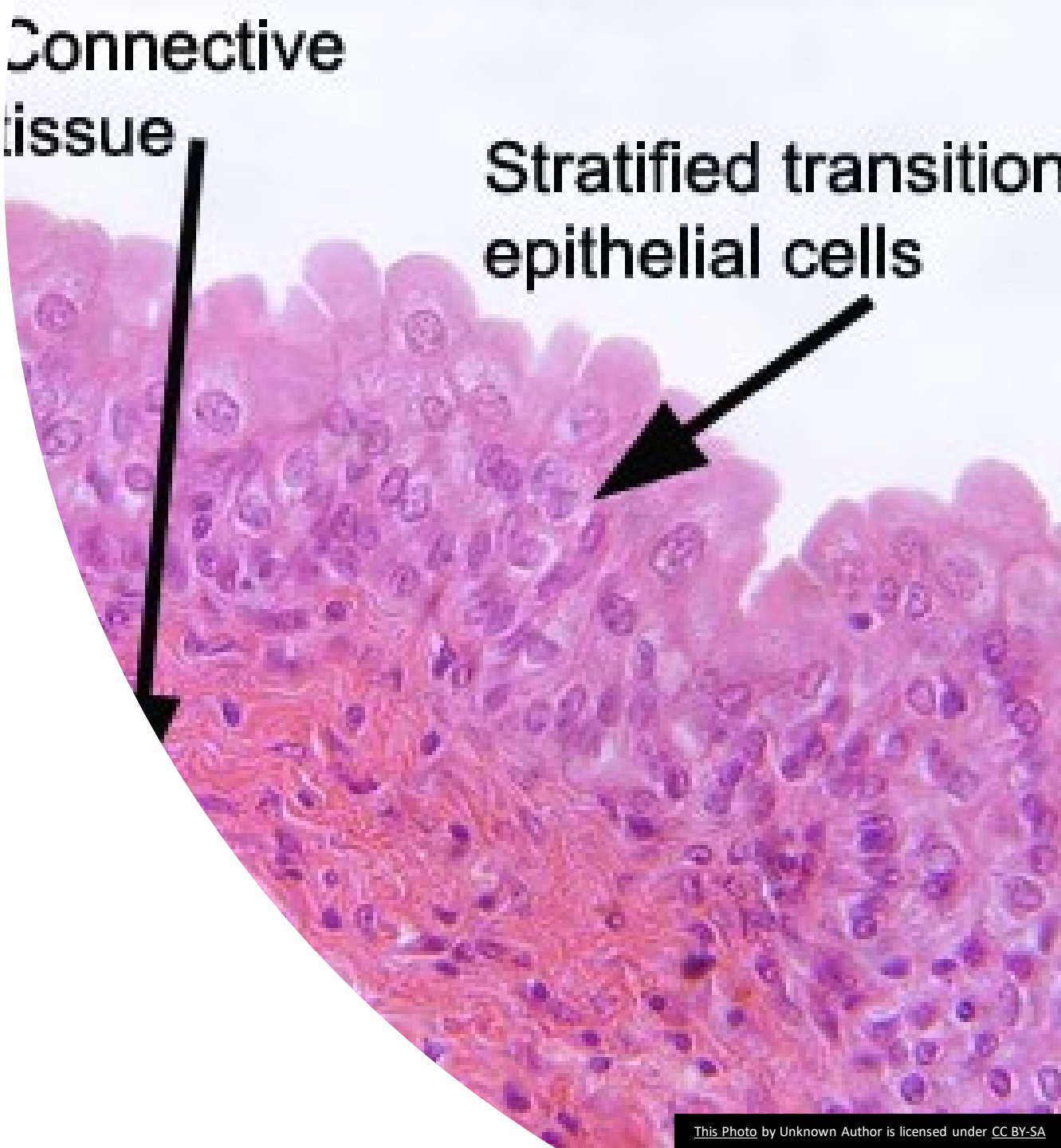
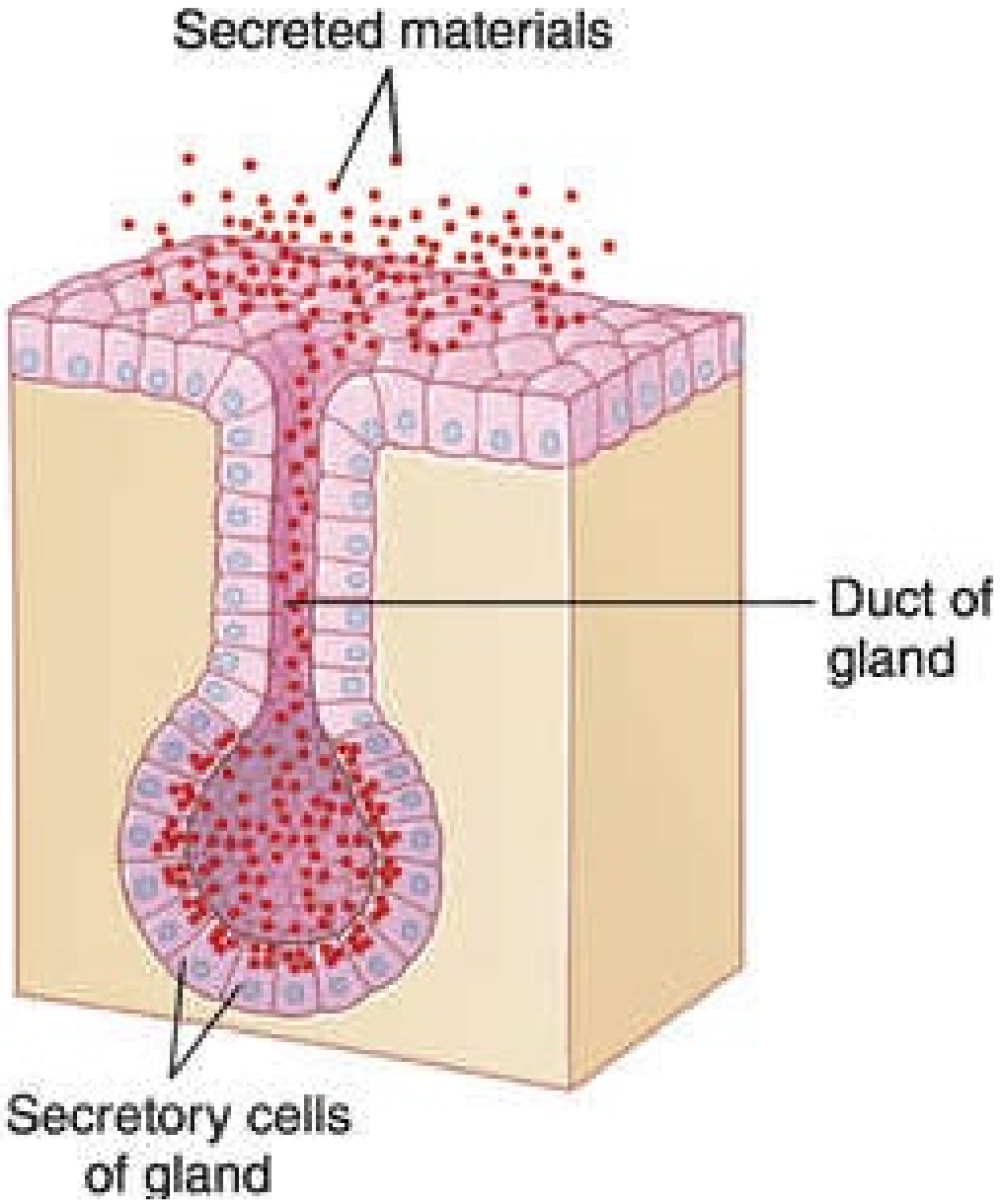
Epithelial tissues

