

- Intercellular connections

Cell adhesion molecules

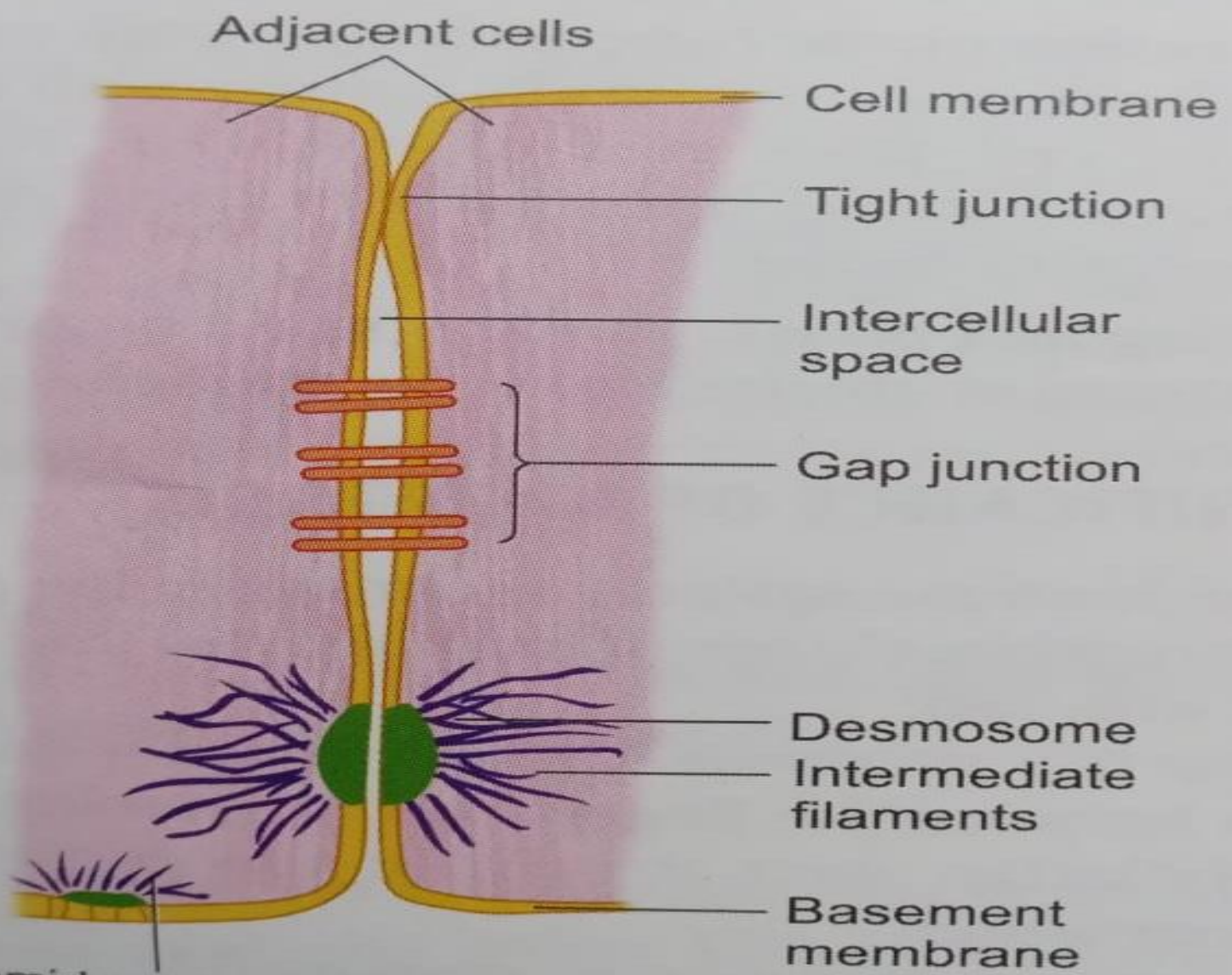
- In tissues and organs of the body , cells should be held together and so they must be connected
- **CAMs** - a group of proteins help to hold cells in their place in tissue
- They attach cells to basal lamina and to each other
- Important CAMs --integrins, cadherins , selectin etc

