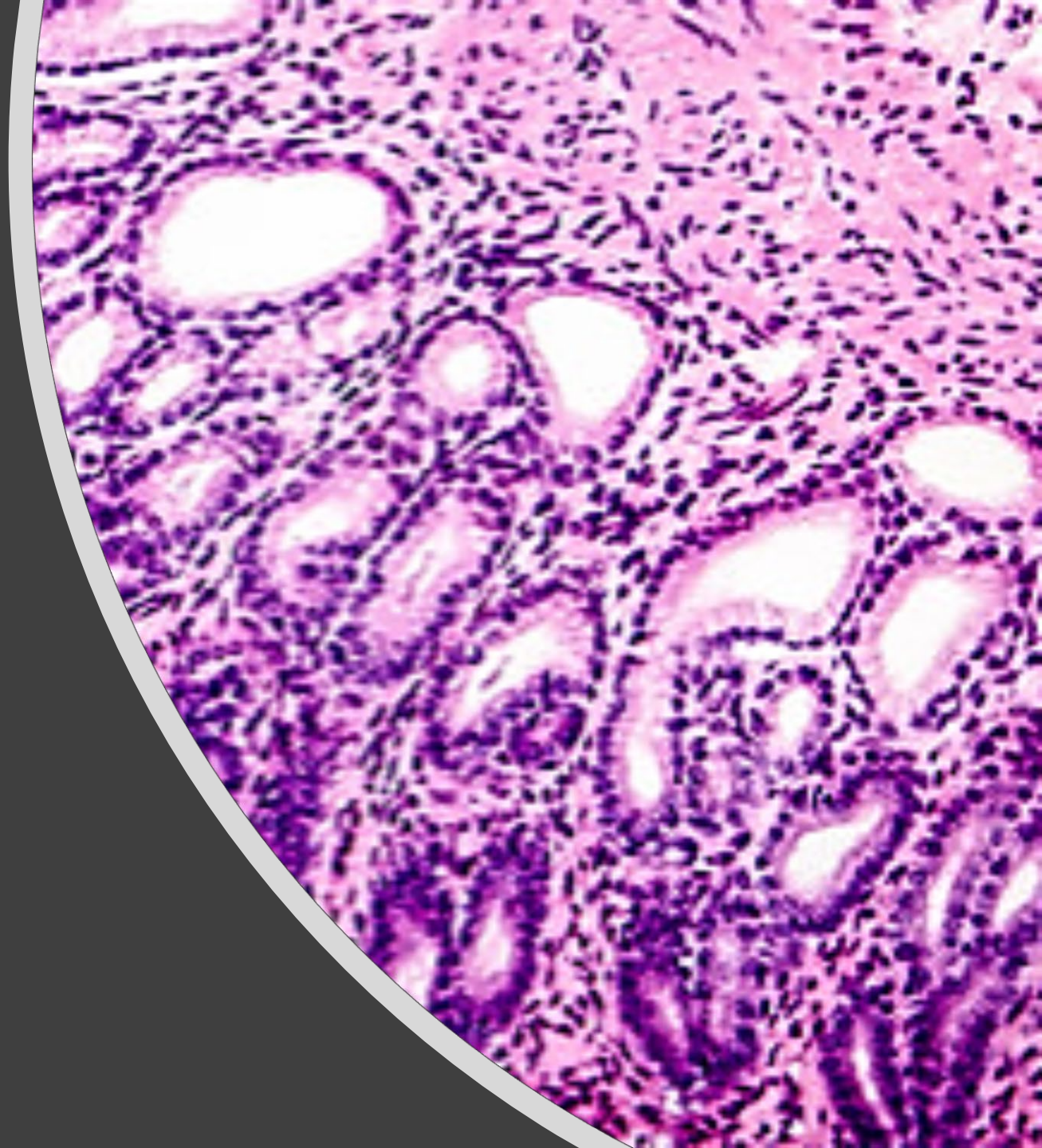
Simple Cuboidal Epithelium

Renal Tubules of the Kidneys

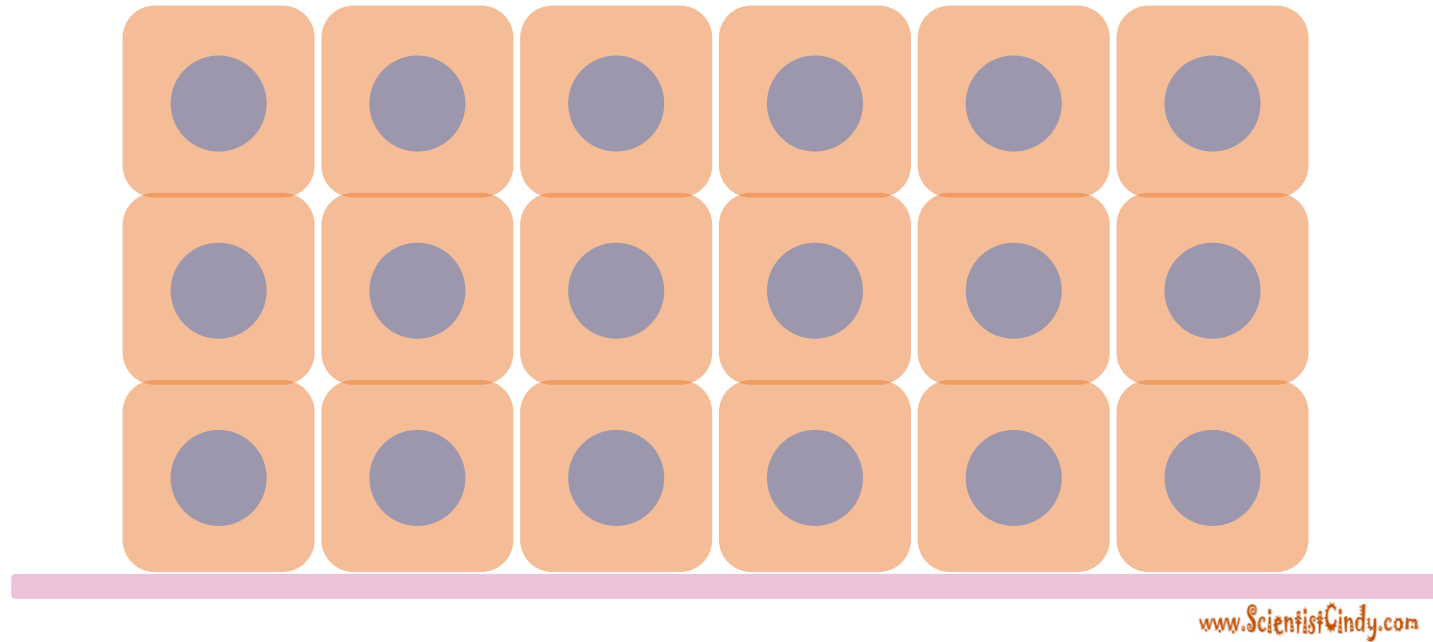


Simple Cuboidal

Stomach

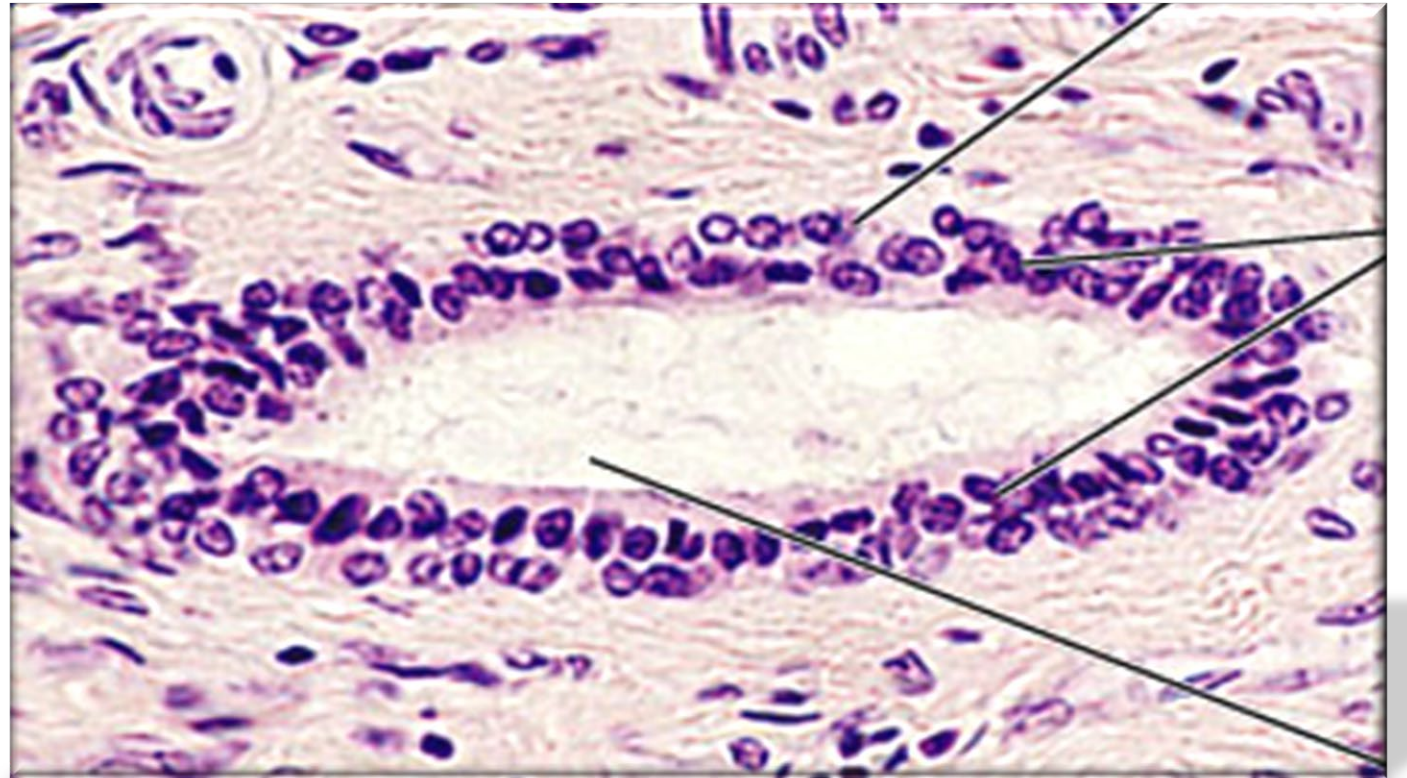