- 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

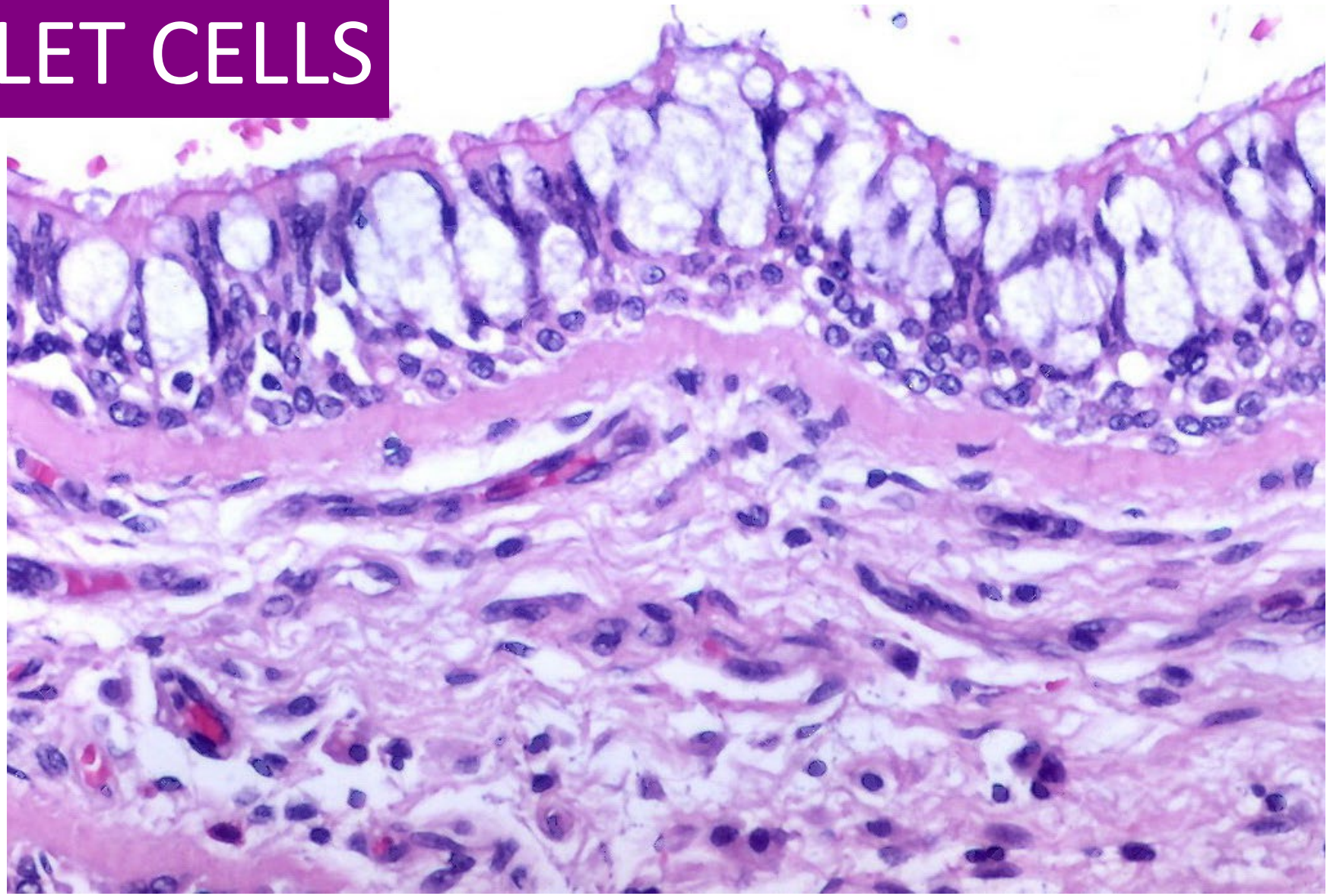
Glandular Epithelium - Found in Glands

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

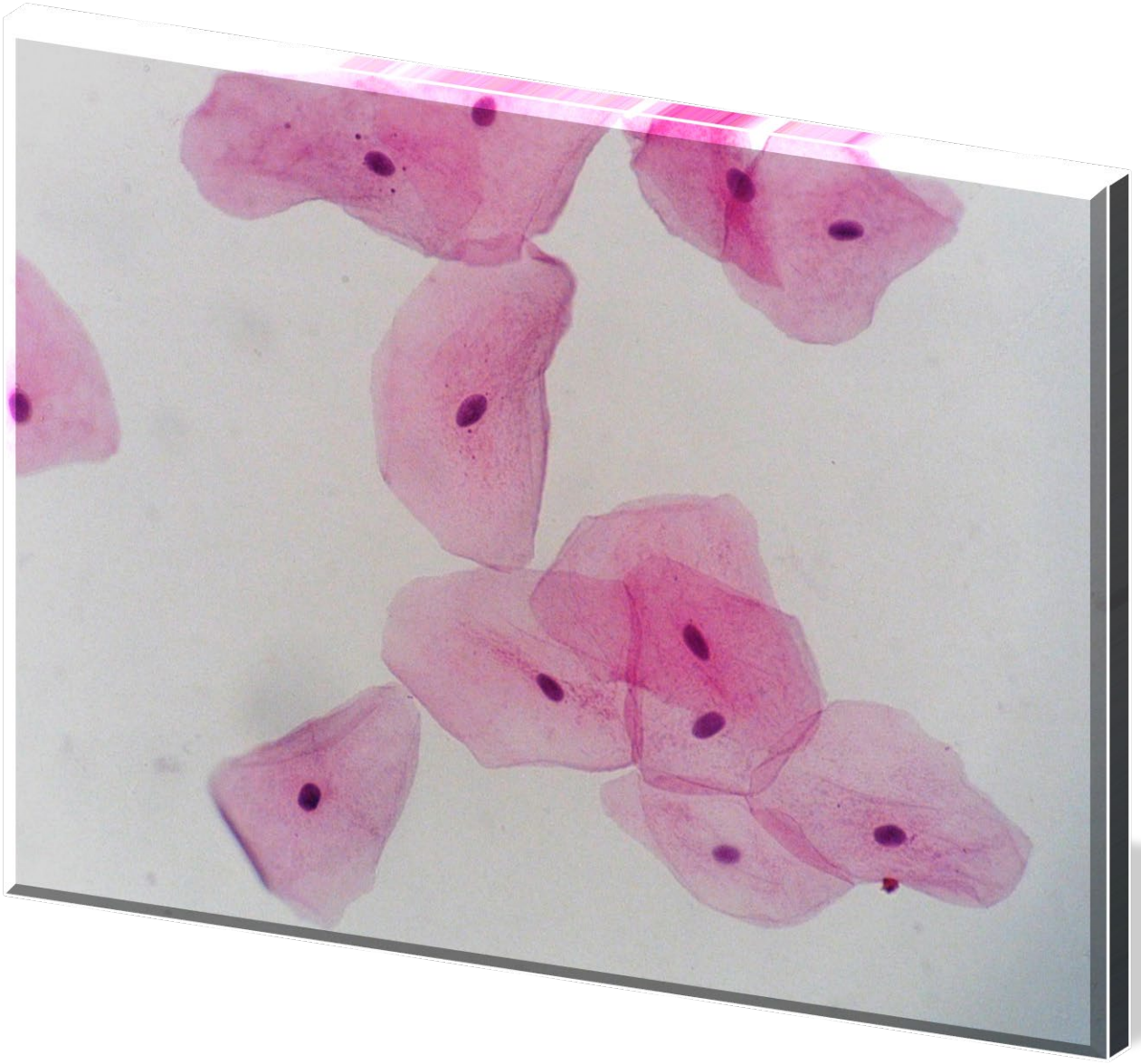


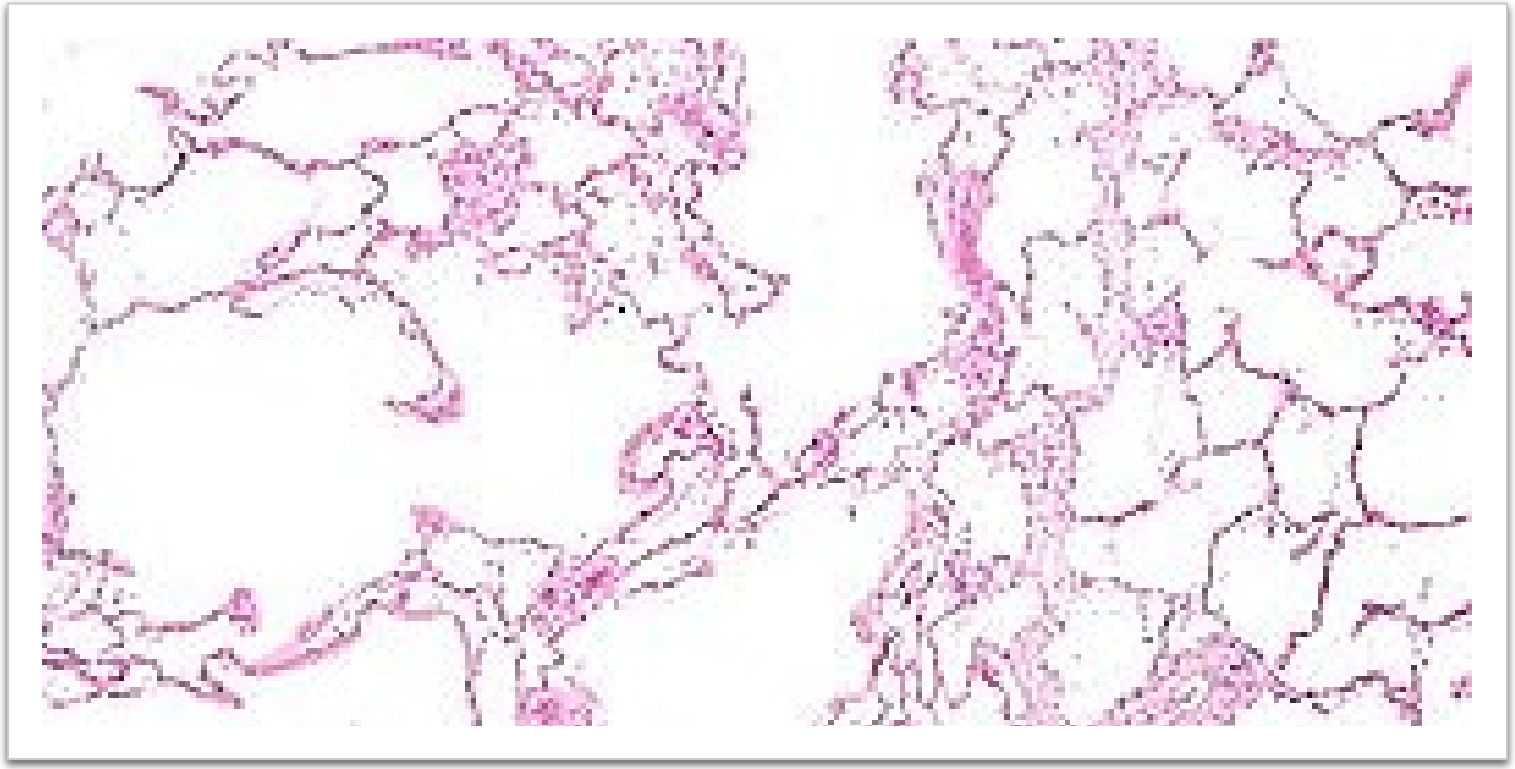
Simple Squamous Epithelium

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

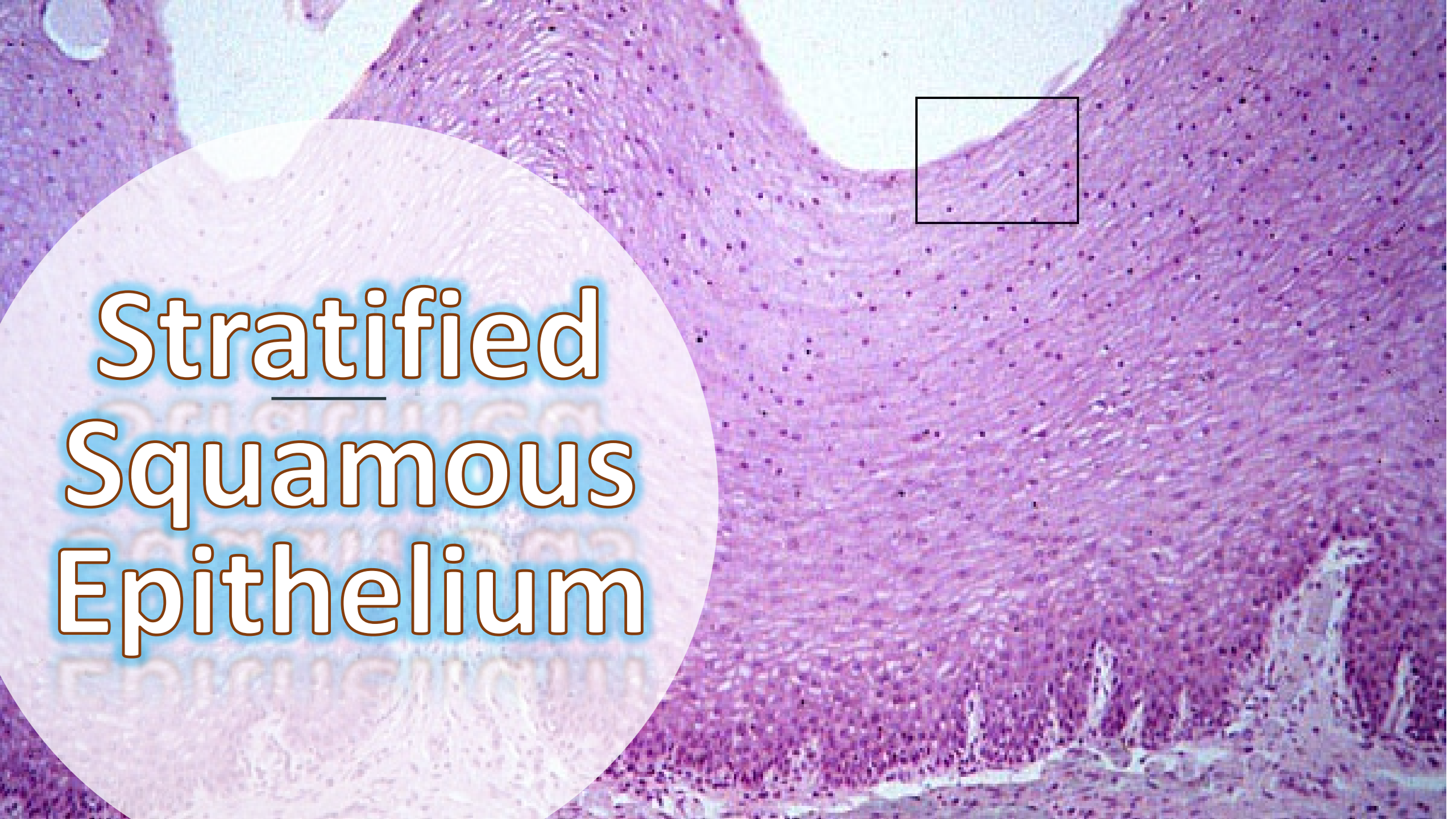
Cells From Cheek Swab



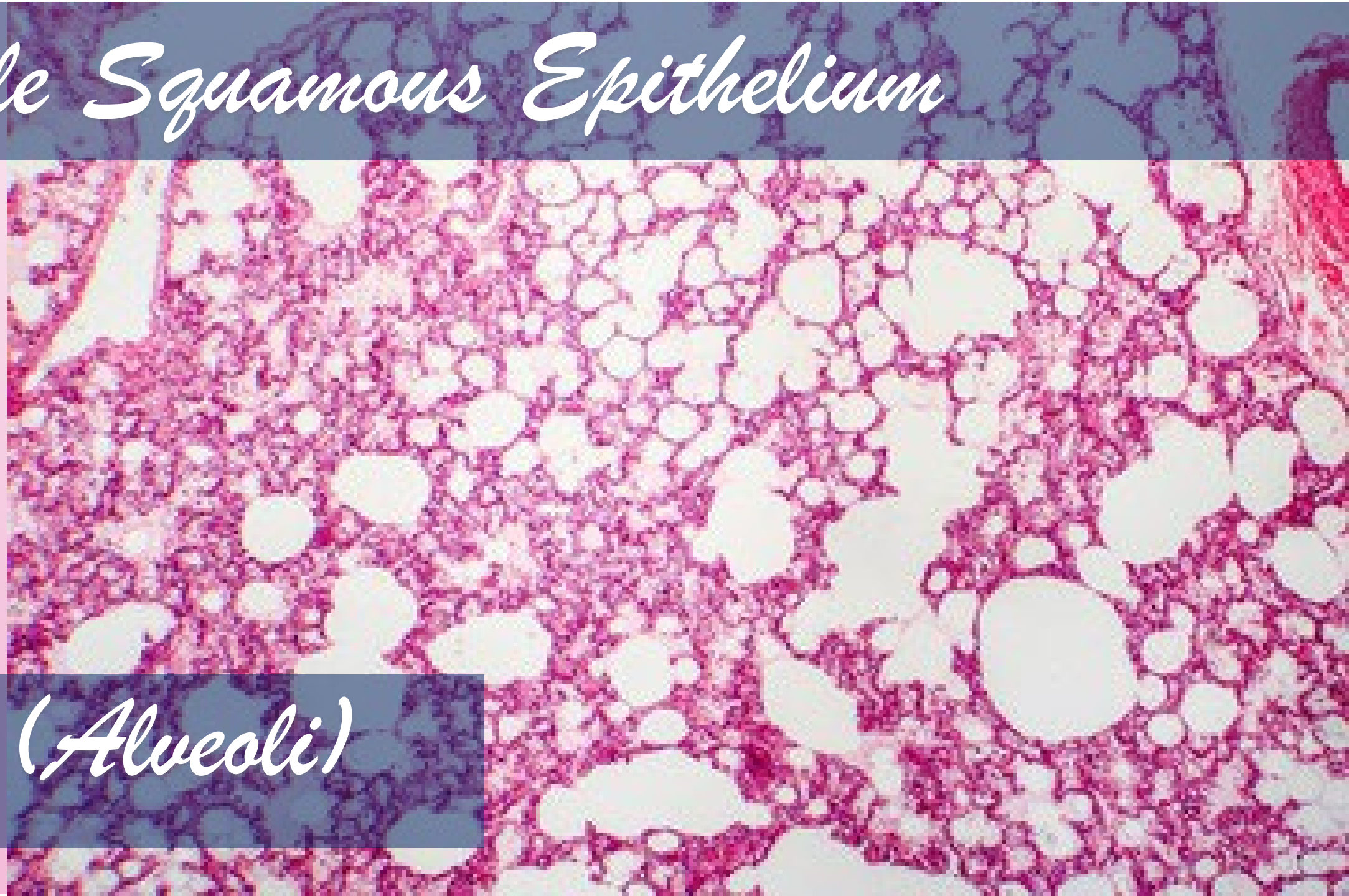


Simple Squamous Epithelium

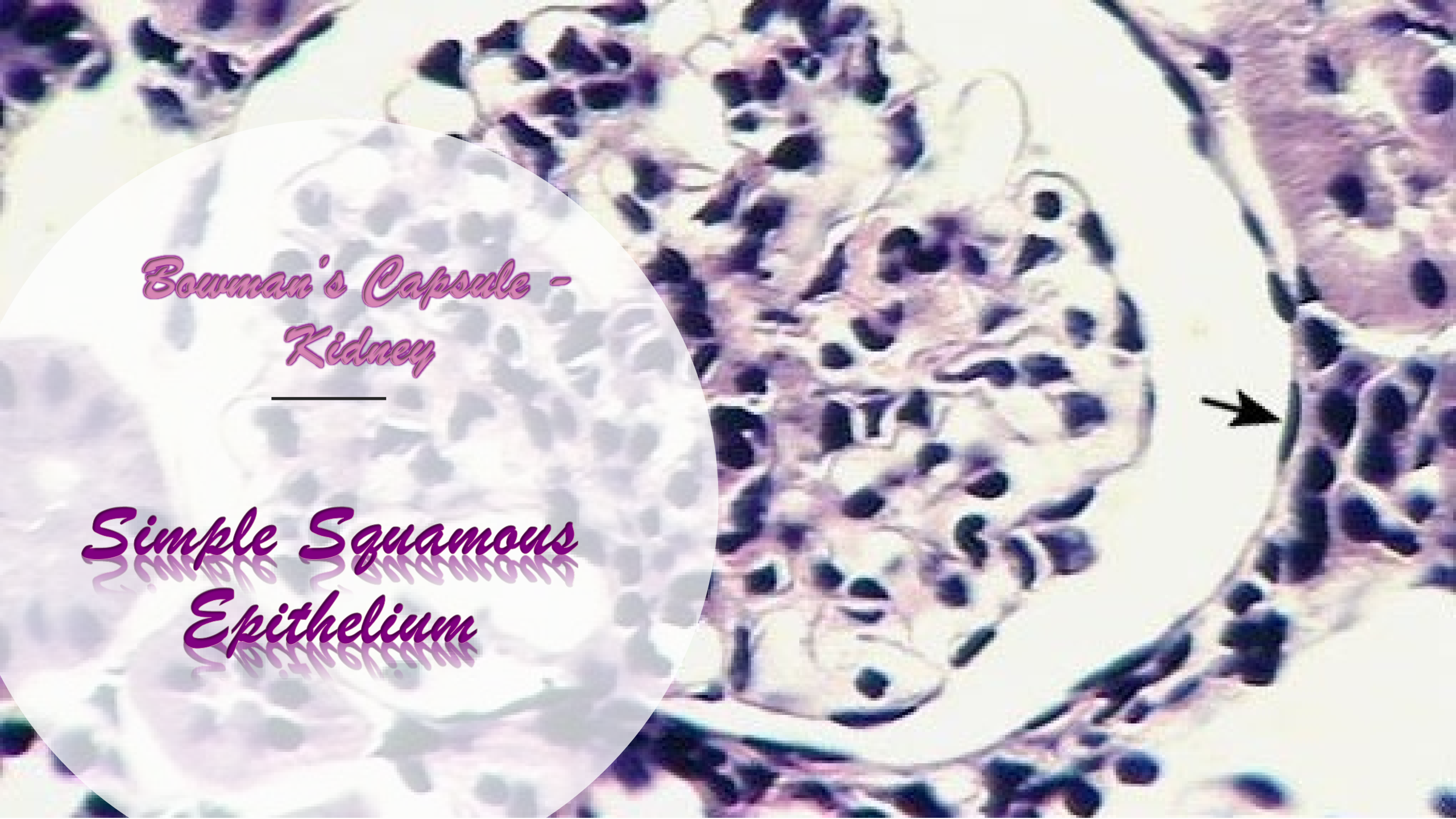
Alveoli - LUNGS


Stratified
Squamous
Epithelium

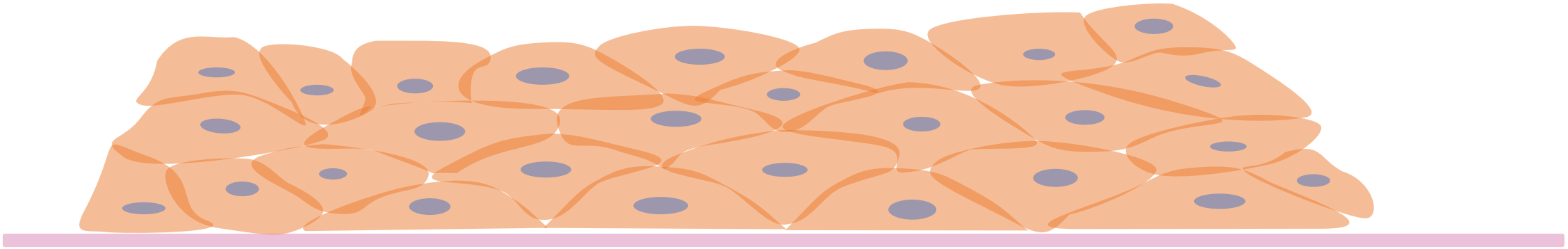
Simple Squamous Epithelium



Lung (Alveoli)


