

Tissues

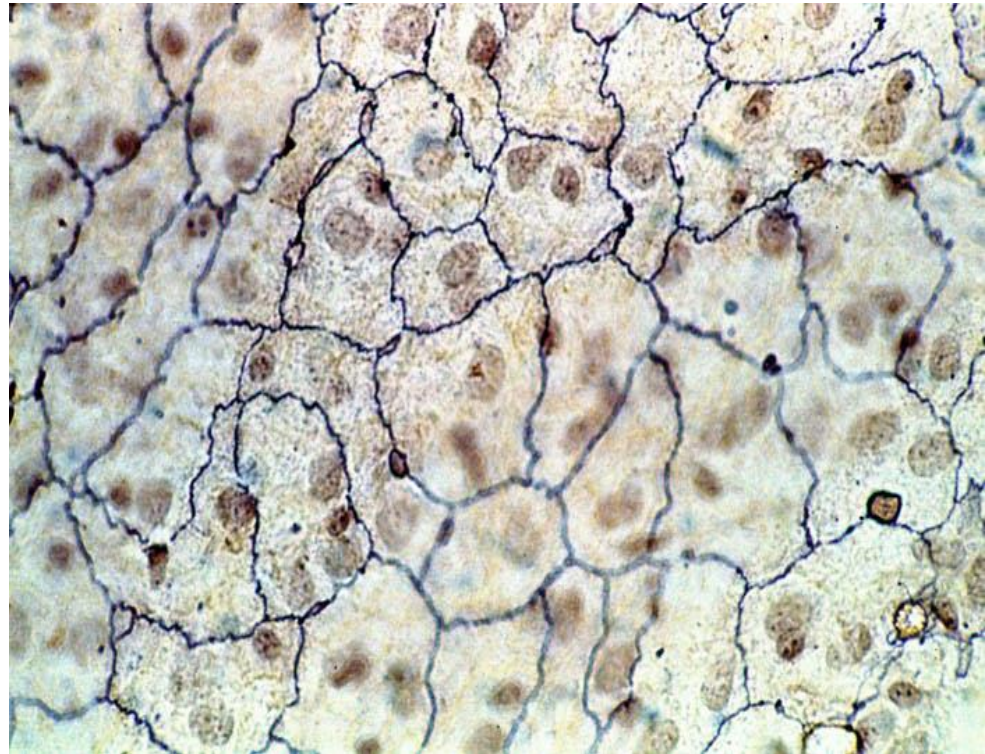
- **Definition:** groups of cells that are similar in structure and perform a common or related task
- **Histology:** the study of tissues
- **4 Primary Tissue Types**
 - Epithelial: covering
 - Connective: support
 - Muscle: movement
 - Nervous: control

Epithelial Tissue

- Covers all body surfaces and lines digestive tract
- Glandular: major tissue of glands
- Close fitting cells (sheets) bound by specialized junctions
- Attached to underlying connective tissue by a basement membrane (reinforces and resists stretching and tearing)
- Innervated (has nerve fibers)
- Avascular (no blood vessels)
- High regeneration
- **Classified by:**
 - 1. # of layers
 - Simple-single
 - Stratified-2 or more
 - 2. Cell Shape
 - Squamous-flattened
 - Columnar-elongated
 - Cuboidal-cube-like

Simple Squamous Epithelium

- Appearance
 - Flattened/Fried egg
- Functions
 - Often permeable
 - Diffusion, filtration, and osmosis
 - Air sacs of lungs, walls of capillaries, linings of blood and lymph vessels
 - **Endothelium:** slick/friction reducing lining of lymphatic vessels, blood vessels, capillaries and heart
 - **Mesothelium:** lines the ventral body cavity and covers its organs



Simple Columnar Epithelium

- Appearance
 - Elongated
 - Soldiers in a row
- Function
 - Lines digestive tract (stomach to rectum)
 - Absorption
 - **Microvilli**-finger-like projections aiding absorption > surface area,
 - Secretion/Protection
 - **Goblet cells**-secrete lubricating mucus