Stratified Cuboidal Epithelium



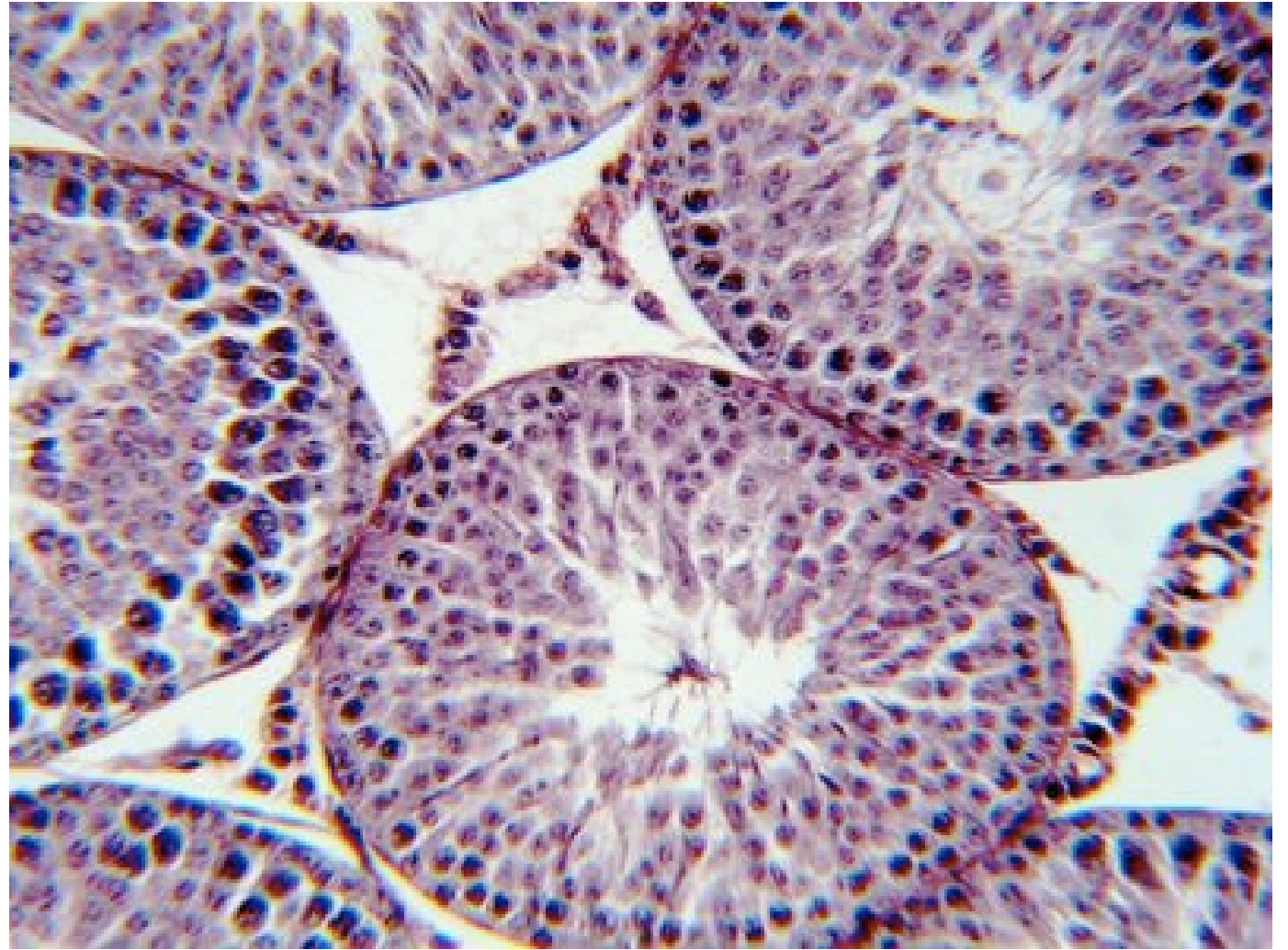
Stratified cuboidal epithelium lines the ducts of many of the body's glands, such as sweat glands, mammary glands, and salivary glands.

