

TOPIC: CHARACTERISTICS OF EPITHELIAL TISSUE

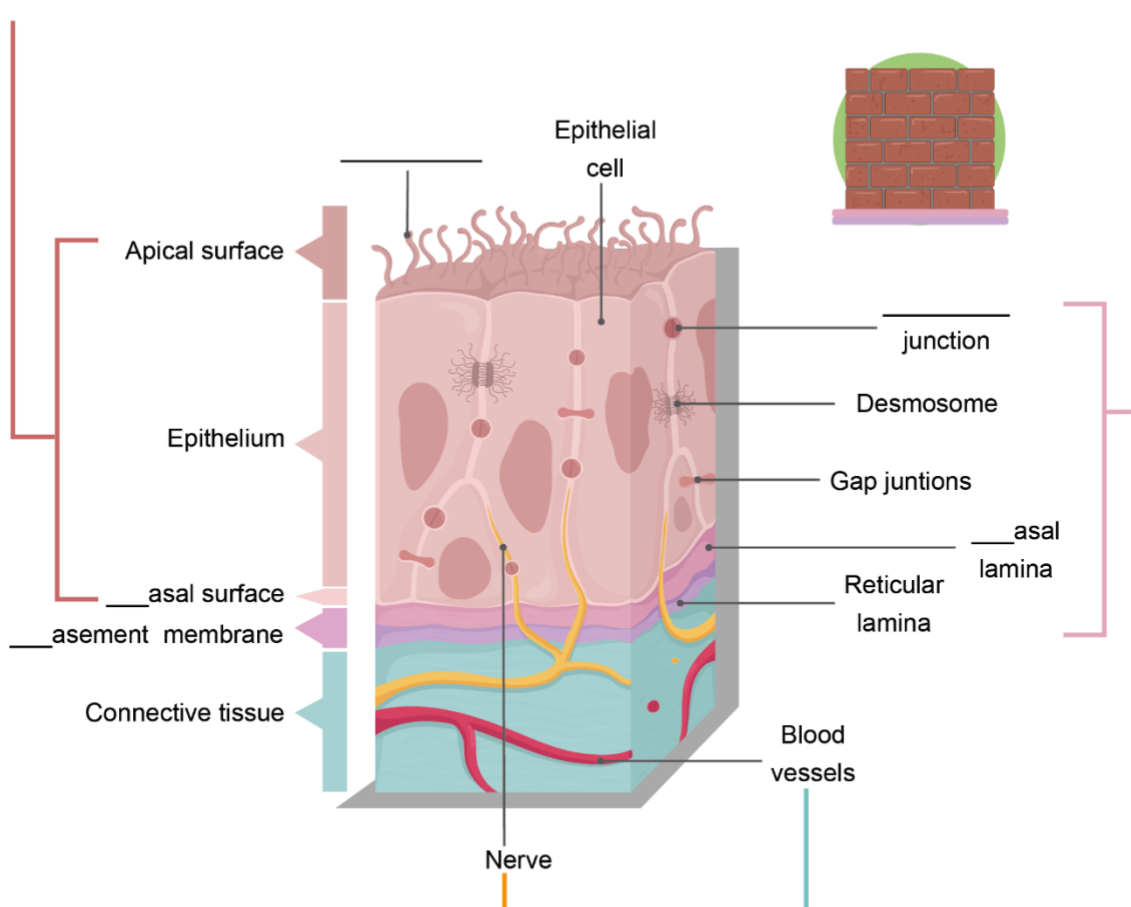
- There are _____ commonly recognized characteristics of epithelial tissue:

1. Polarity

- The tissue is “sided”
 - Apical Surface: usually shown above, facing open space.
 - Basal Surface: usually shown below.

2. Tightly Pressed Tissue Anchored to Basement Membrane

- Cells held *tightly* together, with very _____ ECM.
- Basement Membrane: two thin extracellular layers.
 - Basal lamina: produced by _____.
 - Reticular lamina: produced by connective tissue.



3. Avascular but Innervated Epithelia

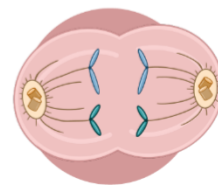
- Avascular: **no** blood vessels.
- Innervated: contains nerves

4. Supported by Connective Tissue

- Vascular connective tissue (with **blood vessels**) supplies nutrients to epithelia & removes wastes.

5. Highly Regenerative

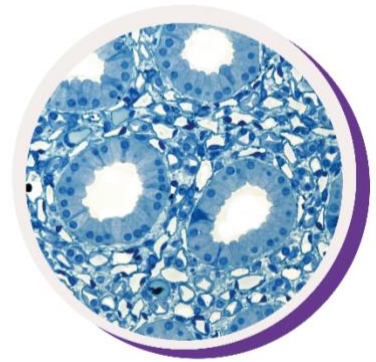
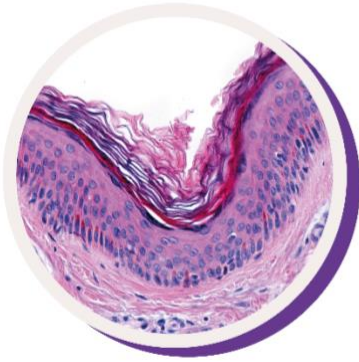
- Epithelia _____ rapidly.
- Most cancers develop from epithelial tissue.



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EXAMPLE: In the following images of epithelial tissue, identify the following features (if present):

- a) apical surface b) basal surface c) basement membrane d) connective tissue e) cilia



PRACTICE: Most cancers develop in epithelial tissues. Which epithelial tissue characteristic makes them prone to cancer?

- a) Epithelial cells have polarity. c) Epithelial tissue is supported by connective tissue.
b) Epithelial tissue is avascular but innervated. d) Epithelial cells divide regularly.

PRACTICE: Together the basal lamina and the reticular lamina make up the _____. The basal lamina is produced by the _____, while the reticular lamina is produced by the _____.

- a) Basement membrane, epithelial tissue, connective tissue
a) Apical surface, epithelial tissue, connective tissue
b) Basement membrane, connective tissue, epithelial tissue
c) Apical surface, connective tissue, epithelial tissue

PRACTICE: A student scratched herself accidentally. What piece of evidence would suggest the scratch went through the epithelium (outermost layers of her skin) and reached the underlying connective tissue?

- a) She started bleeding. b) She felt pain.

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PRACTICE: The epithelial tissue in the small intestine is specialized to absorb nutrients. Why would tight junctions be important in this function?

- a) Tight junctions allow the cells to transmit ions between cells, allowing the cells of the epithelium to coordinate.
- b) Tight junctions ensure all nutrients are absorbed through epithelial cells, allowing for selective permeability.
- c) Tight junctions allow specific molecules such as nutrients to enter the cell more easily.
- d) Tight junctions allow the epithelial cells to sense and recognize specific molecules.