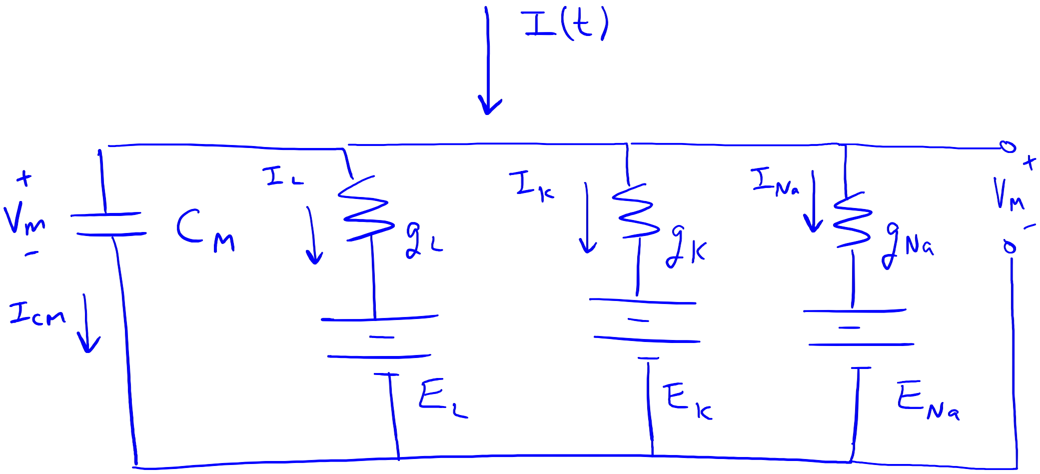

$$g = \frac{1}{R}$$

$$V = IR$$

$$I = \frac{V}{R}$$

$$I = gV$$

$I \equiv$ current i per unit area of membrane

$$I = I_{cM} + I_L + I_K + I_{Na}$$

$$C_M = 1\ \mu F/cm^3$$

$$E_L = -54.4\ mV$$

$$E_K = -70\ mV$$

$$E_{Na} = 50\ mV$$

$$\overline{g_L} = 0.3\ mS/cm^3$$

$$\overline{g_K} = 36\ mS/cm^3$$

$$\overline{g_{Na}} = 120\ mS/cm^3$$

$$I_{cM} = C_M \frac{dV_M}{dt}$$

$$I_L = g_L(V_M - E_L)$$

$$I_L = \frac{1}{R_L}(V_M - E_L)$$

$$V_M - E_L = I_L R_L$$

$$V_M = I_L R_L + E_L$$

$$I_K = g_K(V_M - E_K)$$

$$I_{Na} = g_{Na}(V_M - E_{Na})$$

$$g_L = \overline{g_L}$$

$$g_K = \overline{g_K}\, n^4$$

$$g_{Na} = \overline{g_{Na}}\, m^3 h$$

for $X = n, m, h$

$$\frac{dX}{dt} = \frac{X_\infty(V) - X}{\tau_X(V)}$$

$$X_\infty(V) = \frac{\alpha_X(V)}{\alpha_X(V) + \beta_X(V)}$$

$$\tau_\infty(V) = \frac{1}{\alpha_X(V) + \beta_X(V)}$$