

Supplementary Information

Color and Cellular Selectivity of Retinal Ganglion Cell Subtypes Through Frequency Modulation of Electrical Stimulation

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SUPPLEMENTARY TABLE S1
RATE CONSTANTS OF IONIC CURRENTS

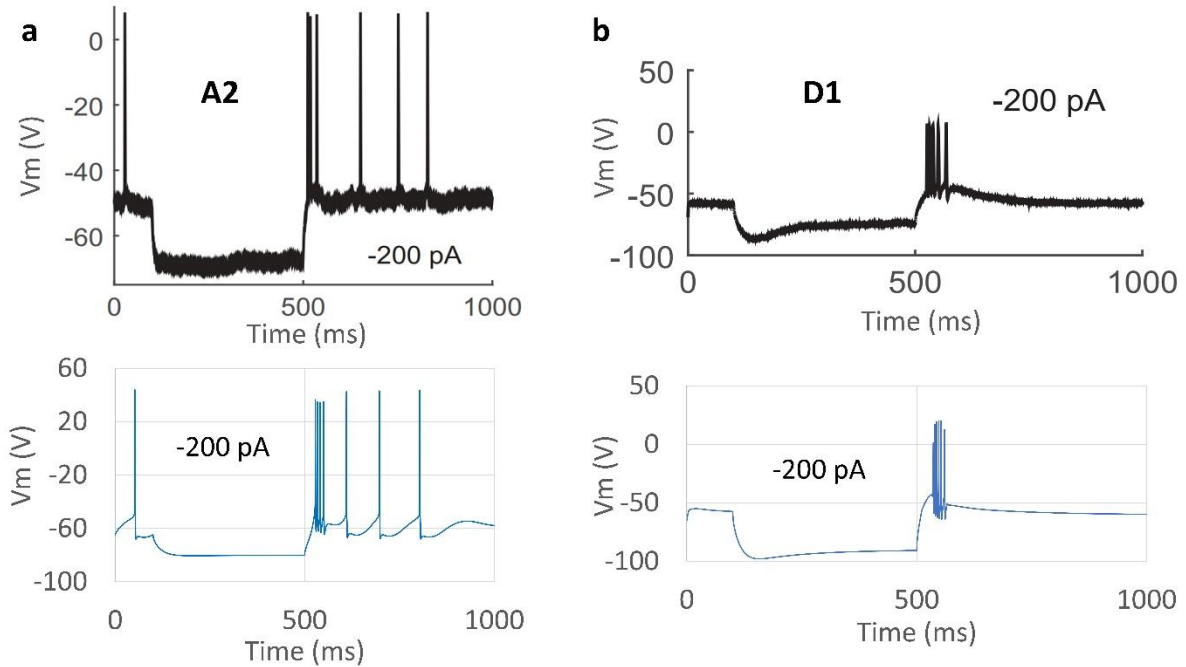
Na Channel	$\alpha_m = \frac{-0.6(E+30)}{e^{-0.1(E+30)} - 1}$ $\alpha_h = 0.4 e^{-(E+50)/20}$	$\beta_m = 20 e^{-(E+55)/18}$ $\beta_h = \frac{6}{e^{-0.1(E+20)} + 1}$
Ca Channel	$\alpha_c = \frac{-0.3(E+13)}{e^{-0.1(E+13)} - 1}$	$\beta_c = 10 e^{-(E+38)/18}$
K Channel	$\alpha_n = \frac{-0.02(E+40)}{e^{-0.1(E+40)} - 1}$	$\beta_n = 0.4 e^{-(E+50)/80}$
A Channel	$\alpha_A = \frac{-0.006(E+90)}{e^{-0.1(E+90)} - 1}$ $\alpha_{h_A} = 0.04 e^{-(E+70)/20}$	$\beta_A = 0.1 e^{-(E+30)/10}$ $\beta_{h_A} = \frac{0.6}{e^{-0.1(E+40)} + 1}$
h Channel	$\alpha_l = e^{0.08316(E+75)}$	$\beta_l = e^{0.033264(E+75)}$
T Channel	$\alpha_{m_T} = \left(1.7 + e^{-(E+28.8)/13.5}\right)^{-1}$ $\alpha_{h_T} = e^{-(E+160.3)/17.8}$ $\alpha_d = \frac{1 + e^{(E+37.4)/30}}{240 \left(0.5 + \left(0.25 + e^{(E+83.5)/6.3}\right)^{0.5}\right)}$	$\beta_{m_T} = \frac{e^{-(E+63)/7.8}}{1.7 + e^{-(E+28.8)/13.5}}$ $\beta_{h_T} = \alpha_{h_T} \left((0.25 + e^{(E+83.5)/6.3})^{0.5} - 0.5 \alpha_{h_T} \right)$ $\beta_d = \alpha_d \left(0.25 + e^{(E+83.5)/6.3} \right)^{0.5}$

SUPPLEMENTARY TABLE S2MAXIMUM IONIC CONDUCTANCE VALUES FOR A2 AND D1 CELLS [S/CM²].

	RGC types			
	A2		D1	
	Soma	Dendrite	Soma	Dendrite
g_{Na}	0.3	0.1	0.2	0.08
g_K	0.12	0.05	0.211	0.08
$g_{K,A}$	3* g_K	3* g_K	3* g_K	3* g_K
$g_{K,Ca}$	0.004* g_K	0.004* g_K	0.004* g_K	0.004* g_K
g_{Ca}	0.137	0.05	0.013	0.01
g_h	0	0	0.0001	3e-5
g_T	0.004	0	0.002	0.001

SUPPLEMENTARY TABLE S3MAXIMUM IONIC CONDUCTANCE VALUES OF THE AXON FOR A2 AND D1 CELLS [S/CM²].

	AH	SOCB	NS	DA
g_{Na}	0.8	2.4	0.9	0.8
g_K	0.6	0.8	0.6	0.6
$g_{K,A}$	3* g_K	3* g_K	3* g_K	3* g_K



Supplementary Fig. S1. Comparison between experimental (top) and computational (bottom) membrane voltages in the cell body (soma) in response to intracellular stimulation. The hyperpolarizing step current stimulation was applied between 100 ms and 500 ms. **(a)**: A2 cell; **(b)**: D1 cell. Experimental data obtained from [37].