

Supplement A (Table 1–3)

Suppl. A Table 1. The MRG model parameters for an axon diameter of 10 μm

Model parameters	Value
Axon diameter	10.0 μm
Node-node separation	1150 μm
Number of myelin lamella	120
Node length	1 μm
Node diameter	3.3 μm
MYSA length	3 μm
MYSA diameter	3.3 μm
MYSA periaxonal space width	0.002 μm
FLUT length	46 μm
FLUT diameter	6.9 μm
FLUT periaxonal space width	0.004 μm
STIN length	175.2 μm
STIN diameter	6.9 μm
STIN periaxonal space width	0.004 μm
Nodal capacitance	2
Internodal capacitance	2 $\mu\text{F}/\text{cm}$
Myelin capacitance	0.1 $\mu\text{F}/\text{cm}^2$
Axoplasmic resistivity	70 $\Omega\text{ cm}$
Periaxonal resistivity	70 $\Omega\text{ cm}$
Myelin conductance	0.001 S/cm^2
MYSA conductance	0.001 S/cm^2
FLUT conductance	0.0001 S/cm^2
STIN conductance	0.0001 S/cm^2
Maximum fast Na^+ conductance	3.0 S/cm^2
Maximum slow K^+ conductance	0.08 S/cm^2
Maximum persistent Na^+ conductance	0.01 S/cm^2
Maximum leakage conductance	0.007 S/cm^2
Na^+ Nernst potential	50 mV
K^+ Nernst potential	–90 mV
Leakage reverse potential	–90 mV
Rest potential	–80 mV

‘STIN’ stands for the ‘stereotype internodal segment’, and is the internodal region where the axon is tightly ensheathed by myelin. ‘FLUT’ stands for the ‘paranodal main segment characterized by a fluted axon’, and corresponds to a fluted region near the node of Ranvier; the fluting becomes increasingly deeper near the node. ‘MYSA’ stands for the ‘paranodal end segment characterized by the myelin sheath attachment to the axolemma’. It corresponds to the region where the paranode is abruptly terminated by the attachment of the myelin sheath to the axon.

Suppl. A Table 2. Stimulation parameters for monopolar simulations

Simulation type	Waveform	Frequency	Interphase delay	Stable variables
Standard waveforms	Square, sine, triangular	4 to 40 kHz (2 kHz spacing) + 3 kHz	0	Electrode to axon distance: 1 mm
Interphase delay	Square	10 kHz	0 to 90% (5% spacing)	Electrode to axon distance: 1 mm

Suppl. A Table 3. Stimulation parameters for bipolar simulations

Simulation type	Electrode to axon distance(s)	Interpolar distance	Other variables changes	Stable variables
Interpolar distance	1 mm	1 to 60 mm (0.5 mm spacing)	Cathode located in yz-plane for parallel simulations, and in xz-plane for perpendicular simulations	Frequency: 10 kHz Waveform: square Interphase delay: 0
Electrode perpendicular distance and interpolar distance	1 to 6 mm (0.5 mm spacing)	1 to 60 mm (0.5 mm spacing)	Interpolar distance for zoomed variant: 1 to 10 mm (0.1 mm spacing)	Frequency: 10 kHz Waveform: square Interphase delay: 0
Electrode orientation	1 mm (only the anode)	2.2 mm	For angle made in xy-plane, cathode moved in the xy-plane towards x-axis. For angle made in yz-plane, cathode moved in yz-plane towards z-axis. Anode location and interpolar distance were equal.	Frequency: 10 kHz Waveform: square Interphase delay: 0