Suppl. Table 1: List of parameters appearing in the manuscript, together with their description.

Parameter	**Description**
E_{L}	resting potential
V_{r}	reset potential
V_{th}	threshold potential
I_{stim}	external stimulation current
C_{m}	membrane capacitance
τ_{m}	membrane time constant
I_{th}	threshold stimulation current
k_{adap}	adaptation constant
k_2	I_{adap} decay rate
k_1	I_{dep} decay rate
Δt_{ref}	refractory interval
t_{spk}	spike time
t_{spk}^{+}	time instant following $t_{\mathrm{spk}} + \Delta t_{\mathrm{ref}}$
t_{start}	last instant in which $I_{\mathrm{stim}} = 0$ or $I_{\mathrm{stim}} \leq I_{\mathrm{th}}$, while for piecewise constant stimulation currents it is updated according to Eq. (56)
T	final stimulation time
$I_{\mathrm{dep}}^{\mathrm{start}}$	initial datum of I_{dep} at t_{start}
I_{adap}^{0}	initial datum for I_{adap} after the first spike
I_{dep}^{0}	initial datum for I_{dep} after the first spike
V^0	initial datum for the membrane potential
$\alpha = -\dfrac{I_{\mathrm{stim}}}{C_{\mathrm{m}}\, E_{\mathrm{L}}\, k_2}$	parameter of the nondimensional model
$\beta = \dfrac{k_{\mathrm{adap}}}{C_{\mathrm{m}}\, k_2^2}$	parameter of the nondimensional model
$\gamma = \dfrac{k_1}{k_2}$	parameter of the nondimensional model
$\delta = \dfrac{1}{k_2\, \tau_{\mathrm{m}}}$	parameter of the nondimensional model
$\tau = \dfrac{1}{k_2}$	parameter of the nondimensional model
K	scaling factor used in the nondimensional model
$I_{\mathrm{stim}}^{\mathrm{min}}$	minimum experimental constant stimulation current
$I_{\mathrm{stim}}^{\mathrm{max}}$	maximum experimental constant stimulation current
$F(I_{\mathrm{stim}}, \chi)$	Monod function
a, b, c, d	parameters of the Monod function
$\chi = t_{\mathrm{spk}}^{+} - t_{\mathrm{start}}$	time parameter used in the Monod function
$P(I_{\mathrm{stim}})$	plateau of the Monod function
$H(I_{\mathrm{stim}})$	superior limit for $I_{\mathrm{adap}}^{0}(\chi, I_{\mathrm{stim}})$ defined in Eq. (36)
$A_{I,II}^{\mathrm{sup}}$ (resp. $A_{I,II}^{\mathrm{inf}}$)	coefficient of I_{stim} related to the superior (resp. inferior) Monod block line
$B_{I,II}^{\mathrm{sup}}$ (resp. $B_{I,II}^{\mathrm{inf}}$)	known term related to the superior (resp. inferior) Monod block line
$\left[I_{\mathrm{block}}^{I}, I_{\mathrm{block}}^{II}\right]$	range of currents in which a firing block occurs
I_{fire}	closest stimulation current above I_{block}^{II} or below I_{block}^{I} for which the firing block does not occur
$I_{\mathrm{block}}^{\mathrm{inf}} = \dfrac{I_{\mathrm{block}}^{II} + I_{\mathrm{fire}}}{2}$	when $I_{\mathrm{fire}} > I_{\mathrm{block}}^{II}$
$I_{\mathrm{block}}^{\mathrm{sup}} = \dfrac{I_{\mathrm{block}}^{I} + I_{\mathrm{fire}}}{2}$	when $I_{\mathrm{fire}} < I_{\mathrm{block}}^{I}$
$t_{\mathrm{spk}}^{\mathrm{last}}$	time of the last spike event for the current I_{stim}
ISI_{last}	ISI of the last spike event for the current I_{stim}
ISI_{last}^{I}	defined as $ISI_{\mathrm{last}}(I_{\mathrm{block}}^{I})$
ISI_{last}^{II}	defined as $ISI_{\mathrm{last}}(I_{\mathrm{block}}^{II})$
$t_{\mathrm{spk}}^{\mathrm{first}}$	first spike time
$t_{\mathrm{spk}}^{\mathrm{last}}$	last spike time
$t_{\mathrm{spk}}^{\mathrm{last}-1}$	second-last spike time