

$$I_T = \hat{g} P z^2 \frac{EF^2}{RT} \frac{[C_a^{2+}]_i - [C_a^{2+}]_o \exp(-zFE/RT)}{1 - \exp(-zFE/RT)}$$

$$\hat{g} = m^3 h$$

if  $-\frac{zFE}{RT} \gg 1 \Rightarrow I_T = \hat{g} P z^2 \frac{EF^2}{RT} \cdot \frac{-[C_a^{2+}]_o}{0-1}$

$$I_T = \hat{g} P z^2 \frac{EF^2}{RT} [C_a^{2+}]_o$$

if  $E=0 \Rightarrow I_T \approx \hat{g} P z^2 \frac{EF^2}{RT} \frac{[C_a^{2+}]_i - [C_a^{2+}]_o (1 - \frac{zFE}{RT})}{1 - (1 - \frac{zFE}{RT})} \approx$

$$\approx \hat{g} P z^2 \frac{EF^2}{RT} \frac{[C_a^{2+}]_i - [C_a^{2+}]_o}{\frac{zFE}{RT}}$$

$$I_T = \hat{g} P z F ([C_a^{2+}]_i - [C_a^{2+}]_o)$$