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#MADEEASY

PHASES OF NERVE ACTION POTENTIAL

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Can you simplify Resting Membrane Potential (RMP)?

Sure,

- *Imagine a quiet room (representing neuron) with a door (representing cell membrane) almost closed but slightly open.*
- *At RMP, the neuron is at rest with a stable negative charge (around -70 MVQ) due to the distribution of ions across the cell membrane.*

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How do you open doors for nerve Depolarization?

Keep in mind the previous example and imagine:

- ***Suddenly, someone rings the doorbell (stimulus).***
- ***In response to the stimulus, the door (cell membrane) opens completely (voltage-gated sodium channels open).***
- ***Sodium ions (Na+) rush into the room (neuron), making the inside less negative (membrane potential now becomes less negative, moving closer to 0 mV).***

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How do you close the gate?

(Repolarization Phase)

- ***Now, the doorbell has stopped ringing (closing sodium channels and opening potassium channels).***
- ***The room becomes quiet again (repolarization).***
- ***Potassium ions (K+) rush out of the room (neuron), making it negative again (restoring the negative membrane potential).***

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And what happens in Hyperpolarization Phase?

In this phase :

- ***The quiet room is now empty, making it even quieter (slight overshoot of potassium efflux).***
- ***Excessive K+ efflux leads to a more positive membrane potential (hyperpolarization).***

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What is Refractory Period?

- ***Now, the door (cell membrane) is completely closed and is stuck in the refractory period, no matter how loud the doorbell rings (neuron temporarily cannot generate another action potential).***

- ***During the refractory period, no new action potential can be generated irrespective of the threshold.***