Bowman's Capsule -
Kidney
Simple Squamous
Epithelium

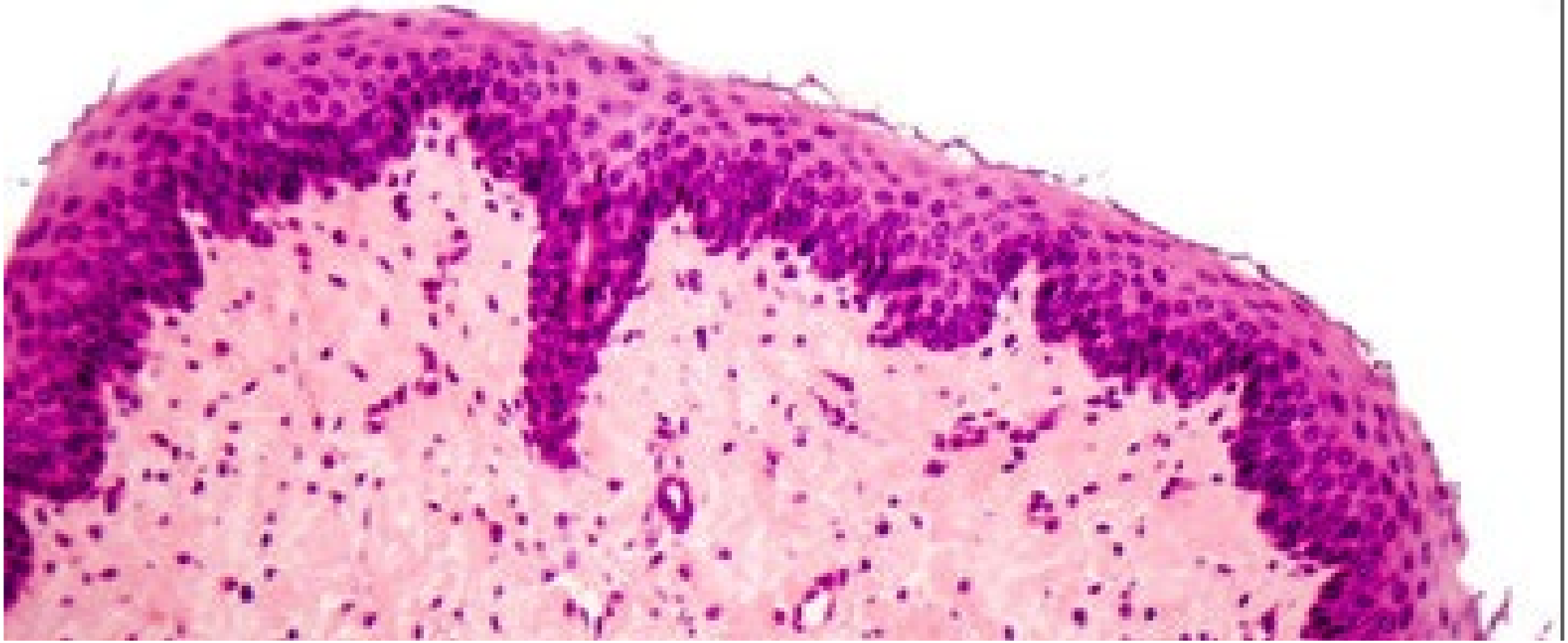
Stratified Squamous Epithelium



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

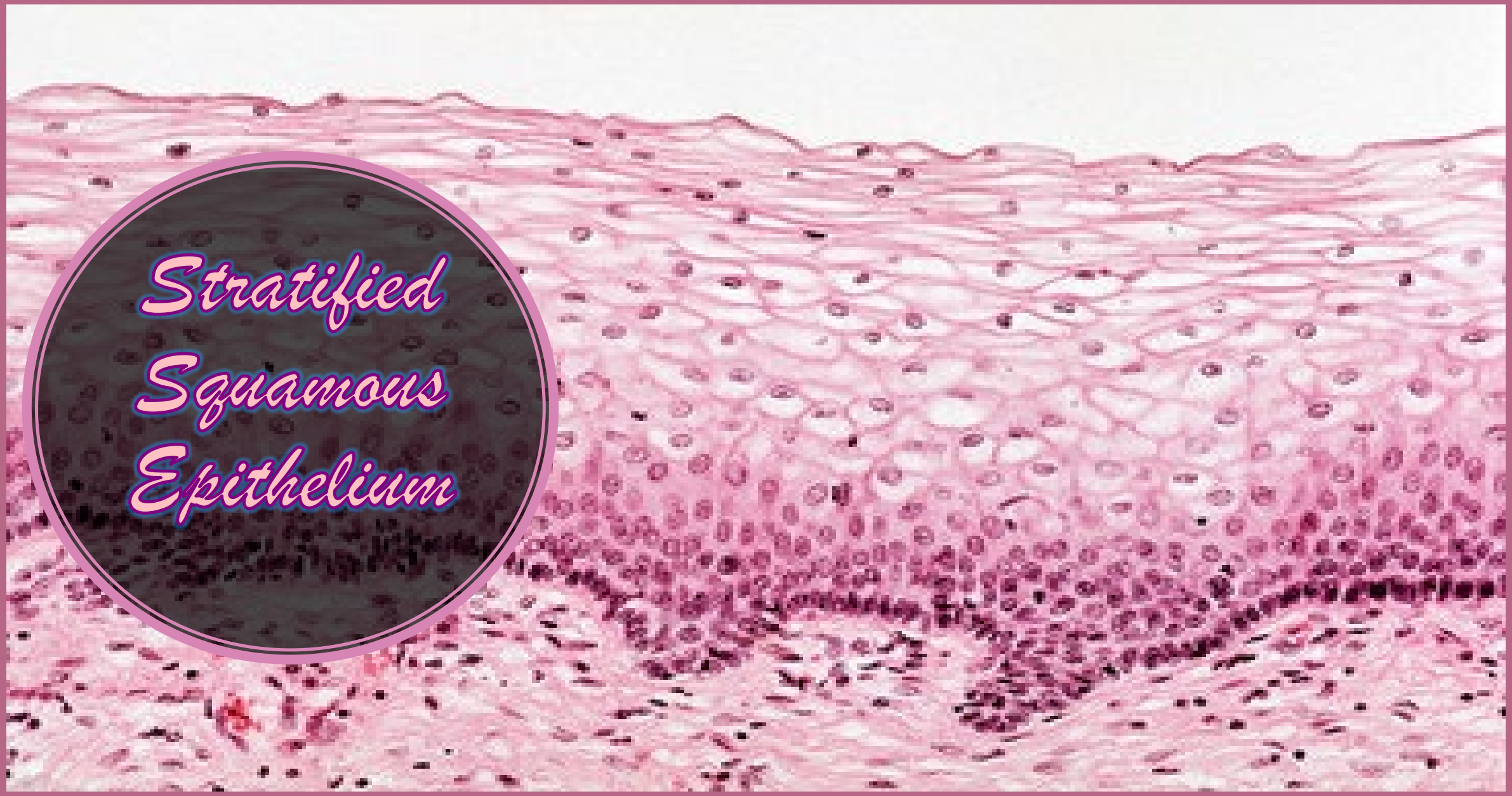
Stratified Squamous Epithelium that the inner surfaces of the body or lie inside the orifices of the body are not keratinized.

Stratified Squamous Epithelium

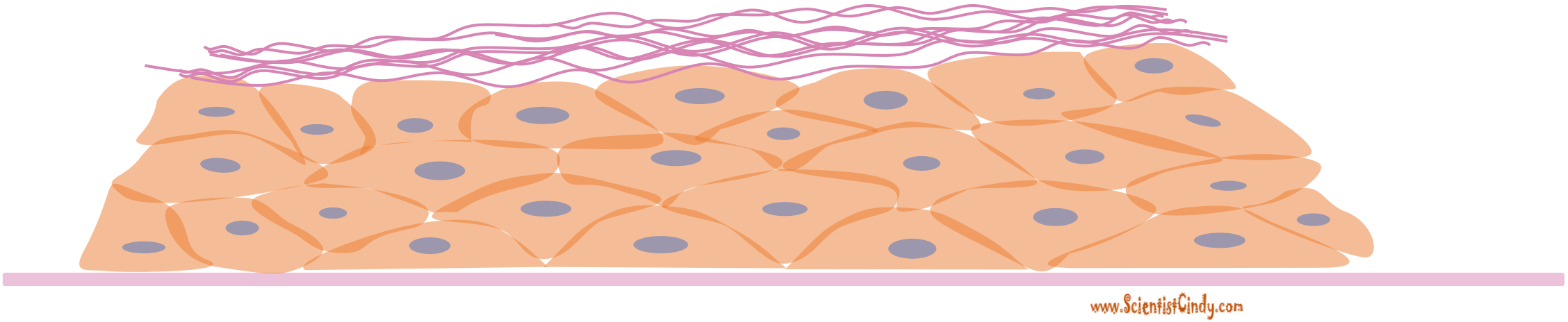



Stratified Squamous Epithelium

Stratified Squamous Epithelium


Stratified
Squamous
Epithelium

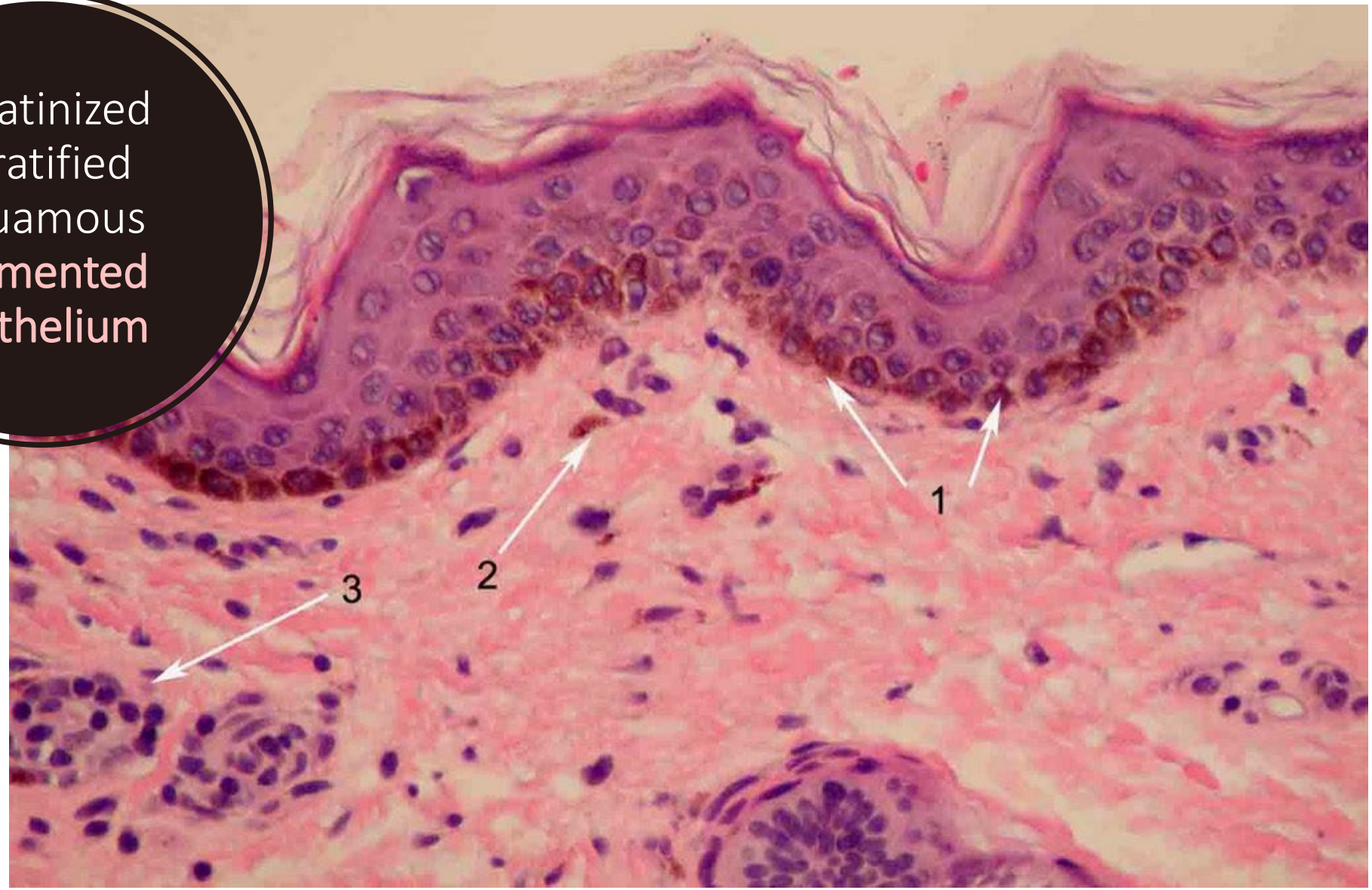
Keratinized Stratified Squamous Epithelium



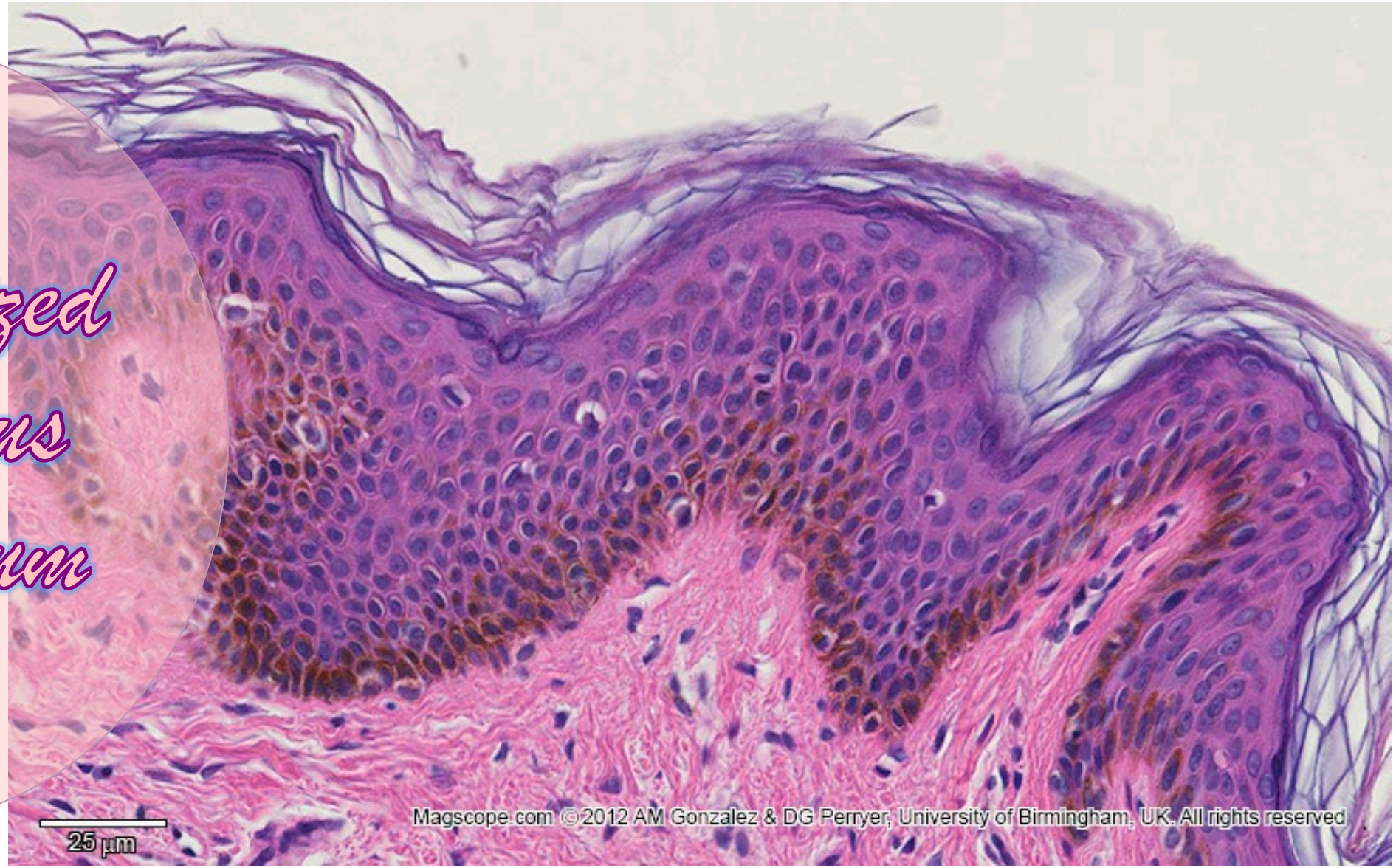
Stratified Squamous Epithelium lines the outer and inner surfaces of the body.

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.

