Table S3: Parameters used in the microenvironment model.

Name	Value	Fit	Description
Simulation Setup			
$strip\_width$	$1000{\times}10^{-6}$ m		Retinal strip width
$strip\_height$	$5000{\times}10^{-6}$ m		Retinal strip height
dx	$5{\times}10^{-6}$ m		PDE lattice spacing
dt	$8.33{\times}10^{-2}$ s		PDE time step
$d_{cell-cell}$	$15{\times}10^{-6}$ m		Center-to-center spacing between cells
r_{cell}	$5{\times}10^{-6}$ m		Cell radius
t_{sync}	$1.0{\times}10^{0}$ s		Synchronization time between PDE and CME simulations
PDE Model			
D	$1{\times}10^{-10}$ m^2 s^{-1}		T3 diffusion coefficient
C_{hi}	$1{\times}10^{-7}$ M		T3 dorsal concentration
C_{lo}	$1{\times}10^{-9}$ M		T3 ventral concentration
CME Model - THRβ2 activity			
μ_{thrb}	$1{\times}10^{-8}$ M		Mean of the cellular THRβ2 concentration
σ^2_{thrb}	$1.0 \cdot \mu_{thrb}$ M^2		Variance of the cellular THRβ2 concentration
k_D^{thrb}	$1.51{\times}10^{-7}$ M	Y	THRβ2-T3 equilibrium dissociation constant
k_f^{thrb}	$1{\times}10^{6}$ M^{-1}s^{-1}		THRβ2-T3 kinetic on rate
k_r^{thrb}	$k_D^{thrb} \cdot k_f^{thrb}$ s^{-1}		THRβ2-T3 kinetic off rate
CME Model - fate determination			
k_f^{fds}	10 s^{-1}		Forward rate for FD(S) regulation
k_{lo}^{fds}	$9.72{\times}10^{-4}$	Y	Lower limit for FD(S) regulation
k_{hi}^{fds}	$2.41{\times}10^{-1}$	Y	Upper limit for FD(S) regulation
k_m^{fds}	$4.37{\times}10^{2}$ molecules	Y	Midpoint of THRβ2* for FD(S) regulation
h^{fds}	$3.61{\times}10^{0}$	Y	Hill exponent for FD(S) regulation
k_r^{fds}	100 s^{-1}		Reverse rate for FD(S) regulation
k_f^{fdc}	10 s^{-1}		Forward rate for FD(C) regulation
k_r^{fdc}	100 s^{-1}		Reverse rate for FD(C) regulation
CME Model - opsin expression			
k_{deg}^{s}	0.01 s^{-1}		S-opsin degradation rate
k_{deg}^{m}	0.01 s^{-1}		M-opsin degradation rate
k_{eq}^{ss}	$2{\times}10^{-10}$ M		FD(S) S-opsin equilibrium concentration
k_{f}^{ss}	$k_{eq}^{ss} \cdot k_{deg}^{s}$ M s^{-1}		FD(S) S-opsin expression rate
k_{eq}^{cs}	$2{\times}10^{-10}$ M		FD(C) S-opsin equilibrium concentration
k_{f}^{cs}	$k_{eq}^{cs} \cdot k_{deg}^{s}$ M s^{-1}		Forward rate for FD(C) S-opsin expression
k_{lo1}^{cs}	$3.05{\times}10^{-4}$	Y	Lower limit for FD(C) S-opsin expression
k_{hi1}^{cs}	$6.44{\times}10^{-1}$	Y	Upper limit for FD(C) S-opsin expression
k_{m1}^{cs}	$6.87{\times}10^{2}$ molecules	Y	Midpoint of THRβ2* for S-opsin expression
h_{1}^{cs}	$1.40{\times}10^{1}$	Y	Hill exponent for FD(C) S-opsin expression
k_{lo2}^{cs}	$1.09{\times}10^{-3}$	Y	Lower limit for FD(C) S-opsin expression
k_{hi2}^{cs}	$7.45{\times}10^{-1}$	Y	Upper limit for FD(C) S-opsin expression
k_{m2}^{cs}	$2.66{\times}10^{3}$ molecules	Y	Midpoint of THRβ2 for FD(C) S-opsin expression
h_{2}^{cs}	$1.39{\times}10^{1}$	Y	Hill exponent for FD(C) S-opsin expression
k_{eq}^{cm}	$2{\times}10^{-10}$ M		FD(C) M-opsin equilibrium concentration
k_{f}^{cm}	$k_{eq}^{cm} \cdot k_{deg}^{m}$ M s^{-1}		Forward rate for FD(C) M-opsin expression
k_{lo}^{cm}	$2.34{\times}10^{-14}$	Y	Lower limit for FD(C) M-opsin expression
k_{hi}^{cm}	$1.26{\times}10^{0}$	Y	Upper limit for FD(C) M-opsin expression
k_{m}^{cm}	$6.17{\times}10^{2}$ molecules	Y	Midpoint of THRβ2* for FD(C) M-opsin expression
h^{cm}	$6.60{\times}10^{-1}$	Y	Hill exponent for FD(C) M-opsin expression