*Stratified
Cuboidal
Epithelium*

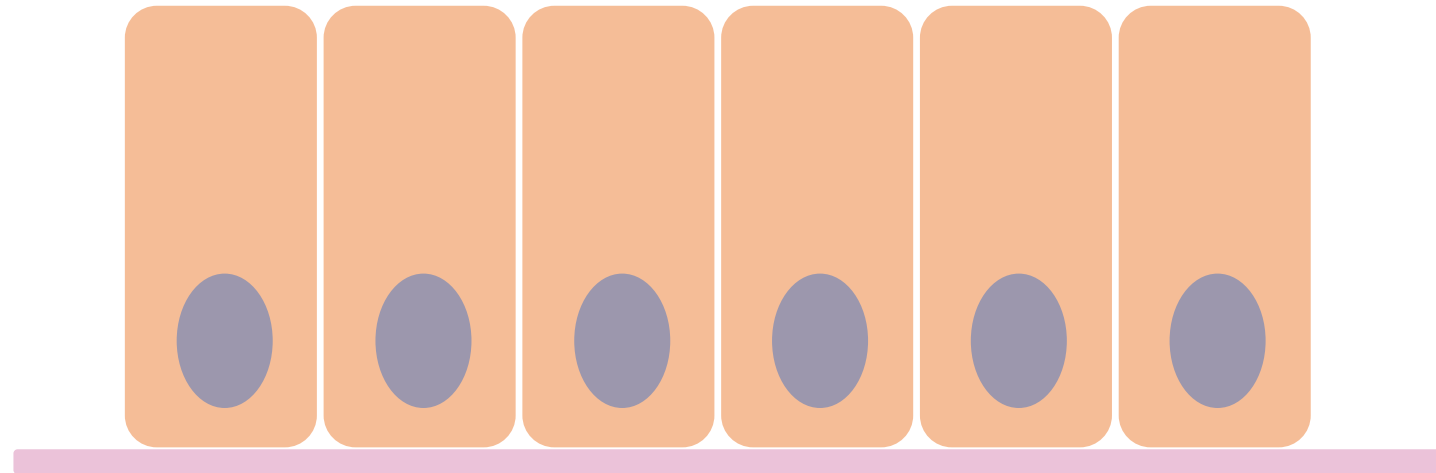


Stratified Cuboidal Epithelium

- lines the walls of the seminiferous tubules in the testes



Simple Columnar Epithelium

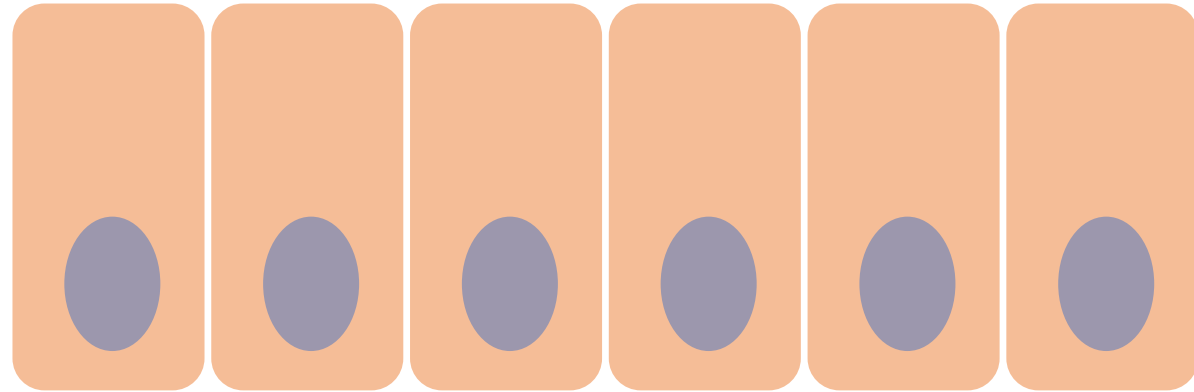


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Identifying Features

- Cell Shape – Column-shaped – Tall Rectangle
- Cell Location – Lines Intestines And May Have Goblet Cells
- Nucleus Shape – Oval Or Stretched Out Vertically
- Nucleus Location – In A Row Toward The Basement Membrane

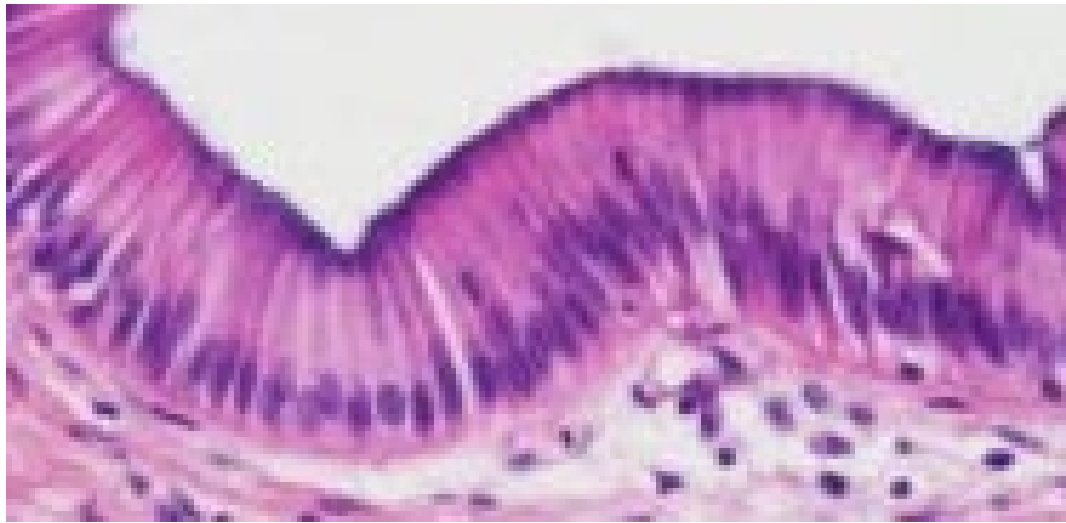
Simple Columnar Epithelium



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Specialized for Secretion
Found in Digestive Tract