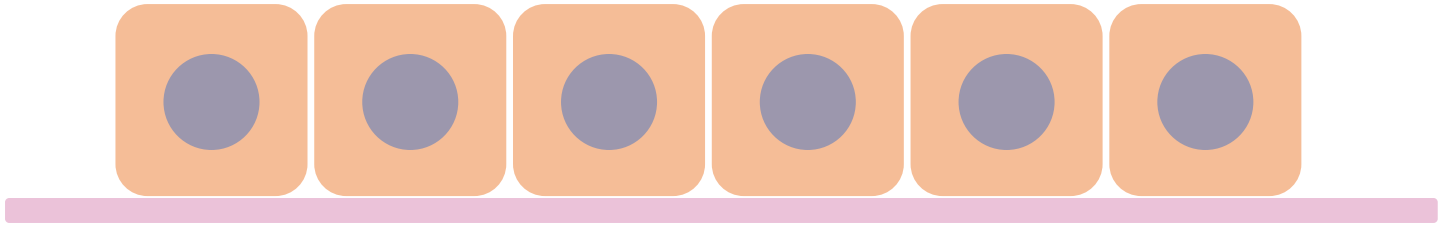
Keratinized Stratified Squamous **Pigmented Epithelium**



Keratinized Squamous Epithelium

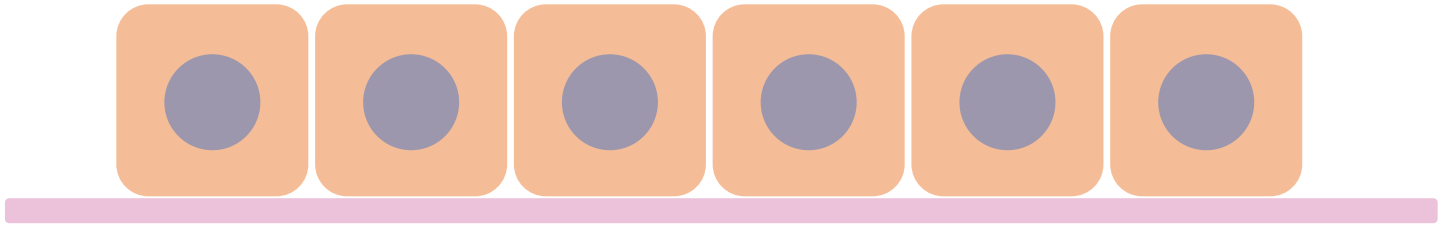


Simple Cuboidal Epithelium



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

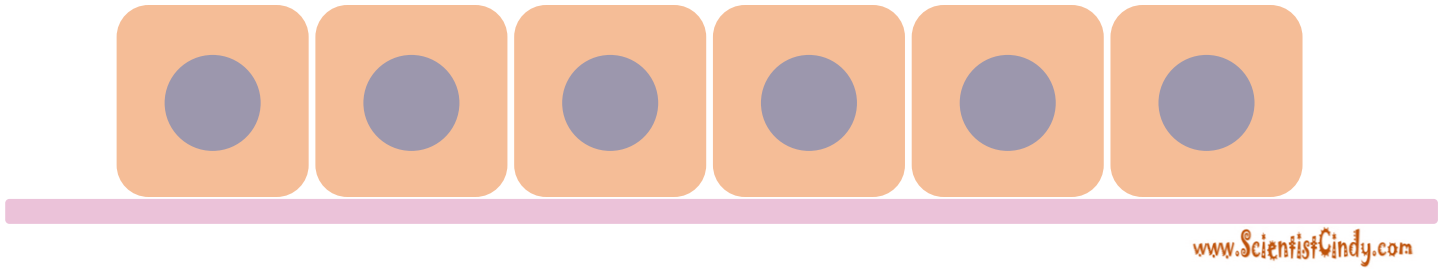
Simple Cuboidal Epithelium



IDENTIFYING FEATURES

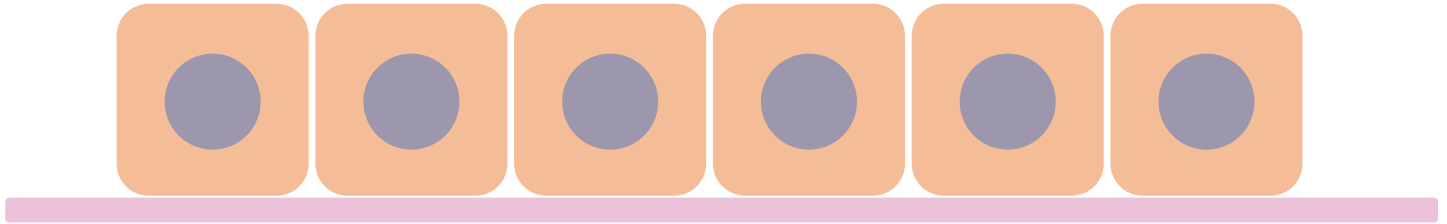
- Cell Shape – Square – As High as They Are Wide
- Cell Location – Lines Tubules and Glandular Epithelial Tissue
- Nucleus Shape - Circular
- Nucleus Location – Centered in the Cell

Simple Cuboidal Epithelium



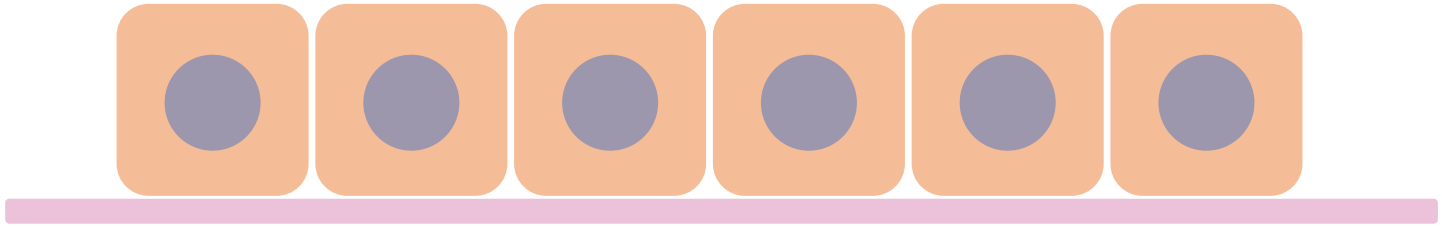
Simple Cuboidal Epithelium is found in glands, the pancreas, the kidney (renal) tubules, and the gonads (covers the ovary and lines the walls of the seminiferous tubules in the testes)

Simple Cuboidal Epithelium

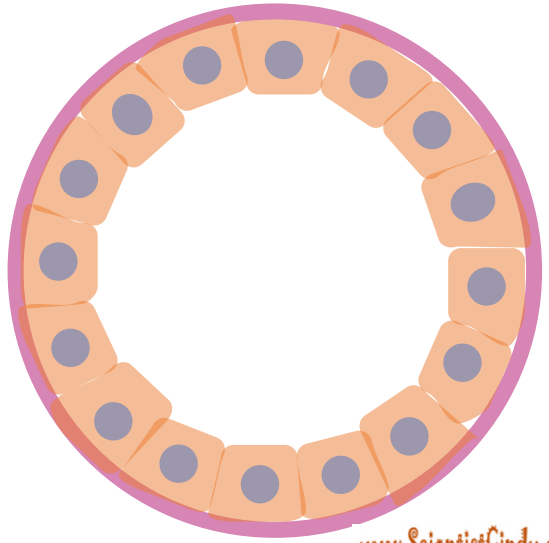


Specialized for Secretion and Absorption
Found in Kidneys, Glands, and Reproductive Tissues

Simple Cuboidal Epithelium



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



Simple Cuboidal Epithelium

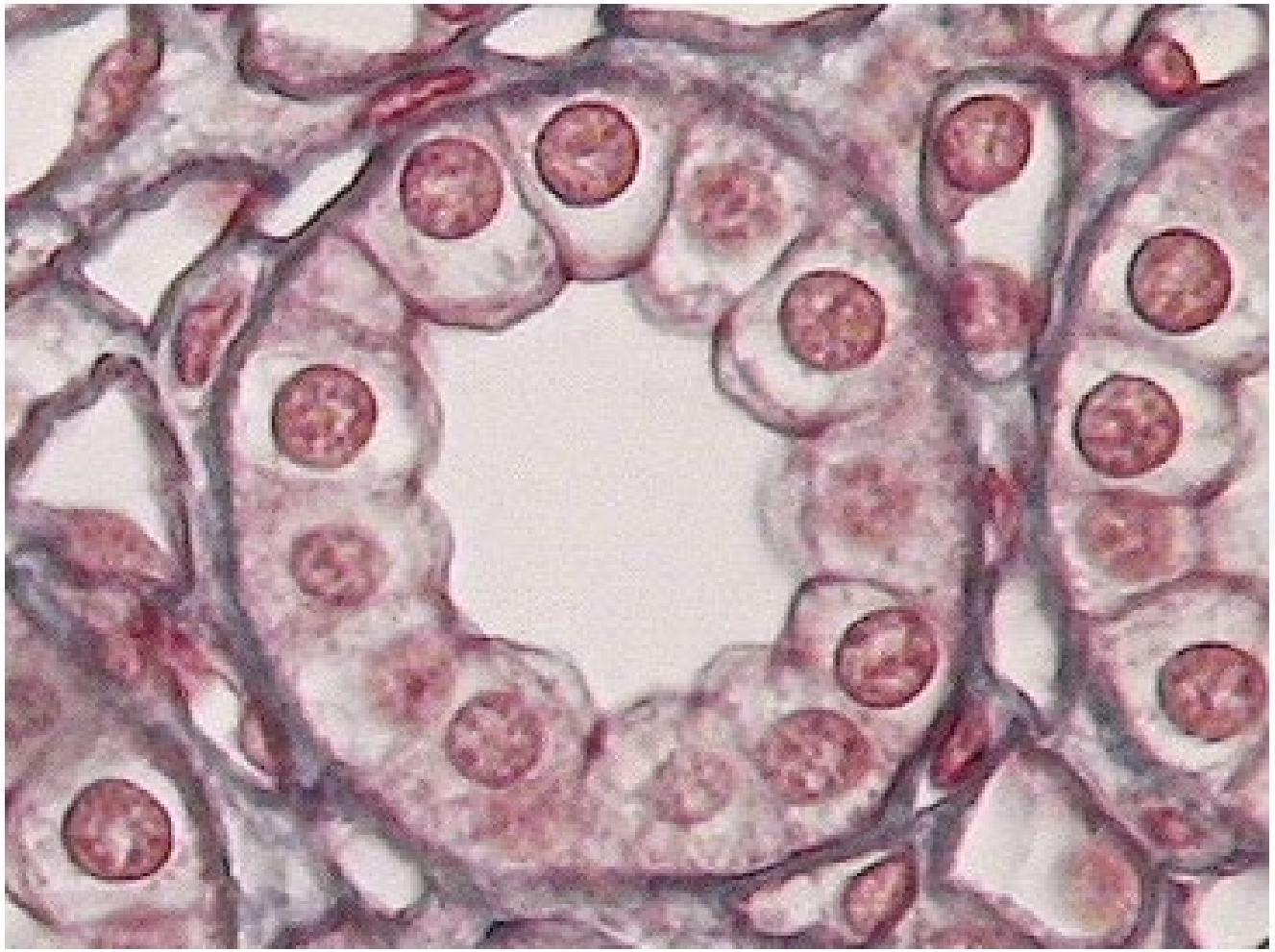
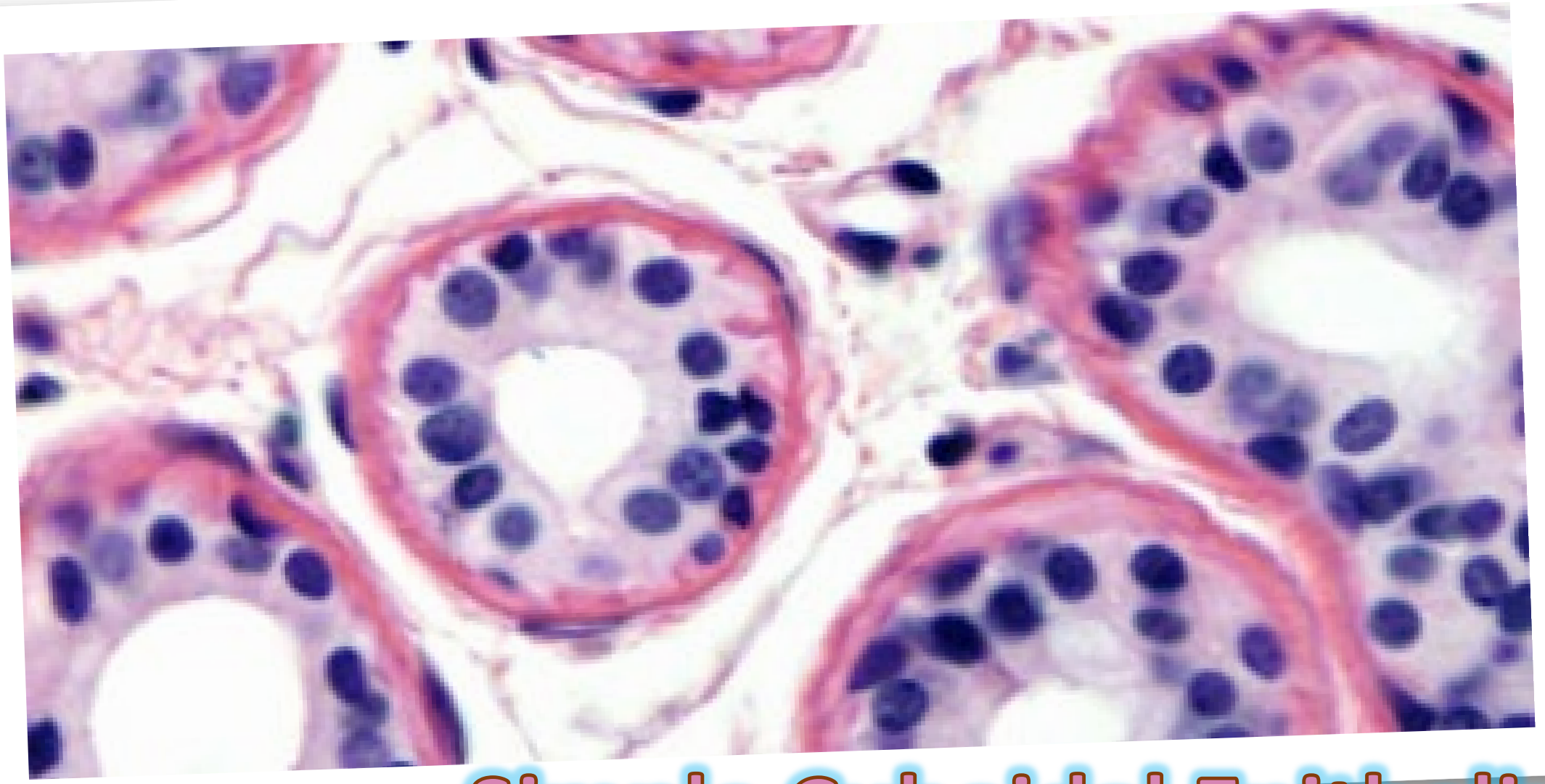