Importance of CAMs

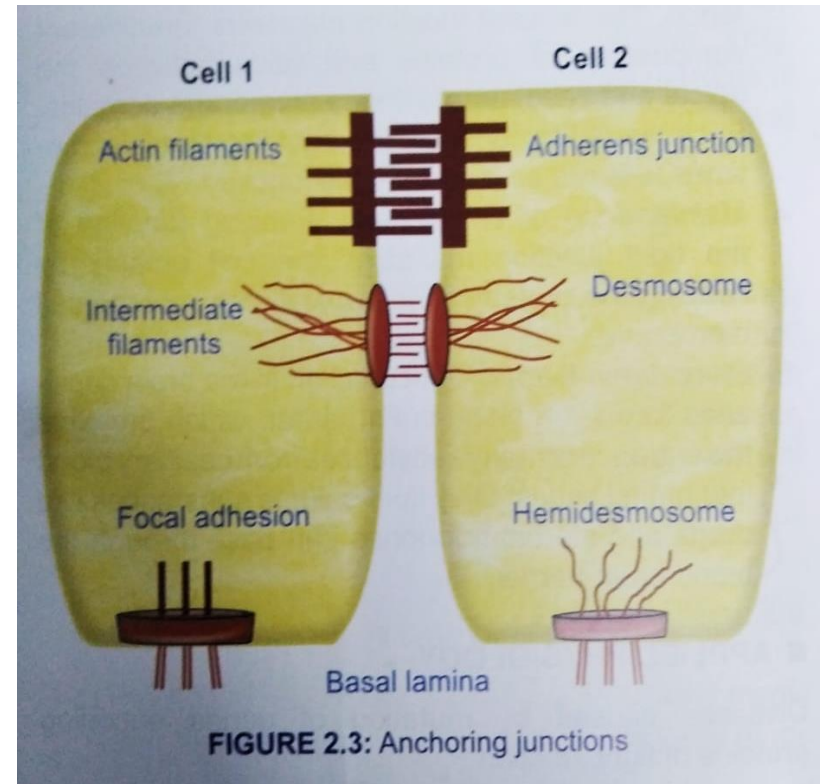
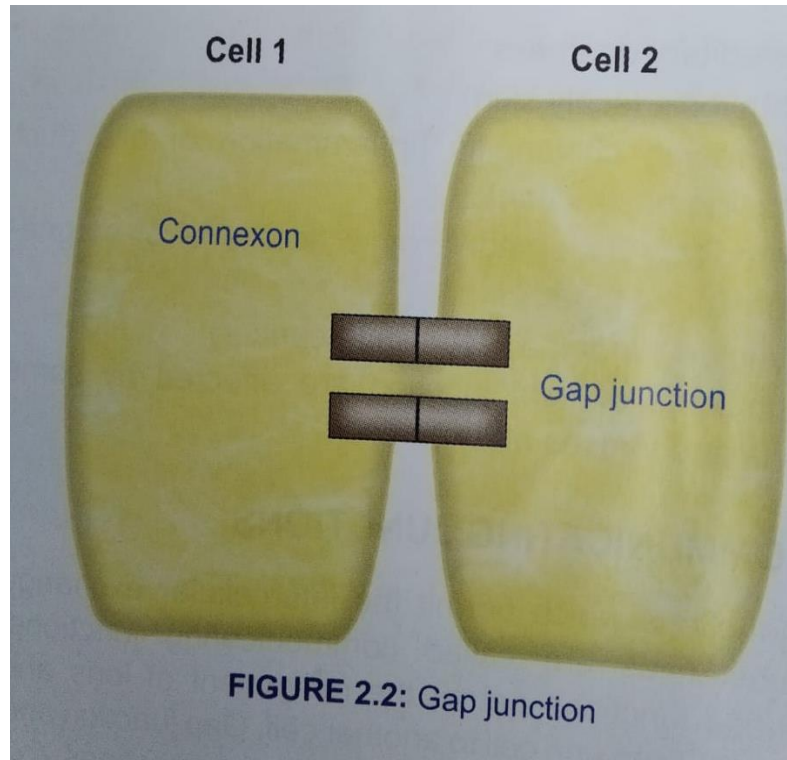
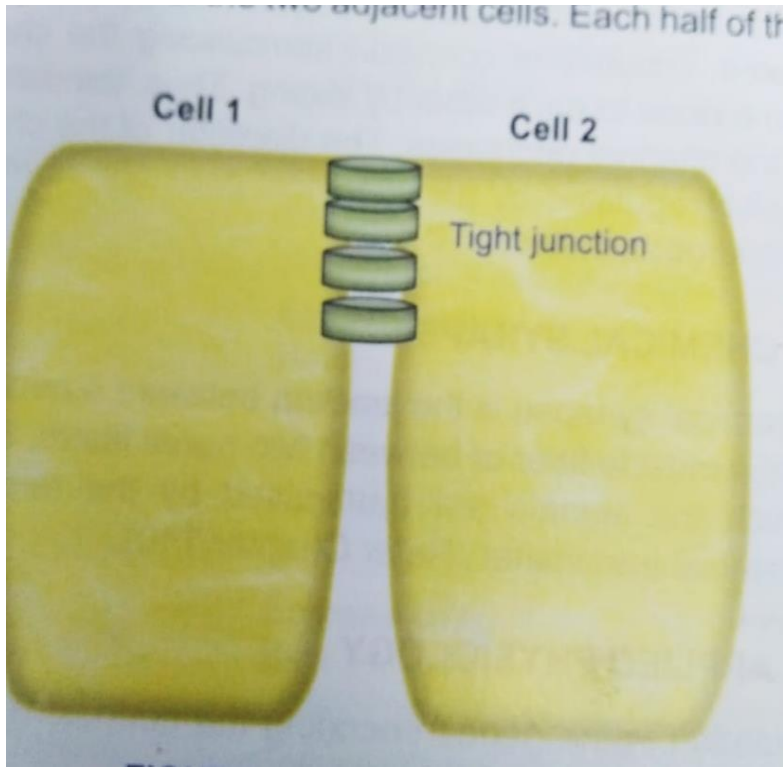
- Important in embryonic development and formation of nervous system and other tissues
- They hold tissues together
- Help to transmit signals into and out of the cell

