BSB 1163
CELL AND MOLECULAR BIOLOGY

Transport across membrane

By
NOOR SUHANA ADZAHAR
MUHAMMAD ADAM LEE ABDULLAH

Faculty of Industrial Science and Technology
nsuhana@ump.edu.my

Revision: Discuss the effects of osmosis in cells

Illustrate the cells conditions in different type of solutions.

Different type of solution/cells	Isotonic solution	Hypotonic solution	Hypertonic solution
Animal cell	Normal	Lysed	Shriveled
Plant cell	Flaccid	Turgid	Shriveled (plasmolyzed)

Active transport

- **Carrier proteins** need **energy** to change shape, transporting specific molecules **AGAINST concentration gradient**

  - 2 types of carriers for active transport:

  1. **Symport -** transport of 2 molecules in same direction
  2. **Antiport -** transport of 2 molecules in opposite directions

Active Transport

- Low to higher concentration.
- Need energy
- Allows cells to take up nutrients even when their concentration outside the cell is very low.
- Allows cells to get rid of unwanted substances even when their concentration is much greater outside the cell.
- Cells that are actively pumping in substances against the concentration gradient are found to contain many mitochondria.

1. **Symport -** transport of 2 molecules in same direction

- **Eg glucose uptake from intestinal lumen**
  Na^+ - glucose transporter: Transports Na^+ & glucose into cell

2. **Antiport -** transport of 2 molecules in opposite directions

- **Eg for cell signaling**
  Na^+ - Ca^{2+} transporter: Transports
  Na^+ into cell & Ca^{2+} out of cell

- **Eg regulation of intracellular pH**
  Na^+ - H^+ transporter: Transports
  Na^+ into cell & H^+ out of cell