Image: K. Wynne, Tyler Junior College

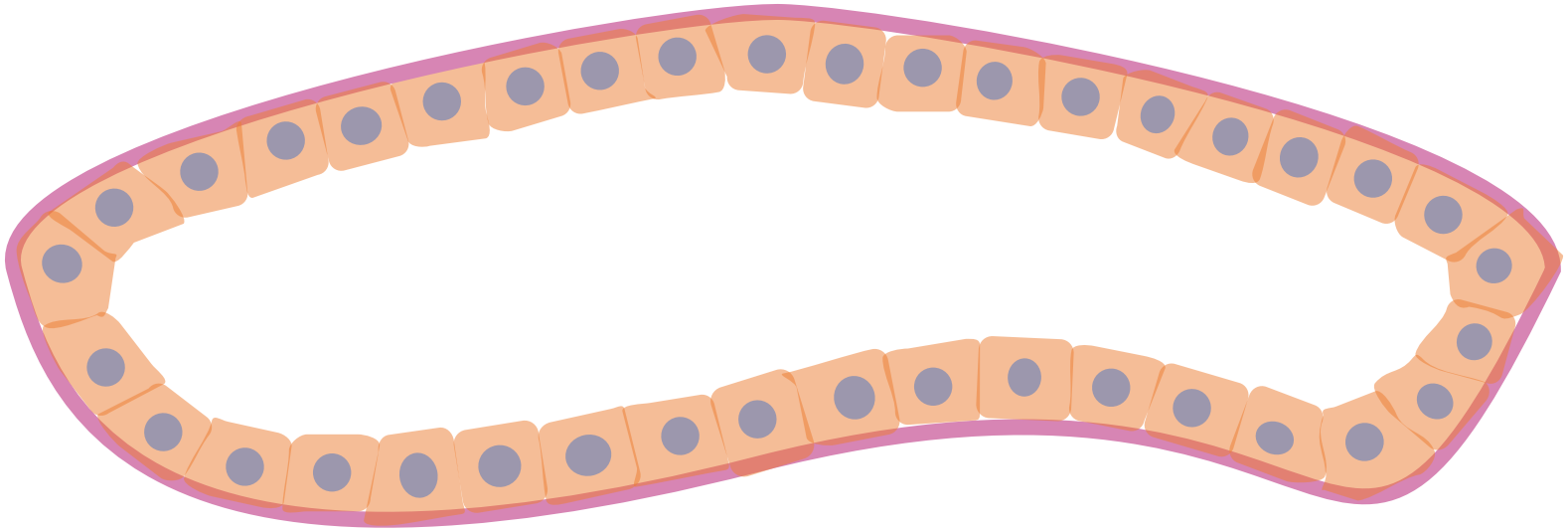
Simple Cuboidal Epithelium

Renal Tubule in the Kidney



Simple Cuboidal Epithelium

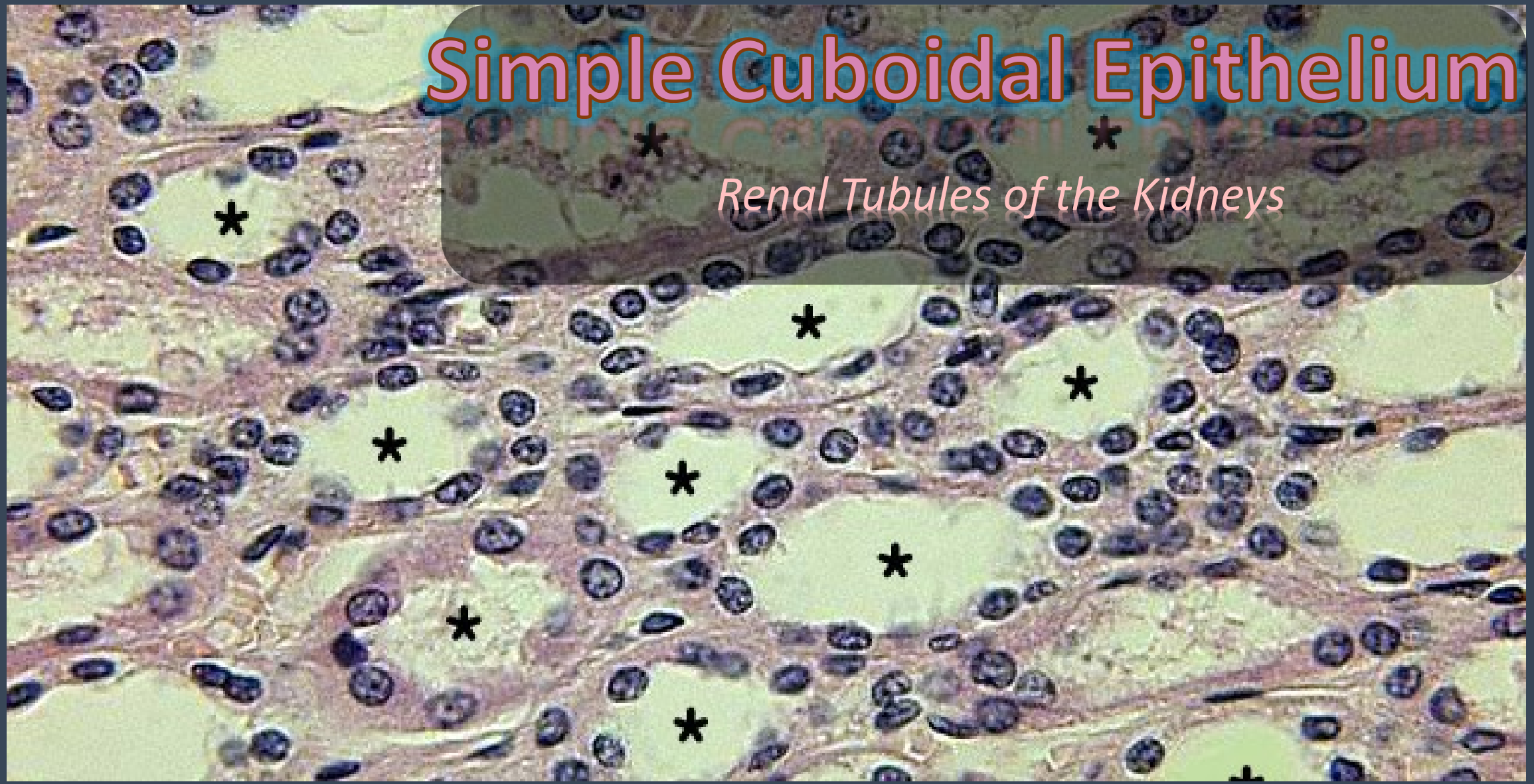
Simple Cuboidal Epithelium



Simple Cuboidal Epithelium

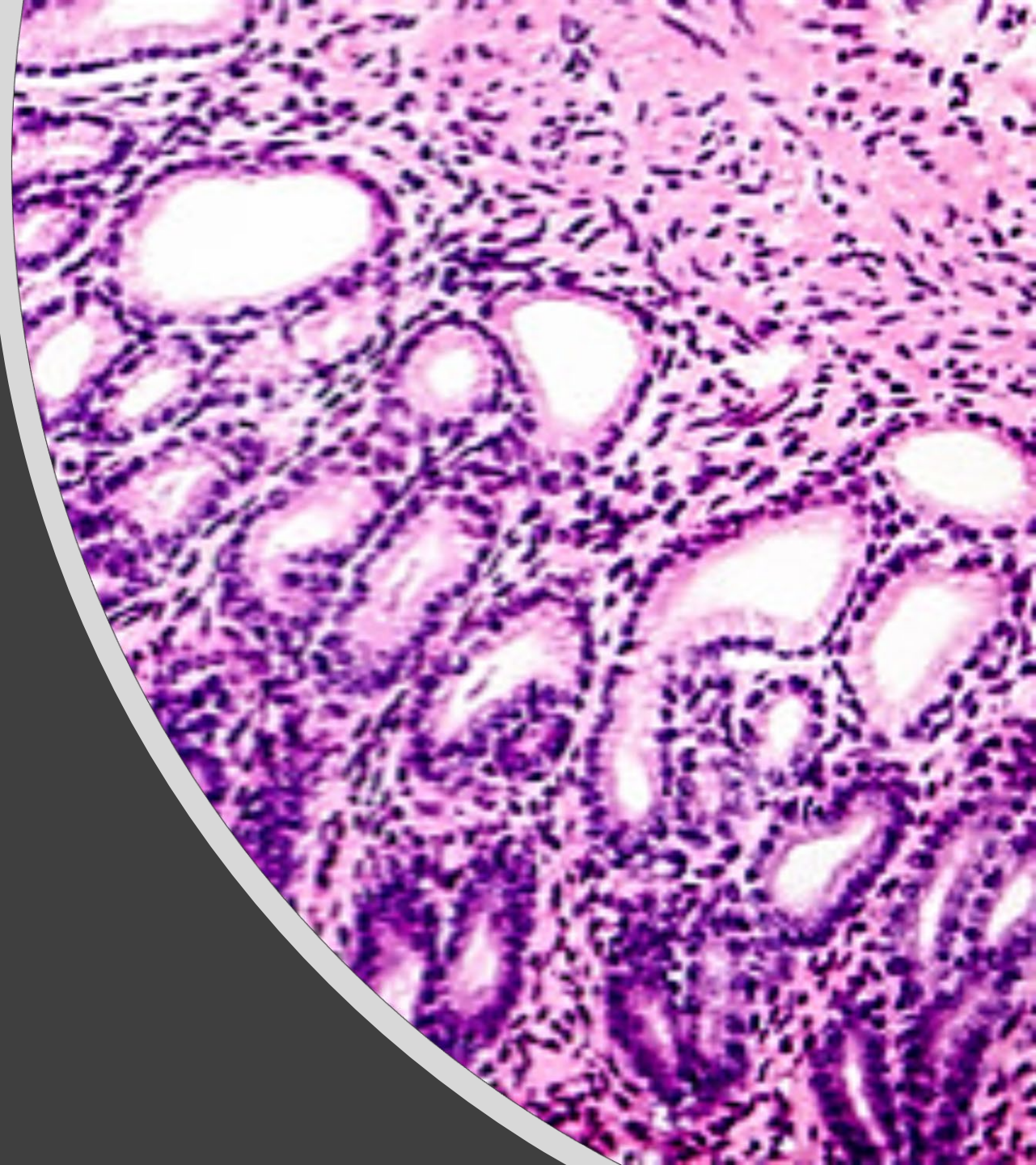
Found in Circular or Long Ovoid (Oval-Shaped) Tubules

Simple Cuboidal Epithelium

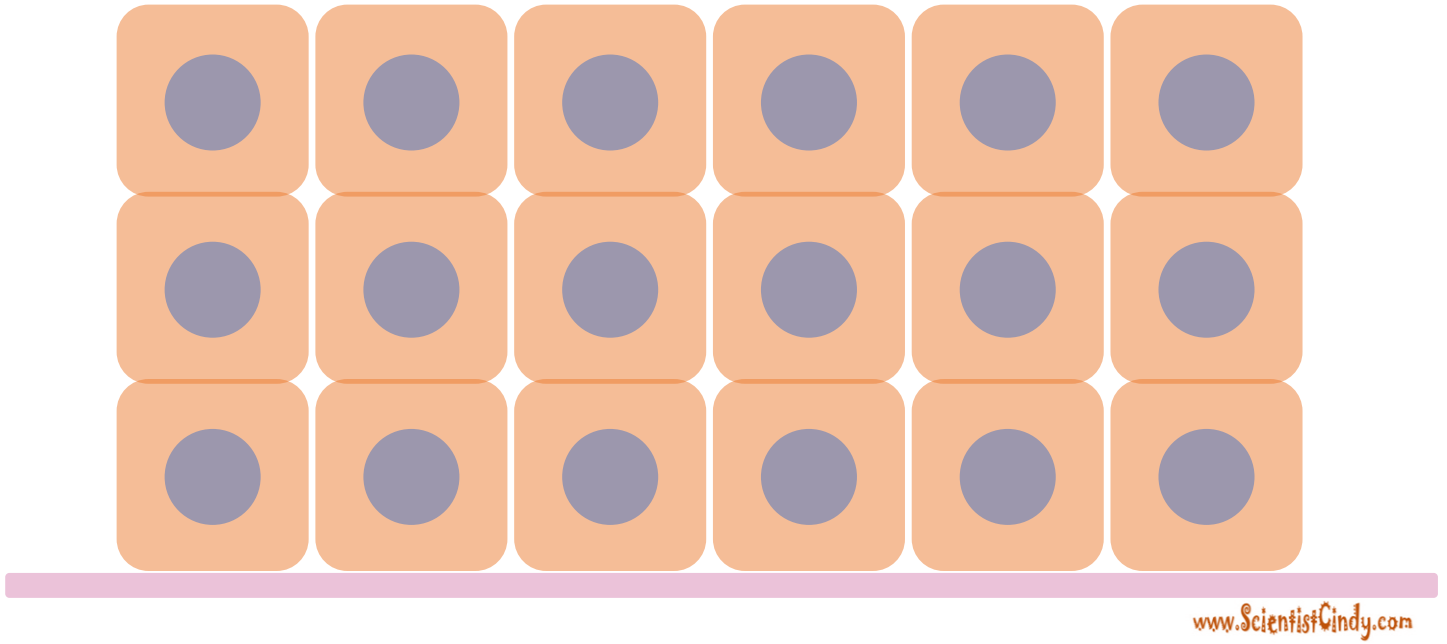

Simple Cuboidal Epithelium
Renal Tubules of the Kidneys

Simple Cuboidal

Stomach

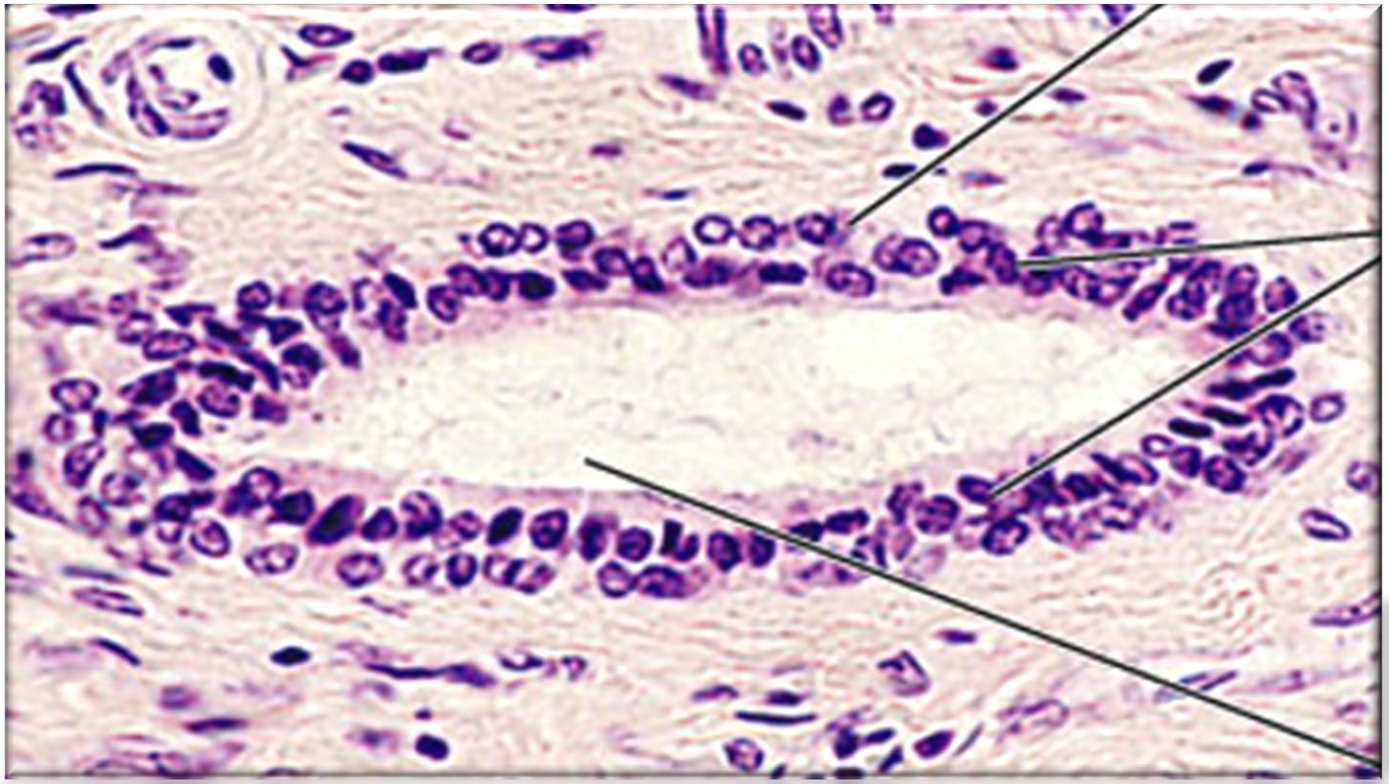


Stratified Cuboidal Epithelium



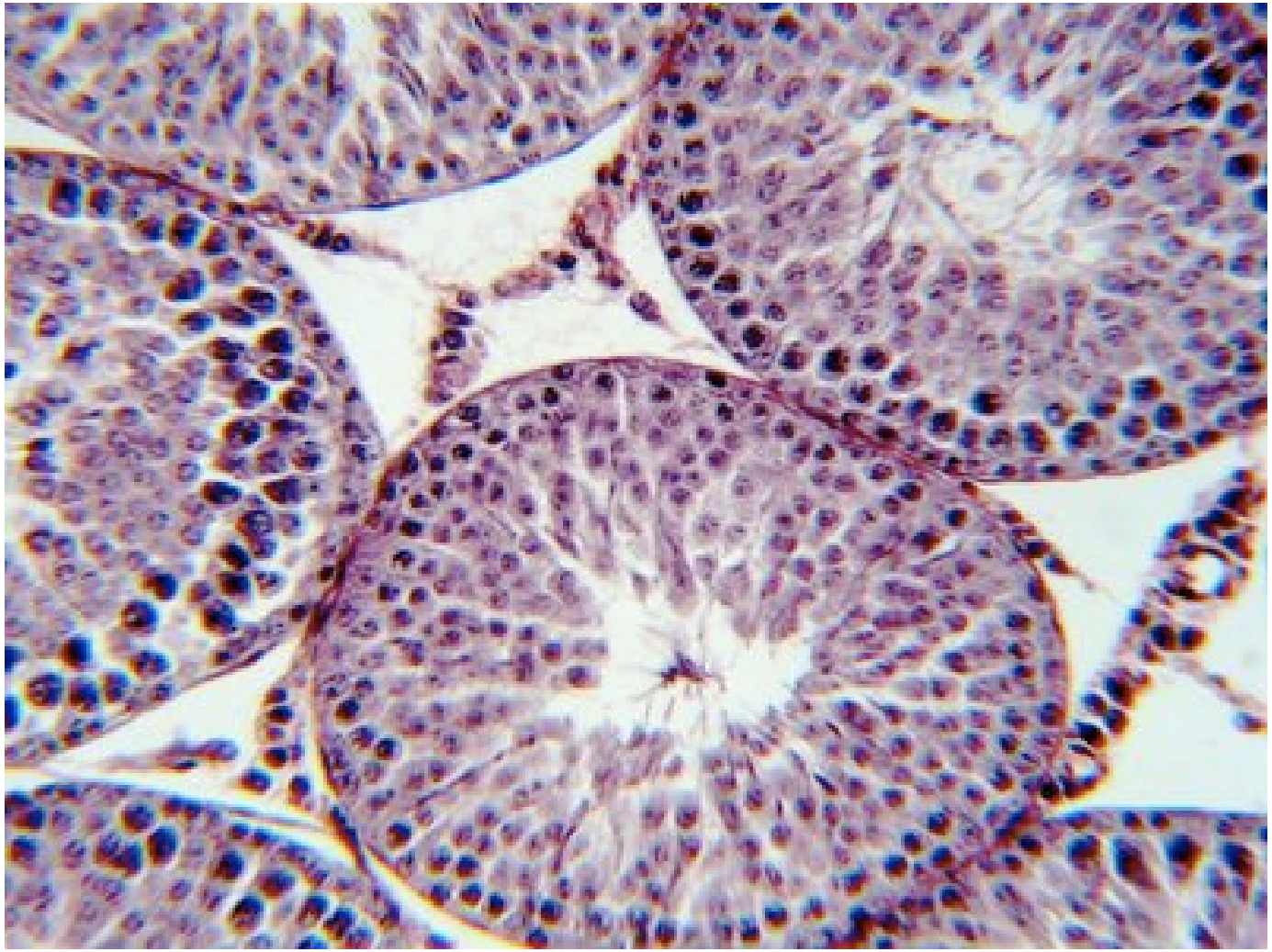
Stratified cuboidal epithelium lines the ducts of many of the body's glands, such as sweat glands, mammary glands, and salivary glands.

