# Basal infolding

Prominent in cells that transport fluid (e.g. kidney tubules) they increase surface area.

## Lateral surface features

Factors that hold the epithelial cells together are:

- Adhesion proteins linking plasma membranes of adjacent cells
- Contours of adjacent cell membranes
- Special cell junctions (tight junctions, adherens junctions, desmosomes, gap junctions and hemidesmosomes)

### Microvilli

Centrioles

They are short, finger-like cytoplasmic projections on the apical surface of epithelium on certain cells of the body, for example, cells of the small intestine (intestinal epithelium has a distinctive striated border – detectable by light microscopy), liver and kidney tubules. They are formed of microfilaments (which attach to the terminal web) covered with the cell membrare increase the efficiency of absorptions and the surface area of the cell. The surface and shape usually correlate to the absorptive capacity.

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They are made of an actin skeleton above introd date filar N fror

A centrole is a short cylindrica structure composed of microtubules. Each cell contains two centrioles arranged perpendicular to each other. They play an important role in cell division.

## Lysosomes and peroxisomes

Lysosomes are vesicles filled with digestive enzymes. Digestive enzymes are used to clean up debris or kill invaders.

Peroxisomes contain oxidase enzymes which detoxify poisons and free radicals.

## Cell Attachments or Junctions

### Gap junction:

- Passageway between two adjacent cells
- Let small molecules move directly between neighbouring cells
- Cells are connected by interlocking, hollow cylinders of protein
- Present in epithelial tissue, cardiac and smooth muscle



#### Tight junction (zonula occludens):

- They close off intercellular space at the top near the lumen stops fluid between cells
- Found at apical region of most epithelial types
- Some proteins in plasma membrane of adjacent cells are fused (proteins combine to form a sealing factor)
- Prevent molecules from passing between cells of epithelial tissue
- Outermost lipid layers of adjacent cell membranes are tightly pressed together by interlocking proteins

#### Adherens Junction (zonula adherens)

Desmosomes (macula adherens) – two cell membranes are locked together by intercellular cement and a network of fine protein filaments.



# **Cell Attachments**

# Zonula Adherens (or Anchoring junction)

<mark>Continuous circumferential adherence of epithelial cell to its neighbours</mark>. Forms a <mark>uniform</mark> <mark>space</mark> between adjacent cells (20-30nm).

There is a microfilament network associated with a cytoplasmic side – this forms a <u>terminal</u> web in cells with extensive microvilli.