

Table S1 Connectome generation parameters

Summary of parameters used for connectome generation together with the methods used to define them (see main text).

Parameter description	Parameter notation	Method to prescribe a value
Environment Gradient slopes in dorsal and ventral directions: Gradient slope in rostral direction: Dorsal and ventral boundaries:	β_D, β_V β_R y_D, y_V	Guidance from literature, computational trials and adjustments
Soma Rostro-caudal and dorso-ventral coordinates in μm (the same for current position of the axon tip):	x, y	Distribution algorithm, 2D generalization
Primary axon Current growth angle and initial (outgrowth) angle (radian) Length from initial point to a current position of the axon tip (μm) : Initial 'orientation' stage sensitivities of rostral, dorsal and ventral gradients respectively: 'Main' stage sensitivities of rostral, dorsal and ventral gradients respectively: Transitional decay rates for rostral, dorsal and ventral sensitivity functions respectively (smooth transition from initial to regular sensitivity values): Variability range for the random factor :	θ_n, θ_0 $L(x, y)$ $\tilde{g}_R, \tilde{g}_D, \tilde{g}_V$ $\bar{g}_R, \bar{g}_D, \bar{g}_V$ $\gamma_R, \gamma_D, \gamma_V$ α	Iterations of difference equations, 2D generalization 1D generalization Visual matching Stochastic optimization Visual matching Stochastic optimization
Secondary axon Current growth angle and initial (outgrowth) angle (radian) : Length from branching point to current position of the axon tip in μm : 'Main' stage sensitivities of rostral, dorsal and ventral gradients respectively: Variability range for the random factor :	θ_n, θ_0 $L(x, y)$ $\bar{g}_R, \bar{g}_D, \bar{g}_V$ α	Iterations of difference equations, 2D generalization 1D generalization Stochastic optimization Stochastic optimization
Dendrites Dorsal and ventral extent respectively (μm) :	(v, w)	2D generalization