Stratified Cuboidal Epithelium

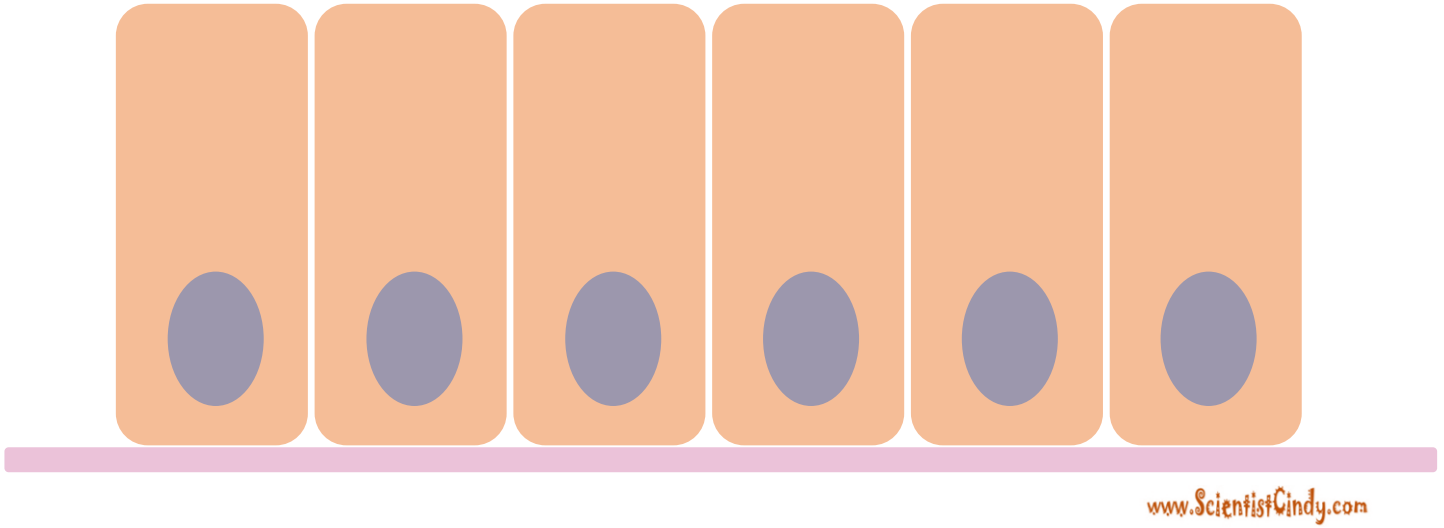


Stratified Cuboidal Epithelium

- lines the walls of the seminiferous tubules in the testes



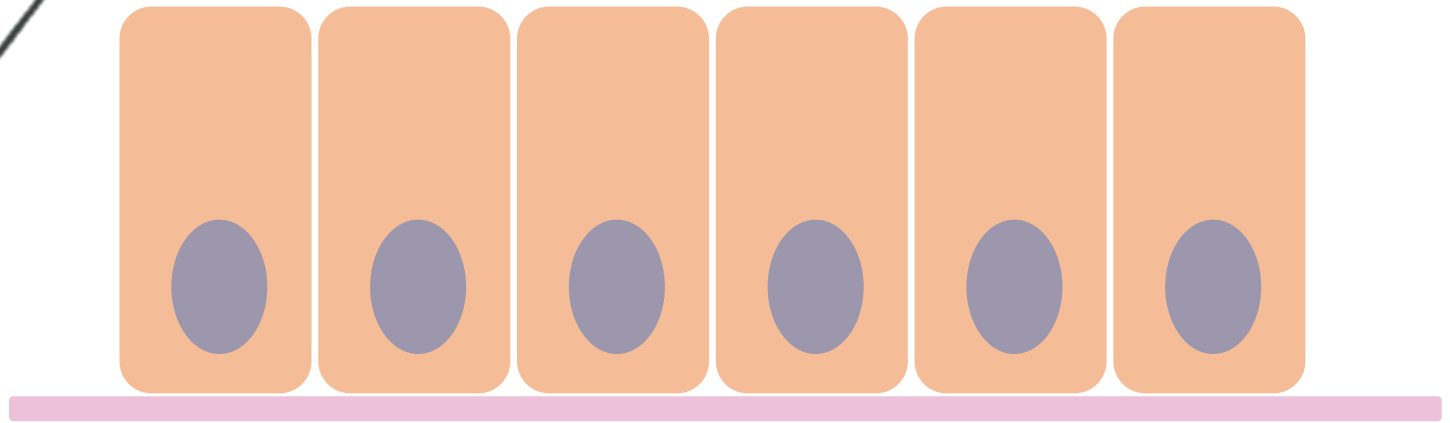
Simple Columnar Epithelium



Identifying Features

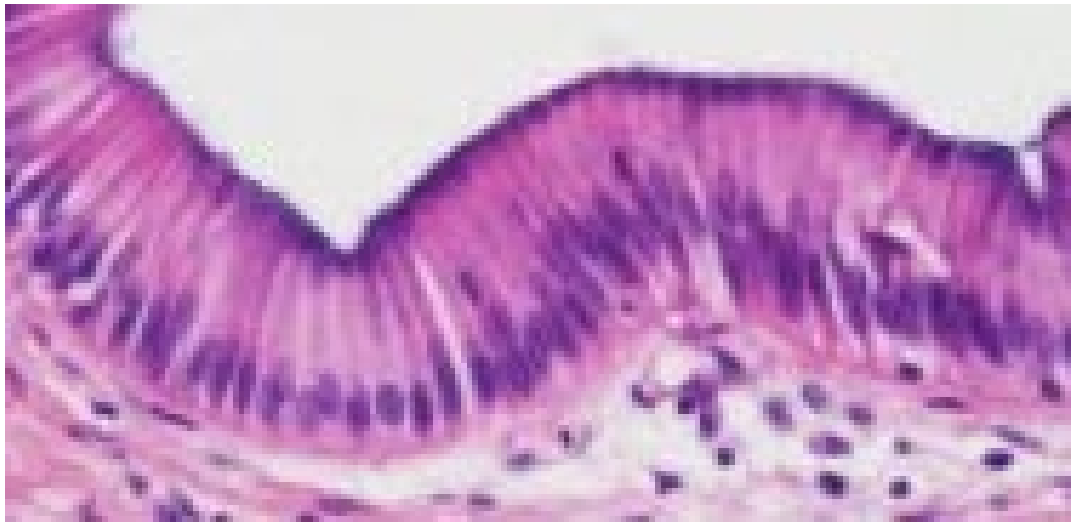
- Cell Shape – Column-shaped – Tall Rectangle
- Cell Location – Lines Intestines And May Have Goblet Cells
- Nucleus Shape – Oval Or Stretched Out Vertically
- Nucleus Location – In A Row Toward The Basement Membrane

Simple Columnar Epithelium



Specialized for Secretion
Found in Digestive Tract

Simple Columnar Epithelium



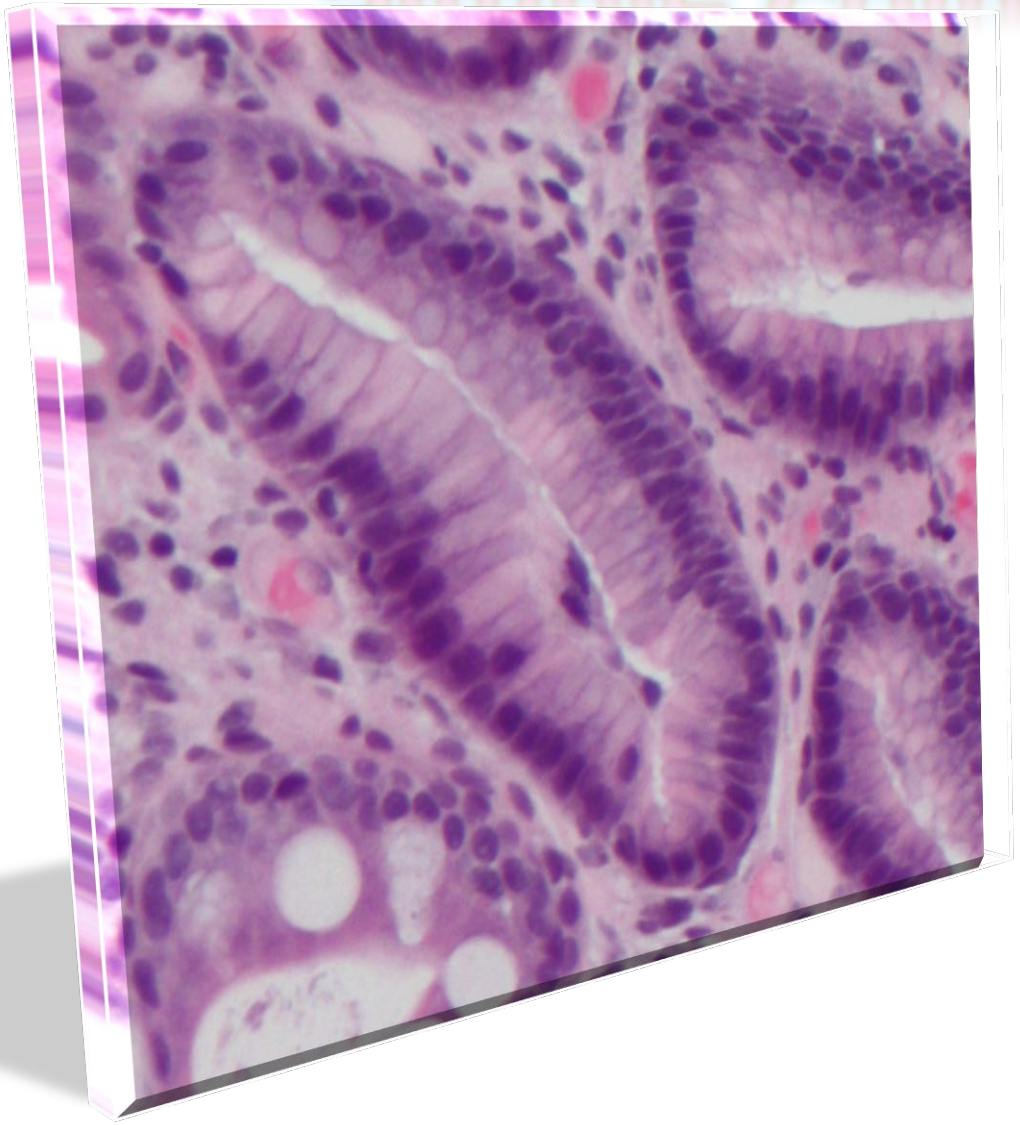
Simple Columnar Epithelium

•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

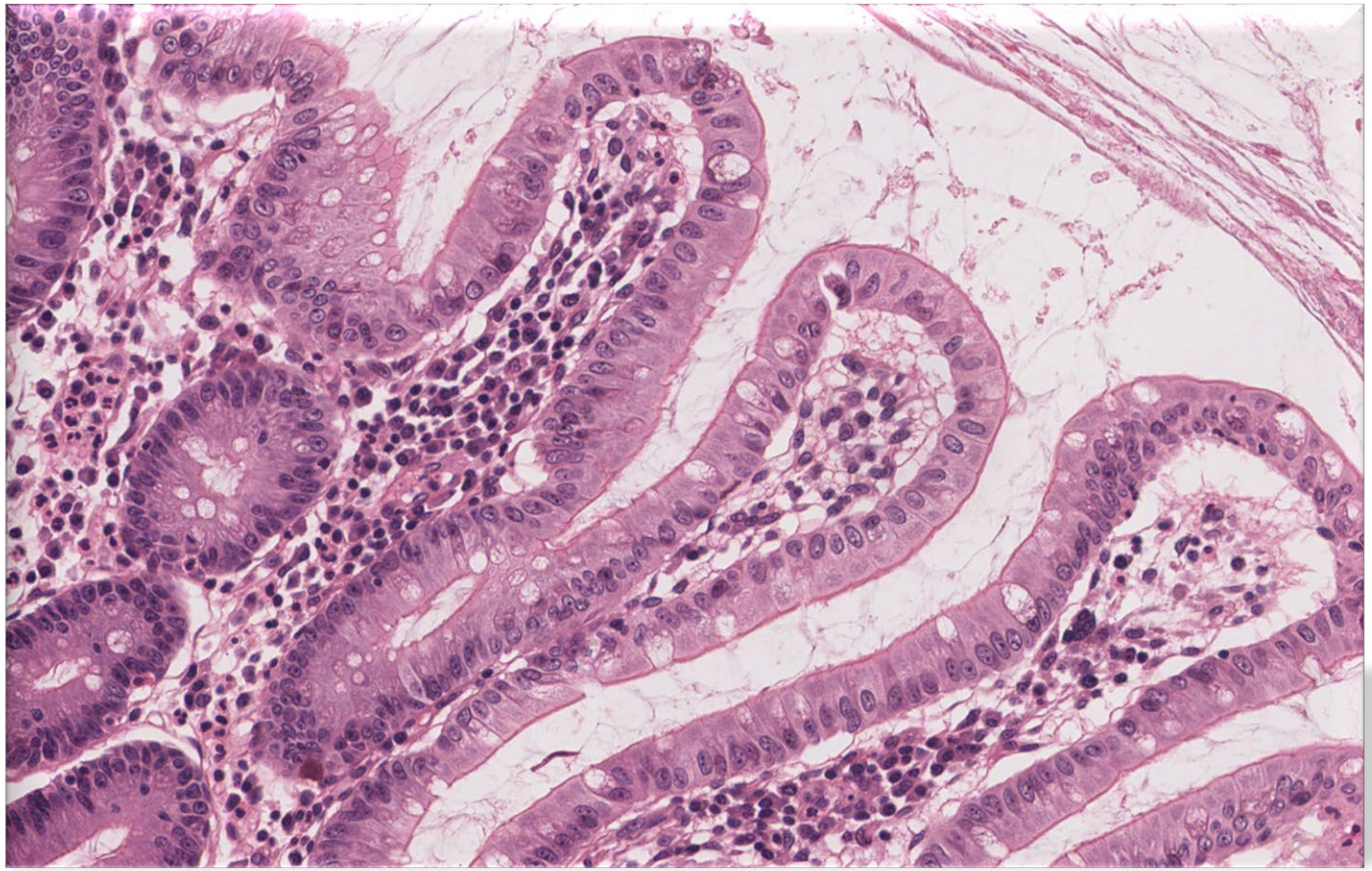
- *Here we see the simple columnar cells of the renal tubules in the kidney.*

