① NEURON AT REST

* MORE Na^+ OUTSIDE THE AXON MEMBRANE
* MORE K^+ INSIDE

} Na & K VOLTAGE-GATED CHANNELS REMAIN CLOSED

* LARGE NEGATIVELY CHARGED PARTICLES INSIDE
* Na/K PUMP - AGAINST CONCENTRATION GRADIENT
  - 3Na OUT, 2K IN } MAINTAINS RESTING POTENTIAL

② SLOW DEPOLARISATION

* SOME Na V-GATED CHANNELS ARE OPENING
* INSIDE IS BECOMING LESS NEGATIVE

AP WILL ONLY FIRE IF THERE IS AN ↑15mV - REACHING THRESHOLD

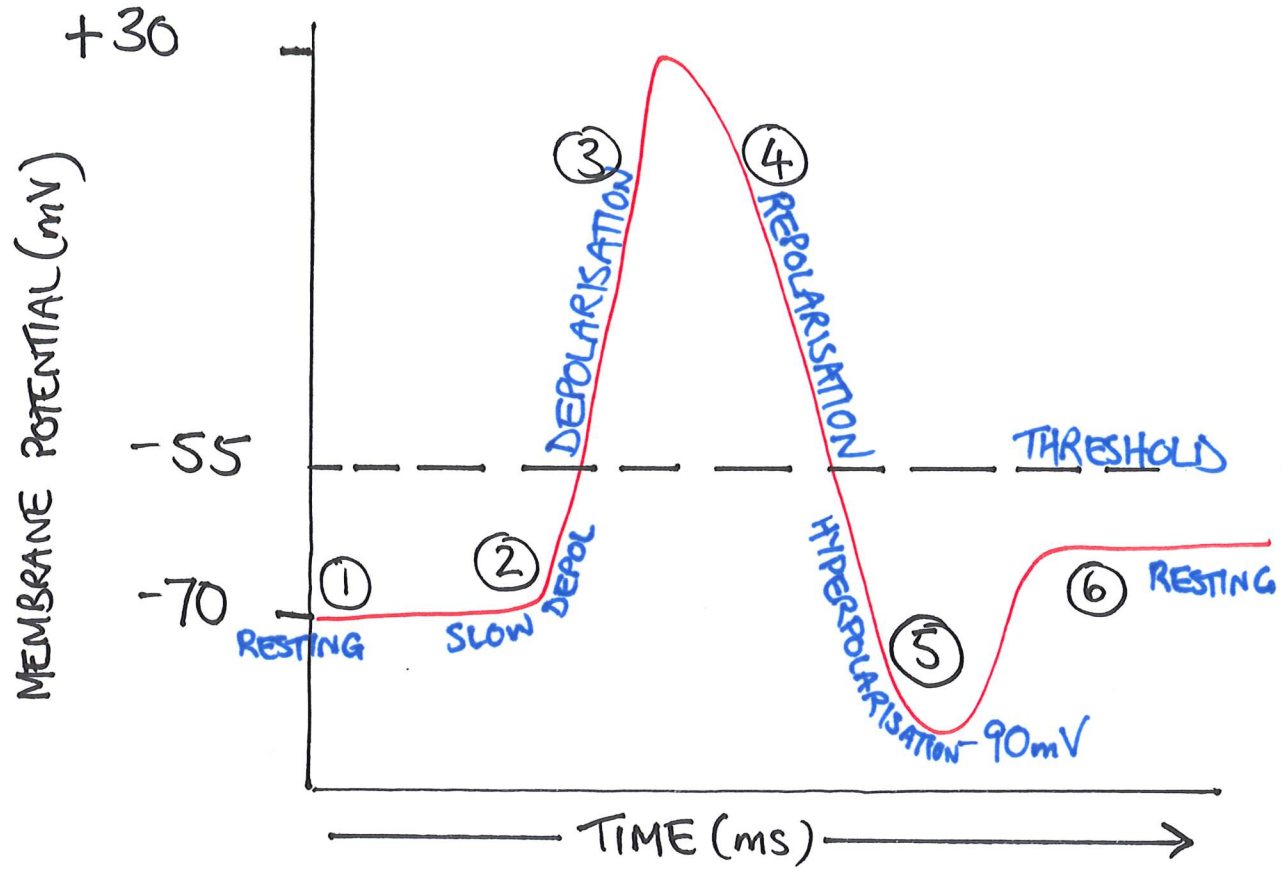
③ THRESHOLD IS REACHED

"ALL OR NOTHING"

ALL Na VOLTAGE GATED CHANNELS OPEN: Na RUSHES INTO AXON BY DIFFUSION

K CHANNELS REMAIN SHUT

→ INSIDE OF AXON BECOMES +ve BECAUSE OF Na^+ ENTERING



④ Na CHANNELS CLOSE ∴ NO MORE Na ENTERING AXON

K CHANNELS OPEN - K DIFFES OUT OF AXON - WE START TO GET A DIFFERENCE IN MEMBRANE POTENTIAL.

⑤ K CHANNELS ARE SLOW TO CLOSE

↳ TOO MUCH K LEAVES THE AXON

↳ RESULTS IN HYPERPOLARISATION

Na CHANNELS ARE STILL CLOSED

↳ THE ARE INACTIVATED

∴ THE AXON IS IN THE REFRACTORY PERIOD - NO FURTHER ACTION POTENTIALS CAN OCCUR DURING THIS TIME

⑥ Na/K PUMP CORRECTS THE OVERSHOOT (-90mV) AND RESTORES THE RESTING MEMBRANE POTENTIAL BACK TO -70mV