Simple Columnar Epithelium

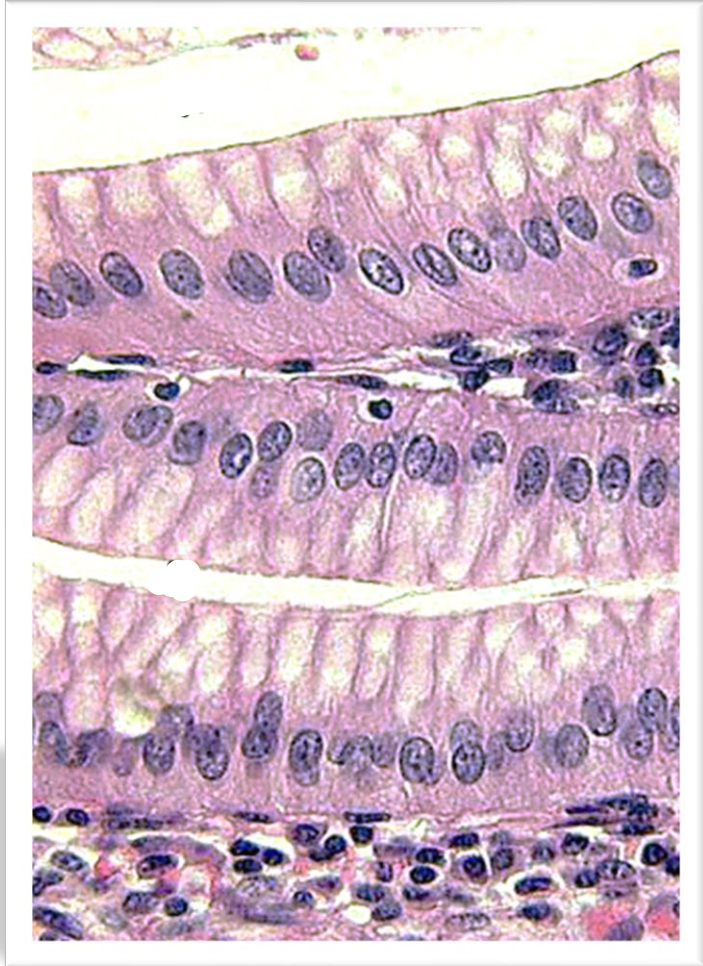


Simple Columnar Epithelium



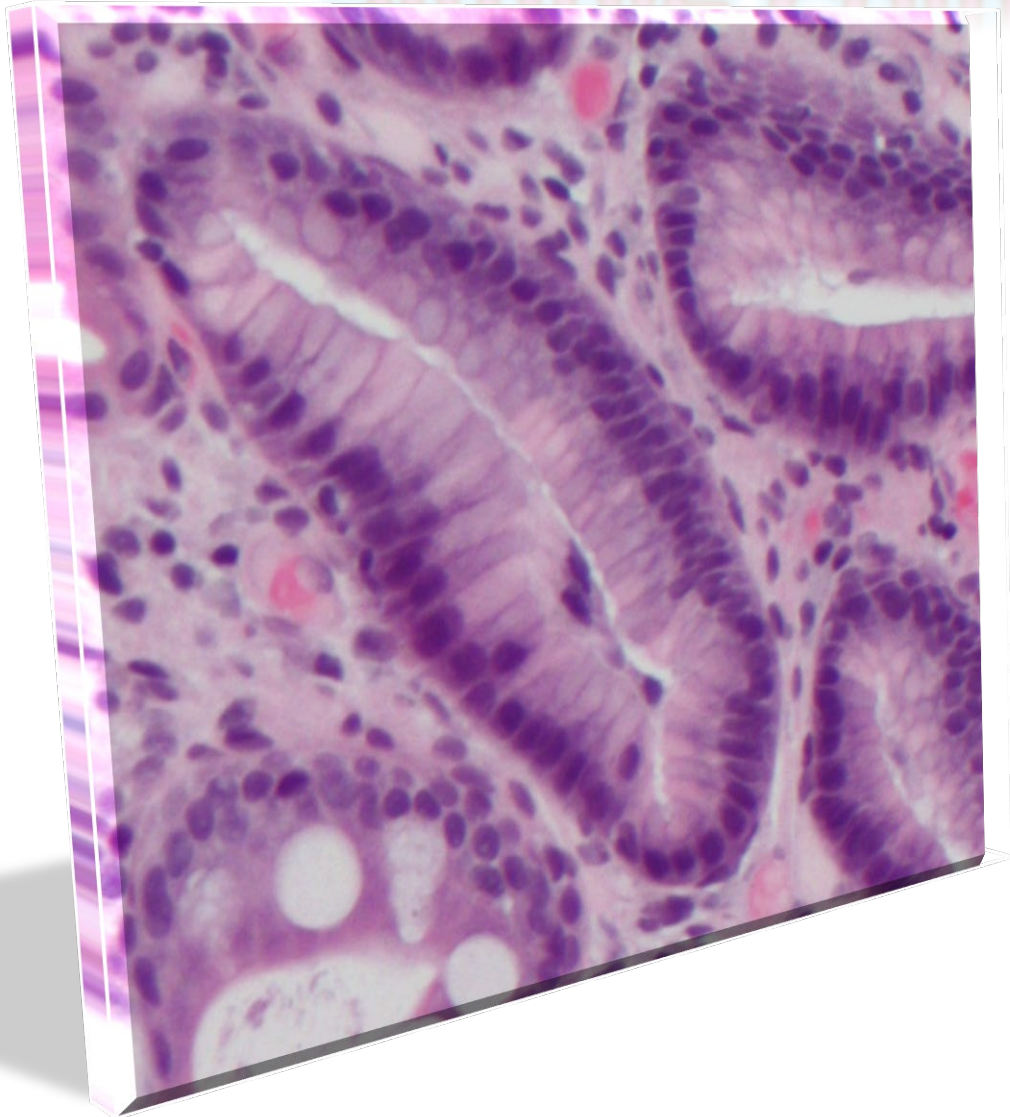
- Simple Columnar Epithelium is used to line the digestive tract. The simple columnar epithelial cells are specially designed to secrete and/or absorb substances from the lumen of areas that get a lot of use. These cells are specially designed to withstand the wear and tear that comes from serving the digestive tract.

Simple Columnar Epithelium



- Here we see the simple columnar cells of the stomach lining.
- Note the conspicuous mucous cup in the apical half of the cytoplasm. The mucous cup is a region that in life contained a large number of smaller mucinogen-containing vesicles. During standard tissue processing, the mucinogens are not preserved.

Simple Columnar Epithelium



Here we see the simple columnar cells of the stomach lining.



Simple Columnar Epithelium

Here we see the simple columnar cells of the renal tubules in the kidney.

