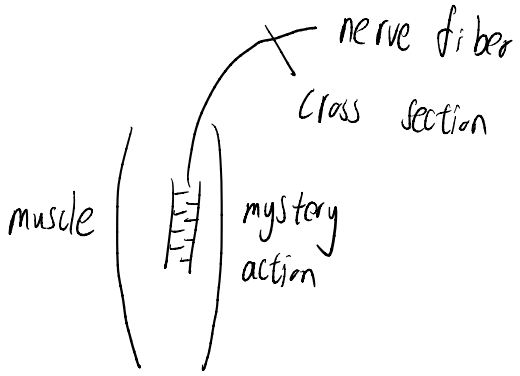
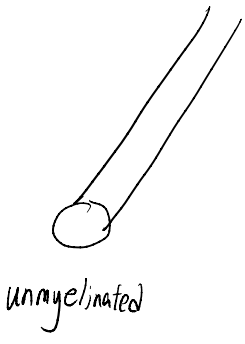
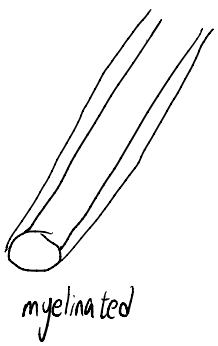
2025. 02. 26 1st meeting Class

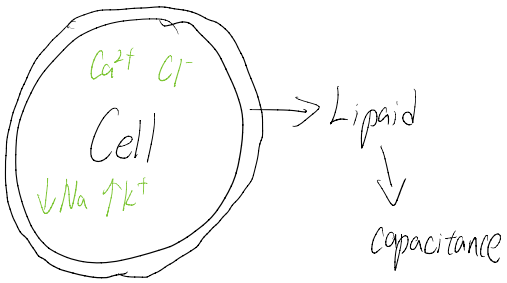



unmyelinated


myelinated

10^{-9} mA activation

$\uparrow Na^+ \downarrow K^+ Ca^{2+} Cl^-$

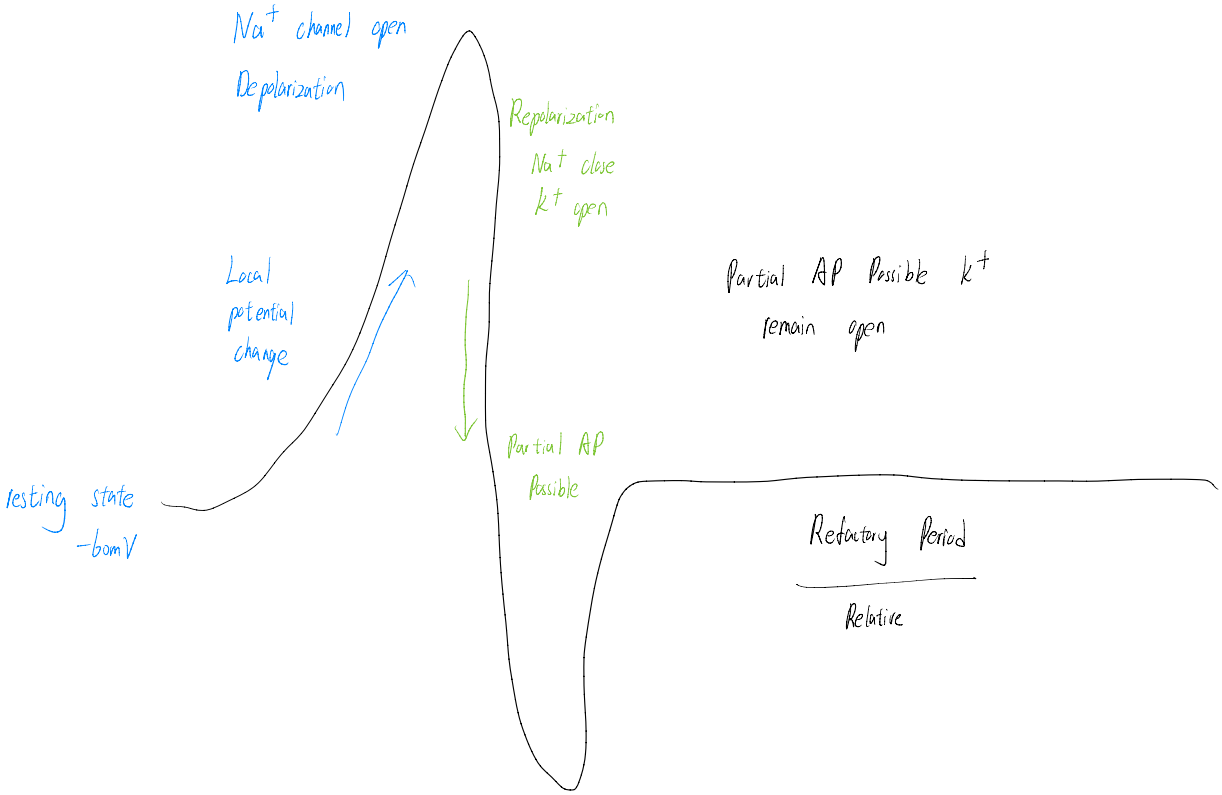


excitable
non-excitable