Intercellular junctions (intercellular connections)

- Intercellular junctions -- junction or connection between neighbouring cells.
- Types
 - 1 occluding junctions
 - 2 communicating junctions
 - 3 anchoring junctions



Hemidesmosome
: Intercellular connections.



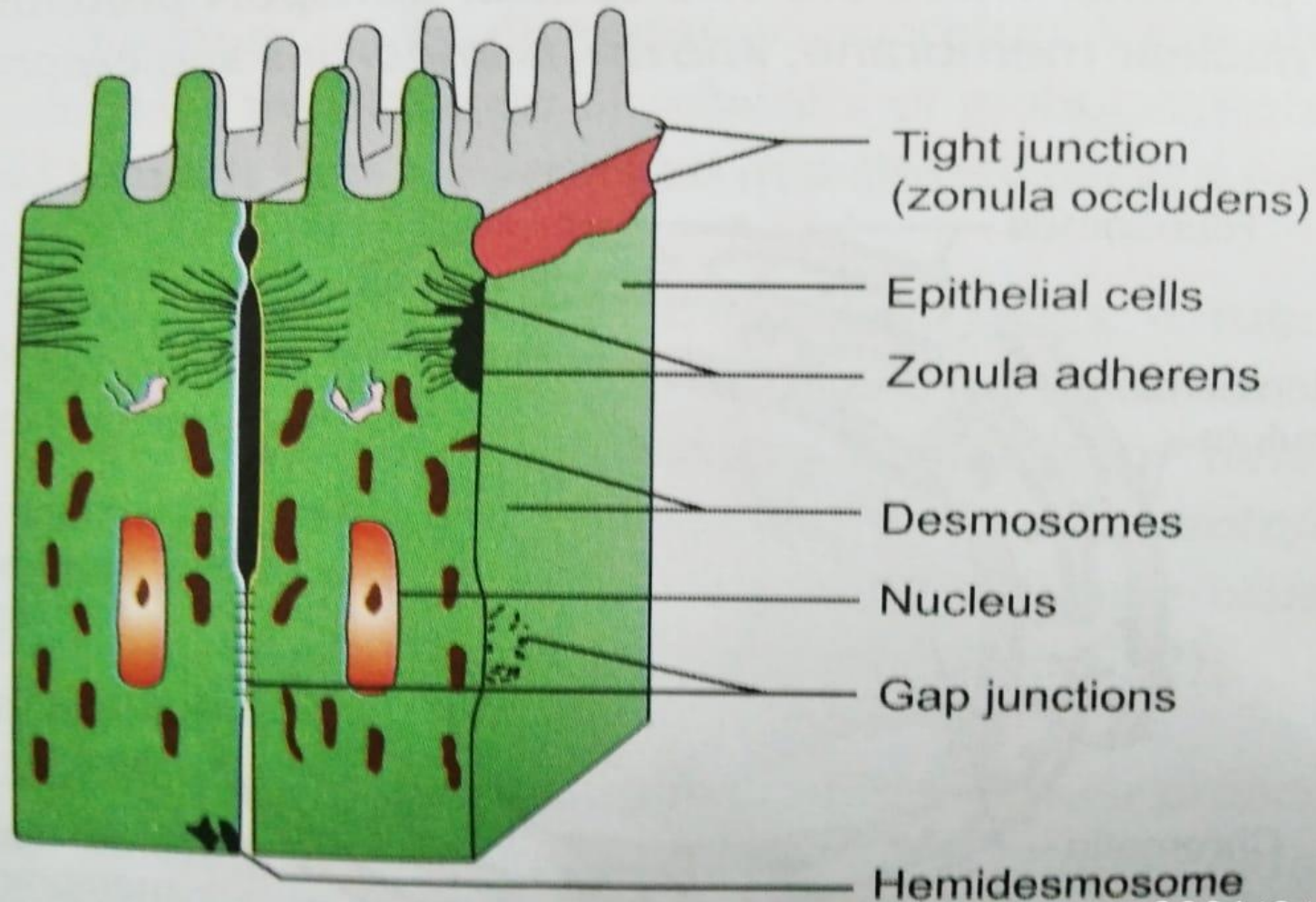


Fig. 4.14: Intercellular junctions in intestinal epithelial cells. Tight

2021/2/17 05:16

an

1.

2.

3.

4.

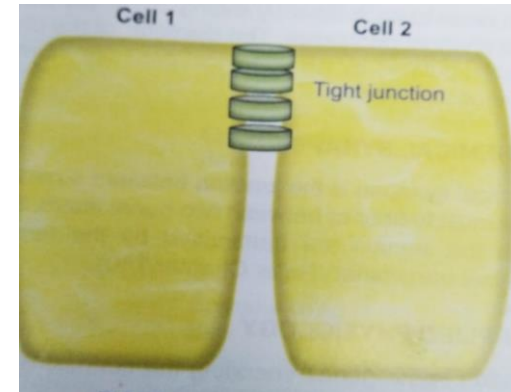
5.

Occluding junctions

- Prevent movement of ions and molecules from one cell to another.