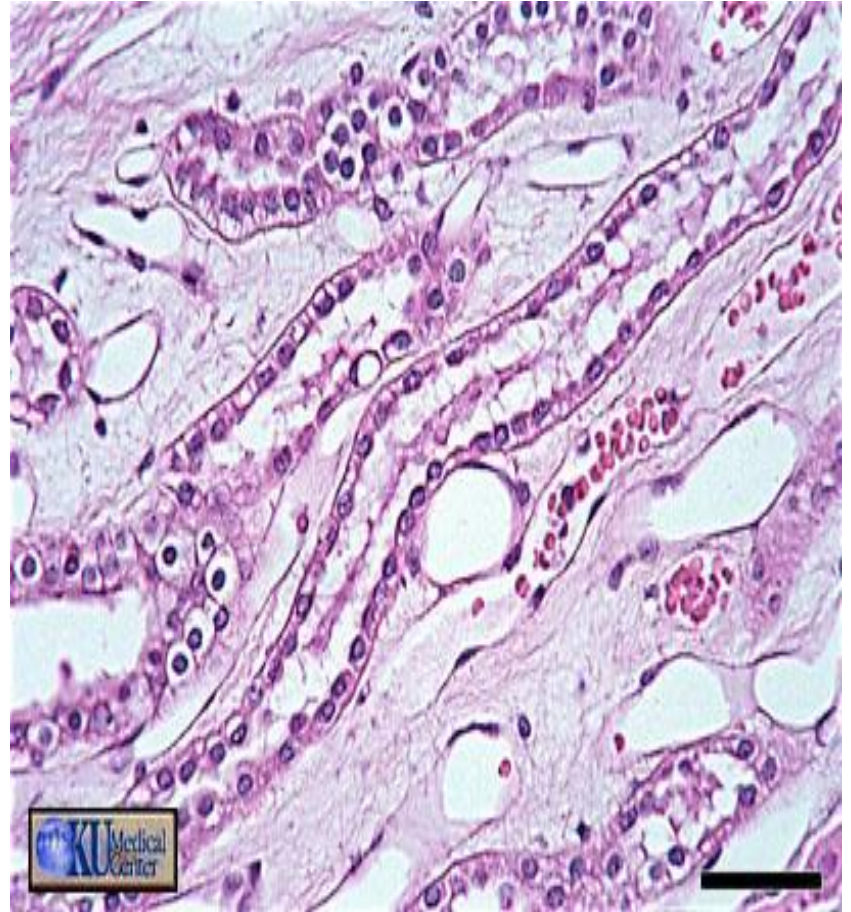
*Gallbladder



Simple Cuboidal Epithelium

- Appearance
 - Cube-like
 - String of beads
- Function
 - Secretion and absorption
 - Covers ovaries, lines kidney tubules, and ducts of glands