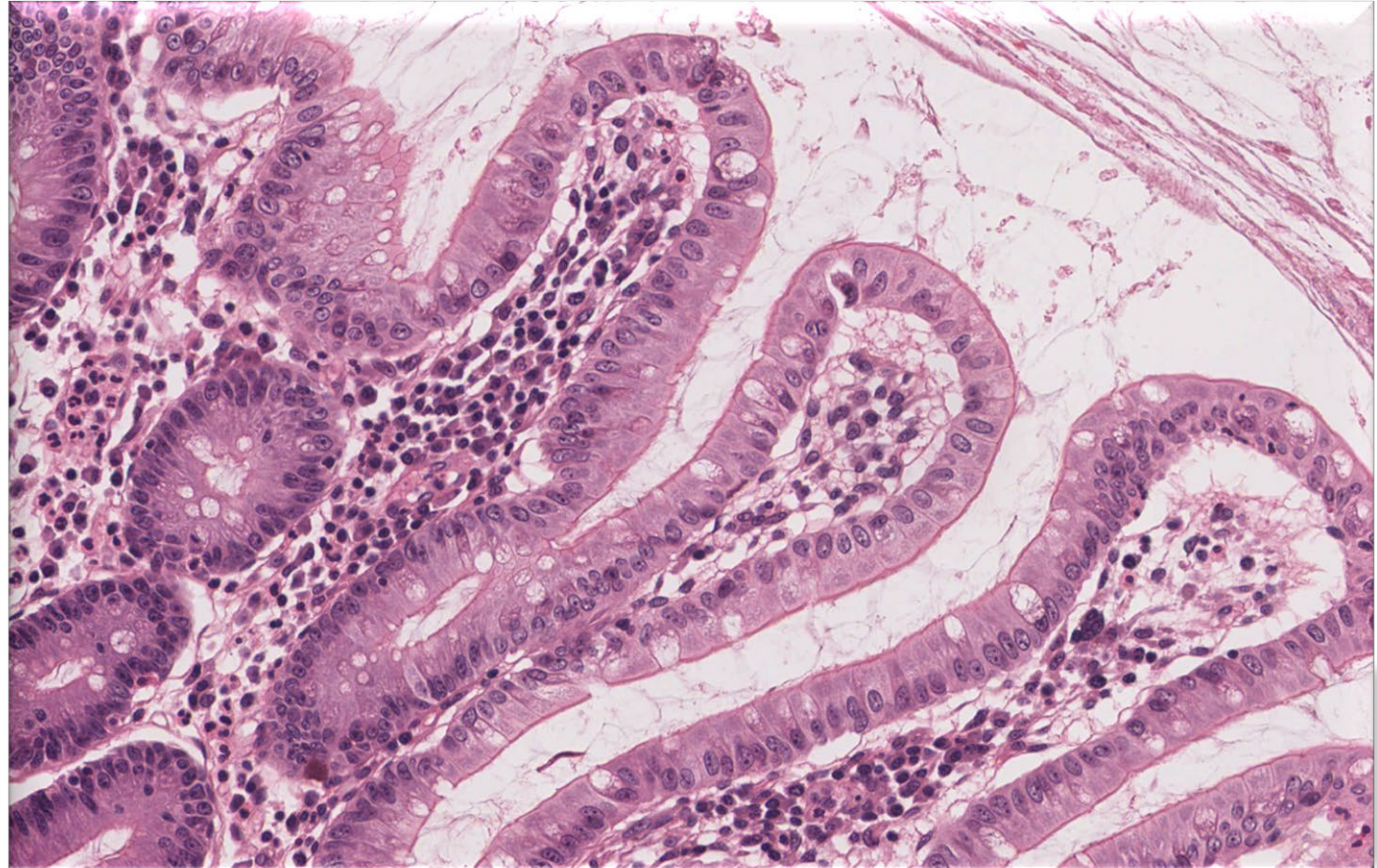
Simple Columnar Epithelium



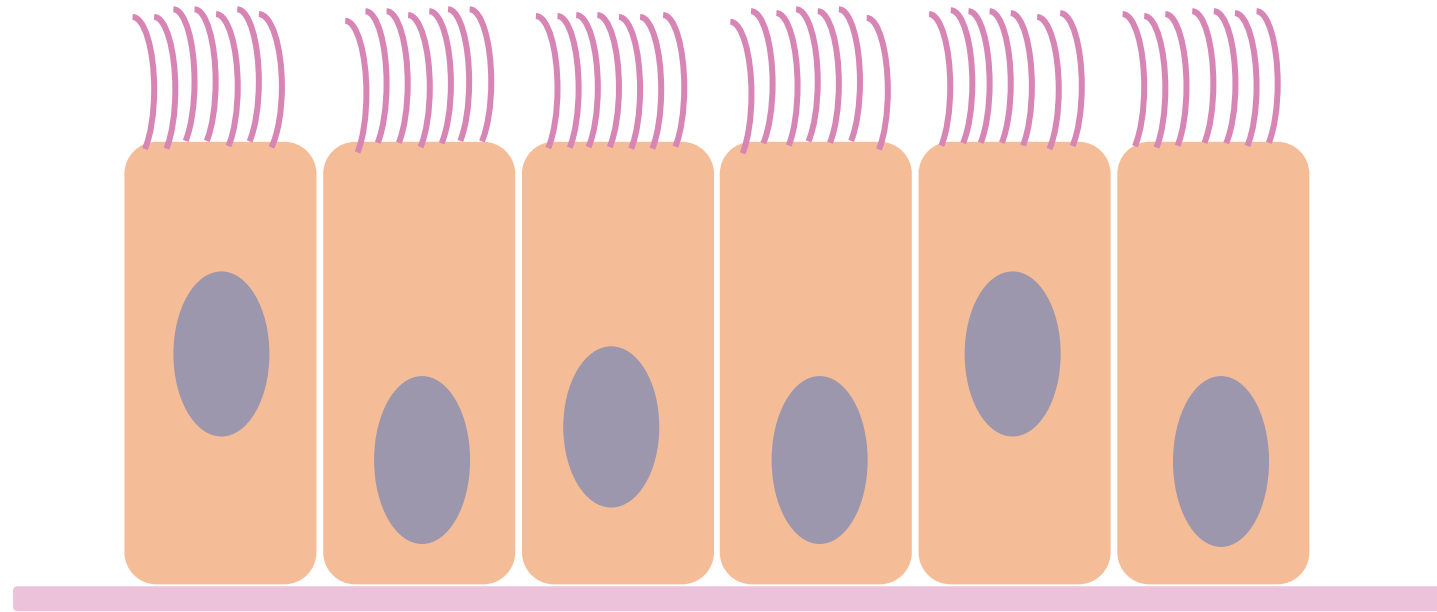
Small Intestines

Simple Columnar Epithelium

Here we see the simple columnar cells of the small intestine.



Ciliated Pseudostratified Columnar Epithelium

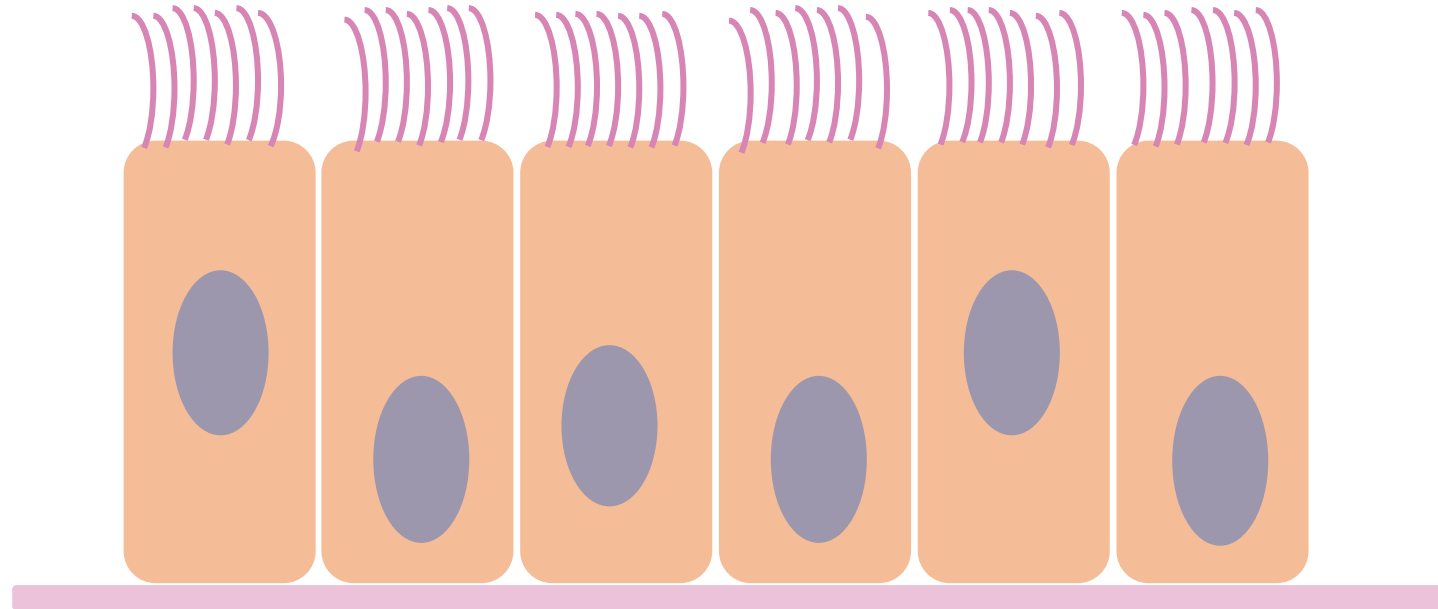


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Identifying Features

- Cell Shape – Column-shaped with Cilia– Tall Rectangle with Cilia
- Cell Location – Lines the Airways of the Respiratory Tract
- Nucleus Shape – Oval Or Stretched Out Vertically
- Nucleus Location – Nuclei are at different levels in the cells and not neatly lined up in a row. This gives them the appearance of being stratified, but they are not!

