

* Structure of K^+ channel & selectivity filter

- K^+ channel :- Integral membrane protein
- Four identical subunit
 - Each subunit has two transmembrane segment, creating inverted 'V' like structure.
 - At wide end of inverted 'V'
↓
Selectivity filter present.
[1.8 Å long]

- Selectivity filter - Lined with carbonyl oxygen atom

↓
provide numbers of sites with which K^+ can interact.

→ K^+ ion dehydrate as enter narrow selectivity filter

↓
fit with proper coordination into filter

but Na^+ is too small to interact with carbonyl oxygen atoms in correct alignment & is rejected.

→ 2 K^+ ion when close to each other in filter, repel one another.

↓
this overcomes interaction between K^+ & surrounding protein molecule & allow very rapid conduction of K^+ with high selectivity

→ voltage gated K^+ channel :-



- Has four subunit
- Each subunit has 6 transmembrane segment



one is voltage sensor & it behave like charged puddle



it can move through interior of membrane transferring a positive charge from one membrane surface to other in response to change in voltage.

- Four voltage sensor in each channel, linked to gate.

- movement of gate of channel in response to changing voltage effectively close channel or reopen channel.