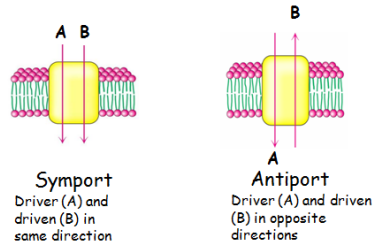
CARRIER MEDIATED TRANSPORT

SECONDARY AND TERTIARY ACTIVE TRANSPORT

SECONDARY ACTIVE TRANSPORT

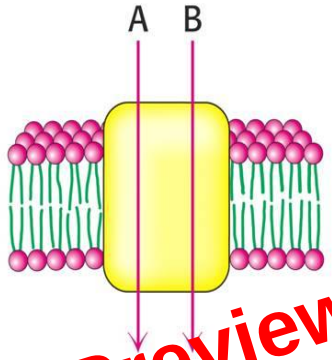
General properties of secondary active transporters

- Can move solute uphill – against an electrochemical gradient
- Do not consume ATP, instead harness existing gradient: Na^+, K^+, H^+
- Saturable and defined affinities
- Symport – driver and driven in the same direction
- Antiport – driver and driven in opposite directions

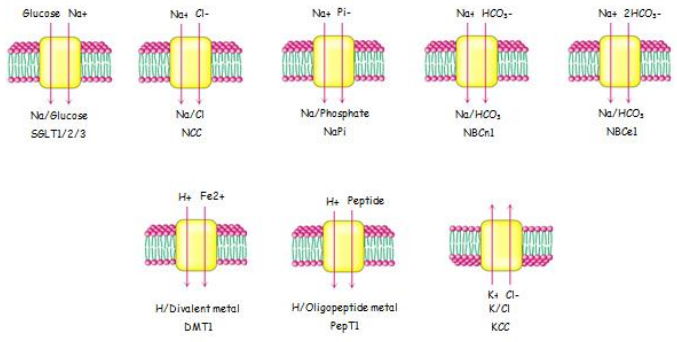


Cotransport (symport)

- Moves two or more solutes in the same direction
- Usually driven by Na^+ or H^+ gradient into the cell



- Harvest energy stored in an electrochemical gradient of one solute to transport the other
- Free energy released during the movement of an inorganic ion down an electrochemical gradient is used as the driving force to pump other solutes uphill, against their electrochemical gradient
- In PM of animal cells, Na^+ is the usual co-transported ion, the electrochemical gradient of which provides a large driving force for the active transport of a second molecule – pumped out later by ATP-driven Na^+ pump in the PM – maintains the gradient – indirectly drives transport



Na^+-glucose cotransporter SGLT: SLC5