- Tight junctions

- They connect apical margins of adjacent cells to one another strongly



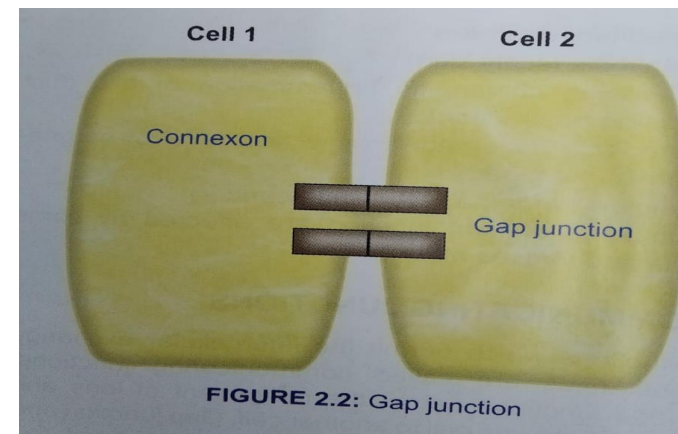
Near the apex the cell memb between adjacent cells are fused together and form ridges

- Present in
 - blood brain barrier
 - urinary bladder
 - wall of renal tubules
 - epithelium of gastric and intestinal mucosa
- **functions**
 - 1 provide **strong union** between neighbouring cells
 - 2 they prevent the passage of ions and molecules across intercellular spaces.

