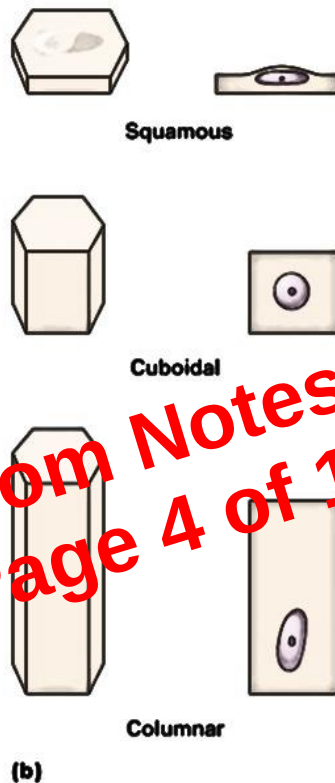


All epithelial cells are irregularly polyhedral (many-sided) in cross section, but differ in cell height.

By height, there are 3 common shapes

- *Squamous*
Flattened and scalelike
- *Cuboidal*
cube-shaped (as tall as they are wide)
- *Columnar*
column-like (tall & column shaped)



*In each, the shape of the nucleus conforms to that of the cell. Thus, nuclear shape can be very helpful when attempting to distinguish epithelial types

Cell arrangement
(# of cell layers)

2 major types of epithelium:

Simple – one layer; typically found where absorption & filtration occur

Stratified – more than one layer stacked on top of the other; typically found in high abrasion areas where protection is important (skin surface & lining of mouth)



Simple



Stratified

(a)

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– 4 major classes of **simple epithelial tissue**

- 1) simple squamous
- 2) simple cuboidal
- 3) simple columnar
(may or may not contain cilia)
- 4) pseudostratified columnar
(may or may not contain cilia)

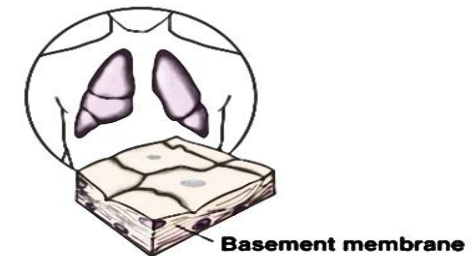
– 4 major classes of **stratified epithelial tissue**

- 1) stratified squamous
- 2) stratified cuboidal
- 3) stratified columnar
- 4) transitional epithelium

FYI—classification of epithelia by cell type and arrangement reveals nothing about the tissue's body location

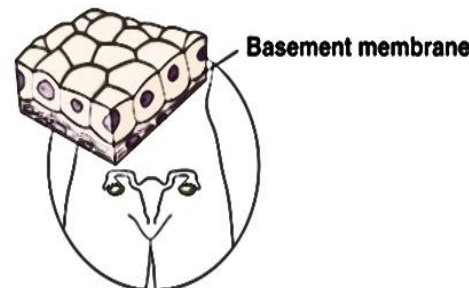
Simple squamous

- Single layer of flat cells
- Usually forms membranes
 - Lines body cavities
 - Lines lungs and capillaries



(a) Simple squamous

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(b) Simple cuboidal

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Simple cuboidal

- Single layer of cube-like cells
- Common in glands and their ducts
- Forms walls of kidney tubules
- Covers the ovaries

Epithelial membrane

- Continuous multicellular sheet composed of at least 2 primary tissue types: epithelium bound to an underlying layer of connective tissue
- 3 common types of epithelial membranes
 - Mucous membranes
 - Cutaneous membrane
 - Serous membrane

3 Epithelial membrane types

Mucous membranes (mucosae)

- Epithelial membranes that line the body cavities those are open to the exterior (digestive, respiratory, & urogenital tracts)
- In all cases, they are “wet,” or moist, membranes bathed by secretions
- Often adapted for absorption and secretion

Cutaneous membrane

- Your SKIN
 - An organ made of keratinized stratified squamous epithelium (epidermis) firmly attached to a thick connective tissue layer (dermis)
 - Uniquely different b/c it is exposed to air and is a dry membrane

Serous membrane (serosae)

- Moist membranes found in closed ventral body cavities
- Remember that each serosa consists of parietal and visceral layers
- Serosae are named according to site & specific organ association
 - Ex. Pleura—lining of thoracic wall & covering the lungs
 - Pericardium—encloses the heart
 - Peritoneum—abdominopelvic cavity

Glandular Epithelium

- Gland – one or more cells that produce & secrete an aqueous (water-based) fluid that typically contains proteins.
- Glandular cells obtain needed substances from the blood and transform them thru chemical rxns into the secretory product.

-
- Glands are classified as:

- **Endocrine gland**

- Ductless
- Secretions are hormones (regulatory chemicals)

- **Exocrine gland**

- Empty through ducts to the epithelial surface
- Include sweat and oil glands, salivary glands, liver, pancreas, mammary glands, mucous glands, etc.