Ciliated Pseudostratified Columnar Epithelium

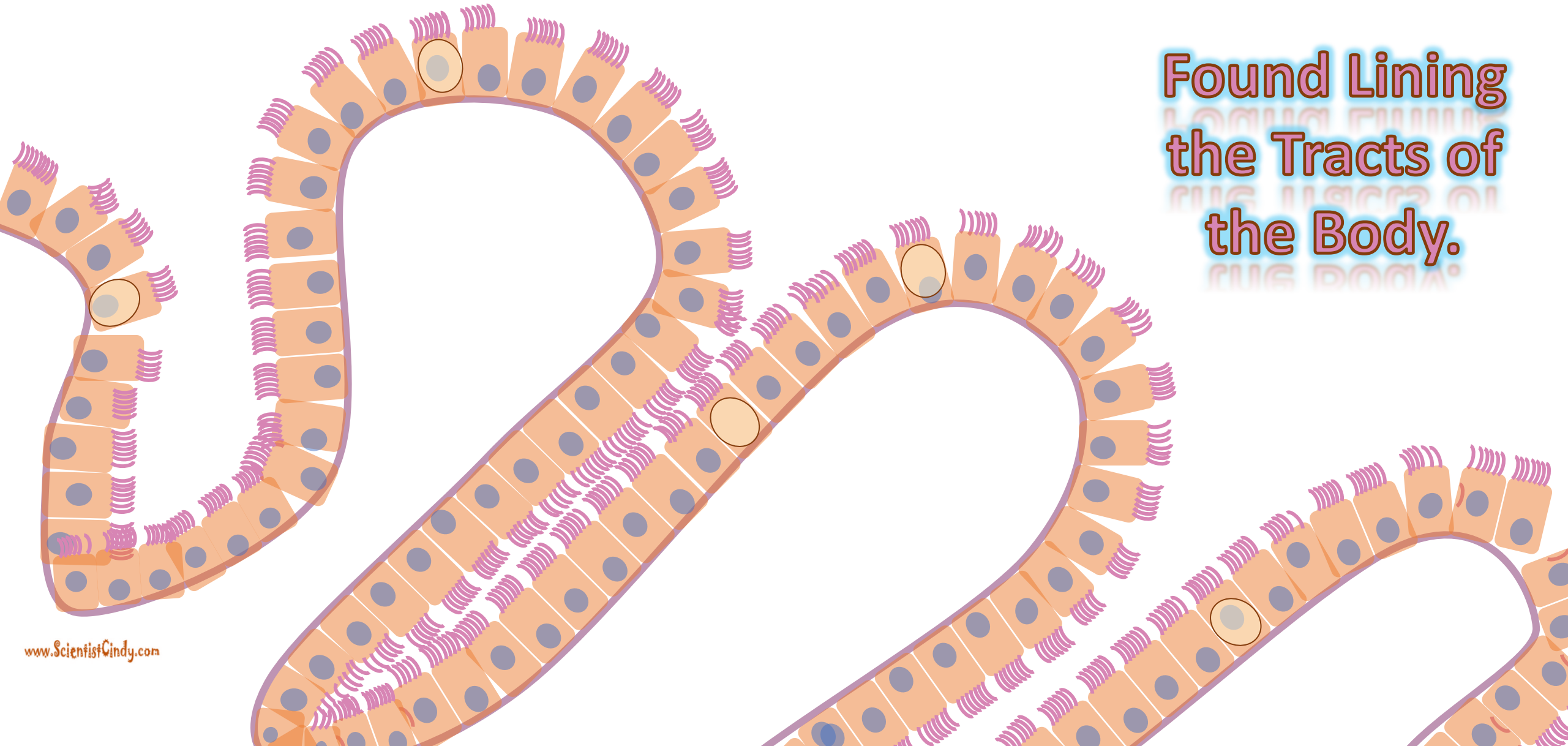


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Pseudostratified columnar epithelium is found lining of the respiratory tract.

Ciliated Pseudostratified Columnar Epithelium

Found Lining
the Tracts of
the Body.



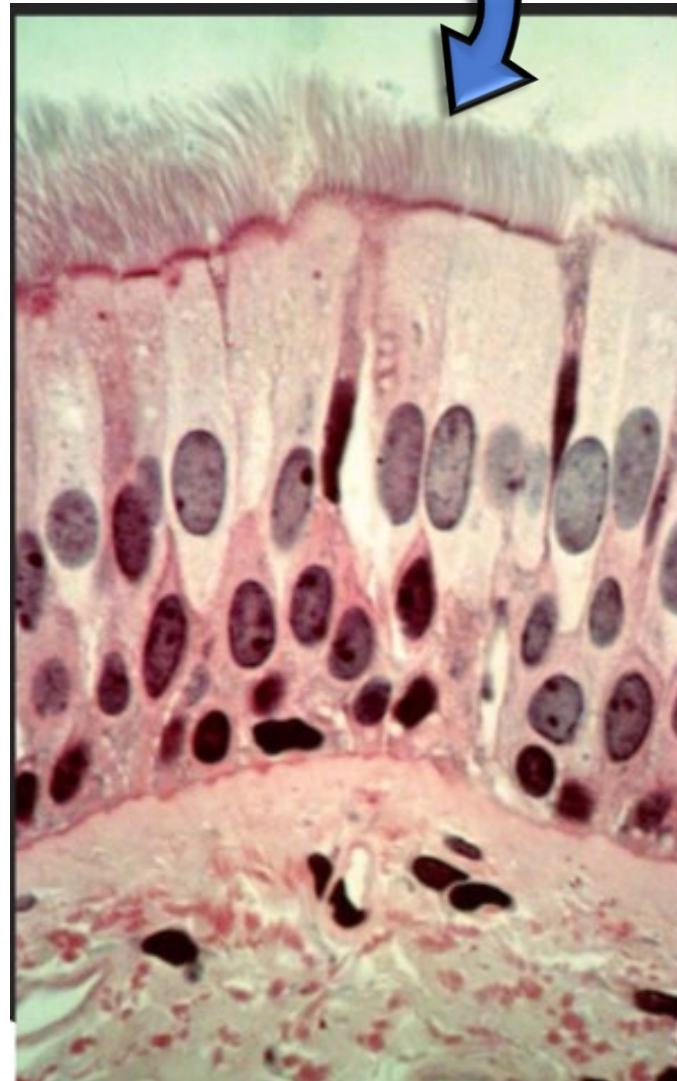
Ciliated Pseudostratified Columnar Epithelium