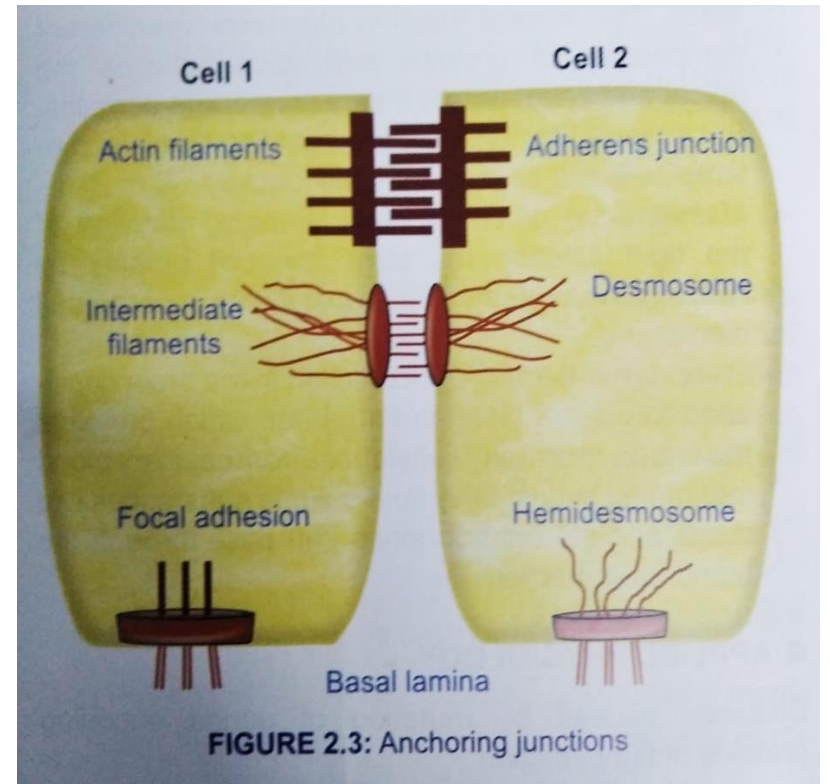
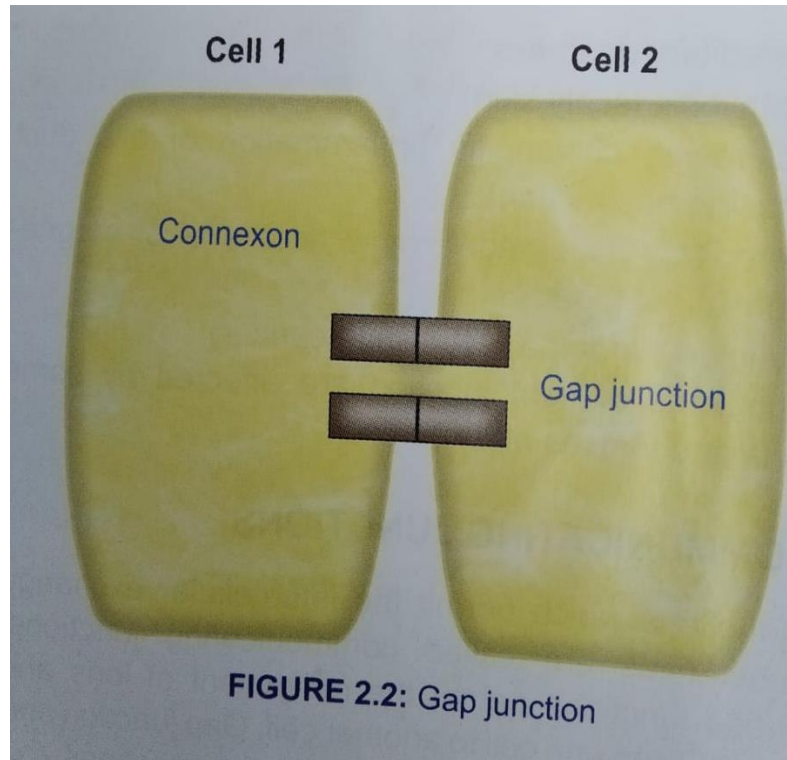
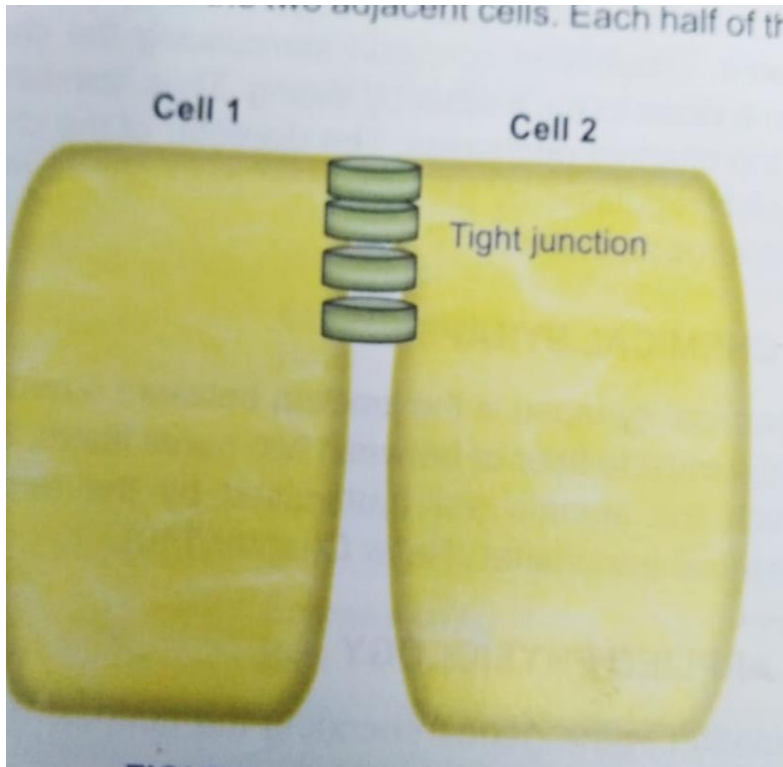
- Tight jn present in gastric epithelium normally prevent back diffusion of H⁺ into the gastric mucosa from the gastric lumen.
- But in **gastric ulcer**, **tight jns are disrupted** and there will be back diffusion of H⁺ from gastric lumen leading to hypochlorhydria.

Communicating junctions

- Gap junctions



- Specialised intercellular connection and form an opening from 1 cell to another
- Gap junctions are bounded by proteins called **connexons**.
- Each connexon has 6 sub units – **connexin**
- They are arranged in a hexagonal pattern encircling a **central canal**.
- The connexon of 1 cell is apposed to the connexon of adjacent cell in such a manner that a channel is formed.