$\Rightarrow$ In neurons, speed 100 m/s

Hodgkin – Huxley model

ionic
$\Rightarrow$ Action Potential

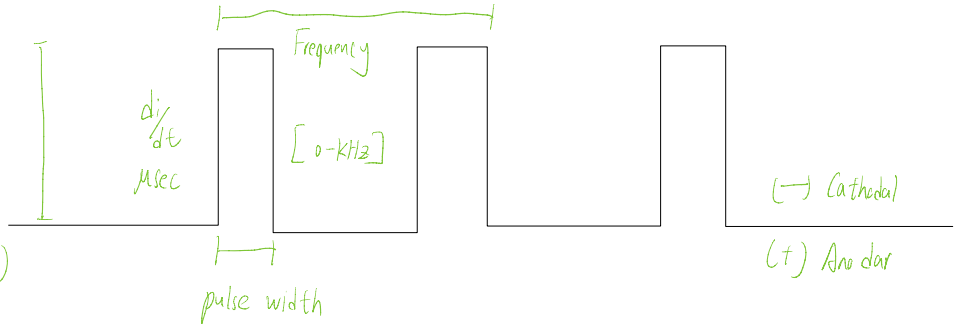
start point -65mV ☆



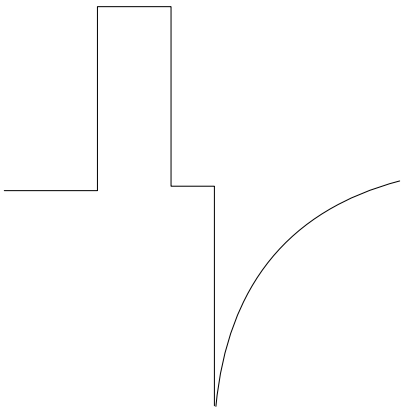
Partial AP Possible K^+ remain open

Neural Stimulation Waveform Parameters

- hyper (+) : higher
- hypo (-) : lower

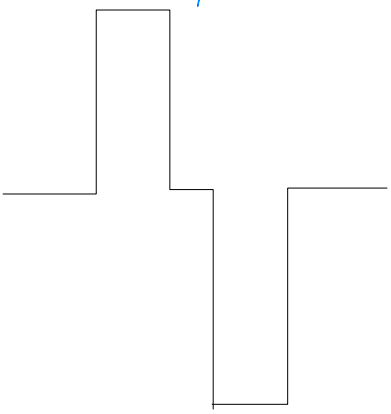


C/A (charge density)