Hyaline Cartilage
Cartilaginous Rings of the Trachea

The
Trachea

Ciliated Pseudostratified Columnar Epithelium



*Ciliated
Pseudostratified
Columnar
Epithelium*

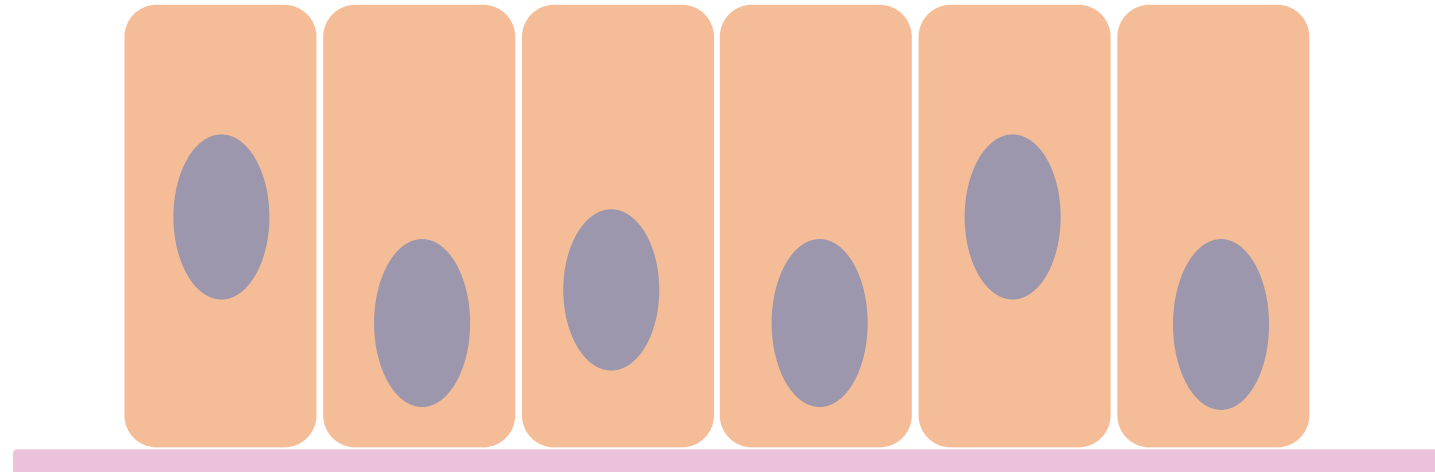


Ciliated Pseudostratified Columnar Epithelium

The
Trachea



Pseudostratified Columnar Epithelium

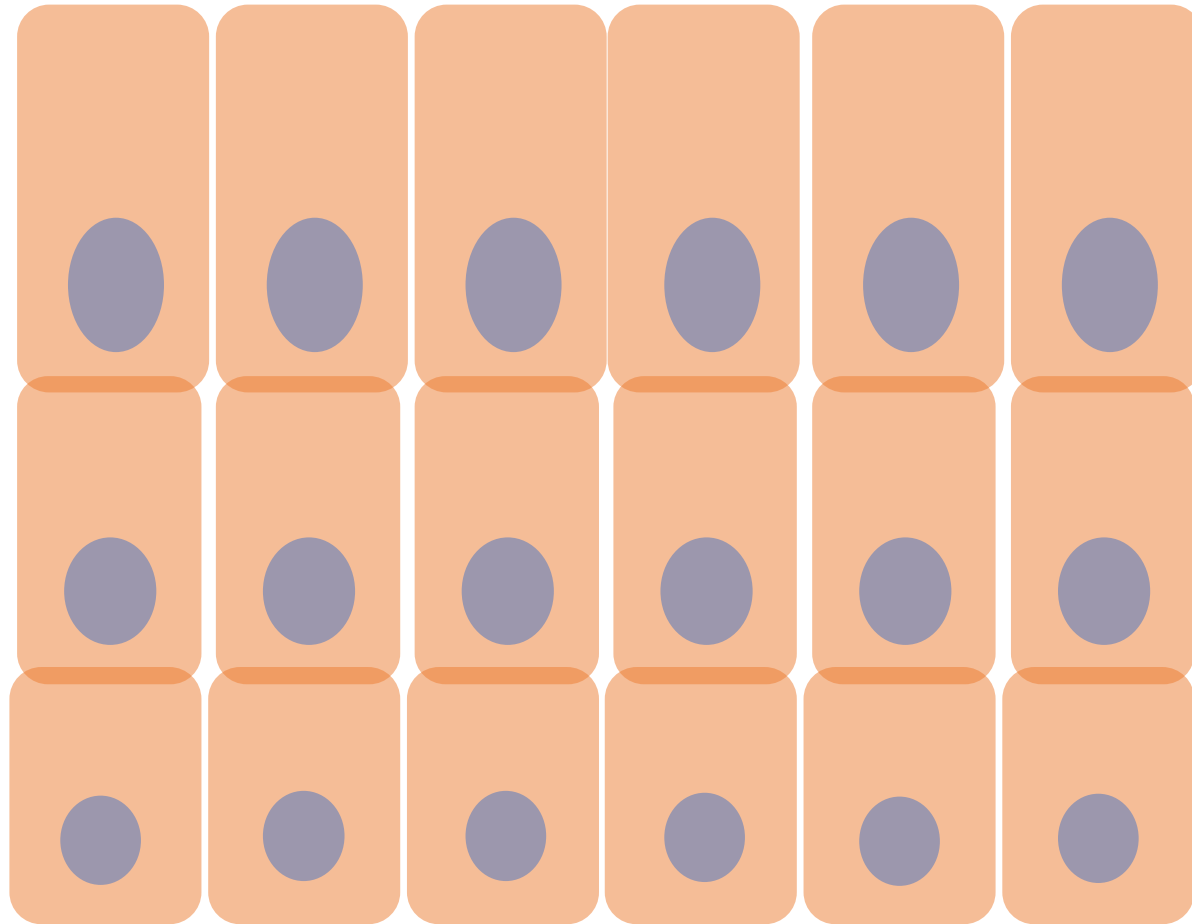


www.ScientistCindy.com

Identifying Features

- Cell Shape – Column-shaped– Tall Rectangle
- Cell Location – Epididymis
- Nucleus Shape – Oval Or Stretched Out Vertically
- Nucleus Location – Nuclei are at different levels in the cells and not neatly lined up in a row. This gives them the appearance of being stratified, but they are not!