Simple Columnar Epithelium

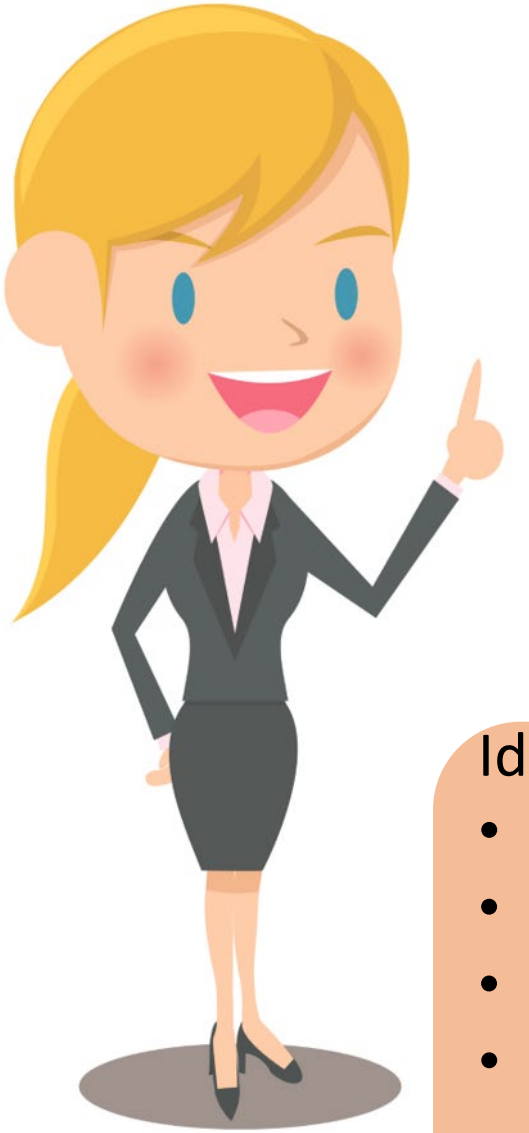
Small Intestines

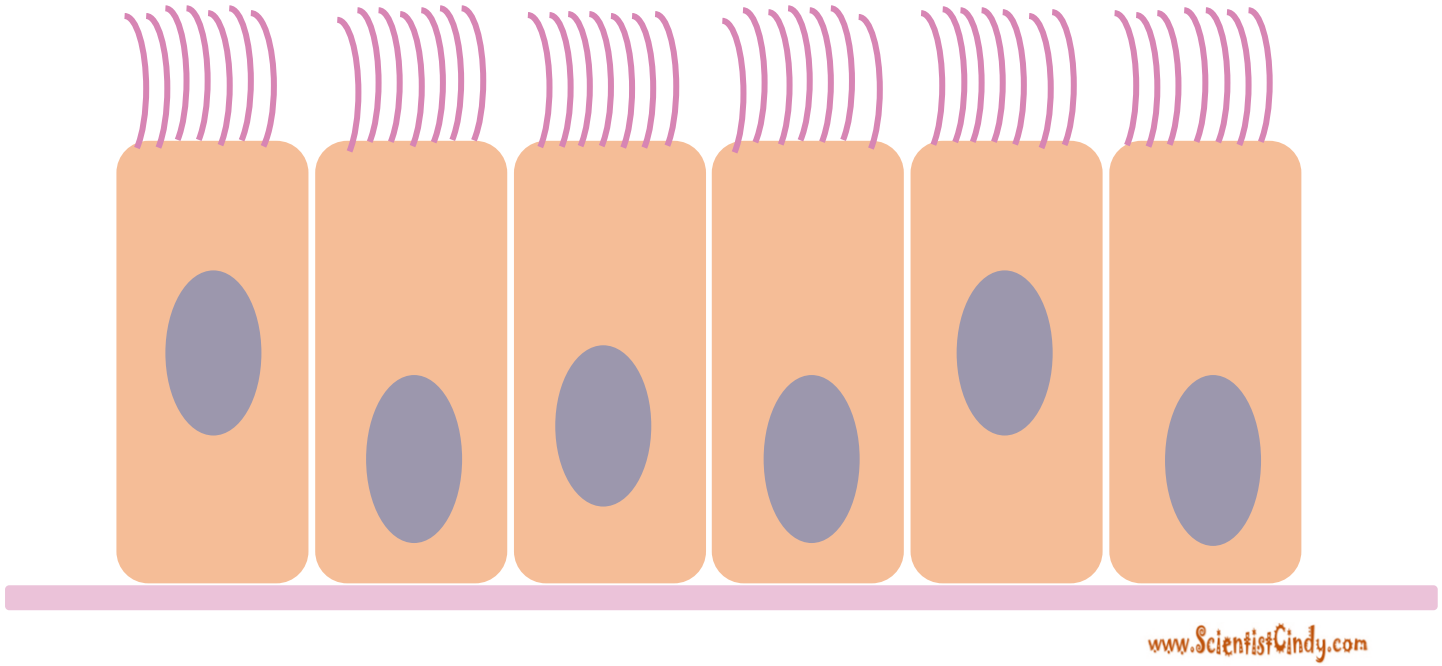
Simple Columnar Epithelium

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



Ciliated Pseudostratified Columnar Epithelium

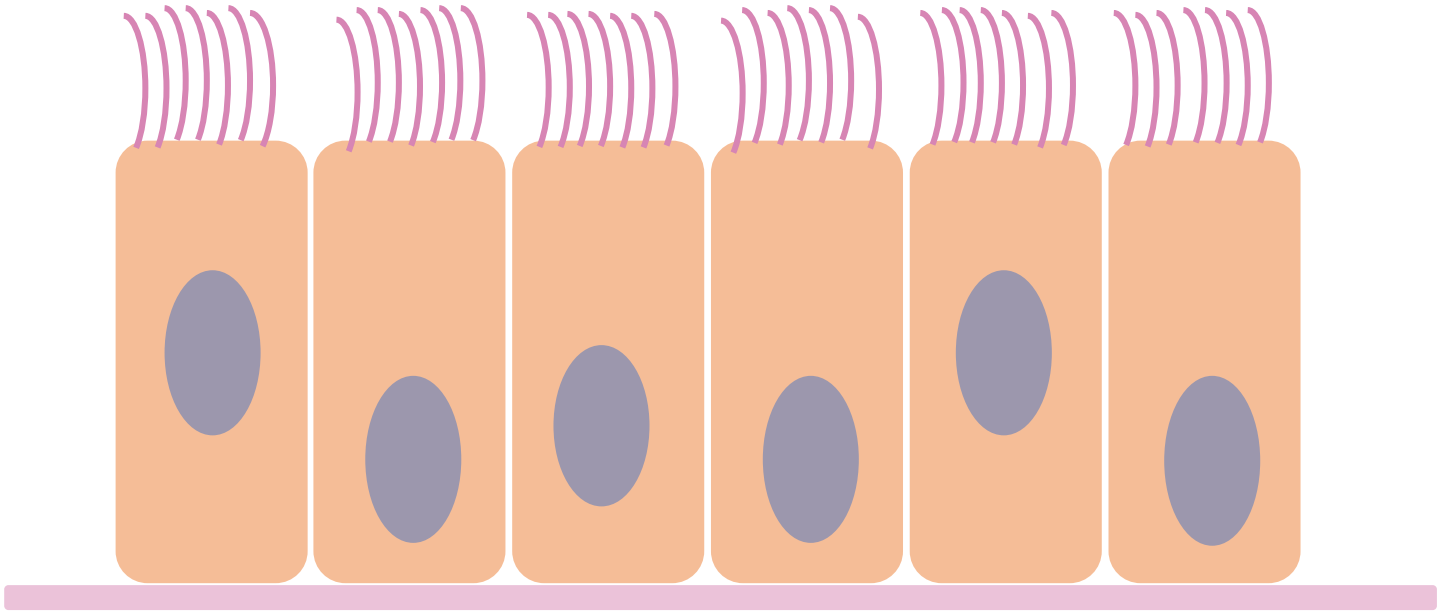




Identifying Features

- 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 a 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!

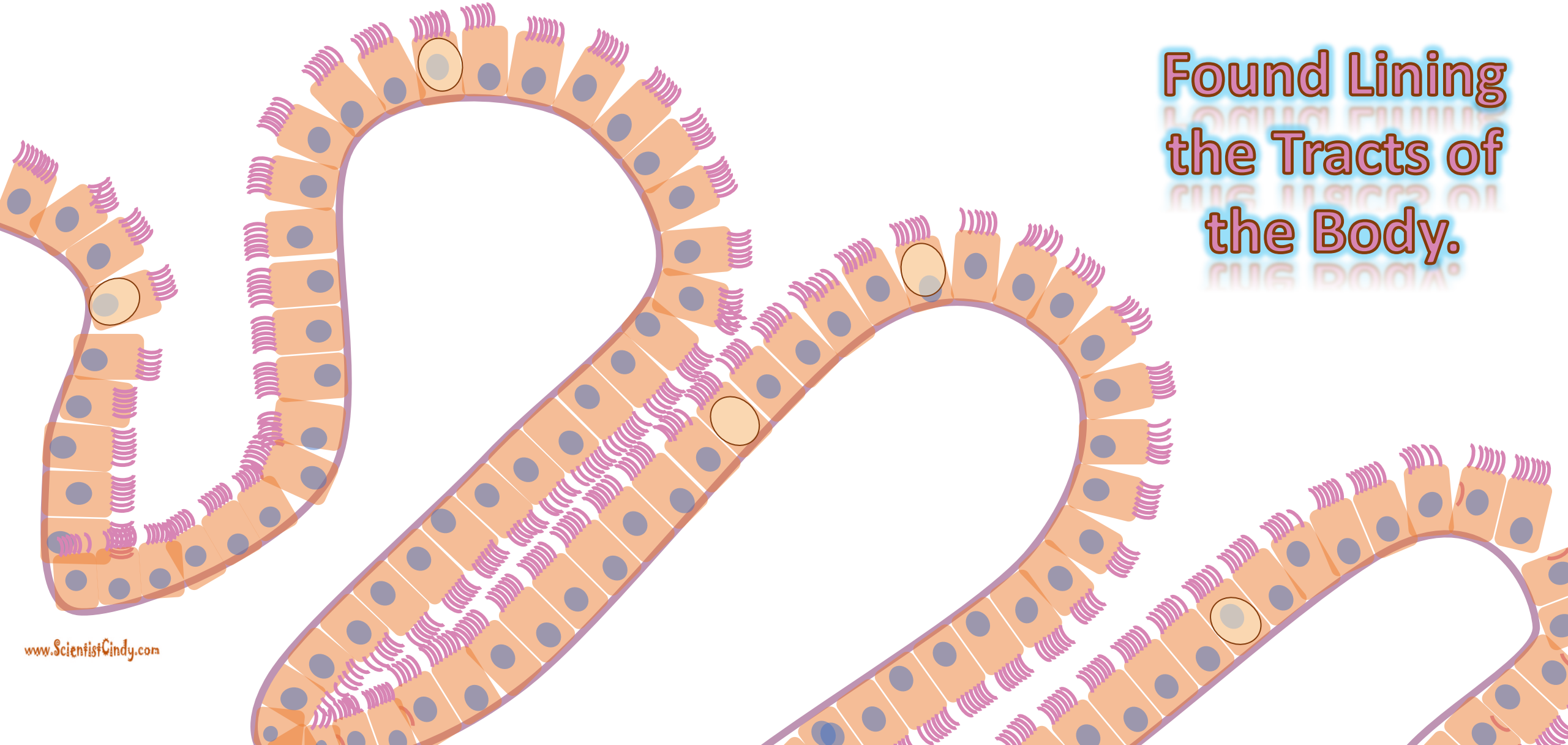
Ciliated Pseudostratified Columnar Epithelium



Pseudostratified columnar epithelium is found lining of the respiratory tract.

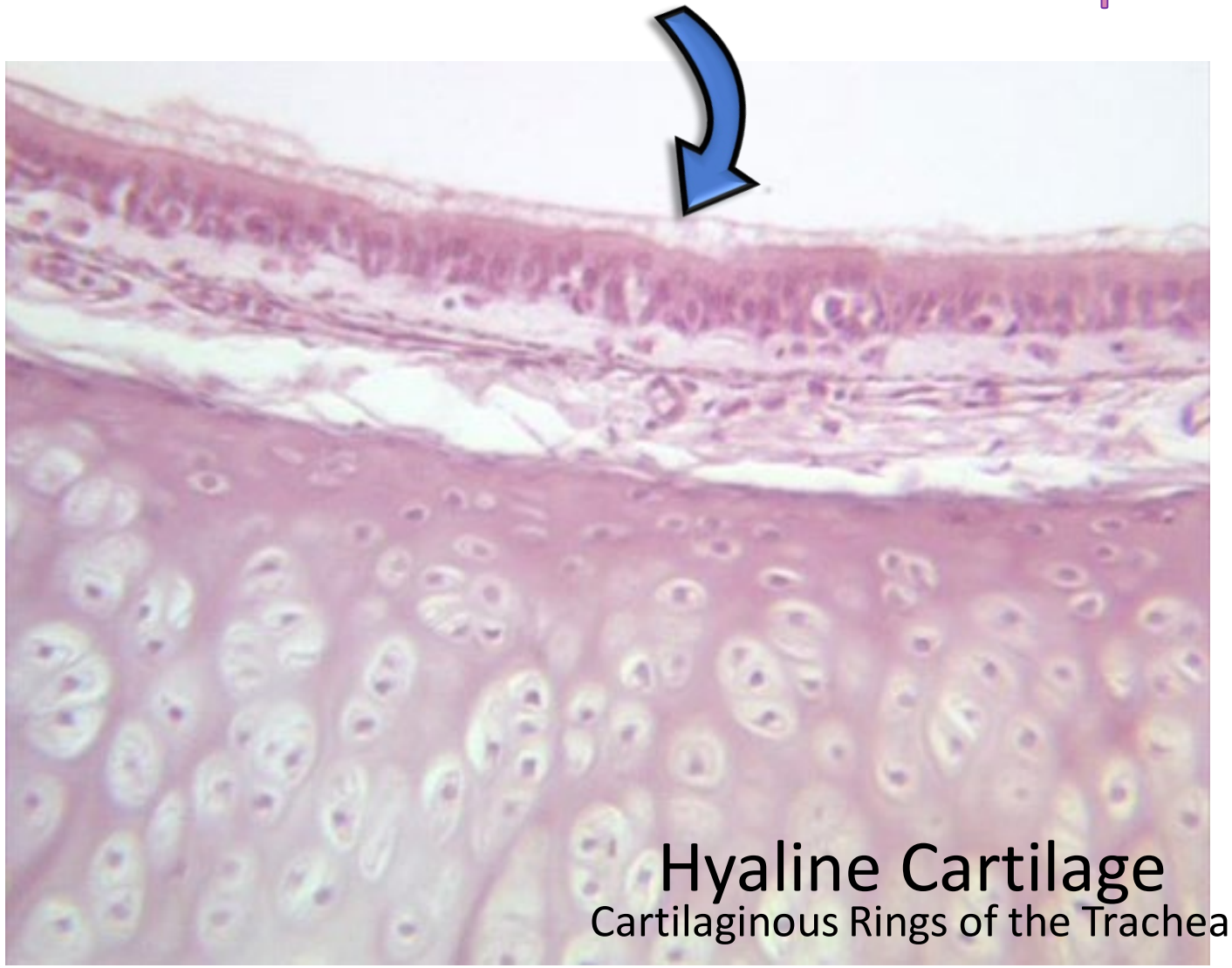
Ciliated Pseudostratified Columnar Epithelium

Found Lining the Tracts of the Body.



The Trachea

Ciliated Pseudostratified Columnar Epithelium



Hyaline Cartilage

Cartilaginous Rings of the Trachea

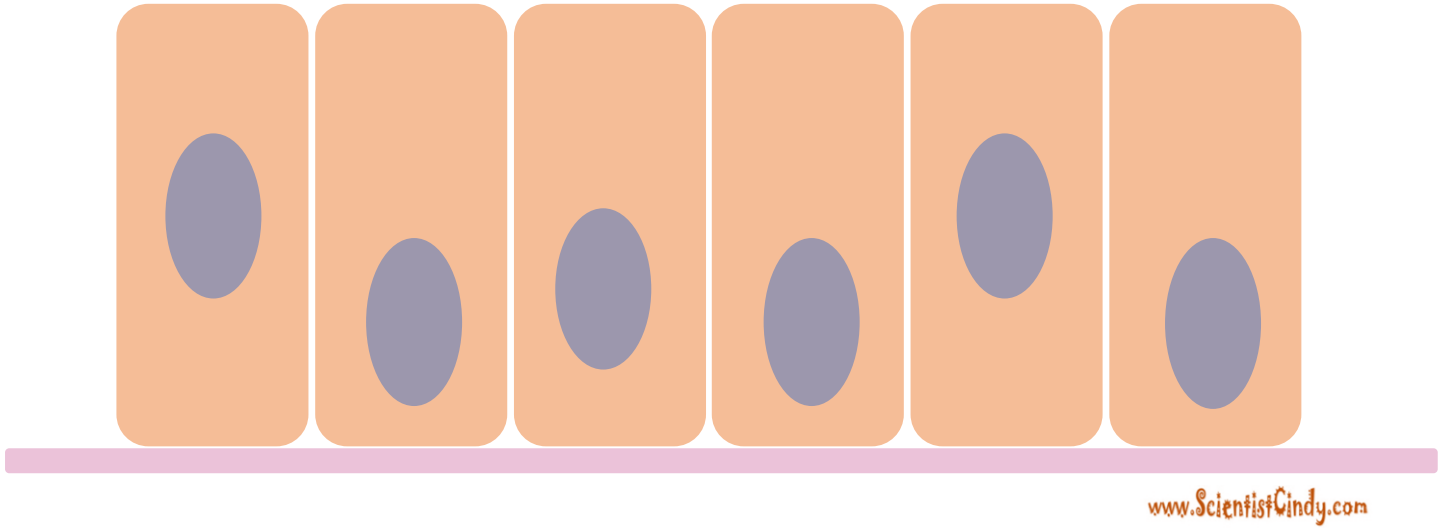
Ciliated Pseudostratified Columnar Epithelium

