

Parameter	Function	Value
$\{N^{(l)}\}$	Layer Widths	[32, 16, 6]
$\sigma_b$	Inference standard dev.	0.01
$\sigma_p$	Generative standard dev.	0.01
$N_d$	Number of dendritic branches	16
$L$	Epoch number	50
$T_w$	Length of Wake phase	200
$T_s$	Length of Sleep phase	200
$K$	Batch number	512
$\eta_p$	Generative parameter learning rate	0.001
$\eta_b$	Inference parameter learning rate	0.001
$[\beta_1, \beta_2]$	Adam optimizer parameters	[0.9, 0.999]

Supplementary File 1: **MNIST multicompartment network hyperparameters**. The hyperparameters used to train our multicompartment neural network model on the MNIST dataset.