Passive Recovery

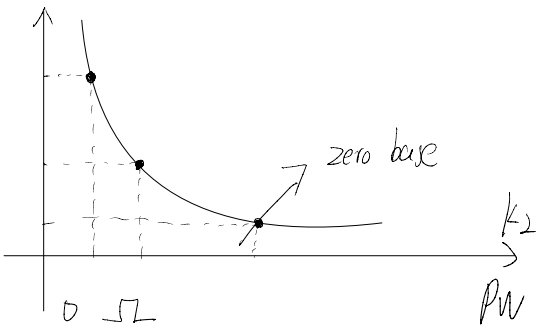
Tissue impedance 1 kΩ



Active recovery

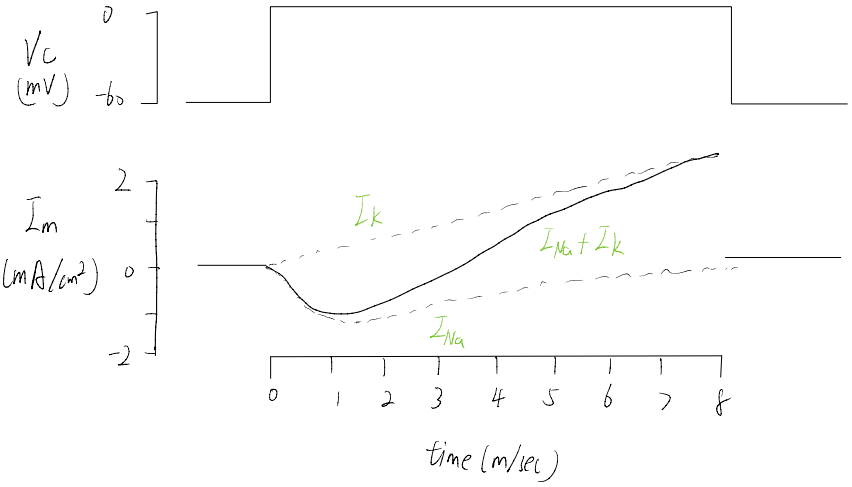
straight & Duration

- 1. Small diameter fiber | slow
- 2. larger diameter fiber | fast



pulse different

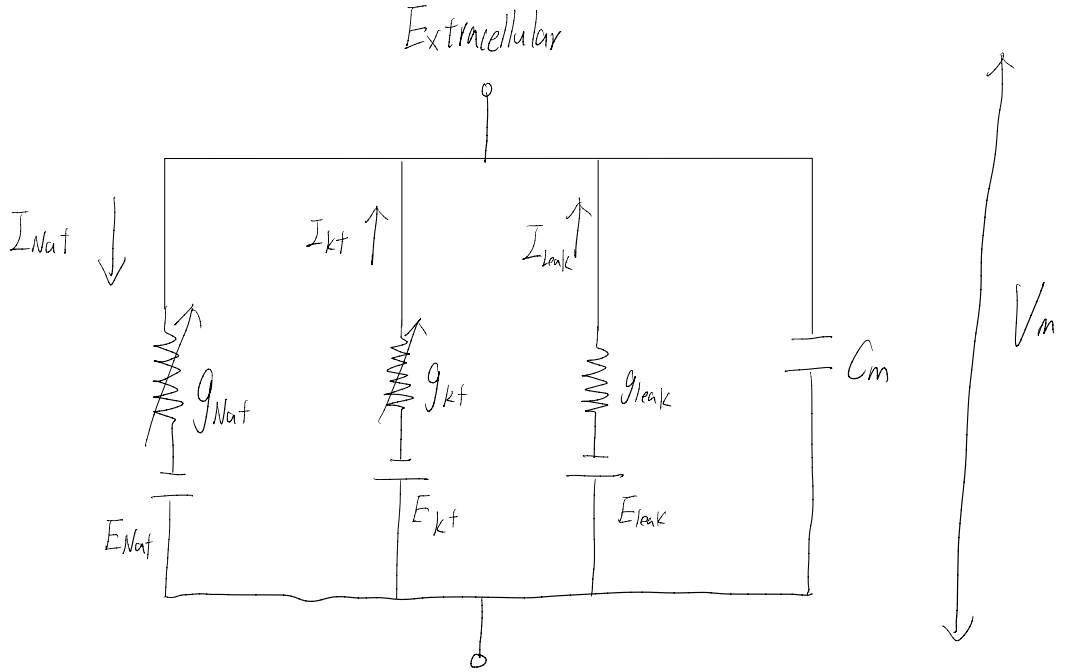
Feedback from Wiki



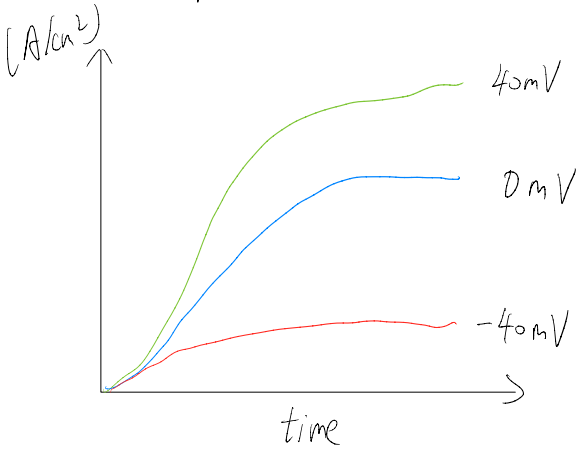
Na open quick & close