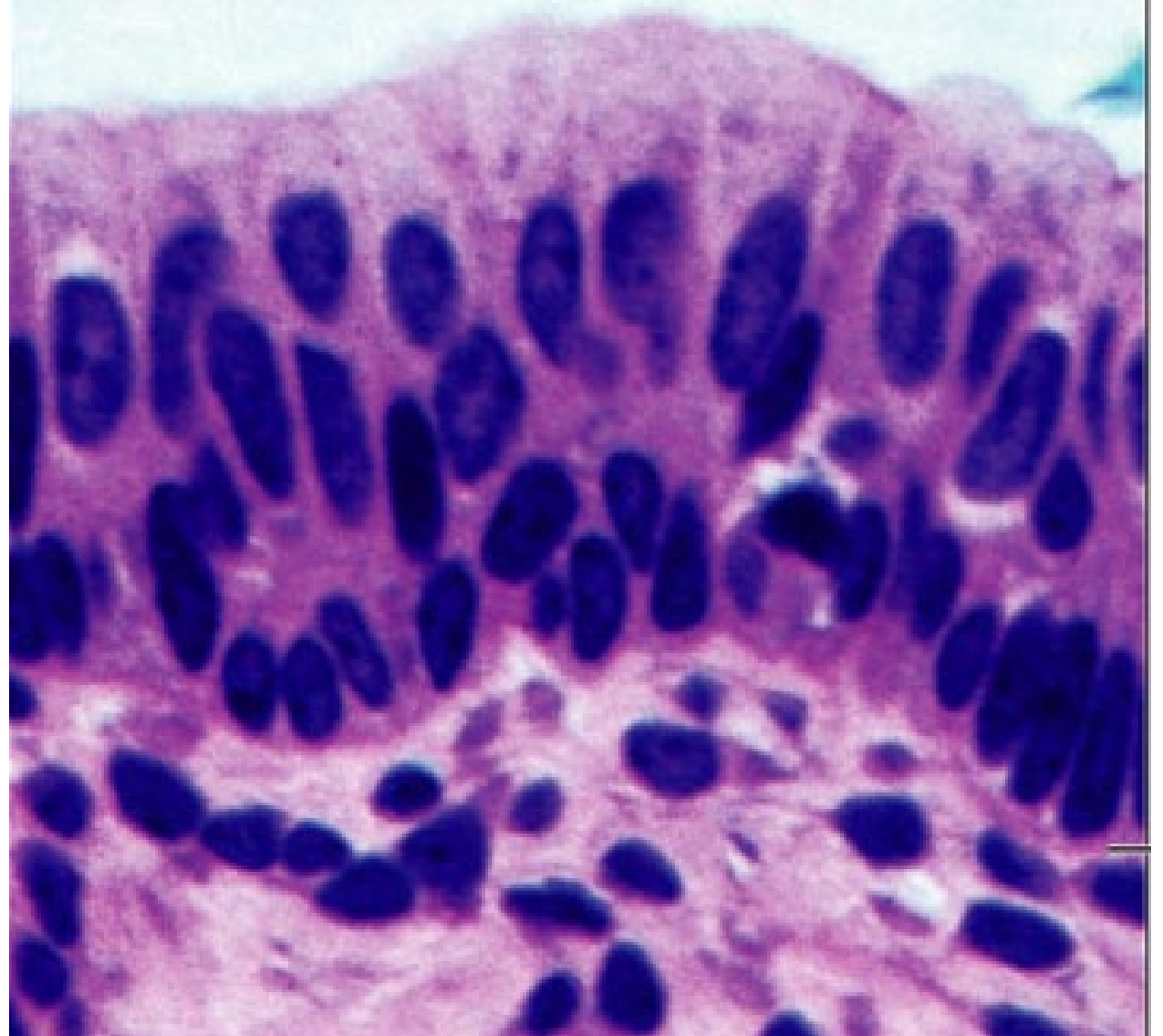
Stratified Columnar Epithelium



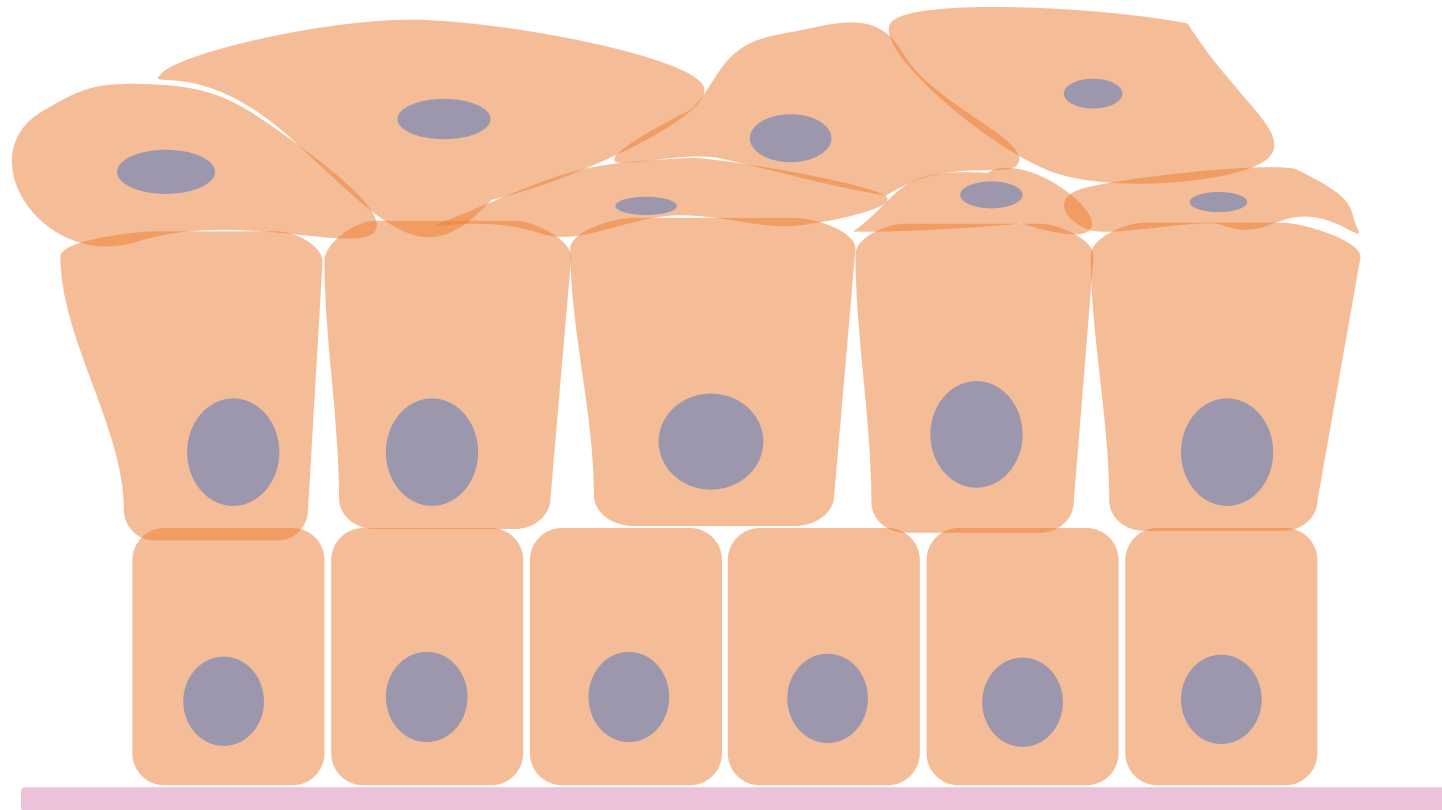
Stratified Columnar Epithelium



Stratified Columnar Epithelium

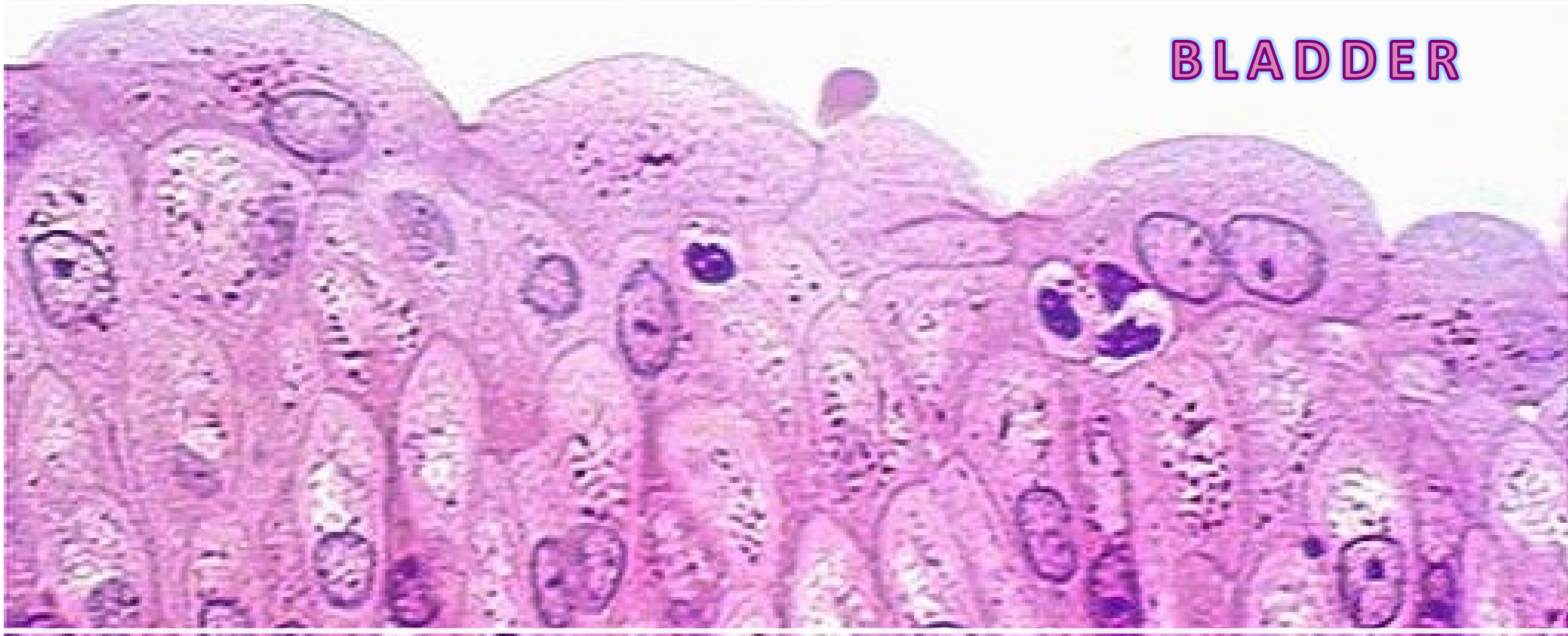


Transitional Epithelium



Found in Highly-Expandable Tissues

BLADDER



Transitional Epithelium