Ciliated Pseudostratified Columnar Epithelium

Ciliated Pseudostratified Columnar Epithelium

The Trachea

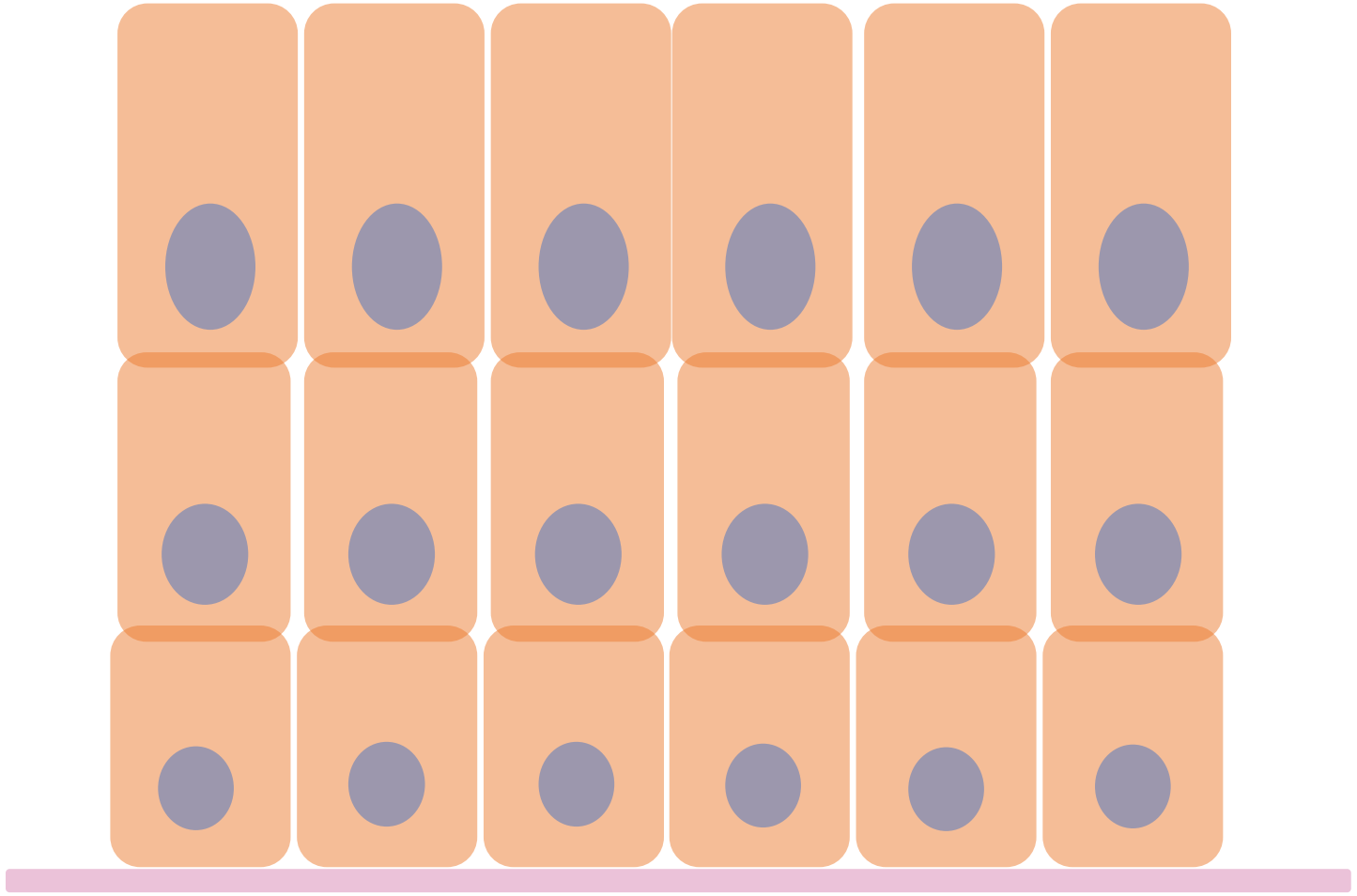
Pseudostratified Columnar Epithelium



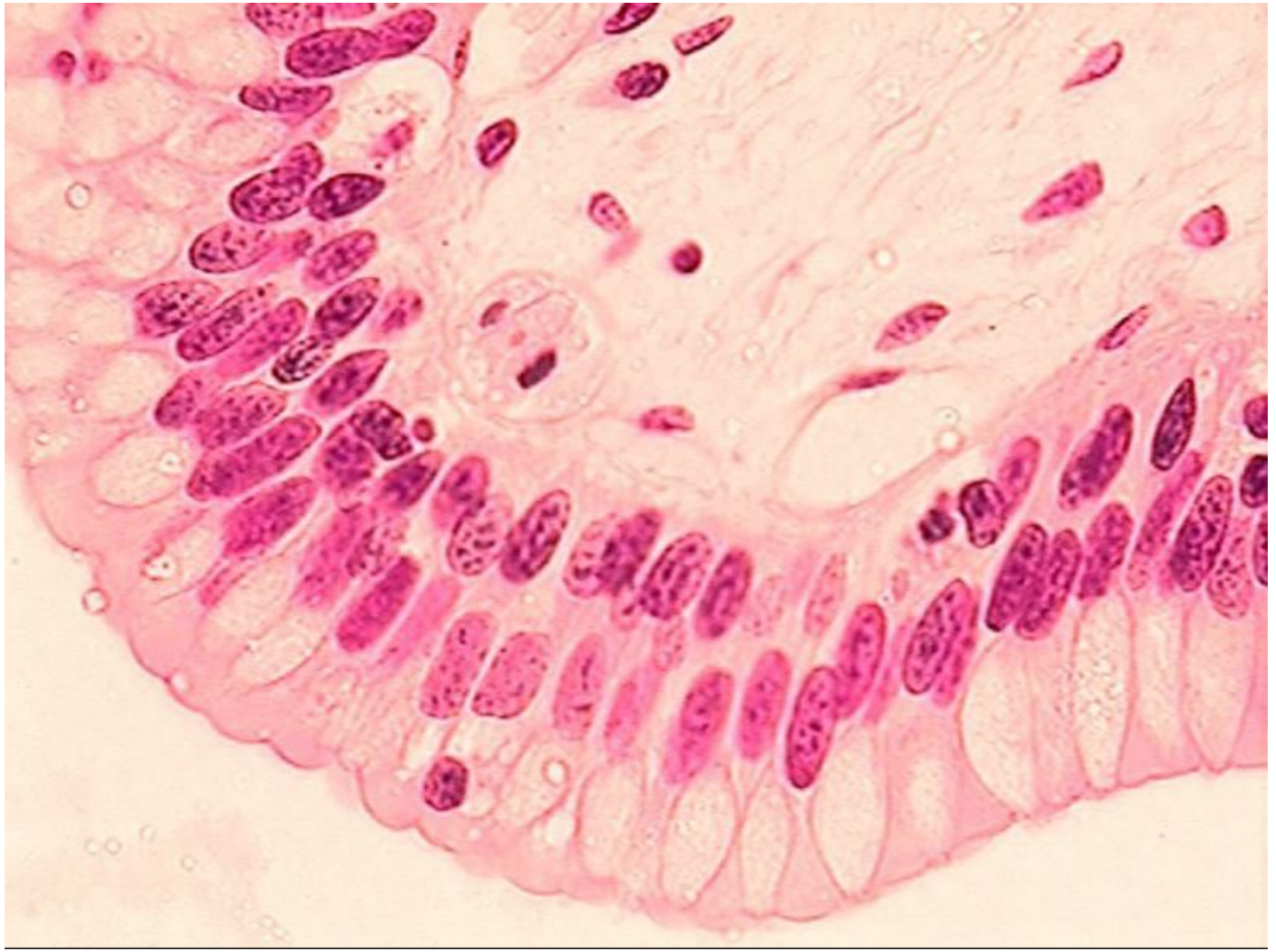
Identifying Features

- Cell Shape – Column-shaped– Tall Rectangle
- Cell Location – Epididymis
- Nucleus Shape – Oval Or Stretched Out Vertically
- Nucleus Location – Nuclei are a 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!

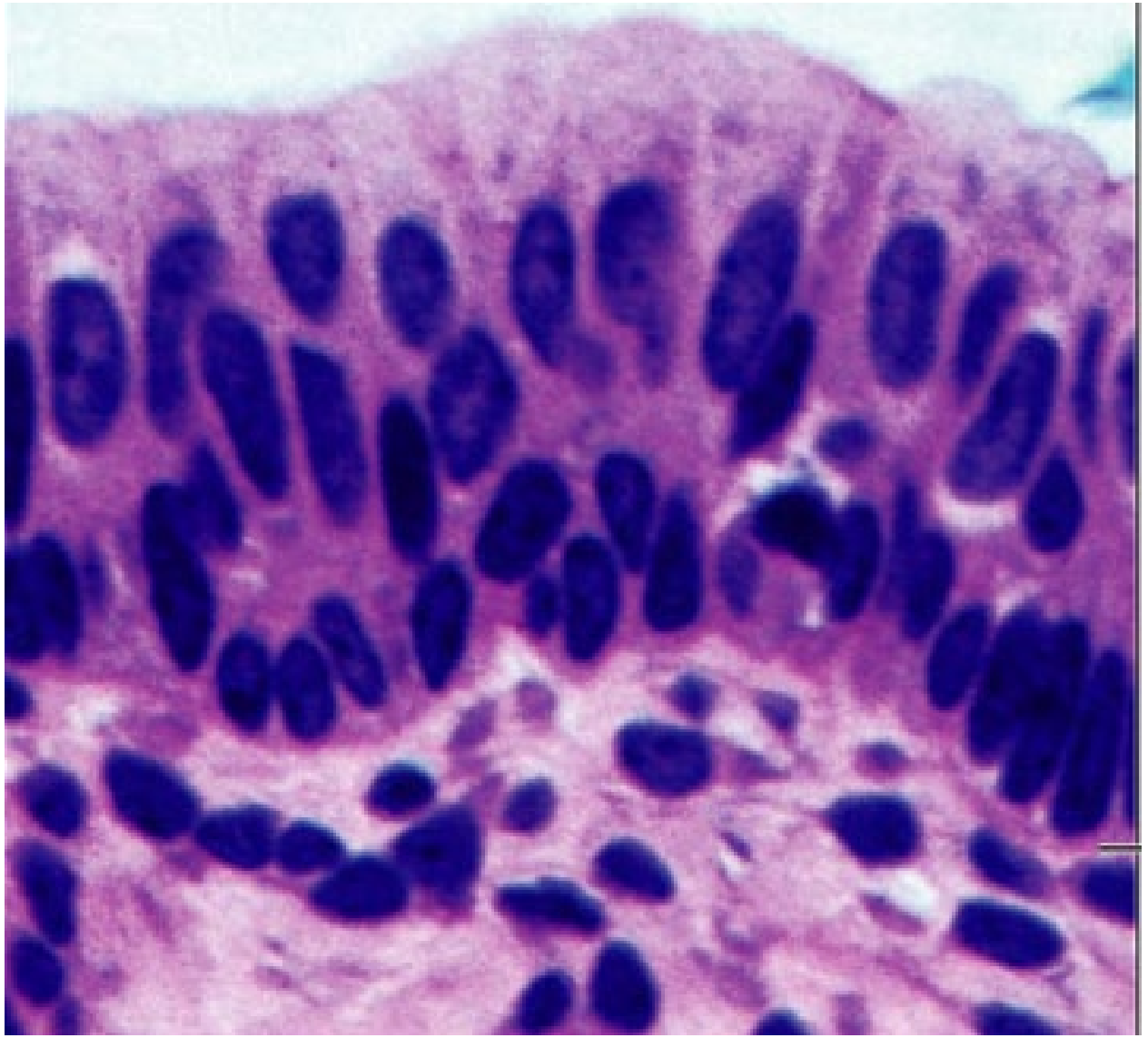
Stratified Columnar Epithelium



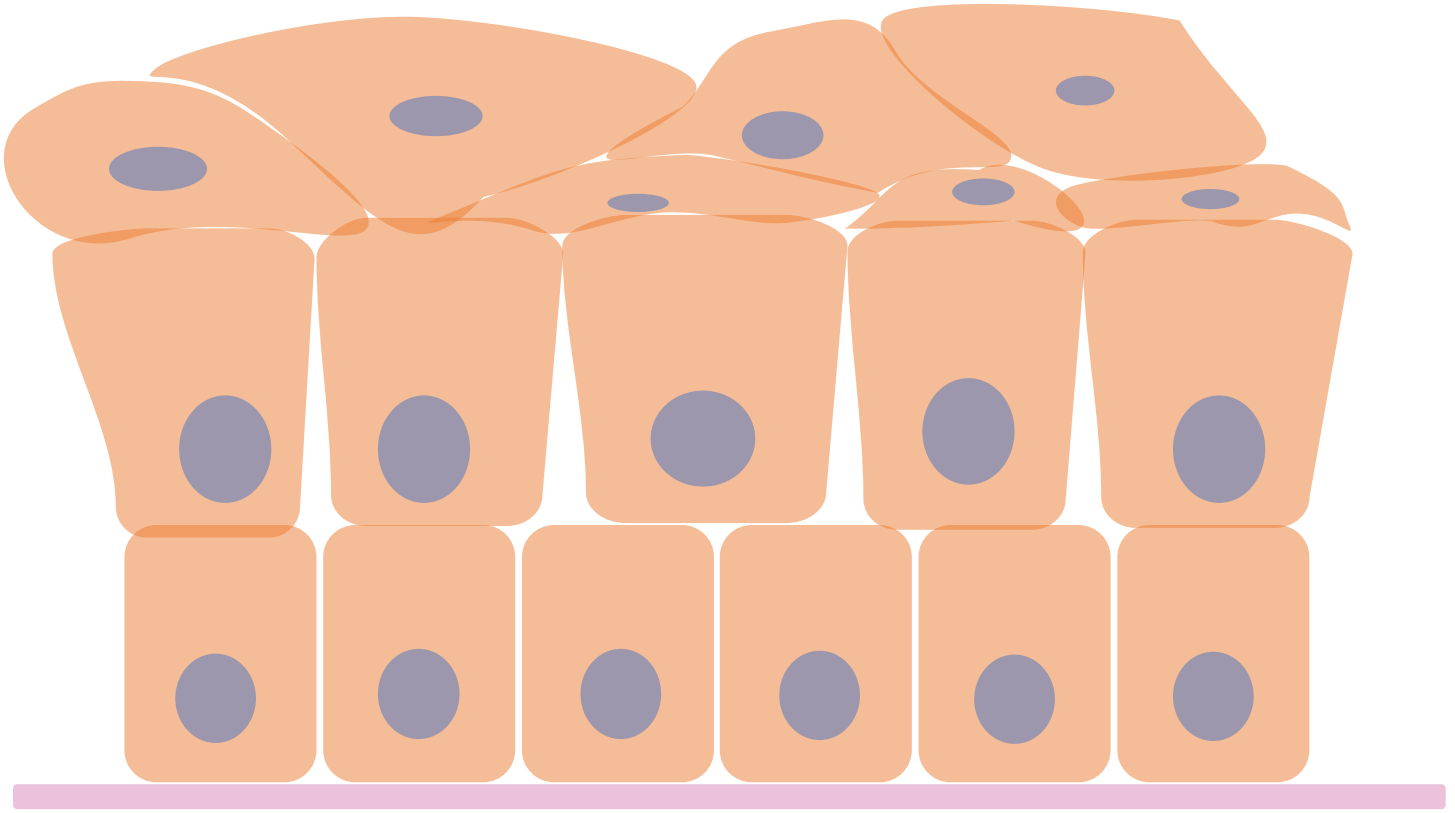
Stratified Columnar Epithelium



Stratified Columnar Epitheliu m

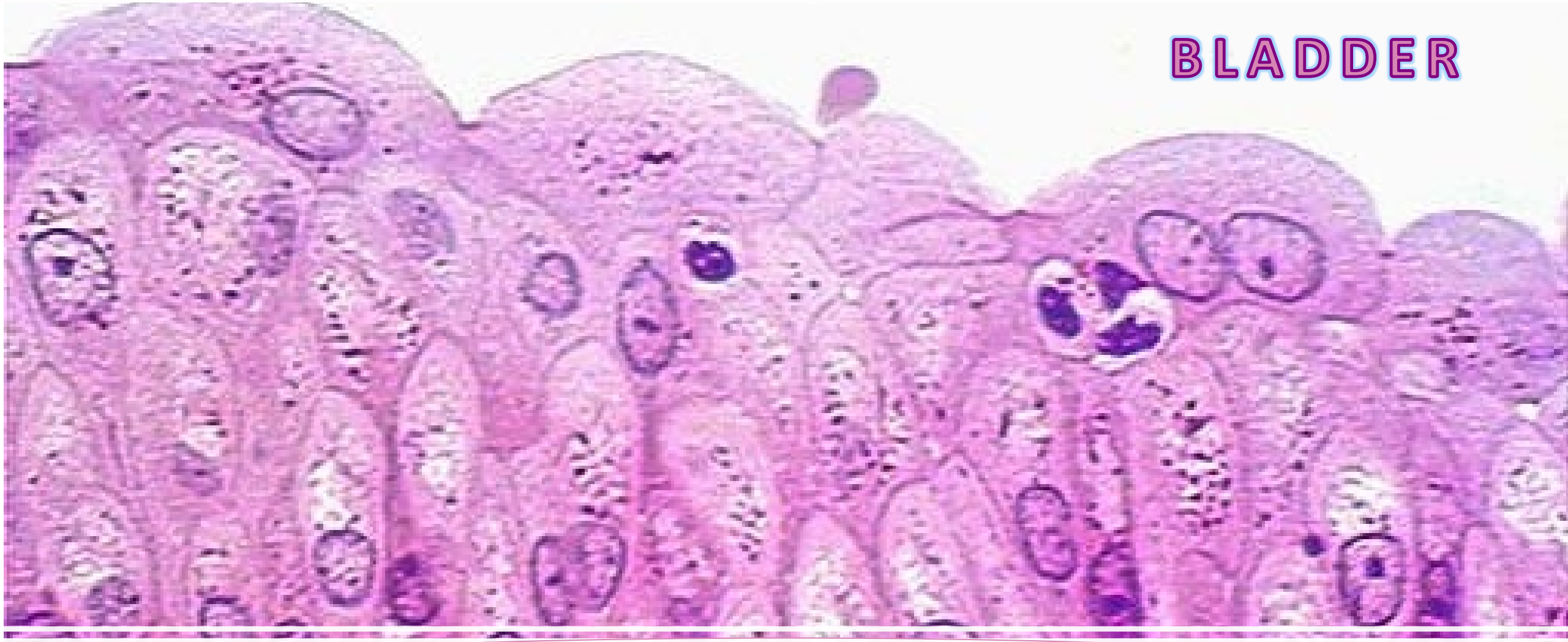


Transitional Epithelium



Found in Highly-Expandable Tissues

BLADDER



Transitional Epithelium