K open slowly

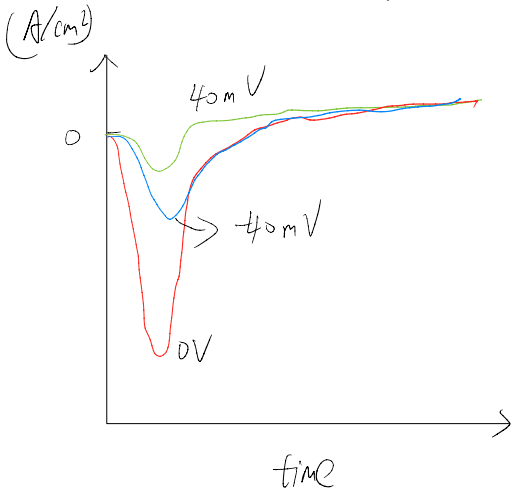
$$I_m = C_m \frac{dV_m}{dt} + I_{Na} + I_k + I_l$$ (I_l : leaky current through Cl^-)

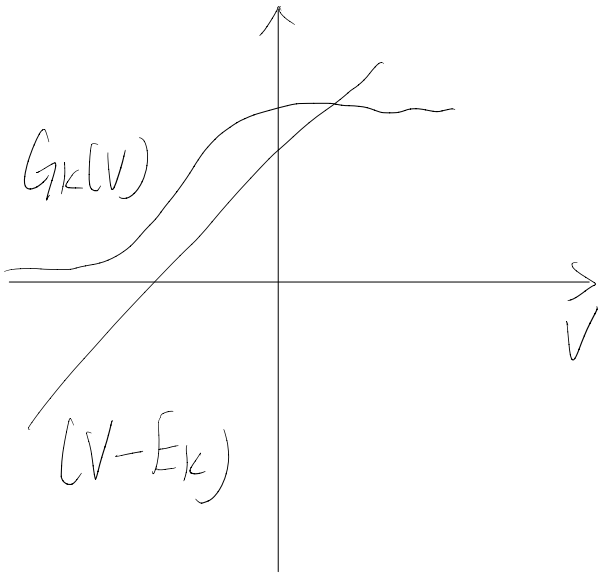


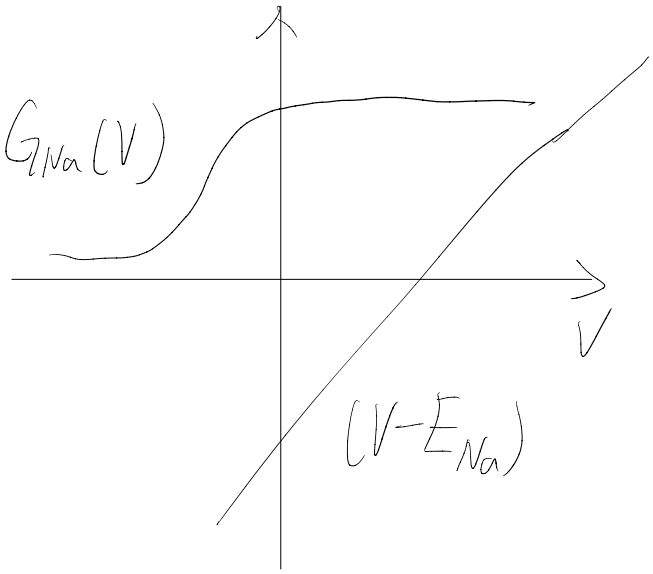
K current



Na Current







$$I_{Na}(V) = g_{Na}(V)(V-E_{Na}), \quad I_K(V) = g_K(V)(V-E_K)$$

$$I_{Na}(t) = g_{Na}(t)(V-E_{Na}), \quad I_K(t) = g_K(t)(V-E_K)$$