

# Tissue Handout

**Big Idea** - How does form and function relate?

## I. Types of Tissue

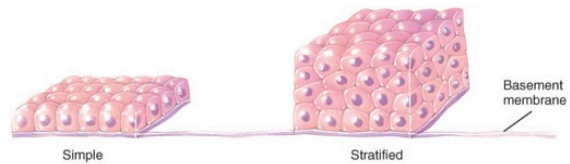
**A. Epithelial Tissue** - lines all surfaces of the body including organs.

- Helps separate body's organs, keeps them in place and protects them.
- **Ex:** outer layer of skin, inside of mouth and stomach, tissue surrounding the body's organs, vessels, ducts.

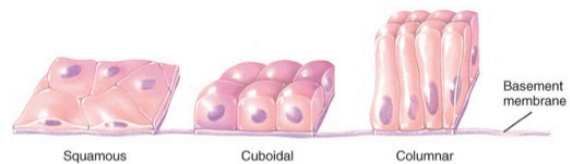
### 1) Characteristics of Epithelium

- All have one exposed surface
- Lack blood vessels-get nutrients by diffusion
- Divide rapidly (**HEAL FROM DAMAGE**)
- Tightly packed (**form barriers**)
- Classified by shape and # of layers
  - **Squamous**-flattened shape
  - **Cuboidal**-cube shape
  - **Columnar**-elongated shape
  - **Simple**-one layer
  - **Stratified**-two or more layers

Arrangement of layers

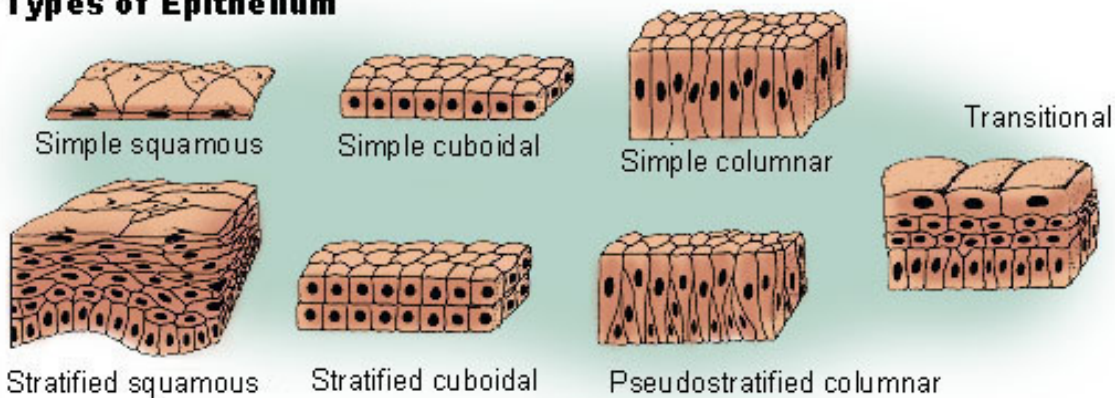


Cell shape



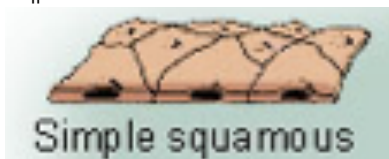
## 2. TYPES OF EPITHELIAL TISSUE

### Types of Epithelium



#### **Simple squamous epithelium**

- Lines air sacs of lungs, capillaries
- **LARGE SURFACE AREA** (*long and skinny* - more area touches the outside)
  - = ↑ **DIFFUSION** (Diffusion occurs easily)
  - = ↑ **SUBSTANCES THROUGH**



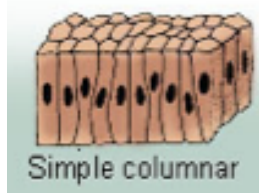
#### **Simple cuboidal epithelium**

- Covers:
  - Ovaries
  - Lines ducts of kidneys and other glands.
- **Unique:** Nuclei are central.



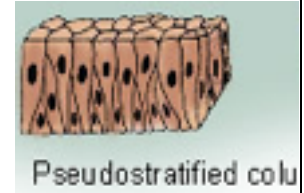
**Simple columnar epithelium**

- Some have cilia
- Made for absorption, secretion
- Lines:
  - Uterus
  - Digestive tract organs.



**Pseudostratified columnar epithelium**

- Appear layered but are not.
- Line:
  - Respiratory system passages
  - have cilia to sweep away dust etc.



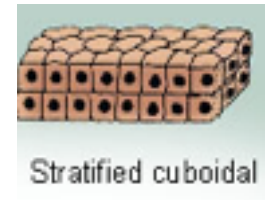
**Stratified squamous epithelium-**

- Thick
- Multi-layered
- Forms outer layer of skin
- Line:
  - Oral cavity
  - Esophagus
  - Vagina
  - Anal canal



**Stratified cuboidal epithelium**

- Lines:
  - Ducts
  - Salivary glands
  - Sweat glands



**Stratified columnar epithelium What would this look like?**

- Where:
  - Urethra of males
  - Pharynx.

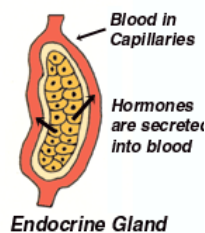
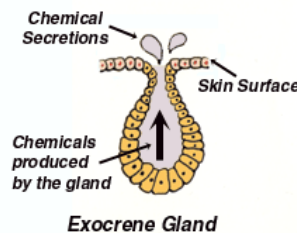
***Trick: Use the name to tell you there shape***

**B. Glandular Epithelium**

- Secretes substances into ducts or body fluids.

**1. Exocrine glands**

- Secrete products into ducts that open onto surfaces.
- EX: skin, lining of digestive tract.



**2. Endocrine glands**

- Secrete products into tissue or blood.

**C. Connective Tissue**

- Adds support and structure to the body.
- Contain fibrous strands of the protein collagen that add strength to connective tissue.
- EX: inner layers of skin, tendons, ligaments, cartilage, bone and fat tissue.

**D. Muscle Tissue**

- Specialized tissue that can contract.
- Contains actin and myosin.
- EX: Heart muscle, muscles lining digestive canal and muscles throughout your body.

**E. Nerve Tissue**

- Nerve tissue that has the ability to generate and conduct electrical signals in the body.
- EX: neurons and glial cells