- Seen in cardiac and smooth muscle
- **Functions**
 - 1 permit intercellular passage of glucose, amino acid, ions and other substance (upto mol wt 1000)
 - 2 permit rapid transmission of electrical pot from 1 cell to another.
 - 3 help in the exchange of chemical messengers between the cells

Anchoring junctions

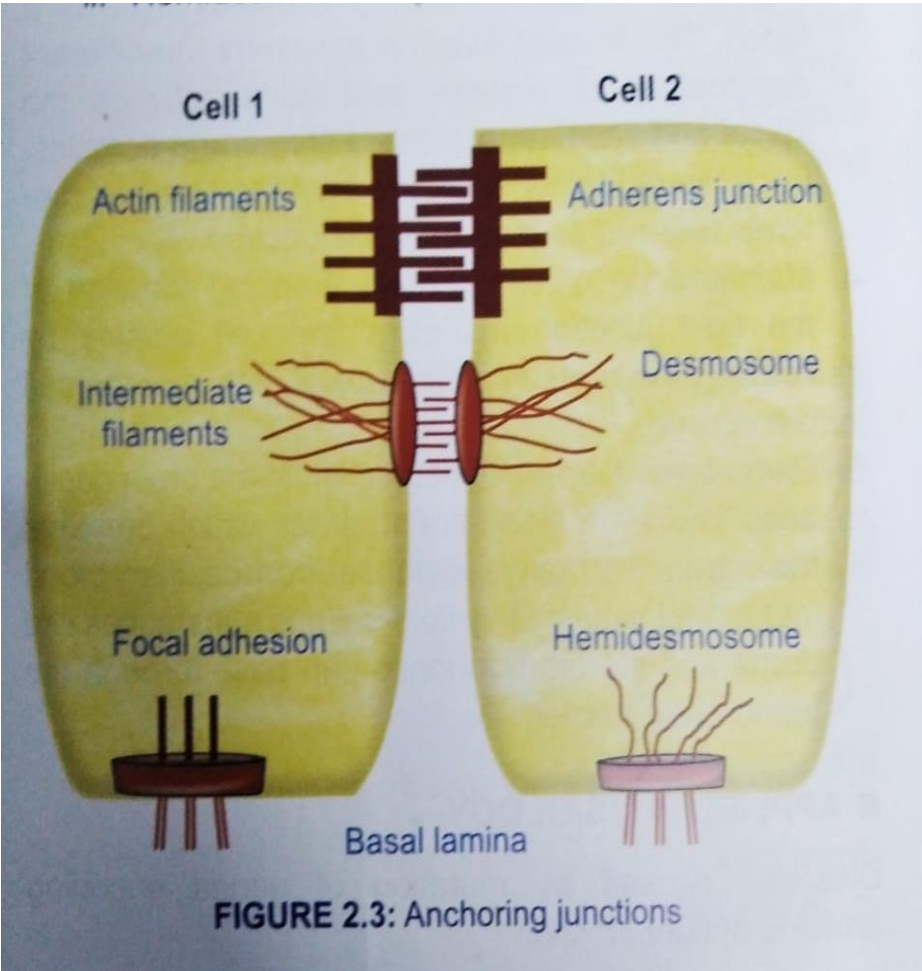
- Provide firm structural attachment between 2 cells or between a cell and the extracellular matrix

Adherence junctions

Desmosomes

Hemidesmosomes

Focal adhesions



Adherence junctions (zonula adherence)

Present at the basal region of tight junction

- Microfilaments within the cell are attached to this region

(They connect actin filaments of one cell to another)

- present in cardiac muscle , epidermis of skin
- CAM -- cadherins

Desmosomes

- Thickening of memb of 2 adjacent cells
- Here intercellular space contain intermediate filaments
- They hold adjacent cells firmly together.
- Seen b/w cells of epidermis of cardiac muscle
- **CAM - Cadherin**

Hemidesmosomes

- they attach cells to the underlying basal lamina and not to each other
- They are connected intracellularly to intermediate filaments
- CAM --**integrins**

- **Focal adhesions**
- Help to attach cell to basal lamina ---they are associated with actin filaments inside the cell and they play an important role in cell movement.

•

•

end