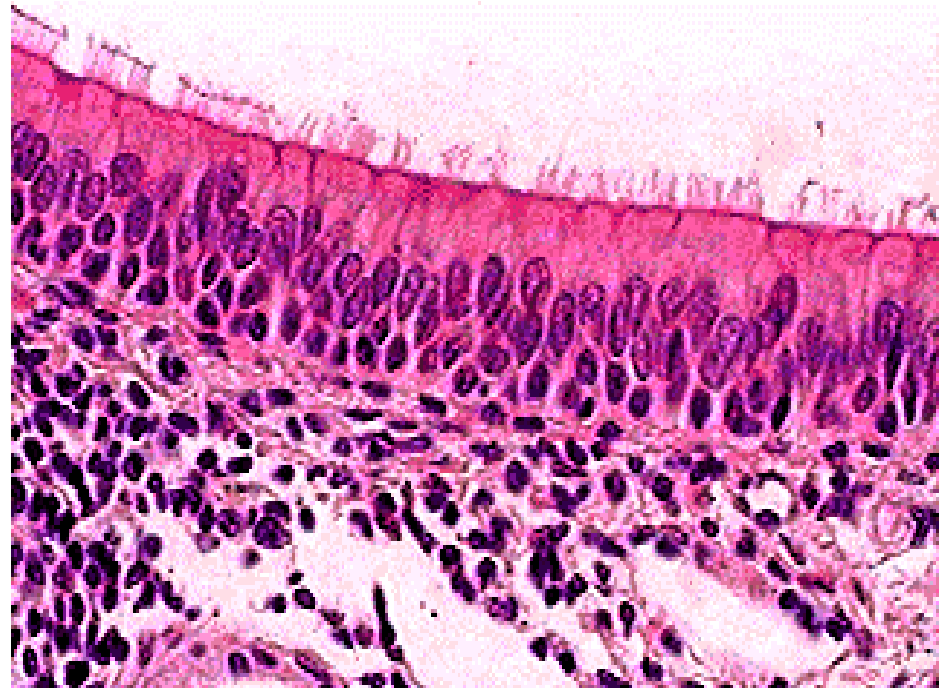
*kidney tubules



Pseudostratified Columnar Epithelium

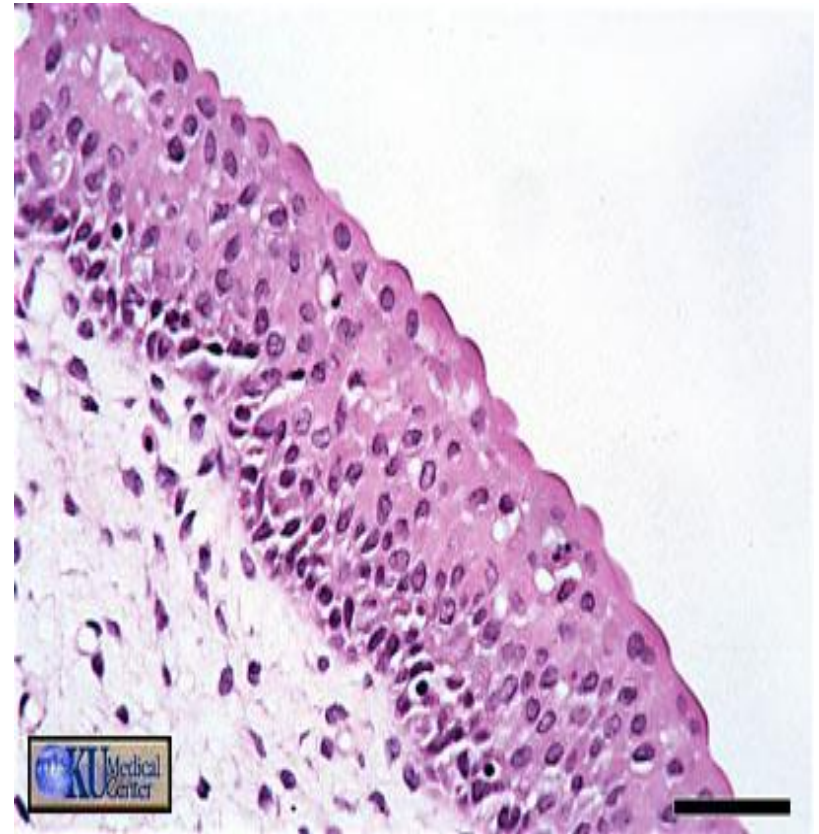
- Appearance
 - ciliated
- Function
 - Protection, secretion, movement of mucus and cells
 - Lines respiratory passages and various tubes of the reproductive systems

* Trachea



Transitional Epithelium

- Appearance
 - Not Stretched-many layers (6) with rounded apical cells
 - Stretched-thins to 3 layers with flattened apical cells resembling squamous
- Function
 - Lines the ureters, bladder, and part of the urethra
 - Stretches to permit distension of urinary organ by contained urine
 - *urinary bladder



Stratified Squamous Epithelium

- Appearance
 - Composed of several layers
 - Free Surface: Squamous
 - Deeper layers: cuboidal
- Function
 - Protection- found in areas subjects to wear and tear
 - Form external part of skin and extends a short distance into every body opening



*Lip

Cell-to-Cell Contacts in Epithelium

- **Tight Junction:** rows of proteins running parallel to tissue's free surface form strands that prevent leaks between adjacent cells
 - * Food digestion
- **Adhesion Junction:** adjoining cells are anchored to the cytoskeleton in each cell by intermediate filaments
 - * Epithelium of skin and stomach
- **Gap Junction:** Paired, aligned protein cylinders form channels connecting the cells cytoplasm
 - * Cardiac & smooth muscle, liver

