Table 3. Model parameters for excitable ion channels

Channel	g_i (s/cm^2)		Gate	X_∞ ($x = m,n,h$)	τ_i (ms)	*p*
I_{Na}	**Soma**	0.178	*m*	$\left(1+\exp^{-(V+17)/11}\right)^{-1}$	0.05	2
	Dendrite	0.0017	*h*	$\left(1+\exp^{(V+23)/11.5}\right)^{-1}$	0.5	1
I_{Kd}	**Soma**	0.154	*n*	$\left(1+\exp^{-(V+17)/13.6}\right)^{-1}$	2	2
I_{Nap}	**Soma**	0.0006	*n*	$\left(1+\exp^{-(V+50)/6}\right)^{-1}$		1
I_A	**Dendrite**	0.001* x/100 µm	*m*	$\left(1+\exp^{-(V+40)/8.5}\right)^{-1}$	$\dfrac{\left(1\Big/\left(\exp\left((v+36)/20\right)+\exp\left(-(v+80)/13\right)\right)+0.37\right)}{3^{((celsious-23.5)/10)}}$	4
			h	$\left(1+\exp^{(V+49)/6}\right)^{-1}$	$\dfrac{\left(1\Big/\left(\exp\left((v+46)/5\right)+\exp\left(-(v+238)/37\right)\right)\right)}{3^{((celsious-23.5)/10)}}$	1
I_{AHP}	**Dendrite**	0.045	*m*	$\dfrac{[Ca^{+2}]}{[Ca^{+2}]+0.04}$	1	2
I_L	**Dendrite**	0.0044	*m*	$\left(1+\exp^{-(V-8)/10}\right)^{-1}$	2	2

Hodgkin and Huxley (3) formalism was used to describe the current flow through an excitable channel. Namely, $I_i = g_i{*}m^p{*}h\ (V-E_i)$, where V, membrane potential; g_i, maximal conductance; m and h, the activating and inactivating variable, respectively; and τ_i, the state variables time constant. For simplicity, the time constant for activation/inactivation of all channels is constant, except for the A-type ion channel. p is the power of the activation function. X_∞ is the steady-state value of the corresponding variable. I_{Na}, sodium current; I_{Kd}, delayed rectifier (potassium); I_{Nap}, persistent sodium;

I_{AHP}, calcium-dependent potassium current; I_L, L-type calcium current; and I_A, A channel.