

Table S1. List of parameters used in single compartment model

τ_{rise}	70 ms	Rise time constant of cone impulse response
τ_{decay}	70 ms	Decay time constant of cone impulse response
τ_{phase}	100 ms	Phase delay of cone impulse response
ϕ	$-\pi/5$	Phase
$I_{\text{Ca/R}}$	3 pA	Peak calcium current at single ribbon
V_{thresh}	-43 mV	Threshold for calcium current activation
S_{IV}	-6.6 mV^{-1}	Inverse of exponent slope for calcium channel activation
z	$1.602 * 10^{-19}$	net charge of one electron
A	$6.02 * 10^{-23}$	Avogadro's number
κ	800	Calcium buffer fraction
$\tau_{\text{rise(Ca)}}$	30 ms	Rise time constant of calcium impulse response
τ_{rad}	$755 \text{ ms } \mu\text{m}^{-1}$	dependency of $\tau_{\text{decay(Ca)}}$ on radius (Figure 2J)
F_{Endo}	0.1 s^{-1}	Fraction of vesicles endocytosed per second
D_{v}	$1050 \mu\text{m}^{-3}$	Vesicle density in RP
RRP_{max}	14 vesicles ribbon ⁻¹	Maximal vesicles in the RRP per ribbon
IP_{max}	48 vesicles ribbon ⁻¹	Maximal vesicles in the IP per ribbon
$J_{\text{RP_to_IP_max}}$	$3 \text{ vesicles s}^{-1} \text{ ribbon}^{-1}$	Maximal rate of filling of IP from RP
$J_{\text{IP_to_RRP_max}}$	$100 \text{ vesicles s}^{-1} \text{ ribbon}^{-1}$	Maximal rate of filling of RRP from IP
K_{IP}	2 μM	Ca^{2+} dependence of filling of RRP from IP
J_{RRP}	$3600 \text{ ves. s}^{-1} \text{ rib.}^{-1} \mu\text{M}_{(\text{Ca}^{2+})}^{-1}$	Rate of exocytosis per $\mu\text{M Ca}^{2+}$